AN ANALYTICAL STUDY OF THE DURATION OF DAYLIGHT IN THE BOOK OF ENOCH

UNDERGRADUATED THESIS

Submitted to Faculty of Sharia and Law

In Partial Fulfillment of the Requirement for
Undergraduate Degree in Islamic Law

By:

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SEMARANG

2021

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Demikian surat keterangan ini dibuat dan diberikan kepada yang bersangkutan untuk dipergunakan sebagaimana mes'inya.

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MOTTO

وَسَخَّرَ لَكُمُ الشَّمْسَ وَالْقَمَرَ دَآئِبَيْنِ ۖ وَسَخَّرَ لَكُمُ الَّيْلَ وَالنَّهَارَ

"And He committed the Sun and the Moon to your service, both continuously pursuing their courses, and He committed the night and the day to your service." (Q.S Ibrahim [14]: 33).[1]

[1] Talal Itani, *The Quran Translated to English by Talal Itani* (Dallas Beirut: ClearQuran, 2012), 126.

DEDICATION

This thesis is dedicated to:

My beloved parents are my guardian, Heru Karsono and my angel Keumala Hayati

which always teach me, pray for me and support me in every step that I took until now.

My beloved sisters are Najzwa Hanifah Azkarrula which always inspires me with her success and Cut Maryam Azkarrula which always supports me every time.

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My grandmothers are Siti Maryam and Murniati

My Aceh, Pontianak and Jakarta's family

All of my teachers

and

Those people who appreciates this thesis.

UNDERGRADUATE THESIS STATEMENT

I certify that this thesis is definitely my own work.

I am completely responsible for content of this thesis.

Other writer's opinion or finings included in the thesis are quoted or cited in accordance with ethical standards.

Semarang, December 19th 2021

The Author

Youla Afifah Azkarrula

NIM. 1802046002

TRANSLITERATION SYSTEM[2]

A. Consonant

No	Arab	Latin
1	ا	-
2	ب	B
3	ت	T
4	ث	Ts
5	ج	J
6	ح	H
7	خ	Kh
8	د	D
9	ذ	Dz
10	ر	R
11	ز	Z
12	س	S

No	Arab	Latin
16	ط	th
17	ظ	zh
18	ع	’
19	غ	gh
20	ف	f
21	ق	q
22	ك	k
23	ل	l
24	م	m
25	ن	n
26	و	w
27	هـ	H

[2] Tim Fakultas Syari’ah IAIN Walisongo, *Pedoman Penulisan Skripsi* (Semarang: Basscom Multimedia Grafika, 2012), 61-62.

13	ش	Sy	28	ء	‘
14	ص	Sh	29	ي	Y
15	ض	Dl			

B. Short Vowel

◌َ	=	a	قَرَأَ	*Qara‘a*
◌ِ	=	i	تَأْتِهِمْ	*ta‘tihim*
◌ُ	=	u	صُحُفُ	*Shuhufu*

C. Long Vowel

آ	=	â	وَالْكِتَابُ	*Walkitaabu*
اِي	=	î	اِنْجِيْلُ	*Injiilu*
اُوْ	=	û	زَبُوْرًا	*Zabuuran*

D. Diftong

اَيْ	=	ai	اَلَّيْلِ	*Al-laili*
اَوْ	=	au	اَلتَّوْرٰىةَ	*at-Tauraah*

E. Syaddah

Syaddah is symbolize as double consonant example وَالرَّبَّانِيُّوْنَ = w*arrabbaniyyuuna.*

F. Article + Lam

Article + Lam (ال...) is written by *al-*... example الْخَيْطُ = *al-khaithu*. The word *Al-* is written by small letter except in the beginning of sentence.

G. Ta' Marbuthah (ة)

Evert *ta' marbuthah* is written by "h" example وَّاحِدَةً = *waahidah.*

ABSTRACT

Prophet Idris is the first man who write down astronomy and Falak science by *qalam*, made some notes and known as Enoch book. The Book of Enoch is a rare book in which the original version was found in Qumran Cave. This book was estimated from 300 BC or more than that because this Book was passed down from generation to generation both orally and in writing. In the Book of Enoch, Prophet Idris explained the daylight duration which is tied to *nisfu qausin nahar* in Falak sciences. This thesis aims to reconstruct the narration of Prophet Idris in his book about the daylight duration.

This research belongs to qualitative research which is classified as library research. This research uses Kitab Nabi Idris: The Book of Enoch Translation and Marginal Note by Tessa Sitorini as the primary data. For the secondary data, the author uses certain journals, books, articles, and any writings which are related to the Book of Enoch, and also interview with Tessa Sitorini and Asherit.

Based on the analysis, the daylight duration in the Book of Enoch occurs in the northern hemisphere when the highest duration of daylight is 15 hours in the third month which is related to May until June and the lowest duration of daylight is 9 hours in the ninth month which related with November until December. The latitude of daylight duration in the Book of Enoch is showed subtropical zone and a little of temperate zone. The latitudes are matched with the journey of Prophet Idris as long as he lived. The implications on fasting are the beginning time and the daylight duration on fasting is changeable depend on which month of Gregorian calendar the fast fall and different times for sahur and iftar.

Keyword: ***Astronomy, Book of Enoch, Daylight Duration, Idris, Prophet Enoch***

ABSTRAK

Nabi Idris adalah orang pertama yang menuliskan astronomi dan ilmu Falak dengan *qalam*, membuat beberapa catatan dan dikenal sebagai buku Enokh. Kitab Henokh adalah kitab langka dimana versi aslinya ditemukan di Gua Qumran. Kitab ini diperkirakan dari 300 SM atau lebih dari itu karena Kitab ini diwariskan dari generasi ke generasi baik secara lisan maupun tertulis. Dalam Kitab Henokh, Nabi Idris menjelaskan durasi siang hari yang terkait dengan *nisfu qausin nahar* dalam ilmu falak. Skripsi ini bertujuan untuk merekonstruktsi narasi Nabi Idris dalam kitabnya mengenai durasi waktu siang.

Penelitian ini termasuk dalam penelitian kualitatif yang diklasifikasikan sebagai penelitian perpustakaan. Penelitian ini menggunakan Kitab Nabi Idris: The Book of Enoch Translation and Marginal Note by Tessa Sitorini sebagai data utama. Untuk data sekunder, penulis menggunakan jurnal, buku, artikel, dan tulisan tertentu yang terkait dengan Kitab Henokh, dan juga wawancara dengan Tessa Sitorini dan Asherit.

Berdasarkan analisis, durasi waktu siang dalam Kitab Henokh terjadi di belahan bumi utara saat durasi tertinggi waktu siang adalah 15 jam pada bulan ketiga yang berkaitan dengan Mei hingga Juni dan durasi terendah adalah 9 jam pada bulan kesembilan yang berhubungan dengan November hingga Desember. Garis lintang pada durasi waktu siang dalam Kitab Henokh menunjukkan zona subtropis dan sedikit zona sedang. Lintang cocok dengan perjalanan Nabi Idris selama ia hidup. Implikasinya dalam puasa adalah permulaan puasa dan durasi waktu siang berubah-ubah tergantung pada bulan apa jatuhnya puasa dan perbedaan waktu dalam sahur dan berbuka.

Kata Kunci: ***Astronomi, Kitab Nabi Idris, Durasi Waktu Siang, Idris, Nabi Henokh***

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The author realized the finished of this thesis is not only the effort of the author by herself but there are some efforts and supports either in the form of moral and spiritual from various parties to finish this thesis. Therefore, the author wants to express deep and sincere gratitude for:

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The author prays that all the good deeds and services from all parties who have helped until the completion of this thesis are accepted by Allah SWT, and get a better reply. The author realizes that this thesis is far from perfect due to the limitations of the author's ability. Therefore, the writer expects suggestions and constructive criticism from the readers for the perfection of this thesis. Finally, the writer hopes that this thesis can be useful for the writer in particular and the readers in general.

Semarang, October 7th 2021

Penulis,

Youla Afifah Azkarrula
1802046002

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CHAPTER I

INTRODUCTION

A. Background of Study

Based on research, the first inventor of Islamic astronomy (Falak) or known as astronomy or astrology is prophet Idris that mentioned in every single preamble of Falak's books.[1] Idris prophet[2] is the first man who used tool to implement the astronomy.[3] Based on other book, it said that the first man who invented astronomy knowledge is Enos[4] Prophet, father of Idris prophet. This statement can be found on *Sabia Adz-Dzahab fi Ma'rifah Al-Qabail Al-Arab* book chapter six by As-Suwaidi page 24, it said "Enos is the heir of his father named Seth[5], he is the son of Prophet Syit. When his father died, Unusy replaced his father's position to lead the kingdom politic and governed it by himself. He is the first man

[1] Ahmad Izzuddin, *Ilmu Falak Praktis Metode Hisab-Rukyat Praktis dan Solusi Permasalahannya* (Semarang: PT. Pustaka Rizki Putra, 2017), cet. 3, 6.

[2] Idris has two different name version. First version is Idris (Akhnukh) bin Yarid bin Mihlail bin Qainan bin Yanisy bin Syaisy bin Adam a.s., based on *Tafsir Al-Qurthubi*, vol 11 page 79. Second version is Idris (Khanukh) bin Yarid bin Mihlayil bin Qainan bin Anwasy bin Syaisy bin Adam a.s., based on *Qashashul Anbiya* page 62,64. On *Qurthubhi* vol 11 page 78, it said that Idris got named Khanukh or Akhnukh because he always studies and learns Kitabullah. On *Fathul Bari*, Ibnu Hajar said, "There will be different opinion about the word "Idris". In one opinion, Idris is an Arabic name taken from word *ad-dirasah* which it means study. In the other hand, Idris is from Syrian language. This opinion is based on hadith Abu Dzar which has long version and legalized by Ibnu Hibban, that Idris is Syrian language. Nevertheless, there is no prohibition to include Idris in Arabic because it confirmed that Idris has two version names. Look at Nandang Burhanudin, *Mushaf Al-Burhan the Choice* (Bandung: CV. Media Fitrah Rabbani, 2009), 144.

[3] Ali Mustofa, *Tashrih Al-Auqot 'Ala Tibyan Al-Miqot* (Kediri: Astro Santri, 2020), 12.

[4] In old Testaments, Unusy known as Enos.

[5] In old Testaments, Syit known as Seth.

who knows writing and the first man who knows *hisab* month and year, and he is the first man who plants coconut and speak with wisdom, and to him Allah gave prophetic light. His birth was 650 years after his father, as it says on Torah[6], and he (Unusy) live for 966 years, Wallahu a'lam." [7] From the book we know that, Idris is descendants from Unusy with lineage Akhnukh bin Yarid bin Mihlail bin Qainan bin Unusy bin Syits bin Adam as.[8] And in Old Testament, the lineage is Enoch bin Jared bin Mahaleel bin Kenan bin Enos bin Seth bin Adam as.[9]

Allah Ta'ala gave Idris 30 *suhuf,*[10] and the man who wrote astronomy and astrology into a science with *qalam*[11] is Idris prophet.[12] The thoughts about Idris prophet as the inventor of astronomy was written by one of Ulama in Indonesia, Zuber Umar Al-Jaelani with his book *Al-Khulashatul Wafiyyah Fil Falaki Bi Jadwalillugharitmiyyah*.[13] Not only Zuber Umar Jaelani, but some figures also support

[6] Torah in Indonesian is Taurat. This book is derived by Allah to prophet Daud a.s known as David. In islam, we must believe that Allah derived 4 kitab to His Prophet. The first prophet is Musa a.s. known as Moses with Taurat or Torah as his scripture (holy book), the second prophet is Daud a.s. known as David with book of Zabur, the third prophet is Isa a.s. with Gospel and the last one is our beloved prophet Muhammad ﷺ with Al-Qur'an as the holy book.

[7] Nur Hidayatullah Al-Banjary, *Penemu Ilmu Falak* (Yogyakarta: Pustaka Ilmu, 2013), 118.

[8] Abi Al-Fauz Muhammad Amin Albaghdadi As-Syahrir Bi As-Suwaidy, *Sabaik Adz-Dzahab fi Ma'rifah Al-Qabail Al-Arab* (Dar Al-Kutub Al-Ilmiyah), 11-12.

[9] Novi Arizatul Mufidoh, "Nabi Idris dalam Perspektif Kitab-Kitab Suci Agama dan Ketokohannya dalam Kajian Ilmu Falak", *Jurnal Riset dan Kajian Keislaman,* vol. 9, no. 1, 2020, 175-176.

[10] Suhuf is derived from Arabic which means sheets. Suhuf is the word of God that derived to His messenger but they do not have duty to convey or teach to man or his people.

[11] Qalam is derived from Arabic which means pen or tools used to write with ink.

[12] Ali Mustofa, *Tashrih*, 12.

[13] A. Kadir, *Formula Baru Ilmu Falak* (Jakarta: AMZAH, 2012), cet. 1, 5.

Idris a.s. trigger of Astronomy or Falak. They are Yasin Al-Fandani with his book "Syarah Mukhtashar Muhadzdzab", Dr. Ahsin Sakho Muhammad and Dr. H. A. Sayuti Anshari Nasution, M.A. with their book "Atlas Al-Qur'an" (translate of Atlas Al-Qur'an: Amakin Aqwam-A'lam) and H. A. R. Gibb and J. H. Kramers with their book "Shorter Encyclopedia of Islam" page 159. Prophet Idris taught astronomy to his folk by written and oral form.[14]

Idris in Hebrew (Old Testament) known as Enoch.[15] Enoch as the first man who write down the astronomy and falak by *qalam*, made some notes and known as Enoch book. Enoch book is not only a book that explain about *nubuwwah*[16] but also filling the void of historical sources from the period Adam to Noah. Beside the book tells us about Idris, it tells us various event until Noah flood happened.[17] Enoch book is not a single book but arranged from some *mushaf* or kitab as follow: first wisdom is The Parable of Enoch on the Future Lot of the Wicked and the Righteous, second wisdom is The Book of Parables, the third wisdom is The Book of the Heavenly Luminaries, forth wisdom is The Book of Dreams and the last one is The Epistle of Enoch.[18] These books were written over different periods of time. Based on some studies, the oldest part of this book is on the first book, The Parable of Enoch on the

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[14] Nur Hidayatullah Al-Banjary, *Penemu Ilmu Falak* (Yogyakarta: Pustaka Ilmu, 2013), 110.

[15] Tessa Sitorini, *Kitab Nabi Idris: The Book of Enoch* (Bandung: Pustaka Prajabati, 2017), xiii.

[16] *Nubuwwah* is basically a model of philosophical understanding of religion as an object, a conclusion to the design and construction of philosophical thought the concept of that has been formulated and defend from the attacks of Al-Razi. Based on Qur'an, *nubuwwah* is described as divine grace or Rabbani's gives to anyone from the chosen people. Look at Juwaini and Aminuddin, "Konsep An-Nubuwwah dalam Diskursus Filsafat", *Jurnal Substancia*, vol. 13, no. 2, (Oktober 2011); Jurnal Ar-Raniry, 197-200.

[17] Tessa Sitorini, *Kitab,* x.

[18] Tessa Sitorini, *Kitab,* xi.

Future Lot of the Wicked and the Righteous, which from 300 BC – 200 BC and the newest one is the second book, The Book of Parables, which from 100 BC.[19]

The third book, The Book of the Heavenly Luminaries explained the two bodies that very important to figure out time for pray. These bodies are sun and moon. In Falak, these bodies are the main important thing that Muslim use to determine time[20] for prays. And this habit is used by the old ancestors to pray to the God. Allah taught the prophet Idris about circulation of celestial bodies and recorded in his book, The Book of the Heavenly Luminaries. Sun is the center of solar system based on Heliocentric or known as Copernican system because Nicholas Copernicus formulated the theory and Earth being just another planet.[21] Heliocentric theory appears after the Geocentric theory, that left by the Greek to Post-Roman Europe or known as the Ptolemaic system, has been debunked by it.[22] So these theories related with three bodies. The relationship between the Sun, the Moon and the Earth make phenomena that influence natural events and time.[23]

The moon used to mark the year as used by Greek Civilization in defining twelve months in a year and the existence of additional months when needed to adjust the season called lunisolar calendar. Likewise with other celestial bodies such as the Sun is used as a benchmark in the Christian

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[19] *Ibid.*, xiii.

[20] Karis Lusdianto et al., "Hilal dalam Perspektif Tafsir Al-Quran", *Al-Marshad: Jurnal Astronomi Islam dan Ilmu-Ilmu Berkaitan,* vol.7, no.1, (June, 2021), 17.

[21] A E Roy and D Clarke, *Astronomy Principles and Practice*, 4th Edition (United States: CRC Press, 2003), 151.

[22] Slamet Hambali, "Astronomi Islam dan Teori Heliocentris Nicolaus Copernicus", *al-ahkam journal,* vol. 23, no. 2, (Oktober 2013), 225.

[23] Hikmatul Adhiyah Syam, "The Essential of the Nusantara Traditional Calendar", *Al-Hilal: Journal of Islamic Astronomy,* vol.3, no.1, (2021), 2.

calendar[24] and the Moon which is used as a reference circulation in the lunar calendar. As we know, Sun and Moon influence our worship such as *fardu*[25] prayer five times a day, eclipse prayer, Eid al-Adha and Eid al-Fitr prayer, fasting in Ramadan, and hajj. Besides that, there are so many sunnah worships in some special Hijri months that based on those two motions.[26]

Day and night are affected by the relationship between the two heavenly bodies and the Earth. The term "daylight" is defined as the time when the Sun is visible over the horizon at a specific location. The diurnal circle is a circle that represent the sun's (imaginary) orbit in a day. To determine the duration of daylight, we must compute the length of sun's diurnal circle above the horizon, also known as the arc of daylight.[27] The arc of daylight is known as *qausin nahar* in falak science.The arc of daylight is divided into two portions in its application, the half of which is referred to as *nisfu qausin nahar*. *Nisfu qausin nahar* takes places from sunrise until midday or from midday until sunset. *Nisfu qausin nahar* is one of the variables used to determine prayer times and the beginning of the month. As a result, the existence of this arc of daylight is linked to determine prayer times and the beginning of the month.[28]

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[24] Ahmad Adib Rofiuddin, "Penentuan Hari dalam Sistem Kalender Hijriah", *al-Hilal journal*, vol.26, no.1, (2016), 118-119.

[25] Fardu is a must-do.

[26] Muhammad Nurkhanif, "Hermeneutics and Deconstruction of *Hilal* Testimony Verse: Critical View on Q.S. al-Baqarah 185", *Ulul Albab*, vol.21, no.1, (2020), 68.

[27] Ariyadi Wijaya, "Matematika Astronomi: Bagaimana Matematika Mempelajari Alam", *Proceeding* Seminar Nasional Penelitian, Pendidikan dan Penerapan MIPA, 16 Mei. Yogyakarta: Jurusan Pendidikan Matematika FMIPA UNY, 2009, 194.

[28] Musyaiyadah, "Studi Analisis Metode Penentuan Awal Waktu Salat dengan Jam Istiwa' dalam Kitab Syawariq Al-Anwar", *Undergraduate Thesis IAIN Walisongo,* (eprintWalisongo, 2011), unpublished, 64-65.

There are some reasons why the author picked this title "An Analytical Study of the Duration of Daylight in The Book of Enoch" as follows:

1. The circulation of the Sun and the Moon is an interesting natural phenomenon to study because the effect of this phenomena cause obligation to worship based by time
2. Prophet Idris is a prophet who wrote astronomy and astrology into a science with *qalam.*
3. The Book of Enoch is a rare book which the original version was found in Qumran Cave or known as Dead Sea Scroll and was written with Armenian as its origin language. This book also estimated from 300 BC or more than that because the Book was passed down from generation to generation both orally and in writing.
4. Reconstruction the narration of Prophet Idris in his book about the daylight duration.
5. The duration of daylight is tied to *nisfu qausin nahar,* which is used to establish prayer times and the beginning of the month, which is associated with worship for Muslims.

Based on the background above, the author conducted further research on the sunshine duration based on the Book of Enoch. Therefore, the author intends to do research and lift the thesis entitled "An Analytical Study of the Duration of Daylight in The Book of Enoch".

B. Identification of Problem

Based on the description of the background of study above, it can be identified that the author main problems in this thesis are:

1. How is the duration of daylight in the Book of Enoch?
2. How is the astronomical analysis of the duration of daylight and the implication on fasting?

C. Objective of Study

Objective dealing with the problem identification, due to the basis of the above issues, the objectives to be achieved in this study are as follows:

1. To describe and know the duration of daylight in the Book of Enoch.
2. To explain the astronomical analysis of the duration of daylight and the implication on fasting.

D. Significance of Study

The benefits of this research are as follows:

1. Theoretical benefits
   a) Enrich insights and intellectual treasures of Muslim, especially in Indonesia, regarding duration of daylight in the past and nowadays.
   b) Gain insights in understanding the astronomical analysis of the duration of daylight and the implication on fasting.
2. Practical benefit

Expected from this study become scientific research that can provide information and sources of reference for researchers, astronomers and all people in the future.

E. Literature Review[29]

Based on the literature review and as far as the author's search has done, the author knows the earlier researches that discuss the duration of Sunshine is may be related to the research carried out by the author but in different perspective. The aim of this literature review is to inform about the research that has been done and avoid plagiarism. Throughout the search, the author has not found specific and detailed research which discuss the duration of Sunshine on Enoch Book and the relevance with now days.

There are so many literatures that discuss Falak Science and Astronomy, especially those which discuss the duration of daylight and the Enoch Book pretty lots. However, there are quite differences compared to this study. Several kinds of research are related to this study as follows

The following is a list of works that discuss the duration of daylight:

1. Veronica Manara and her friends' journal entitled "Sunshine Duration Variability and Trends in Italy

[29] Literature review is a written summary of journal, articles, books and other documents that describes the past and current state information on the topic of research study, it also organizes the literature into subtopics and documents, the need for a proposed study (Creswell: 2012). Literature review serves two main purposes, namely justify the important of the research problem and provide rationale for the purpose of the study and research questions or hypothesis. Look at Sugiyono, *Metode Penelitian Kualitatif* (Bandung: Alfabeta, 2021), cet. 4, 78.

from Homogenized Instrumental Time Series."[30] This journal discussed the differences regional or latitude affect sunshine duration record using Ångström-Prescott formula.

2. Wei Chong and friends' journal entitled "Spectral Influence Analysis on Sunshine Duration Measurement."[31] This journal discussed the comparison between the photovoltaic and the thermopile-based instruments which is carried out to uncover the spectral influence or sunshine duration measurement.
3. Mojca Dolinar's journal entitled "Spatial Interpolation of Sunshine Duration in Slovenia."[32] This journal discus about the calculation of the spatial distribution of sunshine duration in the territory of Slovenia. The seasonal presentation was chosen due to the high inter-seasonal variability in the spatial distribution of sunshine duration. Geographical variables (altitude, latitude, and longitude) are used in models to explain the spatial variability of sunshine duration. For each season, regionalization is performed based on sunshine duration data, derived geographical data, and radio-sounding data.

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[30] Veronica Manara and friends, "Sunshine Duration Variability and Trends in Italy from Homogenized Instrumental Time Series (1936-2013)", *Journal of Geophysical Research: Atmospheres,* vol. 120, (May 2015), 3622-3641.

[31] Wei Chong and friends, "Spectral Influence Analysis on Sunshine Duration Measurement", *Journal the Institution of Engineering and Technology,* vol. 2019, (October 2019), 8505-8507.

[32] Mojca Dolinar, "Spatial Interpolation of Sunshine Duration in Slovenia", *Meteorological Application,* vol. 13, no. 4, (January 2007), 375-384.

4. Ramli Rahim and friends' journal entitled "Classification of Daylight and Radiation Data into Three Sky Conditions by Cloud Ratio and Sunshine Duration."[33] This journal analysis the daylight and solar radiation in low latitude/tropic area to classify them into three sky condition such as, clear sky, intermediate sky, and overcast sky using cloud ratio method and sunshine duration.

The following is a list of works that discuss the Book of Enoch:

1. Colby Townsend's paper entitled "Revisiting Joseph Smith and the Availability of The Book of Enoch."[34] This paper discussed the interest of Enoch Book steadily grow with multiple independent English translation Syncellus's excerpt of the book becoming available in print up to about 1800. And until now Enoch Book is still being studied and associated with all aspects of science.
2. Colby J Townsend's thesis entitled "The Use of Scripture in *1 Enoch* 1-36."[35] This honor thesis analyzes the use of prior authoritative literature in the Book of Watchers (BW), an ancient Jewish text written ca. 200 BCE. The authors of this text were intimately familiar with several texts that

[33] Ramli Rahim and friends, "Classification of Daylight and Radiation Data into Three Sky Conditions by Cloud Ratio and Sunshine Duration", *Energy and Buildings,* vol. 36, no. 7, (July, 2004), 660-666.

[34] Colby Townsend, "Revisiting Joseph Smith and the Availability of The Book of Enoch", *Dialogue: A Journal of Mormon Thought,* vol. 53, no. 3, (Fall 2020), 41-72.

[35] Colby Townsend, "The Use of Scripture *1 Enoch* 1-36", *Undergraduate Thesis* The University of Utah (Academia, 2016), unpublished.

would later become part of the Hebrew Bible. Past scholarship has identified almost all of these literary correspondences, but few projects have been aimed specifically at examining and explaining how and what texts the authors of the BW employ. Lars Hartman's research was the most thorough, next to Nickelsburg's commentary, in examining the influence of prior authoritative texts on the first five chapters of the BW. Siam Bhayro's research failed to make several important connections that other scholars had made while providing a few new ones himself. Chapters twelve through thirty-six of the BW have not received as close scrutiny as the prior chapters in earlier studies. This thesis aims to fill that void by bringing to the foreground several important texts underlying the composition of the BW. These connections highlight the priority of the opening chapters of Genesis over the Enochic BW by pointing out how the BW assumes that the reader already knows the details of the Eden narrative, the expulsion from the garden, and the murder of Abel by his brother Cain.

3. Helen R. Jacobus's journal entitled "Greco-Roman Zodiac Sundials and Their Links to a Qumran Calendar (4Q208-4Q209)."[36] This paper proposes that the Greco-Roman zodiac sundials that flourished in Greece and Italy from about the second century BCE to the second century CE

[36] Helen R. Jacobus, "Greco-Roman Zodiac Sundials and Their Links to a Qumran Calendar (4Q208-4Q209)", *Mediterranean Archaeology and Archaeometry*, vol. 14, no. 3, (2014), 67-81.

were related to a probable zodiac calendar found in astronomical Aramaic manuscript fragments in the Dead Sea Scrolls from Qumran, dated about c. 2,000 years BP and c. 2,170 years BP. He demonstrates that in the Ethiopic Book of Luminaries the zodiac signs have been substituted by numbered gates of heaven and that this codified model can be traced back to the Qumran texts. Furthermore, that this same pattern is evident in Greco-Roman sundials in an unencrypted form. He concludes that the paradigms in the proposed Qumran zodiac calendar and the Greco-Roman zodiac sundials are the same, making it likely that the Aramaic fragments contain a zodiac calendar.

4. Ratson and Eshbal's journal entitled "4Q208: A New Reconstruction and Its Implication on the Evolution of the Astronomical Book."[37] This journal proposes a new reconstruction of 4Q208, a copy of the *Aramaic Astronomical Book of Enoch* (AAB) that was preserved in 36 small fragments. The new reconstructed text demonstrates that alongside the textual continuity between 4Q208 and its later and fuller copy 4Q209, these two manuscripts also reveal textual plurality. The difference in their schemes is not merely an outcome of scribal error but seems to derive from ongoing scientific creativity. Later Jewish astronomers adapted the spatial astronomical theory present in 4Q208 to the more

[37] Ratson and Eshbal, "4Q208: A New Reconstruction and Its Implication on the Evolution of the Astronomical Book", *Revue de Qumran,* vol. 31, no. 2, (2019), 51-110.

accurate, and probably already sanctified 364-day year. They also attempted to suit 4Q208's lunar visibility scheme to reality by reversing the order of full and hollow months.

F. Research Methodology

Research methodology is a working method to be able to understand the object that become the target in science. Method is the guidance for researcher to study and discover the purpose of the research.[38] In this research, the author uses the following research methods:

1. Types of Research Approach

   Based on the explanation above, this research belongs to qualitative research[39]. This research is also classified as library research, because its research conducted using literature and written data sources in the form of scientific works such as books, articles, journals, and other sources related with research in carrying out library analysis.[40]

2. Data Source

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[38] Soerjono Soekamto, *Pengantar Penelitian Hukum* (Jakarta: UI Press, 1986), 67.

[39] Qualitative research basically emphasis the process analysis of inductive thinking processes related to the dynamic between observed phenomena and using scientific logic. Look at Imam Gunawan, *Metode Penelitian Kualitatif* (Jakarta: Bumi Aksara, 2013), 80.

[40] M. Iqbal Hasan, *Pokok-Pokok Metodologi Penelitian dan Aplikasinya* (Bogor: Gahlia Indonesia, 2002), 11.

For collecting data, the author uses two data sources, namely primary data and secondary data sources.[41]

a) Primary Data

Primary data is first-hand data or data obtained or collected from the source directly in the field by the person conducting the research or those concerned who need it.[42] Primary data is an original and unique data from a source such as observations, surveys, questionaries, case studies and interviews according to the requirements.[43] Primary data of this study was taken from Kitab Nabi Idris: The Book of Enoch Translation and Marginal Note by Tessa Sitorini.

b) Secondary Data

Secondary data is data which not directly obtained by the researcher from the object of the research and usually arranged in the form of documents. It also related to the problems examined or complimentary data sources served as a compliment to the data required by the primary data.[44] To clarify this research, the author will conduct interviews and direct discussion via Messenger with Tessa Sitorini as the author of The Book of Enoch Translation and Marginal Note by Tessa Sitorini and Asherit as the leader of personal page of Zadok Enoch Priestly Calendar. Besides that, the author also obtains

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[41] Saifudin Azwar, *Metode Penelitian* (Yogyakarta: Pustaka Pelajar, 1998), 91.

[42] M. Iqbal Hasan, *Pokok.* 82.

[43] Oluwatosin Victor Ajayi, "Distinguish between Primary Sources of Data and Secondary Sources of Data", *Researchgate* (Makurdi: Benue State University, September 2017), 5.

[44] Adnan Mahdi Mujahidin, *Panduan Penelitian Praktis untuk Menyusun Skripsi, Thesis dan Disertasi* (Bandung: Alfabeta, 2014), 132.

secondary data from documentation in the form of writings on Enoch Book, Encyclopedias, Dictionaries, Articles, Books and Journals.

3. Data Collection Methods

Data collection method is the most strategic step on this research because the main aim of this research is to obtain data. Without knowing this method, the researcher never obtain data that qualified.[45] To obtained the data needed in this research, the author uses two data collection method, as follow:

a) Documentation

Documentation is used to collect data of research and examine variables in the form of document that relevant to the research study.[46] Document is past event log that can be writings, pictures, and someone's monumental works.[47] This research was done by documenting, reviewing, studying, and analyzing books, scientific paper, as well as the official archives relate to the problem to be studied.

b) Interview

An interview is a meeting of two persons to exchange information and idea through questions and responses, resulting communication and joint construction of meaning about a particular topic (Esterberg: 2002).[48] In this case the author also interviewed the parties that related to this research.

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[45] Sugiyono, *Metode*, 104.

[46] Suharsimi Arikunto, *Prosedur Penelitian Suatu Pendekatan Praktek* (Jakarta: Penerbit Rineka Cipta, 2002), 206.

[47] Sugiyono, *Metode*, 124.

[48] *Ibid.*, 114.

This interview is conduct to gather a lot of information from the informant or the person being interviewed. Structured interview is used in this interview which the questions of the interview are compiled before being asked to the informant.

The interviewees were from the author of The Book of Enoch Translation and Marginal Note by Tessa Sitorini and Asherit as the leader of personal page of Zadok Enoch Priestly Calendar for additional information.

4. Data Analysis Technique

Analysis of any kind involve a way of thinking to search for pattern. It refers to the systematic examination of something to determine its part, the relation among parts and the relationship to the whole.[49] The author uses an analytical descriptive technique[50] to examine data on the duration of daylight in the Book of Enoch, first describing the duration of daylight in the Book of Enoch. Following that, the duration of daylight in the Book of Enoch was transformed into hours, and each month's data was displayed to be fitted to the solar calendar's common month. This data also examines where this pattern belongs in terms of latitude. This description is then analyzed in order to reach a conclusion. If the technique above is written into a schema, it will be like:

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[49] Sugiyono, 131.

[50] Descriptive which is describing or painting systematically, factually, accurately of the primary data methods, and phenomena or relationship between phenomena investigated. Look at Imam Suprayogo and Tobroni, *Metodologi Penelitian Sosial Agama* (Bandung: PT Remaja Rosdakarya, 2003), 136-137. Descriptive research also conducted to determine the value of independent variables, either one or more variables without making comparisons or relating them to other variables. Look at Beni Kurniawan, *Metodologi Penelitian* (Tangerang: Jelajah Nusa, 2012), 20.

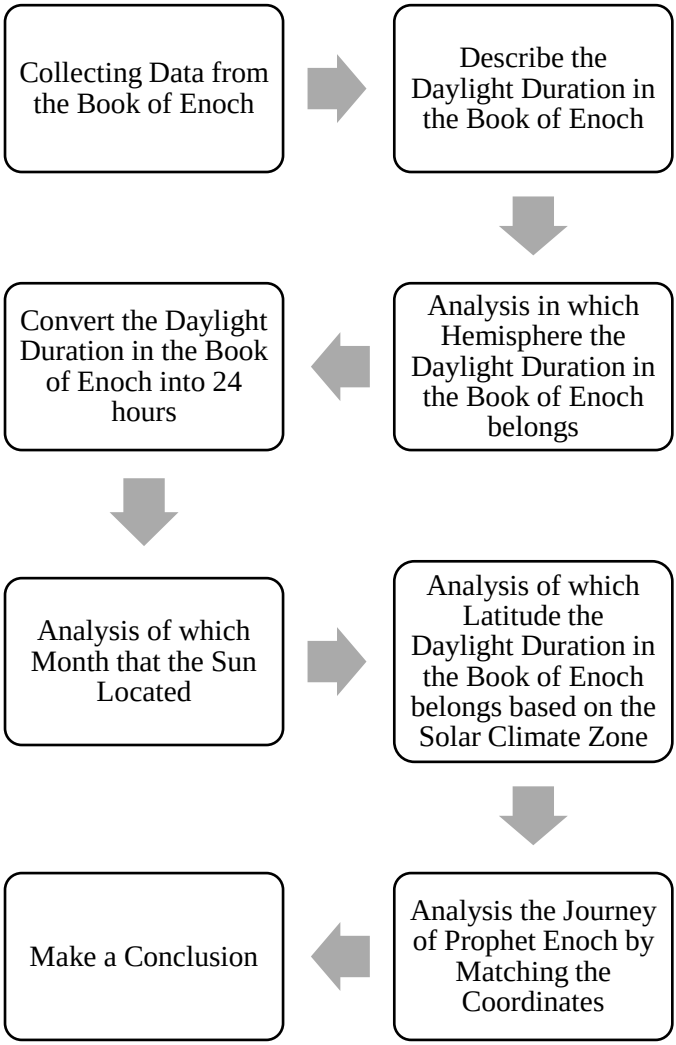

Figure 1. 1: Scheme of Data Analysis

G. Systematic of Writing

To achieve the purpose of this research and the direction of writing clearly, the author compiled this thesis by the system of writing into five chapters based on the writing of a qualitative method in "*Pedoman Penulisan Skripsi Program Sarjana Fakultas Syari'ah dan Hukum UIN Walisongo Semarang"* which puts the research method in the first chapter to make the writing more efficient. There are sub-chapters discussion with a certain problem with systematic as follows:

CHAPTER I: INTRODUCTION, this chapter contains the background of study this research, the formulation of the problem, research objective, and the benefit of study. Furthermore, literature review and the research methodology that explain the method and technical analysis that used by the author to carry out in this research. And the last thing in this chapter is the systematic of writing the thesis.

CHAPTER II: GENERAL REVIEW OF DAYLIGHT DURATION, this chapter presented normative argument some holy book from God, describe the Book of Enoch, and daylight duration.

CHAPTER III: THE DURATION OF DAYLIGHT IN THE BOOK OF ENOCH, this chapter describes the biography of Prophet Idris and the daylight duration in the book of Enoch.

CHAPTER IV: THE ASTRONOMICAL ANALYSIS OF DAYLIGHT DURATION, this chapter is the main points of this thesis discussion will be presented, describes the astronomical analysis on daylight duration, finding the relevance of daylight duration in the book of Enoch with nowadays and finding the implication on fasting.

CHAPTER V: CLOSING, this final chapter covers conclusions based on the data that has been obtained by the research and include suggestions related the discussion result that the author adopt and then the closing remarks.

CHAPTER II

GENERAL REVIEW OF DAYLIGHT DURATION

A. The Sacred Book

The fourth pillar of Islam's faith is belief in the Allah's scriptures. Sacred books or celestial books are the names given to these precious scriptures.[1] The phrase of sacred books, or *al-kutub as-samawiyah*, is Allah's order that was given to his Prophet and apostle as a guide for human existence.[2] The sacred scriptures are Psalms, Torah, Gospel and the Quran. The Quran is the final holy book to recognized and affirm the existence of the prior writings. The texts are not limited to the Quran; other works, such as Psalm, Torah, Gospel, and *shuhuf*, are also *kalamullah*.[3] This collection of celestial books is described in the Quran by surah *Ali Imran* [3]: 184[4]

فَاِنْ كَذَّبُوْكَ فَقَدْ كُذِّبَ رُسُلٌ مِّنْ قَبْلِكَ جَآءُوْ بِالْبَيِّنٰتِ وَالزُّبُرِ وَالْكِتٰبِ الْمُنِيْرِ ۝

> "*If they accuse you of lying, messengers before you were accused of lying. They came with the proofs, and the Psalms, and the Illuminating Scripture."*[5](Q.S. 3 [Ali Imran]: 184)

Though they still disbelieve you, even if you show them your authentic miracles and holy book that guides you to the

[1] Nunung Lasmana and Ahmad Suhendra, "Al-Qur'an dan Tiga Kitab Suci Samawi Lainnya", *Jurnal Asy-Syukriyyah,* vol. 18, (Oktober, 2017), 39.

[2] Ahmad Sarwat, *Al-Quran dan Kitab Samawi Sebelumnya,* (Jakarta: Rumah Fiqih Publishing), 7.

[3] Nunung Lasmana and Ahmad Suhendra, "Al-Qur'an..", 39.

[4] *Ibid.*, 40.

[5] Talal Itani, *The Quran Translated to English by Talal Itani* (Dallas Beirut: ClearQuran, 2012), 36.

true road, don't be upset or worried about their hardness of heart and skepticism. This occurrence was foretold by the Prophet before him. They perform genuine miracles for you. Allah gave down *shuhuf*, sheets of revelation given to Prophets earlier that include wisdom, and Allah sent down holy books that give a flawless explanation and contain sharia law, such as the Torah, Gospel, and Psalm. They remain patient and steadfast in the face of people who break their hearts and deny them.[6]

Non-celestial literature or *ardhi*'s books, such as Tripitaka for Buddha, Veda for Hindus, Wu Jing for Kong Hu Chu, and so on, are the polar opposite of sacred books. The distinction is that, while there are multiple sacred writings, they are considered to have their source from Allah, which is His *kalam* or instructions. While not celestial writings, some elements of them are based on philosophy and ancestral teachings rather than God.[7]

That is why we are obligated to believe in these celestial books by totally believing that the books have been sent down to His Apostles. As Quran surah *al-Baqarah* [2] verse 213, Allah provided us a cue that every Prophet received the correct book and treatise that must be conveyed to his people.

كَانَ النَّاسُ اُمَّةً وَّاحِدَةً ۟ فَبَعَثَ اللّٰهُ النَّبِيّٖنَ مُبَشِّرِيْنَ وَمُنْذِرِيْنَ ۪ وَاَنْزَلَ مَعَهُمُ الْكِتٰبَ بِالْحَقِّ لِيَحْكُمَ بَيْنَ النَّاسِ فِيْمَا اخْتَلَفُوْا فِيْهِ ۟ وَمَا اخْتَلَفَ فِيْهِ اِلَّا الَّذِيْنَ اُوْتُوْهُ مِنْۢ بَعْدِ مَا جَآءَتْهُمُ الْبَيِّنٰتُ بَغْيًۢا بَيْنَهُمْ ۚ فَهَدَى اللّٰهُ الَّذِيْنَ اٰمَنُوْا لِمَا اخْتَلَفُوْا فِيْهِ مِنَ الْحَقِّ بِاِذْنِهٖ ؕ وَاللّٰهُ يَهْدِيْ مَنْ يَّشَآءُ اِلٰى صِرَاطٍ مُّسْتَقِيْمٍ ۝

[6] Kementrian Agama RI, *Al-Qur'an dan Tafsirnya,* jilid 2 (Jakarta: Kementrian Agama RI, 2012), 89.

[7] Ahmad Sarwat, *Al-Quran,* 7.

> *"Humanity used to be one community; then God sent the Prophet, bringing good news and giving warnings. And He sent down with them the Scripture, with the truth, to judge between people regarding their differences. But none differed over it except those who were given it – after the proofs had come to them – out of mutual envy between them. Then God guided those who believed to the truth they had disputed, in accordance with His will. God guides whom He wills to a straight path."*[8] (Q.S. 2 [Al-Baqarah]: 213)

Humanity used to be a single entity. One faith and one aim charity, to fix and not to destroy, doing good and not doing bad, be fair and not be persecution. They turn away and do the opposite, and there is no unity of faith and viewpoint between them, which carries them into bliss, and they dispute, divorced. To bring people back to their original state and unite the virtuous, Allah sent down His Prophets, the chosen ones to guide them down the straight road, show them their errors, and send good news to the believers and loyal.

Allah sent down His Prophets with a celestial book, which contains the truth, guidance, and entire explanation, and is utilized as a basis to offer thought and conclusion as fair as possible in all that is disputed. Actually, humans do not need to argue because the sacred book that is given has true annotations or explanations that can all be known and comprehended. So, the reason they blame each other is because they are vengeful and enjoy to violate. If this bitterness is embedded in the heart of an individual or a community, it is difficult to achieve peace and well-being between them.[9] Therefore, we must believe that

[8] Talal Itani, *The Quran,* 16.

[9] Kementrian Agama RI, *Al-Qur'an dan Tafsirnya,* jilid 1 (Jakarta: Kementrian Agama RI, 2012), 310-311.

those books were sent down by Allah as a source of illumination and guidance for all humans to represent Allah.[10]

1. Psalm

According to etymology, the word "*Zabur*" is derived from the Arabic word *zabran*, which means throw, mind, patient, writing, or transcribing. *Zabur* is a moniker that refers to Prophet David's collection of quotes in the form of revelation and inspiration that he acquired as a result of his *munajat* to Allah. This explanation is found in Surah *al-Isra* [17] verse 55 of the Quran.[11]

وَرَبُّكَ اَعْلَمُ بِمَنْ فِى السَّمٰوٰتِ وَالْاَرْضِ ۗ وَلَقَدْ فَضَّلْنَا بَعْضَ النَّبِيّٖنَ عَلٰى بَعْضٍ وَّاٰتَيْنَا دَاوٗدَ زَبُوْرًا ۝

"Your Lord knows well everyone in the heavens and the earth. We have given some Prophets advantage over others, and to David we gave the Psalms."[12] (Q.S. 17 [Al-Isra]: 55)

This verse reveals that Allah is perfectly aware of His servant's status, whether in the sky or on Earth, visible or invisible. He picks between His servants who are more deserving of Prophetic duties and religious knowledge. He also favors one servant over another based only on esoteric knowledge and His own might. This verse is also a rebuttal to polytheists who claim that Muhammad ﷺ was merely an orphan nurtured by his uncle, Abu Thalib, before becoming a Prophet. Nobles and Quraysh leaders will not want to be his followers if his followers are just those who are hungry and dressed in rags. The reference of Allah knowing well everyone in the sky and the earth is a

[10] Nunung Lasmana and Ahmad Suhendra, "Al-Qur'an..", 46.
[11] *Ibid.*, 41.
[12] Talal Itani, *The Quran,* 143.

rejection of their arrogance and desire for Allah to send down angels or prominent individuals from Mecca or Taif.[13]

Those who have spiritual virtues and a clean soul are among Allah's servants who are chosen to be His Messenger. Allah chooses one servant above another based on His choosing, such as Prophet Abraham, who was given the privilege of being given the title *Khalilullah*, and Prophet Moses, who was given the advantage of being given the term *Kalimullah*. Prophet Muhammad ﷺ was granted the highest miracle of all miracles, the Quran, and the luxury of facing straight into Allah's presence during *Isra'* and *Mi'raj*. Allah mentions at the end of this verse that He has delivered Psalm to Prophet David. As a result, it is clear that Prophet David was superior not just as a monarch, but also because he received the sacred book from Allah. The mention of Psalm, specifically in this verse, because it is mentioned in that holy book that Prophet Muhammad is the final Prophet and his people are good people as well.[14] Psalm was mentioned three times in the Quran, including Surah *an-Nisa'* verses 55, 163, and *al-Anbiya'* verse 105.[15]

2. Torah

Torah is the name of the holy book that was given to Prophet Moses as the Jewish holy book. The title "Torah" was derived from the Hebrew, *taroh 'yarah-yurih',* which means to instruct (give a lesson) or to

[13] Kementrian Agama RI, *Al-Qur'an dan Tafsirnya,* jilid 5 (Jakarta: Kementrian Agama RI, 2012), 499-500.

[14] Kementrian Agama RI, *Al-Qur'an dan Tafsirnya,* jilid 5 (Jakarta: Kementrian Agama RI, 2012), 500-501.

[15] Ahmad Sarwat, *Al-Quran,* 9.

demonstrate (direction).[16] Torah is a name that refers to some sheets that contain the words that were sent down to Prophet Moses on Tur Mountain. The core law of sharia is derived from the sacred texts that were sent down to Prophet Moses.[17] *'Ahdul Qadiim* is the name given to their sharia (Old Testament).[18] This statement was mentioned in *al-Maidah* [5] verse 44.

اِنَّآ اَنْزَلْنَا التَّوْرٰىةَ فِيْهَا هُدًى وَّنُوْرٌ ۚ يَحْكُمُ بِهَا النَّبِيُّوْنَ الَّذِيْنَ اَسْلَمُوْا لِلَّذِيْنَ هَادُوْا وَالرَّبّٰنِيُّوْنَ وَالْاَحْبَارُ بِمَا اسْتُحْفِظُوْا مِنْ كِتٰبِ اللّٰهِ وَكَانُوْا عَلَيْهِ شُهَدَاۤءَ ۚ فَلَا تَخْشَوُا النَّاسَ وَاخْشَوْنِ وَلَا تَشْتَرُوْا بِاٰيٰتِيْ ثَمَنًا قَلِيْلًا ۗ وَمَنْ لَّمْ يَحْكُمْ بِمَآ اَنْزَلَ اللّٰهُ فَاُولٰۤىِٕكَ هُمُ الْكٰفِرُوْنَ ۝

> *"We have revealed the Torah, wherein is guidance and light. The submissive Prophets ruled the Jews according to it, so did the rabbis and the scholars, as they were required to protect God's Book, and were witnesses to it. So do not fear people, but fear Me. And do not sell My revelations for a cheap price. Those who do not rule according to what God revealed are the unbelievers."*[19] (Q.S. 5 [Al-Maidah]: 44)

Allah sent down to Moses the Torah, which contains guidance and direction for humans to the right so that they can escape and save from errors and idol worship, as well as the light that illuminates the things that are still

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[16] Nilna Indriana, "Common Word dalam Tiga Agama Samawi: Islam, Kristen, dan Yahudi (Sebuah Dialog Antar Agama Menuju Titik Temu Teologis", *An-Nas: Jurnal Humaniora,* vol. 4, no. 1, (2020), 35.

[17] Nunung Lasmana and Ahmad Suhendra, "Al-Qur'an..", 42.

[18] Ahmad Zarnuji, "Isra'iliyyaat dalam Menceritakan Kisah-Kisah Al-Qur'an", *Fikri,* vol. 1, no. 2, (Desember, 2016), 452.

[19] Talal Itani, *The Quran,* 55.

dim or dark for them, so that they can see the right path both in religion and in the world. Torah becomes a guide for Prophets who honestly commit themselves to Allah, beginning with Moses and continuing with Prophets from the Israelites until Prophet Isa. Because this holy text is used by Jews to make decisions, it is Jewish property. Similarly, some leaders and pastors employed Torah as a law (enactment) when there was no Prophet present, because Allah mandates them to keep Torah, be witnesses, and be accountable for its application. Do not even break Torah rules and hide them because contrary to their willingness or fear of the prominent person, they are not brave enough to stead the law for them, implying that they are more scared of humans than Allah. Another case is Abdullah bin Salam, who lives until *al-Khulafa ar-Rasyidin.* He is a Jew who sincerely upholds Allah's law thus others despise him and are dissatisfied with him. He imposes stoning on everybody who should be punished for adultery, including their leader or influential members.[20]

Do not let them not propagate and explain those laws since the world advantage or profit that he acquired from interested persons, such as bribery or the position or authority given to him, has no meaning or worth when compared to the recompense they will receive in the hereafter. Whoever punishes or decides on a case that is not in accordance with Allah's law, such as the Jews, who hide the law of stoning against adultery with a husband or wife and replace it with the law of lashing and blackening his face, then being paraded around for the public to see, and others, means they are breaking the law and are disbelievers. [21] The Torah was mentioned 16 times in the Quran. They are Surah *Ali Imran* verse 3, 48, 50, 65 and

[20] Kementrian Agama RI, *Al-Qur'an dan Tafsirnya,* jilid 2 (Jakarta: Kementrian Agama RI, 2012), 405-406.

[21] Kementrian Agama RI, *Al-Qur'an dan Tafsirnya,* jilid 2 (Jakarta: Kementrian Agama RI, 2012), 406.

93; *al-Maidah* verse 43, 44, 46, 66, 68 and 110; *al-A'raf* verse 157; *at-Taubah* verse 111; *al-Fath* verse 29; *ash-Shaf* verse 6 and *al-Jumu'ah* verse 5.[22]

Torah is the Semitic name. The Greek term, which translates as 'Pentateuch,' refers to a five-part work: Genesis, Exodus, Leviticus, Numbers, and Deuteronomy. These are the five portions of the 39-volume Old Testament. The Old Testament is a collection of texts of widely varying lengths and genres. Based on oral tradition, they were written in numerous languages over a span of more than 900 years. Many of these works were revised and completed in response to events or unique requirements, often at very different times. The Old Testament is a disjointed collection of stories based on an oral tradition. It is therefore intriguing to compare the method by which it was formed with what might have happened in another time and place when a primitive literature was born.[23]

This sacred book's language is Hebrew, and it teaches about monotheistic, or Allah's oneness. As 10 orders were given to Prophet Moses in Tur Mountain, which is known as *ihsan* or good acts, they are as follows:[24]

1) Obligation to unite Allah;
2) Prohibition of worshiping statues or idols;
3) Prohibition of mentioning Allah in vain;
4) Glorification of Saturday;
5) Respect for your father and mother;
6) Prohibition of killing each other;
7) Prohibition of adultery;
8) Prohibition of stealing;

[22] Ahmad Sarwat, *Al-Quran*, 8.

[23] Dr. Maurice Bucaille, *The Bible, The Qur'an and Science: The Holy Scriptures Examined In The Light Of Modern Knowledge.*

[24] Nilna Indriana, "Common..", 35-36.

9) Prohibition of false witness;
10) Prohibition of having other people's rights.

3. Gospel

The name of the revelation that was sent down to Prophet Isa and later collected by his friends for Christians is known as the gospel. The phrase "*Injil*" is a word that has been absorbed into Arabic. Some argue that this name comes from the Roman language, *instanjailiyu*, which meaning "glad news." Meanwhile, Imam Qurtubi asserted that the term "*injil*" is derived from the Syriacs. Another school of thought holds that the *injil* is derived from Greek, which meaning "fluent sentence." Some linguists and *mufasir* say that this name derives from Arabic, where the root word *najlan* means "water that comes from the earth."[25]

According to a redaction, *Injil* is derived from the Greek word *'euanggelion'*, which consists of the words *'anggelion'*, meaning news, and *'eu'*, or glad; good. The good news was the arrival of true faith, which was a God-given summons to repentance and a reflection of a better shift in life. For Christians, the word "*injil*" has a spiritual meaning as the good news of the coming of Messiah, who would present himself on the cross as the redeemer of mankind when his corpse is buried. As prophesied in the Old Testament Prophetic literature, the Messiah will rise again on the third day.[26] Their sharia is referred to as *'Ahdul Qadiim* (Old Testament) and *'Ahdul Jadiid* (New Testament).[27]

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[25] Nunung Lasmana and Ahmad Suhendra, "Al-Qur'an..", 42-43.

[26] Nilna Indriana, "Common..", 36.

[27] Ahmad Zarnuji, "Isra'iliyyaat dalam Menceritakan Kisah-Kisah Al-Qur'an", *Fikri,* vol. 1, no. 2, (Desember, 2016), 452.

Regarding *injil*, Allah mentioned it in Quran surah al-Maidah [5] verse 46.

وَقَفَّيْنَا عَلٰٓى اٰثَارِهِمْ بِعِيْسَى ابْنِ مَرْيَمَ مُصَدِّقًا لِّمَا بَيْنَ يَدَيْهِ مِنَ التَّوْرٰىةِ ۖ وَاٰتَيْنٰهُ الْاِنْجِيْلَ فِيْهِ هُدًى وَّنُوْرٌ ۙ وَّمُصَدِّقًا لِّمَا بَيْنَ يَدَيْهِ مِنَ التَّوْرٰىةِ وَهُدًى وَّمَوْعِظَةً لِّلْمُتَّقِيْنَ ۝

> *"In their footsteps, We sent Jesus son of Mary, fulfilling the Torah that preceded him; and We gave him the Gospel, wherein is guidance and light, and confirming the Torah that preceded him, and guidance and counsel for the righteous."*[28] (Q.S. 5 [Al-Maidah]: 46)

This verse explains that following the end of the period of the Prophets, adherents, and implementers of the contents of Torah, Allah sent Prophet Isa, the son of Maryam, to follow the path of Israelites before him and implement Torah which was sent down before him. Then Allah sent down the Gospel to Prophet Isa to complete the contents of the Torah, which had reached the end of its validity period and had to be fitted to the situation and condition of the people and society. The gospel book contains guidance, as well as being the light that illuminates the people so that they can see the right road that will make them happy. The Gospel verifies the previous sacred book, Torah, which provides the principles that might save their people from errors in faith and charity, such as monotheistic, which eliminates shirk and idolatry, which is the cause of superstition and evil. The Gospel contains guidance and teaching, such as doctrine that tells there will be a Prophet (New Testament, Yohannes xiv.16, xv.26, and xvi.7, as well as surah ash-

[28] Talal Itani, *The Quran*, 55.

Shaff verse 6) with noble character, whose sharia is more complete and tends to be worldwide, with no time and location limitations. He is the final Prophet and the final apostle. However, the guidance and teachings can only be used by a devout person.[29]

The Injil was mentioned 12 times in the Quran. They are Surah *Ali Imran* verse 3, 48, 65; *al-Maidah* verse 46, 47, 68, 110; *al-A'raf* verse 157; *at-Taubah* verse 111; *al-Fath* verse 29 and *al-Hadid* verse 27.[30]

The majority of Christians believe that the Gospels were written by firsthand witnesses to Jesus' life and thus represent undeniable proof about the events that highlighted his life and ministry. The Gospel did not come together as a full whole until more than a century after the conclusion of Jesus' mission. According to the Ecumenical Translation of the Bible, the four Gospels became canonical literature around 170 AD. The four gospels are Matthew's, Mark's, Luke's, and John's.

4. Shuhuf

The term "*shuhuf*" refers to a single page but can also refer to multiple written pages or a book. The scriptures revealed to the Prophets are frequently expressed in the Quran with the phrases "*shuhuf*," "*kitab*," and "*zubur*." According to Al-Samarqandi, Al-Qurtubi, and Elmalili, the word "*shuhuf*" in the Quran comes to mean the books or scriptures revealed to the Prophets in several verses. The word "*shahiifah*" is used eight times in the Prophet Muhammad's Medina Constitution between Muslims, Jews, and Pagans to designate the document,

[29] Kementrian Agama RI, *Al-Qur'an dan Tafsirnya,* jilid 2 (Jakarta: Kementrian Agama RI, 2012), 409.

[30] Ahmad Sarwat, *Al-Quran*, 9.

while "*kitab*" is used twice.[31] In Quran, the word "*shuhuf"* was mentioned in Surah *Thaha* verse 133:

وَقَالُوْا لَوْلَا يَأْتِيْنَا بِاٰيَةٍ مِنْ رَّبِّهٖ ۗ اَوَلَمْ تَأْتِهِمْ بَيِّنَةُ مَا فِى الصُّحُفِ الْاُوْلٰى ۝

> *"And they say, "Why does he not bring us a miracle from his lord?" Were they not even given enough miracles in the former scriptures?*"[32] (Q.S. 20 [Thaha]: 133)

However, the term *shahiifah* was used to refer to Hadith literature written during the early period of Islam. Nonetheless, the word "*shuhuf*" has undergone a semantic restriction over time, and it is now used only to refer to the *shuhuf* revealed to the Prophets Adam, Idris, Seth, and Abraham, rather than the Torah, Psalms, Bible, Quran, and other holy texts. Because the word *shuhuf* is defined as "a little, thin book consisting of numerous pages," there is a misunderstanding about the content and volume of prior *shuhuf*/books.[33]

In his shahih, Ibn Hibban relays a hadith from Abu Dhar al-Ghifari that details the names and number of *shahiifah* (pages) of the texts revealed to the Prophets. However, hadith scholars deemed this hadith untrustworthy because Ibrahim bin Hisham al-Ghassani made an error ('*illat*). The first word in this hadith is

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[31] Mehmet ALTUNTAŞ, "KUR'AN'DA PEYGAMBERLERE GÖNDERİLEN 'SUHUFLAR/KİTAPLAR' ÜZERİNE BİR DEĞERLENDİRME", *Turkish Studies: International Periodical for the Languages, Literature and History of Turkish or Turkic,* vol.11, no.12, (Summer, 2016), 2.

[32] Talal Itani, *The Quran*, 163-164.

[33] Mehmet ALTUNTAŞ, "KUR'AN'DA", 3.

"kitab," followed by the word "*shahiifa*h" in the following statement:[34]

"O Rasulullah ﷺ! How many kitabs (books) has Allah Almighty sent down?' He replied: 'He revealed one hundred and four kitabs. He revealed fifty *shahiifah* to Seth, thirty *shahiifah* to Idris, ten *shahiifah* to Abraham and ten *shahiifah* to Moses before the Torah." [35]

The fact that the word "*shahiifah*" is used to denote "book" in this hadith indicates that it is used in the sense of "book" holding divine revelations conveyed to the Prophets. Again, there is no information in this hadith on the *shahiifah* delivered to Prophet Adam. However, according to several hadiths, the number of *shahiifah* revealed to Prophet Adam ranges between 10, 21 and 51.

According to the Qur'an, the core of all scriptures given to the Prophets is union and worship. In Surah *al-An'am* verses 83-89, Allah the Almighty reveals to Prophet Muhammad[36]

> *"Those are the ones whom Allah has guided, so from their guidance take an example. …"*(Q.S. 6 [Al-An'am]: 90)

There has never been a shift in the faith, worship, and moral issues that form the foundation of Islam. The word *Shuhuf* is used in the Quran to refer to the Psalms, Torah, Bible, Quran, and other scriptures, the book revealed to Abraham, the book of deeds, the main resource containing information on Allah the Almighty, a special book, and the large tray used in serving Muslims with offerings in heaven. According to Ibn Ashur, the term *shuhuf* refers to the scriptures given to the Prophets. The

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[34] *Ibid.*, 3.
[35] *Ibid.*, 3.
[36] *Ibid.*, 4.

term *shuhuf* was also applied to the Qur'an, which was revealed to Prophet Muhammad in surah *al-Bayyinah* verse 1-2. According to Az-Zarkashi and Al-Suyuti, the Qur'an had 55 names and one of those names was "*shuhuf*".[37]

5. Quran

The word "Quran" is derived from the Arabic word *qara'a*, which means "reading and collecting." According to Islam, the Quran is Allah's directives that were sent down to Rasulullah ﷺ, and reading it is considered worship. The phrase "Allah's directives" signifies that the Quran is not the speech of jinn, devil, human, or angel. The phrase "was sent down to Rasulullah ﷺ" signifies that these directives were solely sent down to Rasulullah ﷺ and were not given to other Prophets such as Prophet David, Prophet Moses, or Prophet Isa. And the phrase "reading it as worship" refers to the fact that the Quran is more than just a collection of verses; it is a revelation from Allah, thus reading it is a kind of worship.[38] Quran surah *al-Isra* [17] verse 9.

اِنَّ هٰذَا الْقُرْاٰنَ يَهْدِىْ لِلَّتِىْ هِيَ اَقْوَمُ وَيُبَشِّرُ الْمُؤْمِنِيْنَ الَّذِيْنَ يَعْمَلُوْنَ الصّٰلِحٰتِ اَنَّ لَهُمْ اَجْرًا كَبِيْرًا ۙ

> *"This Quran guides to what is most upright; and it gives good news to the believers who do good deeds, that they will have a great reward."*[39] (Q.S. 17 [Al-Isra]: 9)

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[37] Mehmet ALTUNTAŞ, "KUR'AN'DA", 4-5.

[38] Tim Penulis, *Buku Panduan Ujian Komprehensif S1 Fakultas Syariah dan Hukum UIN Walisongo Semarang 2017* (Semarang: UIN Walisongo, 2017), 1.

[39] Talal Itani, *The Quran*, 141.

The topics covered in the Quran include religious, social, legal, and moral in nature (Abdel Haleem:1999, 10-11).[40] The Quran teaches about Allah's unity, the story of Allah's messenger and apostle, warnings and good tidings, and the *muamalah* relationship.[41] The Quran has several names, and each one reflects the importance of the role and position. In other words, the Quran is the most holy sacred book. Quranic names include *al-Furqan, al-Tanzil, adz-Dzikr, al-Kitab*, and others. Aside from that, the Quran contains certain excellent characteristics such as *nur, hudan syifa, mau'izah, aziz, mubarak, basyir, nadzir*, and so on.[42]

The Quranic miracles are universal and eternal, meaning they apply to all humanity till the end of time. As a result, the Quran is regarded as the greatest miracle of all those conferred by Allah on the past Prophets and on the Prophet Muhammad ﷺ himself. The preceding Prophets and Apostles' miracles were sensory material marvels, but the Prophet Muhammad's miracles were spiritual, rational, and immortal for all time, notably the Quran *al-Karim* as the greatest miracle among the miracles given to him.[43]

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[40] Sara Eweida, *The Realization of Time Metaphors and the Cultural Implications: An Analysis of the Quran and English Quranic Translations*, (Sweden: Stockholms universitet, 2007), 8.

[41] Nilna Indriana, "Common..", 36.

[42] Anshori, *Ulumul Quran*, (Jakarta: Rajawali Press, 2013), 20.

[43] Huzaemah Tahidoh Yanggo, "Al-Qur'an Sebagai Mukjizat Terbesar", *Waratsah*, vol.1, no. 2, (Desember, 2016), 1.

B. General Description about The Book of Enoch

The book of Enoch is a collection of discussion and notes during the Prophet Idris' time. This book is made up of five separate booklets. Those five books are in chronological time. The Book of the Watchers, the first book or I Enoch, was completed in the second half of the third century BC and contains 36 chapters (chapter 1-36). The Book of Similitudes, or The Parables, the second book of Enoch, and it was completed from the first century BC to the first century AD, with chapters ranging from 37 to 71. The Book of the Heavenly Luminaries, or The Astronomical Writings, is the third book, and it covers chapter 72 – 82, which were completed in early Babylonian period.[44] The fourth book, The Book of Dream Visions (chapters 83 – 90), was completed in 161 BC. The Epistle of Enoch is the title of the final book, which is the fifth in series. This book, which span chapters 91 to 107, was completed in the early second century BC and was not completed until the late second century BC. [45]

The "Enochic Pentateuch" is the name given to these volumes. According to Milik (1976: 4), the 4 Book of The Giants, discovered at Qumran, was originally part of the Enochic Pentateuch, and The Book of The Giants was superseded by The Parables. According to Black (1985: 9), a Jewish Christian translator/redactor compiled the several volumes into a "Pentateuch" as early as the second century AD. To form or leave a "Pentateuch", The Book of the Giants was deleted and replaced by The Parables.[46]

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[44] Isaac dates it at 110 BC, Nicklesburg considers the Book of Luminaries older than The Book of Watchers.

[45] Lawrence Henry Vanbeek, *The Letter of Jude's Use of 1 Enoch: The Book of the Watchers as Scripture* (University of South Africa, 1997), 4.

[46] *Ibid.*, 5.

The Temple scroll was first published in 1974 in the Dead Sea Scrolls collection.[47] The book of Enoch appears to have circulated during the Second Temple Period. By the time of the European Renaissance, texts attributed to Enoch had fallen out of favor for a variety of reasons. However, a dubious book (suspected to have been written by Enoch) was recently discovered to still be in circulation (in Ethiopia). The Ethiopian version does, in fact, provide a number of axioms and formulas for resolving the Earth's and Moon's paths. The fact that specific definitions and laws documented in the Ethiopian text's astronomical book reaction are right in illustrating that the rate of lunar quarters, solar months, and tropical years can all be defined together within the context of a national model is significant. The fact that portions of the Ethiopian Enoch are totally valid in depicting the Earth and Moon's orbital structure is likely one of the reasons why this book was so popular in the Temple area.

A portion of Ethiopian literature (those that appropriately account for Sun and Moon stations) appears to be reflected from inside passages of Hebrew scrolls and books published during the Temple era, which is significant for this study of ancient astronomy. Following that, a series of paragraphs and related material will seek to document the substance of an early lunisolar system using relevant Hebrew and Ethiopian writings. The reader will eventually come to the conclusion that an effective 'day count' system for measuring time was almost certainly within the grasp of a group of ancient astronomers.[48]

The book of Enoch makes an attempt to fill in the gaps in the Old Testament by expanding on stories and

[47] Father Tom Roberts, PhD, DD, OSA, *The Temple Scroll and the Reign of God*.

[48] James D. Dwyer, *Revolution of the Luminaries,* 2013. 7 August 2021 11.41 PM.

personalities.[49] Between 190 BC – 900 AD, The Book of Enoch (or 1 Enoch) was written and assembled in its current form. It should not be confused with two later books of the similar title (2 and 3 Enoch). [50]

Book	Title	Original Language	Date written
1 Enoch (Ethiopic Apocalypse)	Enoch, Book of Enoch or Words of Enoch	Aramaic/ Hebrew	190 BC – 900 AD
2 Enoch (Slavonic Apocalypse)	The Book of the Secrets of Enoch	Slavonic	Late 1st century AD
3 Enoch (Hebrew Apocalypse)	Hebrew Enoch or Book of the Palaces	Hebrew	5th – 6th century AD

Table 2. 1: Book of Enoch from each apocalypse

The Book of Enoch was compiled over the course of a century. [51] The original language is most likely Aramaic, with some Hebrew sections (chapters 37-71). Two Jewish sects made use of the book. Evidence suggests that 1 Enoch influenced or was used by the Magharians (200 BC) and Essenes at Qumran, where the Dead Sea Scrolls (DSS) were also preserved.[52]

The 1 Enoch is divided into five parts (perhaps to match the Pentateuch) and has been divided into 108 chapters with two short appendices since the sixteenth century. The first section is The Book of the Watcher (chapters 1-36), the second section is Similitudes (also known as Parables chapters 37-71), the third part is the Astronomy Book (chapter 72-82), the fourth section

[49] Douglas E. Potter, *The Book of Enoch: Canonical, Authoritative or What?*, 2018. Southern Evangelical Seminary, 2.

[50] *Ibid.*, 3.

[51] *Ibid.*, 3.

[52] David R. Jackson, *Enochic Judaism: Three Defining Paradigm Exemplars* (New York: T&T Clark International, 2004), 8.

is Book of Dreams (chapter 83-90), and the fifth section is Epistle of Enoch (chapter 91-105), the Birth of Noah (chapter 106-107) and the last one is Another Book by Enoch is chapter 108.[53]

It is now widely acknowledged that 1 Enoch was written in a Semitic language. But, in terms of some parts of the Bible, what that language is remains a point of contention. Murray, Jellinek, Hilgenfeld, Halevy, Goldschmidt, Charles (previously), Littman and Martin have argued for a Hebrew original in the past, whereas De Sacy, Levi, Eerdmans, Schmidt, Lietzmann, Wellhausen and Praetorius have argued for an Aramaic original at various periods. Ewald, Dillman, Lods, Flemming could not decide whether to use Hebrew or Aramaic. Only three of the above scholars, Halevy, Charles, and Schmidt, have actually struggled with the problem, and they have three different theses to offer. While Halevy maintains a Hebrew source and Schmidt an Aramaic, the current writer is convinced that neither view can be established, but that each appears to be true in part, based on his research in editing the Ethiopic text and translation and commentary based on it. The finding of this investigation suggest that chapter 6-36 were originally written in Aramaic, while 37-104 and presumably 1-5 were written in Hebrew.[54]

Various titles for the book can be found in existing manuscripts (MSS). “Enoch”, “Book of Enoch” or “Words of Enoch” and “Ethiopic Apocalypse of Enoch” are a few examples. Ten Aramaic fragments (1 Enoch 30:1 – 32:3; 35:1 – 36:4; 77:3) sections of the fifth book and Apocalypse of Ten Weeks were discovered in Qumran as part of the Dead Sea Scrolls. There are no Similitudes (also known as Parables) chapter 37-71 fragments. Chapter 1-36, 85-90, 97-100 are

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[53] George W. W. Nickelsburg and James C. VanderKam, *1 Enoch the Hermeneia Translation* (Minneapolis: Fortress Press, 2012), 1.

[54] R.H. Charles, *The Book of Enoch or 1 Enoch Translated from the Editor’s Ethiopic Text,* (Toronto: University of Toronto, 2009), Lvii.

preserved in seven fragments. Only the Book of the Luminaries chapters 72-82 are found in four fragments. Parts of the Book of Giants can be found in nine fragments. Overall, these fragments represent about 196 verses out of a total of 1062 verses or roughly one-fifth of the Ethiopic original.

About 28% of 1 Enoch is preserved in fragmentary texts translated from an Aramaic original in the Greek version. The Chester Beatty Papyrus (Enoch 97:6 – 107:3) is the most important, showing that by the end of the first century, the Greek translation based on Jude's citation, Latin fathers, and Greek church fathers was in place. The Ethiopic version dates from the fourth and sixth centuries, while the first existing MSS is 1,000 years old. It was discovered by Scottish explorer James Bruce in Abyssinia in 1769 and retains the majority of its content. The Book of Enoch was canonized by the Ethiopic church, although it was never included in the Greek Translation of the Old Testament, the Septuagint (LXX/70). The Ethiopic version, which dates from around 500 AD, was translated from Greek, which most likely based on an Aramaic original.[55]

Language	MSS or Fragments	Date	1 Enoch
Aramaic	7 fragments	3rd to early 2nd century BC	1-36, 85-107
	4 fragments		72-82
	9 fragments		Book of Giants
	(Qumran/DSS)		
Greek	2 fragments Oxyrhynchus Papyrus	4th century AD	77:7 – 78:1; 78:8; 85:10 – 86:2; 87:1 – 3

[55] George W. W. Nickelsburg and James C. VanderKam, *1 Enoch The Hermeneia Translation* (Minneapolis: Fortress Press, 2012), 9-17.

	Chester Beatty Papyrus	4th century AD	97:6 – 107:3
	Akhmim (Codex Panopolitanus)	5-6th century AD	19:3; 1:1 – 32:6a
	Chronography of George Syncellus	9th century AD	6:1 – 9:4; 8:4 – 10:14; 15:8 – 16:1
	Codex Vaticanus	11th century AD	89:42 - 49
Latin (quotations)	Pseudo-Cyprian Tertullian Other Latin Fathers	9th century AD	106:1 – 18; 1:9; 99:6 – 7
Coptic	Coptic fragment Apocalypse of Week	6th century AD	Parts of 93:3 – 8
Syriac	Excerpt from Book of the Watchers	12th century AD	6: 1 – 9
Ethiopic Version	49 MSS of 1 Enoch	16 – 18 century AD	1 – 108

Table 2. 2: Fragments in every language

1 Enoch's acceptance or rejection in different parts of the world cannot be determined with confidence. On the basis of preserved fragments and MSS, only 1 Enoch's existence can be determined. Palestine, Syria, Asia Minor, Athens, Rome and Carthage all had copies of 1 Enoch. In Egypt, the most widespread acceptance was among heretical sects, with Christian acceptance declining.

Richard Laurance released his first English translation in 1821, followed by his published Ethiopic text in 1838. The

majority of early English translation were primarily based on Ethiopic sixteenth-century MSS. The English translation by Robert H. Charles is perhaps the most well-known and widely utilized (1893). Tessa Sitorini utilized his translation book to translate the book into Indonesian. As art of the published collection of *The Old Testament Pseudepigrapha* (1983), Ephraim Issac gives a translation. However, his translation is based on only one Ethiopic MSS from the 15th century R. H. Charles (1906)[56]. Critical texts of the Ethiopic version, including recent fragments, have been published by Michael Knibb (1978)[57]. Another English translation and commentary by Mathew Black was published in 1985.[58] However, the two-volume commentary by George W. E. Nickelsburg (2001)[59] is perhaps the best critical translation with a textual apparatus to date.[60]

In terms of I Enoch's language, most scholars think that the Ethiopic is a tertiary form, a translation of a Greek Vorlage derived from Aramaic and/or Hebrew. The Ethiopic, according to Nicklesburg, is a direct descendant of the Greek. According to Ullendorff, the Ethiopic text is derived directly from Aramaic. Though the Ethiopic text generally accords with the Greek, Knibb believes that there are moments when the evidence strongly suggests an Aramaic vorlage.

Despite the evidence that the Ethiopic texts translators had some Aramaic at their disposal, the Greek portions of Enoch are most likely the foundation for the Ethiopic texts, and the Greek texts were also founded on the Semitic *grundschrifts*

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[56] R. H. Charles, *The Ethiopic Version of The Book of Enoch* (Oxford: Clarendon Press, 1906).

[57] Michael A. Knibb, *The Ethiopic Book of Enoch A New Edition in Light of the Aramaic Dead Sea Fragments* (Oxford: Clarendon, 1978).

[58] Matthew Black, *The Book of Enoch or 1 Enoch* (Leiden: EJ Brill, 1985).

[59] E. Isaac, "1 (Ethiopic Apocalypse of) Enoch (Second Century B.C. – First Century A.D." *in The Old Testament Pseudepigrapha,* vol. 1.

[60] Nicklesburg, *1 Enoch 1 and 1 Enoch 2* (Minneapolis: Fortress Press, 2001).

(basic script). Because the Aramaic passages recovered at Qumran only make up discernible chunks of only 196 verses and 69 of which relate to the first fourteen chapters of the Ethiopic version, much of this is speculation on way or the other (Knibb 1978: 12). The preserved Greek portions of I Enoch similarly only cover roughly one third of the work, with the first thirty-two chapters and the last ten chapters being the only ones that have survived. Much of I Enoch can only be found in Ethiopic texts. Jude's quotations from I Enoch are from passage of The Book of Watchers, which exists in Greek.[61]

It is difficult to date and create a chronological progression to 1 Enoch. According to E. Isaac's work, the following is represented:[62]

Title of Section	Chapters: Verses	Suggested Period/Date
1. Apocalypse of Week	91:12 – 17; 93:1 – 10	Early pre-Maccabean
2. Fragments of Enochic Visions	12 – 16	Early pre-Maccabean
3. Fragments of the Book of Noah	6 – 11; 106f, cf, 24:7 – 55:2; 60; 65 – 69:25	Late pre-Maccabean
4. Independent Fragment	105	? pre-Maccabean
5. Dream Visions	83 – 90	c. 165 – 161 B.C.
6. Book of Heavenly Luminaries	72 – 82	c. 110 B.C.
7. Similitudes	37 – 71	c. 105 – 64 B.C
8. Later addition to Dream Visions	91:1 – 11; 18, 19; 92; 91-104	c. 105 – 104 B.C

[61] Lawrence Henry Vanbeek, *The Letter of Jude's Use of 1 Enoch: The Book of the Watchers as Scripture* (University of South Africa, 1997), 13-16.

[62] Douglas E. Potter, *The Book*, 6.

9. Introductory Chapters	1 – 5	Late pre-Christian

Table 2. 3: Chronological progression of 1 Enoch based on E. Isaac work

The following is chronology provided by Leonhard Rost: The Book of Noah (6 – 11; 39:1 – 2a; 54:7 – 55:2; 60; 65:1 – 69:25 and 106-107) was most likely written around 190 BC in Palestine (Jerusalem), before the time of the Maccabees. 170 BC or before the Maccabean period, The Apocalypse of Ten Weeks (93; 91:12 – 17). The Similitudes or Parables, chapters 37 – 71, was written in the year 100 BC.

Chapters 72 – 82, Astronomical treatise and chapters 94 – 105 Enoch's Exhortations, beginning (chapter 1 – 5) and conclusion (chapter 108) and redactional aspects date from the first century. With the exception of chapters 1 – 5, Isaac and Rost believe that the majority of the book existed well before Christ's ministry (AD 29 – 33). In short, his chronology is as follows:

Date	Section
190 BC	Book of Noah
170 BC	Apocalypse of Weeks, Journey sections
130 BC	Astronomical sections, Animal apocalypse
100 BC	Similitudes
50 BC	Admonitions Section Beginning and end of Ethiopic Enoch

Table 2. 4: Chronology based on Isaac and Rost

Finally, James VanderKam, proposes a more comprehensive chronology that places the Similitudes (Parables) within the first century AD.[63]

Section	Date
The Astronomical Book (1 Enoch 72 – 82)	3rd century BC

[63] VanderKam, "1 Enoch, Enochic Motifs, and Enoch in Early Christian Literature", 33.

The Book of the Watcher (1 Enoch 1 – 36)	3rd century BC
The Epistle of Enoch (1 Enoch 91 – 108)	2nd century BC
The Book of Dream (1 Enoch 83 – 90)	2nd century BC
The Book of Parables (1 Enoch 37 – 71)	1st century AD

Table 2. 5: James VanderKam's chronology

C. Daylight Duration

The sun is a vital source of life.[64] The interaction between the two heavenly bodies (Sun and Moon) and the Earth influences day and night. The time when the Sun is visible over the horizon[65] at a certain location is referred to as "daylight." The diurnal circle is a circle that represents the (imaginary) orbit of the sun in a day. The length of the sun's diurnal circle above the horizon, commonly known as the arc of daylight, must be computed to determine the duration of daylight.[66] The diurnal

[64] Mona Berlian Sari and friends, "Sistem Pengukuran Intensitas dan Durasi Penyinaran Matahari Realtime PC Berbasis LDR dan Motor Stepper", *ResearchGate*, vol. 7, (April, 2015), 37.

[65] The horizon is a large circle that divides the celestial sphere into two equal portions, visible and unseen. The circle becomes the limit of one's vision. Each person from a distinct location has a unique horizon. Human sight distinguishes three horizons: true/geometrical horizon, sensible/astronomical horizon, and visible horizon. A true horizon is a circle on a celestial sphere whose plane is perpendicular to a vertical line and passes through the center of the earth. The sensible horizon is a circle on the celestial sphere whose plane passes across the earth's surface where the observer is and is perpendicular to the vertical line and the observer. A visible horizon is one that is visible to the naked eye, such as when someone is on the beach or on a large expanse of land, and it seems as a kind of meeting line between heaven and earth. Look at Susiknan Azhari, *Ensiklopedi Hisab Rukyat*, (Yogyakarta: Pustaka Pelajar, 2012), 134-223.

[66] Ariyadi Wijaya, "Matematika Astronomi: Bagaimana Matematika Mempelajari Alam", *Proceeding* Seminar Nasional Penelitian, Pendidikan dan Penerapan MIPA, 16 Mei. Yogyakarta: Jurusan Pendidikan Matematika FMIPA UNY, 2009, 194.

cycle is governed by the alternation of light and darkness (light exposure).[67]

In falak science, the arc of daylight is called as *qausin nahar*. *Qausin Nahar* is an arc measured along the circle of a celestial body from the rising point to the top culmination until the setting point.[68] In its application, the arc of daylight is divided into two parts, one of which is known as *nisfu qausin nahar*. The arc from dawn to culmination point is referred to as the half arc of daylight, or *nisfu qausi an-nahar*. *Nisfu Qausi al-Nahar* is a half-arc of daylight measured from the time the Sun rises to the time it sets. *Nisfu Qausi al-Nahar al-Mar'i* is a half-daylight arc with a value of degrees; when converted to hours, it represents the time for sunset (*maghrib*).[69] One of the criteria used to calculate prayer times and the beginning of the month is *nisfu qausin nahar*. As a result, the existence of this arc of daylight is linked to the determination of prayer hours and the start of the month.[70]

The duration of daylight is defined as the time between dawn and sunset. The length of the day is determined using the latitude position and the date (Julian Date). The arc of daylight is an arc formed by the Sun's orbit during its daily pseudo circulation, which runs from dawn to sunset. In the Quran, it is

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[67] Mohamed Boubekri, "The Impact of Optimized Daylight and Views on the Sleep Duration and Cognitive Performance of Office Workers", *International Journal of Environmental Research and Public Health*, vol. 17, (May, 2020), 2.

[68] Rizal Mubit, "Hisab Awal Waktu Salat dalam Kitab al-Khulashah fi al-Awqat al-Syar'iyyah bi al-Ligharitmiyyah Karya Muhammad Khumaidi Jazry", *Al-Marshad: Jurnal Astronomi Islam dan Ilmu-Ilmu Berkaitan*, vol. 2, no. 1, (2016), 71.

[69] Alfan Maghfuri, "Hisab Waktu Shalat dalam Kitab al-Durus al-Falakiyah", *Al-Mizan: Jurnal Pemikiran Hukum Islam,* vol. 41, no. 1, (2018), 128.

[70] Musyaiyadah, "Studi Analisis Metode Penentuan Awal Waktu Salat dengan Jam Istiwa' dalam Kitab Syawariq Al-Anwar", *Undergraduate Thesis IAIN Walisongo,* (eprintWalisongo, 2011), unpublished, 64-65.

commonly represented by *al-khait al-abyad*[71], which is stated in Surah al-Baqarah verse 187,

أُحِلَّ لَكُمْ لَيْلَةَ الصِّيَامِ الرَّفَثُ اِلٰى نِسَآئِكُمْ ۗ هُنَّ لِبَاسٌ لَّكُمْ وَاَنْتُمْ لِبَاسٌ لَّهُنَّ ۗ عَلِمَ اللّٰهُ اَنَّكُمْ كُنْتُمْ تَخْتَانُوْنَ اَنْفُسَكُمْ فَتَابَ عَلَيْكُمْ وَعَفَا عَنْكُمْ ۚ فَالْـٰٔنَ بَاشِرُوْهُنَّ وَابْتَغُوْا مَا كَتَبَ اللّٰهُ لَكُمْ ۗ وَكُلُوْا وَاشْرَبُوْا حَتّٰى يَتَبَيَّنَ لَكُمُ الْخَيْطُ الْاَبْيَضُ مِنَ الْخَيْطِ الْاَسْوَدِ مِنَ الْفَجْرِ ۖ ثُمَّ اَتِمُّوا الصِّيَامَ اِلَى الَّيْلِ ۚ وَلَا تُبَاشِرُوْهُنَّ وَاَنْتُمْ عَاكِفُوْنَ ۙ فِى الْمَسٰجِدِ ۗ تِلْكَ حُدُوْدُ اللّٰهِ فَلَا تَقْرَبُوْهَا ۗ كَذٰلِكَ يُبَيِّنُ اللّٰهُ اٰيٰتِهٖ لِلنَّاسِ لَعَلَّهُمْ يَتَّقُوْنَ ۝

> *"Permitted for you is intercourse with your wives on the night of the fast. They are a garment for you, and you are a garment for them. God knows that you used to betray yourselves, but He turned to you and pardoned you. So, approach them now, and seek what God has ordained for you, and eat and drink until the white streak of dawn can be distinguished from the black streak. Then complete the fast until nightfall. But do not approach them while you are in retreat at the mosques. These are the limits of God, so do not come near them. God thus clarifies His revelations to the people, that they may attain piety*."[72] (Q.S. 2 [Al-Baqarah]: 187)

The Quran employs metaphorical words (parables) such as *al-khait al-abyad*. Once upon a time, one of Rasulullah's companions named 'Adi bin Hatim understood the sentence textually, as it signifies. He took a white and a black thread, then stretched and observed the threads during the night. But he

[71] Mohd. Kalam Daud, *Ilmu Hisab dan Rukyat: Hisab Urfi, Hisab Hakiki, Rukyat, Mathla' dan Gerhana* (Aceh: Sahifah, 2019), cet.1, 30.

[72] Talal Itani, *The Quran*, 14.

could not tell the difference between the two. The next day, he described his previous night's experience and explained his ignorance of the surah verse. Then Rasulullah ﷺ clarified that *al-khait al-abyad* means *bayaad al-nahar*, or the whiteness of noon since the Sun is approaching, but *al-khait al-aswad* means *sawaad al-lail*, or the darkness of the night because the Sun has not yet appeared. The essence of those statements in the Quran is that during Ramadan, while the Sun has not yet risen, it is permissible to eat and drink.[73]

The Sun's energy is the most abundant renewable energy source. The length of the day is determined by latitude[74]; the higher the latitude, the longer the day. Furthermore, the longitudinal coordinates and elevation have a slight impact on the estimation of daylight duration. In other words, in the summer, the northern hemisphere has an edge over the southern hemisphere, and vice versa.[75]

The daylight duration, also known as the solar hour angle, SOLHRA, is calculated using an equation, which may then be used to calculate the sunrise and sunset times.[76]

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[73] Islah Gusmian, "Epistemologi Tafsir Al-Qur'an Kontemporer", *Al-A'raf: Jurnal Pemikiran Islam dan Filsafat,* vol. XII, no. 2, (December, 2015), 25.

[74] Latitude is a vertical line that quantifies the angle between a place and the equator, which is made up of parallel circles. North latitude refers to a point on the north equator, whereas south latitude refers to a point on the south equator. Latitude has a maximum value of 90 degrees. The north latitude has a positive value, whereas the south has a negative value. Look at Slamet Hambali, *Pengantar Ilmu Falak,* (Yogyakarta: Bismillah Publisher, 2012), 298.

[75] Parvathy Rajendran and Howard Smith, "Modelling of Solar Irradiance and Daylight Duration for Solar-Powered UAV Sizing", *Energy Exploration & Exploitation,* vol. 34, no. 2, (2016), 235.

[76] Parvathy Rajendran and Howard Smith, "Modelling of Solar Irradiance and Daylight Duration for Solar-Powered UAV Sizing", *Energy Exploration & Exploitation,* vol. 34, no. 2, (2016), 239-240.

$$SOLHRA = \frac{180}{\pi} \cos^{-1}(-\tan\left(LAT \frac{\pi}{180}\right)\tan\left(DEC \frac{\pi}{180}\right))$$

The unit of daylight duration is expressed as an hour, a tithe value[77], or a percentage of the maximum day length.[78] The length of daylight varies from day to day, depending on the meteorological conditions the day before. Furthermore, the length of daylight influences evaporation and rain intensity.[79]

Each year, at least one day when the Sun is below the horizon for 24 hours (on the winter solstice) and at least one day when the Sun is above the horizon for 24 hours (on the summer solstice) will occur within the polar circles (north of the Arctic Circle and south of the Antarctic Circle) (on the summer solstice). The length of the day, as well as solar altitude and azimuth, varies from day to day and season to season in the middle latitudes (between the tropics and the polar circles, where most humans reside). As one gets farther from the Equator[80], the disparity between the lengths of a long summer day and a short winter day grows larger.[81]

Daylight duration is also affected by latitude, with greater latitudes resulting in longer daylight duration. Longitudinal coordinates and elevation, on the other hand, have

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[77] Tithe is a one-tenth part of something.

[78] Asih Pujiastuti and Agus Harjoko, "Sistem Perhitungan Lama Penyinaran Matahari dengan Metode Otsu Thresholder", *Thesis* Universitas Gadjah Mada (Yogyakarta, 2016), 11, unpublished.

[79] Mona Berlian Sari and friends, "Sistem Pengukuran Intensitas dan Durasi Penyinaran Matahari Realtime PC Berbasis LDR dan Motor Stepper", *ResearchGate*, vol. 7, (April, 2015), 50.

[80] The equator is a large circle-shaped imaginary line that is equidistant between the north and south poles and splits the Earth into two equal sections (north and south). Look at Muhyiddin Khazin, *Ilmu Falak dalam Teori dan Praktik: Perhitungan Arah Kiblat, Waktu Shalat, Awal Bulan dan Gerhana*, (Yogyakarta: Buana Pustaka, 2005), 41.

[81] Vyacheslav Khavrus and Ihor Shelevytsky, "Introduction to Solar Motion Geometry on the Basis of a Simple Model", *Physic Education*, vol. 45, no. 6, (November, 2010), 641.

only minimal effects on the estimation of daylight duration. As a result, during the summer, the northern hemisphere has an edge over the southern hemisphere, and vice versa.[82] The daylight duration, also known as the solar hour angle, is calculated and used to calculate the sunrise and sunset times.[83]

The length of daylight depends on the day of the year as well as a city's latitude, longitude, and elevation. The length of daylight is determined by latitude; the higher the latitude, the longer the daylight.[84] In most cases, elevation explains the majority of the variation in sunshine length, while longitude[85] and latitude are sometimes used as explanatory variables as well.[86] The average length of daylight is longer in towns located farthest from the equator. The longitudinal coordinates and elevation have a modest impact on the assessment of daylight

[82] Parvathy Rajendran and friends, "Modelling and Simulation of Solar Irradiance and Daylight Duration for a High-Power-Output Solar Module System", *Applied Mechanics and Materials (ResearchGate),* vol. 629, (October, 2014), 475.

[83] Parvathy Rajendran and friends, "Modelling and Simulation of Solar Irradiance and Daylight Duration for a High-Power-Output Solar Module System", *Applied Mechanics and Materials (ResearchGate),* vol. 629, (October, 2014), 477.

[84] Parvathy Rajendran and Howard Smith, "Implication of Longitude and Latitude on the Size of Solar-Powered UAV", *Energy Conversion and Management,* vol. 98, (April, 2015), 113.

[85] Longitude is a line that runs from north to south and equally intersects the equator, particularly from the point 0 degrees in Greenwich to the point 180 degrees west/east where the meeting point is in the Pacific Ocean, which is also the International Date Line. Look at Nur Fitriana Sari, *Ensiklopedia Geografi Peta,* (Klaten: Cempaka Putih, 2018), 30-31.

[86] Mojca Dolinar, "Spatial Interpolation of Sunshine Duration in Slovenia", *Meteorological Application,* vol. 13, (January,2007), 377.

duration.[87] The lower a location is located, the less daylight it receives.[88]

The length or shortness of the arc of daylight is most closely related to latitude and the Sun's location relative to the Equator. The greater the latitude and Sun's position from the equator, the greater the ratio of the arc of daylight to the arc of night. The closer the latitude and position of the Sun to the equator, the smaller the ratio of the arc of daylight to the arc of night. There are several provisions based on the change in the position of the sun to the equator:

1. When the Sun's position is perfectly in the equator, as it is on March 21st and September 23rd, the duration of daylight and darkness is equal for the region that receives sunlight path.
2. When the Sun's position is visible in the north of the equator between the 21st of March and the 21st of June, and between the 21st of June and the 23rd of September, so:
    a. For regions north of equator, the day is longer than the night.
    b. For regions south of equator, the day is shorter than the night.
    c. For the north pole, it is day all the time for six months.
    d. For the south pole, it is night all the time for six months.
3. When the Sun's position is visible in the south of the equator between September 23rd and

[87] Parvathy Rajendran and Howard Smith, "Implication of Longitude and Latitude on the Size of Solar-Powered UAV", *Energy Conversion and Management,* vol. 98, (April, 2015), 111.

[88] E. Tsianaka, "Daylight Availability in Courtyards of Urban Dwellings in Athens", *WIT Transactions on Ecology and The Environment,* vol. 113, (2008), 308.

December 22nd, and between December 22nd and March 21st, so:

a. For regions in the north of equator, the day is shorter than the night.
b. For regions in the south of equator, the day is longer than the night.
c. The north pole experiences continuous night for six months.
d. For the south pole, it is day all the time for six months.[89]

[89] Michael A. Seeds and Dana E. Backman, *Astronomy: The Solar System and Beyond*, (Belmont: Brooks, 2010), sixth edition, 24-25.

CHAPTER III

THE DURATION OF DAYLIGHT IN THE BOOK OF ENOCH

A. Biography of Prophet Idris

Some sacred writings, such as the Bible[1], Torah[2], Gospel[3], and Quran, give Prophet Idris distinct names. Prophet Idris is known as Enoch in the Torah or Old Testament.[4] Enoch could imply 'initiated' in Hebrew.[5] Prophet Idris is Enoch in the Gospel. Mercia Aliade explains, "Enoch or in Hebrew known

[1] Before it became a collection of books, it was a folk tradition that relied exclusively on human memory, which was once the only means of passing down ideas. This tradition was sung.

[2] Torah is the semitic name. The Greek expression, which in English gives 'Pentateuch', designates a work in five parts; Genesis, Exodus, Leviticusm Numbers and Deuteronomy. These five parts of 39 volumes that makes up the Old Testament. The Old Testament is a collection of works of greatly differing length and many different genres. They were written in several languages over a period of more than 900 years, based on oral tradition. Many of these works were corrected and completed in accordance with events or special requirements, foten at periods that were very distant from one another. The Old Testament is a disparate whole based upon an initially oral tradition. It is interesting therefore to compare the process by which it was constituted with what could happen in another period and another place at the time when a primitive literature was born. Look at Dr. Maurice Bucaille, *The Bible, The Qur'an and Science: The Holy Scriptures Examined In The Light Of Modern Knowledge*

[3] The majority of Christians believe that the Gospel were written by direct witnesses of the life of Jesus and therefore constitute unquestionable evidence concerning the events high-lightning his life and preaching. Gospel did not form a complete whole 'very early on' until more than a century after the end of Jesus's mission. *The Ecumenical Translation of the Bible* estimates the date four Gospels acquired the status of canonic literature at around 170 AD. The Four Gospel are Matthew's, Mark's, Luke's and John's Gospel.

[4] Novi Arizatul Mufidoh, "Nabi Idris dalam Perspektif Kitab-Kitab Suci Agama dan Ketokohannya dalam Kajian Ilmu Falak", *Islamic Review: Jurnal Riset dan Kajian Keislaman,* vol. IX, no. 1, 2020, 173.

[5] Douglas E. Potter, *The Book of Enoch: Canonical, Authoritative or What?,* 2018. Southern Evangelical Seminary, 3.

as Henoch (which means pure, beginning); is Jared's son, according to the truth ancient bible, and according to Jew's writings and Christian about holy's man lived".[6]

Henoch's description is based on contemporary apocalyptic writing, such as 1 and 2 Henoch, Jubilees, Pseudo-Eupolemus, and other Dead Sea Scrolls (DSS). Jubilee 4: 16-26 summarizes Henoch's life and the secrets given to him, with additional detail in the Book of Enoch.[7]

Enoch was seventh in descent from Adam to Nuh and his sons in the Hebrew Bible's Genesis. Enoch lived for only 365 years, a fraction of the time of previous prophets. He was raised by God towards the end of his life (Genesis 5: 21-24). Modern scholars agree that Enoch is an old monarch who is wise and a hero from the great flood in ancient Mesopotamian culture, based on this literature. [8]

In Genesis chapter 5, people learn about Adam's progeny, and in Genesis 18-24, people learn about prophet Idris. *And Jared lived a hundred sixty and two years, and begat Enoch (18); And Jared lived after he begat Enoch eight hundred years, and begat sons and daughters (19); And all the days of Jared were nine hundred sixty and two years: and he died (20); And Enoch lived sixty and five years, and begat Methuselah (21); And Enoch walked with God after he begat Methuselah three hundred years, and begat sons and daughters (22); And all the days of Enoch were three hundred sixty and five years (23); And*

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[6] Ghufran A. Mas'adi, *Ensiklopodi Islam Ringkas*, translate of The Concise Encyclopedia of Islam by Cyril Glasse (Jakarta: Raja Grafindo Persada, 1999), 159.

[7] Novi Arizatul Mufidoh, "Nabi Idris dalam Perspektif Kitab-Kitab Suci Agama dan Ketokohannya dalam Kajian Ilmu Falak", *Islamic Review: Jurnal Riset dan Kajian Keislaman,* vol. IX, no. 1, 2020, 174.

[8] Novi Arizatul Mufidoh, "Nabi Idris dalam Perspektif Kitab-Kitab Suci Agama dan Ketokohannya dalam Kajian Ilmu Falak", *Islamic Review: Jurnal Riset dan Kajian Keislaman,* vol. IX, no. 1, 2020, 173.

Enoch walked with God: and he was not; for God took him (24).[9]

Lamech was Noah's father, so Methuselah was Noah's grandfather, and Enoch was Noah's great-grandfather. Enoch is mentioned in the genealogy of Christ in Luke 3:37 and the genealogy of 1 Chronicles 1: 2-4. "The son of Methuselah, the son of Enoch, the son of Jared, the son of Mahalaleel, the son of Cainan." In Hebrews 11:5, he is also mentioned:[10] "*Enoch was taken up by faith so that he would not see death; and he was not found because God took him up; for he had received the witness that was pleasing to God before was taken up.*"

Finally, Jude (14-15) mentions Enoch by name, followed by a quotation from the Book of Enoch: *"Behold, the Lord came with many thousands of His holy ones, to execute judgment upon all, and to convict all the ungodly of all their ungodly deeds which they have done in an ungodly way, and of all the harsh things which ungodly sinners have spoken against Him,"* Enoch, the seventh generation from Adam, prophesied.[11]

According to Jubilees 4:17 and 18, Enoch was the first of mankind born on Earth to learned (the art of) writing and to record in a book the sign of the sky in accordance with the fixed pattern of their months, so that mankind would know the seasons of the years according to the fixed patterns of each of their months. He revealed the days of the years, the months he organized and the Sabbaths of the years.[12]

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[9] International Council of Religious Education, *The American Standard Translation of THE HOLY BIBLE* (United States of America: Thomas Nelson & Sons, 1902), 22.

[10] Douglas E. Potter, *The Book of Enoch: Canonical, Authoritative or What?*, 2018. Southern Evangelical Seminary, 2.

[11] Douglas E. Potter, *The Book of Enoch: Canonical, Authoritative or What?*, 2018. Southern Evangelical Seminary, 3.

[12] Lawrence Henry Vanbeek, *The Letter of Jude's Use of 1 Enoch: The Book of the Watchers as Scripture* (University of South Africa, 1997),107-108.

Idris is referenced in the Quran in a few ayat because Allah honors him as one of His messengers who is knowledgeable in sciences and enjoys learning (*daras*). Allah provided him with 30 mushaf (*suhuf*) as a means of teaching his people. According to Ibnu Ishaq, Idris was the first man to wrote with a pen. "*In the past, there was a prophet who wrote with it (it means writing on the sand). Whoever agrees with his writing, that is it (his writing),"* Rasulullah ﷺsaid. Some stories reference Prophet Idris, who is mentioned in a hadith reported by Muslim from Mu'awiyah bin al-Hakam as-Sulami. His writing ability to write is in accordance with Rasulullah's hadith which narrated by Imam Ahmad in Musnad Ahmad which state, "*The first creature which is created by Allah is pen. Then, Allah said to that pen, 'Write it'. Then, all that has been planned takes place throughout that time, until the Judgement Day." (Look at Musnad Ahmad RA).*[13]

He got named Idris because he is gifted writer who enjoys studying. Ulama and mufassir acknowledged Idris as a prophet with numerous benefits. His abilities include the ability to write, draw, sew (tailor), and be an expert in astronomy, among others. It is recorded in the *Tarikh al-Hukama* book which Idris is named *Hurmus al-Haramisah.* His name is from Aramaic, which is derived from Greek. Then it was given the Arabic name *Hurmus.* He was given the name since he is an astronomy expert.[14] Besides that, according to Random House Webster's Dictionary: College Dictionary, the Hermes Trimegistus is a name attributed by Neoplatonist and other to an Egyptian priest, to some extend identified with Greek

[13] Syahruddin El-Fikri, *Dari Banjir Nuh Hingga Bukit Thursina* (Jakarta: Penerbit Republika, 2010), 19-20.

[14] Syahruddin El-Fikri, *Dari Banjir Nuh Hingga Bukit Thursina* (Jakarta: Penerbit Republika, 2010), 18-19.

Hermes, various mystical, astrological and alchemical, writings were ascribed to him.[15]

His Hebrew name is *Khunukh*, which is pronounced *Akhnukh* in Arabic. This debate focuses on al-Maghluts, Ibnu Katsir, Afif Abdul Fatah, Ahmad Bahjat (*Sejarah Nabi-nabi dalam Al-Qur'an*) and other scholars. Ibnu Katsir claims that Idris prophet is a descendant of Rasulullah. Idris full name is Idris (*Akhnukh*) bin Yared bin Mahalain (Mahalaleel) bin Qainan bin Anusy bin Syits bin Adam AS, according to Al-Maghluts.[16]

Prophet Idris is a messenger of Allah to his people. Idris was sent to the people of the Prophet Seth or descendants of Qabil, the son of the Prophet Adam, in ancient Iraq, according to certain histories, as recorded from Sami bin Abdullah Al-Maghluts in his book "Atlas Sejarah Nabi dan Rasul". Some Ulama said that Idris was born in Munaf (Memphis), Egypt, and then preached Allah's faith till ancient Iraq, according to Afif Abdullah fatah's book "Nabi-Nabi dalam Al-Qur'an". Idris was born and nurtured in Babylonia, according to other members of the community. Idris lived from 4533 to 4188 BC, according to Al-Maghluts. His age is estimated to be around 345 years old. However, some redactions also stated that he is 308 years old. On *Qishash al-Anbiyaa'*, Ibnu Katsir mentions this assertion, which he quotes from Ibnu Ishaq.[17]

Prophet Idris, according to KH Zubair Umar al-Jailany[18]'s book, was the first man to invent astronomy. Allah

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[15] Nur Hidayatullah Al-Banjary, *Penemu Ilmu Falak Pandangan Kitab Suci dan Peradaban Dunia*, (Yogyakarta: Pustaka Ilmu, 2017), 90.

[16] Syahruddin El-Fikri, *Dari Banjir Nuh Hingga Bukit Thursina* (Jakarta: Penerbit Republika, 2010), 19.

[17] Syahruddin El-Fikri, *Dari Banjir Nuh Hingga Bukit Thursina* (Jakarta: Penerbit Republika, 2010), 18.

[18] KH Zubair Umar al-Jailany is a parson and famous academician which expert in Falak science with his masterpiece *kitab al-khulashah al-wafiyyah*. He was born in Pandangan, Bojonegoro regency, East Java, 16th of September

bestowed wisdom to him by teaching him about the secrets of luminaries and various clusters in the universe. This remark demonstrates that Islamic astronomy existed even before the reign of the prophet Idris period. This *maqalah* is on KH Zubaer's book entitled *kitab al-khulashah al-wafiyyah.*

Prophet Adam, according to Syekh Yasin al-Fadani[19], was the first man to understand astronomy. The basis for this assertion is because Prophet Adam was the first human to be sent down to Earth and served as the Earth's leader(*khalifah*). As revealed in al-Baqarah ayat 31-32, Allah granted Adam knowledge to know everything. According to these ayat, Allah only gave Adam knowledge and not sciences, therefore even if he learned Islamic astronomy, it is only *ta'rif* not *'ilm.*

In their book, Astronomy: Principle and Practice, A E. Roy and D. Clarke state that they do not know who the first astronomers were, but that the science of astronomy was well advanced in parts of Europe by the middle of the third millennium BC, and that the Chinese had astronomical schools as early as 2000 BC. People have been fascinated by the sky and their changing appearance from the dawn of man's

1908. He was died in Salatiga, 10th of September 1990. In his live, he does not only study but also teaches his knowledge. He became a teacher in Madrasah Salafiyah Tebuireng, Jombang, even he also became a rector in IAIN Walisongo Semarang. Besides that, he used to lead *al-Ma'had al-Diiniy* Islamic boarding school, Rekosari Suruh Salatiga in 1935-1945. Built *Luhur* Islamic boarding school which is the benchmark to be Tarbiyah faculty IAIN Walisongo the branch of Salatiga. And he built Joko Tingkir Islamic boarding school in 1977. Look at Tim Penulis, *Buku Panduan Ujian Komprehensif S1 Fakultas Syariah dan Hukum UIN Walisongo Semarang 2017* (Semarang: UIN Walisongo, 2017), 109.

[19] Syekh Muhammad Yasin al-Fandani with his fullname Abu Al-Fadyl 'Alamudin Muhammad Yasin bin Muhammad Isa Al-Fandani. He was born on 1916 in Padang, West Sumatra. He was died in Makkah, 21st of July 1990. He is an expert of hadith science, fiqh, ushul fiqh and Falak science. He has written many books. Look at Nur Hidayatullah Al-Banjary, *Penemu Ilmu Falak Pandangan Kitab Suci dan Peradaban Dunia,* (Yogyakarta: Pustaka Ilmu, 2017), 31.

knowledge, and these people have attempted to create cosmologies as far as their cultural setting has permitted them. That is still the case now. As the result, they made no mention of who is the culprit.

In their book, "Atlas Alquran: Amaakin Aqwaam A'lam", Dr. Ahsin Sakho Muhammad and Dr. H. A. Sayuti Anshari Nasution, M.A. cite prophet Idris as the first man who expelled wisdom word and science of astronomy. According to Nur Hidayatullah al-Banjary, author of the book "Penemu Ilmu Falak", Prophet Idris was the first man to learn astrology rather than astronomy.

As-Suwaidi described Prophet Idris on his book as a tall man who has wide chest, big stomach, has much hair on his head, has a little hair on his body, one of his ears is larger than the other ear. There is a white spot on his body but not a leprous, his footsteps are not too long when he walks.[20]

According to Al-Maghluts, human may communicate in 72 distinct languages during the Idris era. Idris drew city development as he preached to his people, with the consequence that 188 cities were constructed in that time. Idris, the prophet, divided the earth into zones and appointed a king to each. Elaus, Zous, Esqlebeos and Zous Amon are the kings.[21] While according to *Sabia Adz-Dzahab fi Ma'rifah Al-Qabail Al-*

[20] Nur Hidayatullah Al-Banjary, *Penemu Ilmu Falak Pandangan Kitab Suci dan Peradaban Dunia*, (Yogyakarta: Pustaka Ilmu, 2017), 131.

[21] Syahruddin El-Fikri, *Dari Banjir Nuh Hingga Bukit Thursina* (Jakarta: Penerbit Republika, 2010), 19.

Arab[22] by As-Suwaidi[23], Idris is the first man who draws city development (urban planning architect), collect his folk and teach them politic and urban planning, so there were around 180 cities that were built on Prophet Idris era.[24]

Prophet Idris lived between 4500 – 4188 BC, according to historian. Various civilizations that he left behind will be carried on by the following generation. Prophet Idris' folk and people who did not believe in Prophet Idris' call continued his behavior like write, sew, measure, and so on. A few years ago, modern scientists and archaeologists discovered various pieces of furniture and other artifacts that were estimated to date back 4000 years. Those items include a Sumerian dirt slab with a mathematic formula written on it in ancient language, metal ballast, clay molds such as pitchers, glasses, a stone slab with

[22] This book is discussed about the lineage and Arabic's clan since Prophet Adam, and consist of thirteen chapters. The first chapter is discussed about the virtue and the benefit of kinship science. The second chapter is discussed who is the first man says the word "Arab" and its clan. The third chapter is discussed the strata of lineage and things which linked to them. The fourth chapter deals with the ancient Arabic residence which spread to any country. The fifth chapter deals with the matters that must be learned before someone study the kinship science. The sixth chapter deals with how to determine Arab, Turki, Rum and Sudan lineage. The seventh chapter moots the tribes which is mentioned by the lineage member. The eighth is discussed whether the tribes are from Arabic or non-Arabic. The ninth chapter moots the Arabian religion and their knowledge before Islam. The next chapter, the tenth, describes the pride of Arabian between each tribe. The eleventh chapter describes the Arabian's war days during the period of ignorance and the early days of Islam. The twelfth chapter is discussed the light of Arabian at the time of ignorance. And the last one, the thirteenth chapter describes the Arabian economy before Islam. Look at Nur Hidayatullah Al-Banjary, *Penemu Ilmu Falak Pandangan Kitab Suci dan Peradaban Dunia,* (Yogyakarta: Pustaka Ilmu, 2017), 117.

[23] His complete name is Syeikh Al-Fadhil wa An-Najrir Al-Kamil Abu Al-Fauz Muhammad Amin Al-Baghdadi, and called by As-Suwaidi. Look at Nur Hidayatullah Al-Banjary, *Penemu Ilmu Falak Pandangan Kitab Suci dan Peradaban Dunia,* (Yogyakarta: Pustaka Ilmu, 2017), 118.

[24] Nur Hidayatullah Al-Banjary, *Penemu Ilmu Falak Pandangan Kitab Suci dan Peradaban Dunia,* (Yogyakarta: Pustaka Ilmu, 2017), 132.

painting on it depicting people farming in little country civilizations in the south and center of Iraq city.[25]

The Sumerian civilization (4500-1700 BC) was the world's oldest and most advanced society. This location has spawned a wide range of structures and cultures. One of them is hanging garden in Babylonia. According to legend, Sumerians used astrology to determine the ideal planting season. The Taurus constellation is thought to mark the start of spring and is ideal for farming, while the Virgo constellation is perfect for harvesting.[26]

Idris is a prophet, king and judge, according to As-Suwaidi. He is known as *Mushollash* because he was the first man to write with a pen, and a prophet and wise ruler. According to legend, Prophet Idris could view the sky and receive a sign of impending flood. Consequently, he ordered the construction of a pyramid-shaped structure to save the science texts.

After adult, *Akhnukh* was elected to be a prophet which is known as Prophet Idris. His duty is to complete sharia that carried out by Prophet Adam and Prophet Seth. Allah gave him 30 *shahifah.* So Idris could know 90 *shahifah*; 10 *shahifah* of Prophet Adam, 50 *shahifah* of Prophet Seth and 30 *shahifah* that he got.[27]

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[25] Syahruddin El-Fikri, *Dari Banjir Nuh Hingga Bukit Thursina* (Jakarta: Penerbit Republika, 2010), 21.

[26] Syahruddin El-Fikri, *Dari Banjir Nuh Hingga Bukit Thursina* (Jakarta: Penerbit Republika, 2010), 22.

[27] Nur Hidayatullah Al-Banjary, *Penemu Ilmu Falak Pandangan Kitab Suci dan Peradaban Dunia,* (Yogyakarta: Pustaka Ilmu, 2017), 125.

B. Daylight Duration in the Book of Enoch

The Astronomical Book, commonly known as The Book of Heavenly Luminaries, is one of the oldest sections of the 1 Enoch corpus, possibly originating from the Persian Period. The Book of Luminaries is important for the rest of the 1 Enochic corpus, and it is essential to comprehending its apocalyptic worldview. Indeed, the Astronomical Book's matrix of ideas and inspirations is reminiscent of those that affected the Enochic scribes in general. To date, the majority of discussion on the Astronomical Book has focused on Babylonian cosmology and astronomy, as either as a source or as a parallel. The present purpose is not to refute Mesopotamian traditions in general, but to indicate that a few Iranian elements may have influenced the development of the Enochic tradition.[28]

The Heavenly Luminaries or Book of Astronomical Writings deal mostly with the solar calendar, which has three hundred and sixty-four days with four seasons of ninety-one days. This section had religious as well as scientific significance. The last day's disorders in the Sun, Moon, Stars and Earth are discussed in chapter 80. The Aramaic fragments at Qumran point to a much larger Astronomical section than the Ethiopic recension from the fifteenth to sixteenth centuries AD.[29]

The Aramaic Astronomical Book is one of Enoch's books, and the Ethiopian Astronomical Book (EAB) chapters 72-82 include parallel material. The foundation of the Astronomical Book is angel Uriel's[30] teaching to Enoch, according to which Enoch will pass to Methuselah (Ethiopic

[28] Jason M. Silverman, "Iranian Details in the Book of Heavenly Luminaries (1 Enoch 72-82)", *Journal of Near Eastern Studies,* vol. 72, no. 2, October 2013, 195.

[29] Lawrence Henry Vanbeek, *The Letter of Jude's Use of 1 Enoch: The Book of the Watchers as Scripture* (University of South Africa, 1997), 18.

[30] Known as Malaikat Izrail in Islam.

Astronomical Book chapter 82). The book's content includes information the movement of the moon in its phases, schematic meteorology, and the motion of the stars in connection to the seasons of the year. These materials bear striking resemblances to Babylonian astronomy. Given these similarities, it is no wonder that the relationship between The Ethiopian Astronomical Book and ancient Babylonia astronomy is still being debated. The Aramaic Astronomical Book is attested by four Qumran manuscripts, 4Q208-4Q211.[31]

The Aramaic version is quite incomplete as compared to the Ethiopian text. The manuscripts were not published until 2000, despite Milik's early work with the writings from Enoch tradition, particularly The Aramaic Astronomical Book. The manuscripts 4Q208 and 4Q209 were published in the official Discoveries in the Judaean Desert series by Florentino García Martínez and Eibert J. C. Tigchelaar. In the meantime, the manuscripts 4Q210 and 4Q211 have remained unpublished in the Discoveries in the Judaean Desert series until now. As a result, The Aramaic Astronomical Book (4Q208-211) fills a significant gap in current scholarship, for which it deserves praise. [32]

4Q208, also known as 4QAstronomical Enoch, is a copy of the Aramaic Astronomical Book of Enoch (AAB), which contains Synchronous Calendar remnants (this section is as of 1997 unpublished). It was found in 36 little pieces, the largest of which has nine broken lines.[33] 4Q209, 4QAstronomical Enoch is a copy of the Astronomical Book

[31] Hanna Tervanotko, "The Aramaic Astronomical Book (4Q208-4Q211) from Qumran: Text, Translation, and Commentary (review)", *Hebrew Studies*, vol. 53, January 2012, 104.

[32] Hanna Tervanotko, "The Aramaic Astronomical Book (4Q208-4Q211) from Qumran: Text, Translation, and Commentary (review)", *Hebrew Studies*, vol. 53, January 2012, 104.

[33] Eshbal Ratson, "4Q208: A New Reconstruction and Its Implications on the Evolution of the Astronomical Book", *Peeters Online Journal, Revue de Qumran Journal*, vol.31, no. 1, 2019, 51-52.

which includes the Synchronous Calendar and I Enoch 76:13 – 17; 78:9 – 12; 79:3 – 5; 78:17 – 79:2; 82:9 – 13. 4Q210, 4QAstronomical Enoch is a copy of the Astronomical Book that concludes of I Enoch 76:3 – 10; 76:13 – 77:4; 78:6 – 8. 4Q211 is 4QAstronomical Enoch contains three columns of I Enoch 82:20.[34]

1 Enoch's Book of Heavenly Luminaries essentially discusses

Chapter	Content
72 (1-37)	The Sun
73 (1-8)	The Moon
74 (1-17)	System of rotation
75 (1-9)	The Stars and their position
76 (1-14)	The twelve winds
77 (1-8)	Four direction, seven mountain, seven rivers
78 (1-17)	Names for the phases of the Sun and Moon
79 (1-6)	Conclusion on the season
80 (1-8)	Parallels between sinners and seasons
81 (1-10)	It told to read the "tablets of heaven" and to report this reading to his son, Methuselah
82 (1-19)	Enoch passes this knowledge onto his son

Table 3. 1: The contain of the Book of Heavenly Luminaries

Based on table 3.1, chapter 72 is discussed about the Sun. The daylight duration is influenced by the motion of the Sun. Chapter 72 consists of 37 verses which is discussed some topics, and one of them are discussing about the daylight duration. The daylight duration in the Book of Enoch using the term "part" and it said that sometimes the day is longer than the night and so on.

Verse	Contain

[34] Lawrence Henry Vanbeek, *The Letter of Jude's Use of 1 Enoch: The Book of the Watchers as Scripture* (University of South Africa, 1997), 117-118.

1	The book of the courses of the luminaries of the heaven, the relations of each, according to their classes, their dominion and their seasons, according to their names and places of origin, and according to their months, which Uriel, the holy angel, who was with me, who is their guide, showed me; and he showed me all their laws exactly as they are, and how it is with regard to all the years of the world and unto eternity, till the new creation is accomplished which dureth till eternity.
2	And this is the first law of luminaries: the luminary the Sun has its rising in the eastern portals of the heaven, and its setting in the western portals of the heaven
3	And I saw six portals in which the sun rises, and six portals in which the sun sets and the moon rises and sets in these portals, and the leaders of the stars and those whom they lead: six in the east and six in the west, and all following each other in accurately corresponding order: also many windows to the right and left of these portals
4	And first there goes forth the great luminary, named the Sun, and his circumference is like the circumference of the heaven, and he is quite filled with illuminating and heating fire.
5	The chariot on which he ascends, the wind drives, and the sun goes down from the heaven and returns through the north in order to reach the east, and is so guided that he comes to the appropriate (lit. ‘that’) portal and shines in the face of the heaven
6	In this way he rises in the first month in the great portal, which is the fourth those six portals in the cast
7	And in that fourth portal from which the sun rises in the first month are twelve window-openings, from which proceed a flame when they are opened in their season

8	When the sun rises in the heaven, he comes forth through that fourth portal thirty mornings in succession, and sets accurately in the fourth portal in the west of the heaven
9	And during this period the day becomes daily longer and the night nightly shorter to the thirtieth morning
10	On that day the day is longer than the night by a ninth part, and the day amounts exactly to ten parts and the night to eight parts.
11	And the sun rises from that fourth portal, and sets in the fourth and returns to the fifth portal of the east thirty mornings, and rises from it and sets in the fifth portal
12	And then the day becomes longer by two parts and amounts to eleven parts, and the night becomes shorter and amounts to seven parts
13	And it returns to the east and enters into the sixth portal, and rises and sets in the sixth portal one-and-thirty mornings on account of its sign
14	On that day the day becomes longer than the night, and the day becomes double the night, and the day becomes twelve parts, and the night is shortened and becomes six parts
15	And the sun mounts up to make the day shorter and the night longer, and the sun returns to the east and enters into the sixth portal, and rises from it and sets thirty mornings
16	And when thirty mornings are accomplished, the day decreases by exactly one part, and becomes eleven parts, and the night seven
17	And the sun goes forth from that sixth portal in the west, and goes to the east and rises in the fifth portal for thirty mornings, and sets in the west again in the fifth western portal
18	On that day the day decreases by two parts, and amounts to ten parts and the night to eight parts

19	And the sun goes forth from that fifth portal and sets in the fifth portal of the west, and rises in the fourth portal for one-and-thirty mornings on account of its sign, and sets in the west
20	On that day the day is equalized with the night, [and becomes of equal length], and the night amounts to nine parts and the day to nine parts
21	And the sun rises from that portal and sets in the west, and returns to the east and rises thirty mornings in the third portal and sets in the west in the third portal
22	And on that day the night becomes longer than the day, and night becomes longer than night, and day shorter than day till the thirtieth morning, and the night amounts exactly to ten parts and the day to eight parts
23	And the sun rises from that third portal and sets in the third portal in the west and returns to the east, and for thirty mornings rises in the second portal in the east, and in like manner sets in the second portal in the west of the heaven
24	And on that day the night amounts to eleven parts and the day to seven parts
25	And the sun rises on that day from that second portal and sets in the west in the second portal, and returns to the east into the first portal for one-and-thirty mornings, and sets in the first portal in the west of the heaven
26	And on that day the night becomes longer and amounts to the double of the day: and the night amounts exactly to twelve parts and the day to six
27	And the sun has (therewith) traversed the divisions of his orbit and turns again on those divisions of his orbit, and enters that portal thirty mornings and sets also in the west opposite to it

28	And on that night has the night decreased in length by a ninth part, and the night has become eleven parts and the day seven parts
29	And the sun has returned and entered into the second portal in the east, and returns on those his divisions of his orbit for thirty mornings, rising and setting
30	And on that day the night decreases in length, and the night amounts to ten parts and the day to eight
31	And on that day the sun rises from that portal, and sets in the west, and returns to the east, and rises in the third portal for one-and-thirty mornings, and sets in the west of the heaven
32	On that day the night decreases and amounts to nine parts, and the day to nine parts, and the night is equal to the day and the year is exactly as to its days three hundred and sixty-four
33	And the length of the day and of the night, and the shortness of the day and of the night arise—through the course of the sun these distinctions are made (lit. 'they are separated')
34	So it comes that its course becomes daily longer, and its course nightly shorter
35	And this is the law and the course of the sun, and his return as often as he returns sixty times and rises, i.e. the great luminary which is named the sun, for ever and ever
36	And that which (thus) rises is the great luminary, and is so named according to its appearance, according as the Lord commanded
37	As he rises, so he sets and decreases not, and rests not, but runs day and night, and his light is sevenfold brighter than that of the moon; but as regards size they are both equal

Table 3. 2: The contain of Chapter 72

Based on table 2, the topic about daylight duration is started from verse 9 until verse 34. In the verse 7 of chapter 72, it states that the first month of year is started when the Sun rises in the fourth portal. And on the verse 9, it states that during this period the day becomes longer than the night. The unit of this length is ten parts of day and eight parts of night. And as usual, the day and night are divided into nine parts. So, for the first month the day is longer than the night by a ninth part. Basically, there are eighteen parts of day and night which is nine parts of day and nine parts of night. It is explained in the verse 10. The ratio between day and night is 10:8. The next verse, in the second month, the Sun rises and sets in the fifth portal and the day becomes longer than before by two parts and amount from nine parts to eleven parts and so do the night. The night becomes shorter and amounts to seven parts. Those were explanation in the 11th and 12th verse. The ratio between day and night in the second month is 11:7.

In the third month, the Sun rises and sets in the sixth portal, and in this month, the day is longer than night with portion the day becomes double the night. So, the night becomes six parts and the day is two times six equal twelve. And the ratio between day and night is 12:6 or 2:1. This statement is mentioned in the verse 13th and 14th. And it is changed when entering the fourth month. In this month, the Sun rises and sets in the sixth portal but the day is decrease one part, so the day becomes eleven parts and 7 parts for night. The day becomes shorter than before, the third month. So based on verse 15th and 16th, the ratio between day and night is 11:7. The next month, the Sun rises and sets in the fifth portal at the fifth month. Like the previous month, the day also becomes shorter than before with decrease two parts of day. So, the day becomes 10 parts and 8 parts for the night. The 17th and 18th verse of chapter 72 mentions the ratio between day and night is 10:8, same as the first month.

In the verse 19th and 20th, the Sun rises and sets in the fourth portal at the sixth month. The day becomes shorter than previous month, so that the day is equal with the night. There are 9 parts for night and for day. The Sun goes to third portal in the seventh month as explained in the verse 21st for thirty days. The day becomes shorter than the day in the previous month, and decrease one part amount to 8 parts and 10 parts of the night as explained in the verse 22nd. Second portal is passed by the Sun to rise and set in the eighth month with the day is shorter than previous month which is decrease two parts from nine into seven parts. As explained in the 23rd and 24th, the ratio between day and night is 7:11.

First portal is passed in the ninth month by the Sun for thirty-one days. In this period, the day is still shorter than the night. The night becomes double the day, it is six parts for day and twelve parts for night. It is the opposite of the third month. This explanation is available in the verse 25th and 26th. In the verse 27th and 28th, the night becomes shorter than in the previous month at the tenth month. The Sun rises and sets in the first portal with the ratio between day and night is 7:11. As the month before, the night becomes shorter than in the previous month at the eleventh month. As explained in the verse 29th and 30th, the Sun rises and sets in the second portal with the ratio between day and night is 8:10. The day is equal the night in the end of year, the twelfth month, with 9 parts of day and night. This explanation is mentioned in the verse 31st and 32nd.

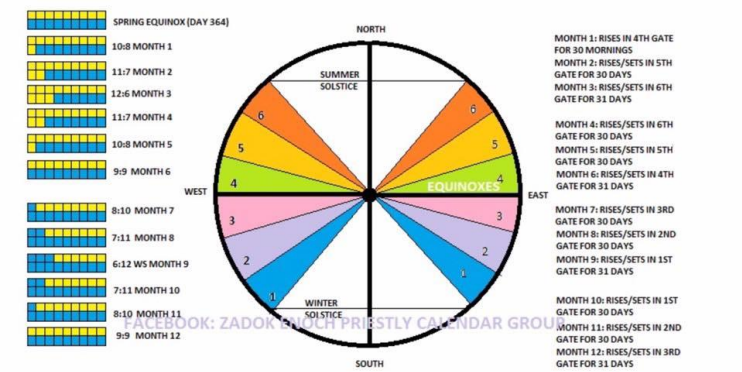


Figure 3. 1: The Daylight Proportion[35]

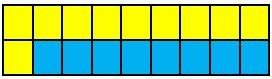
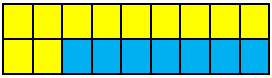
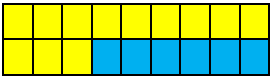
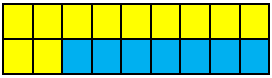
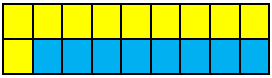
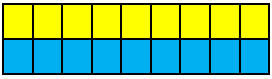
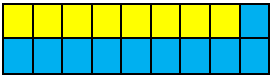
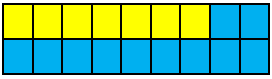
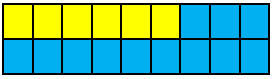
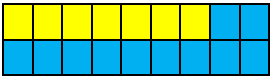
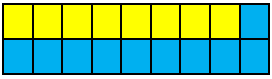
Based on the description above, it can be narrated into a table

Month	Duration of		Total days
	Day	Night	
1	10	8	30
2	11	7	30
3	12	6	31
4	11	7	30
5	10	8	30
6	9	9	31
7	8	10	30
8	7	11	30
9	6	12	31
10	7	11	30
11	8	10	30
12	9	9	31

Table 3. 3: Portion of Duration of Daylight

[35] Picture from fb://photo/1879511458930651?set=a.1879511468930650 accessed on May 9, 2021 11:59 PM

From the table above, the portion of day and night can be described into picture

1st month		10 parts for day and 8 parts for night
2nd month		11 parts for day and 7 parts for night
3rd month		12 parts for day and 6 parts for night
4th month		11 parts for day and 7 parts for night
5th month		10 parts for day and 8 parts for night
6th month		9 parts for day and 9 parts for night
7th month		8 parts for day and 10 parts for night
8th month		7 parts for day and 11 parts for night
9th month		6 parts for day and 12 parts for night
10th month		7 parts for day and 11 parts for night
11th month		8 parts for day and 10 parts for night

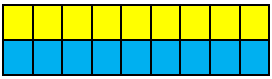
12th month		9 parts for day and 9 parts for night

Table 3. 4: Description Portion of Duration of Daylight

CHAPTER IV

ASTRONOMICAL ANALYSIS OF DAYLIGHT DURATION

A. Analysis in which hemisphere it belongs

Earth is the only planet that has living creature. In the middle of the Earth, there is an imaginary line which called equator. Because of the existence of equator, the Earth is split into two equal sequences, they are northern and southern hemisphere. The explanation about the duration of daylight in the Book of Enoch is describe a phenomenon which is occurred in certain place. And this place could be in the northern or southern hemisphere. The explanation in the Book of Enoch[1] chapter 72 about the daylight duration which is conceived in verse nine until thirty-four could be describe in a table below.

Month	Duration of (part)		Total days
	Day	Night	
1	10	8	30
2	11	7	30
3	12	6	31
4	11	7	30
5	10	8	30
6	9	9	31
7	8	10	30
8	7	11	30

[1] Tessa Sitorini, *Kitab Nabi Idris: The Book of Enoch* (Bandung: Pustaka Prajabati, 2017), 85-90.

9	6	12	31
10	7	11	30
11	8	10	30
12	9	9	31

Table 4. 1: Portion of Daylight Duration

The daylight duration causes a wave pattern. At some point, the number of day portions increases and sometimes decreases. If the table 4.1 is plotted into a chart, it will cause a pattern that occurs continuously which depicted by the chart below.

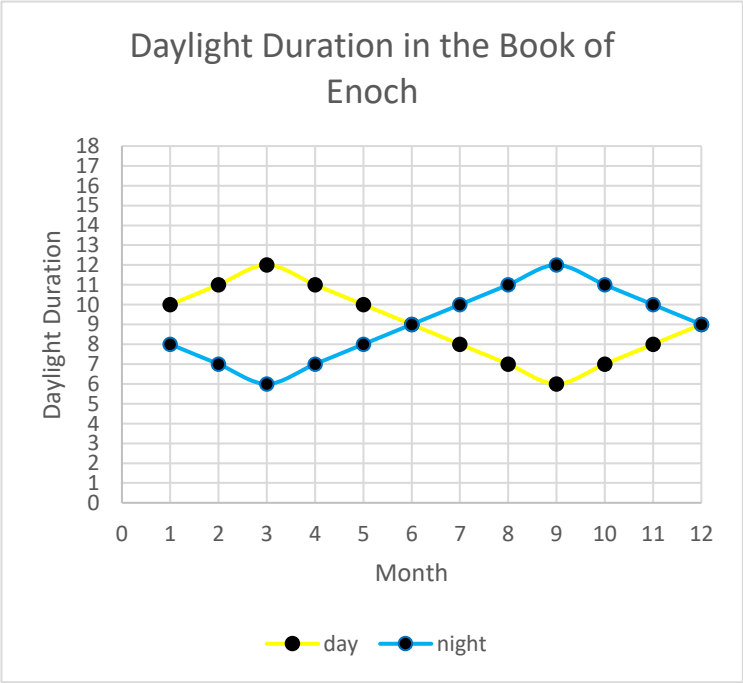


Figure 4. 1: Daylight Duration in the Book of Enoch

In fig. 4.1, the portion of daylight duration increased starting from the first month at the beginning of the year until the third month. Then over time, the portion of daylight duration starts to decrease from the top in the third month to the ninth month which is the bottom of the lowest point of daylight duration portion. From the lowest point, the portion of daylight duration starts to increase from the ninth month until the end of the year, the twelfth month. The daylight trip is the opposite of the darkness portion's trip. Starting from the first month, the portion of darkness is lower than daylight's portion. The darkness portion decreased from the first month until the third month where the lowest point of darkness duration. Then the darkness' portion increased and stuck in the limit of the highest level which is in the ninth month of the year. And absolutely after it stuck in the top, it will decrease from the top until the twelfth month of the year. This motion shows when the daylight portion increased, the darkness portion decreased. This also applies to the opposite, when the daylight portion decreased, the darkness portion will increase.

From the fig. 4.1, it can be seen that the daylight duration in a few months at the beginning of the year has many portions than the darkness portion. From the chart, the highest portion of daylight is in the third month. If it is analyzed astronomically, on those months the Sun gives more sunlight to that place. The position of the Sun at someplace effects the portion of daylight obtained. At the beginning line which is plotted at the beginning of the year, the line is constantly rising which is represent the Sun motion is on a certain place. And when the Sun is reaching the top limit, it will descend slowly which represents the Sun's position is moving to another place. At the beginning of the line which represents the Sun motion, the portion of the day is higher at the beginning than the end of the year. It shows that the Sun more often appeared at the beginning of the year than at the ending of the year.

Based on the pseudo-motion of the Sun, the Sun is on the vernal equinox or the zero degrees point on the 21st of March. Then it moved to the north at 23.5 degrees North latitude which is called the summer solstice on the 21st of June.[2] At this point, the northern hemisphere receives the sun's exposure more than the Southern hemisphere. And then the Sun moves to Equator or zero degrees of the Earth on 23rd September which is called autumnal equinox. And then Sun moves to the South on the 22nd of December, which is called the winter solstice. At this time, the southern hemisphere gets sun exposure more than the northern hemisphere.[3] The sun motion is showed by the figure below.

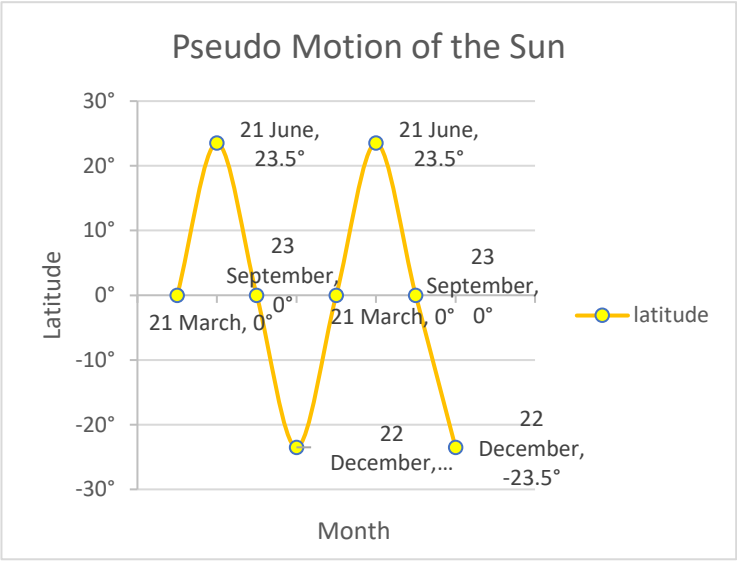


Figure 4. 2: Pseudo-motion of the Sun

[2] Encep Abdul Rojak et al., "Koreksi Ketinggian Tempat terhadap Fiki Waktu Salat: Analisis Jadwal Waktu Salat Kota Bandung", *al-ahkam journal*, vol. 27, no.2, (Oktober, 2017), 249.

[3] Edvin Aldrian, *Adaptasi dan Mitigasi Perubahan Iklim Indonesia*, (Jakarta: BMKG, 2011), 4.

The tilt of the Earth's rotation axis relative which is inclined 23.5 degrees to the ecliptic[4] is responsible for the different seasons at each latitude.[5] Seasons do not occur because the Earth moves closer or farther away from the sun. The orbit of the Earth is almost round. Its distance from the sun varies by less than 4%, and this has little bearings on the seasons.

Seasons are influenced by the length of time the sun receives.[6] As we could see in figure 4.2, because of the tilt of the Earth's axis, winter in the Northern Hemisphere occurs from the solstice on December (about December 21st with UTC) until the equinox on March which is experience spring season (about March 20th with UTC), while summer occurs from solstice on June until the equinox on September (about September 23rd with UTC). The exact date varies every year because of the difference between the calendar year and astronomical year.[7]

The significant temperature difference has seen between the hot summer and chilly winter months. This variance is caused by a combination of two causes, first there are more daylight hours in the summer than in the winter. In the summer, a substantially bigger portion of the line is sunny, and more sunshine implies more solar heating. Second, when the Sun is high in the sky in summer, the rays of sunlight impacting the Earth's surface are more concentrated (spread out over a smaller area) than when it is low in the sky in winter so winter sunshine is more dispersed, as evidenced by the long winter

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[4] M. Ihtirozun Ni'am and Khabib Suraya, "Analemma and the Beginning of Maghrib Prayer Alteration (Correlation of Analemma's Position Towards the Beginning of Maghrib Prayer According to Ephemeris Calculation)", *Al-Hilal: Journal of Islamic Astronomy,* vol. 3, no. 1, 2021, 33.

[5] Patrick Moore, *Philip's Atlas of the Universe,* (London: Philips, 2005), 37.

[6] Muhammad Himmatur Riza and Nihayatul Minani, "The Effect of EL Nino and La Nina on the Intensity of Determining Qibla Direction", *Al-Hilal: Journal of Islamic Astronomy,* vol. 3, no. 1, 2021, 55.

[7] Richard Matzner, *A Volume in Comprehensive Dictionary of Physics: Dictionary of Geophysics Astrophysics, and Astronomy*, (Florida: CRC Press LLC, 2001), 436.

shadows. As a result, the Sun appears to be hotter. As a result, summer is often much warmer than winter because the Sun is higher above the horizon and the days are longer.[8]

The summer sun rises in the northeast and sets in the northwest, occupying the sky for more than 12 hours. The winter sun rises in the southeast and sets in the southwest, remaining in the sky for less than 12 hours. With this factor and two factors above imply that the summer sun provides more energy to northern latitudes, and therefore summer days are warmer than winter days.[9]

If it is linked with the pseudo motion of the Sun, it can be seen that the Sun is on its way across the northern hemisphere first. With the Earth tilted from its axis by 23.5 degrees, it caused there is a difference in sun exposure[10] which linked to the difference of daylight duration on every latitude of the Earth. With the portion of daylight which is shown in figure 4.2, it can be seen that the Sun is on the Northern Hemisphere. Based on the pseudo motion point of view, the condition on the beginning month has appeared in the northern hemisphere.

Sun Position	Northern Hemisphere	Southern Hemisphere
March 21	Spring	Autumn
June 21	Summer	Winter
September 23	Autumn	Spring
December 22	Winter	Summer

[8] Eric Chaisson and Steve McMillan, *Astronomy Today*, (San Francisco: Pearson Education, 2014), 15-16.

[9] Michael A. Seeds and Dana E. Backman, *Astronomy The Solar System and Beyond*, (Belmont: Brooks/Cole, 2010), 23-25.

[10] Moelki Fahmi Ardliansyah, "Implementasi Titik Koordinat Tengah Kabupaten atau Kota dalam Perhitungan Jadwal Waktu Salat", *al-ahkam journal*, vol. 27, no. 2, (Oktober, 2017), 220.

Table 4. 2: Sun's Position and Seasons

When the North Pole is tilted toward the Sun, it is summer in the Northern Hemisphere and winter in the Southern Hemisphere. When the South Pole is tilted towards the Sun, it is summer in the Southern Hemisphere and winter in the Northern Hemisphere.[11] By seeing the figure 4.2, with this data match, it can be concluded that the explanation of the daylight duration in the Book of Enoch occurred in the Northern Hemisphere.

B. Conversion of Daylight Duration in the Book of Enoch

The Book of 1 Enoch uses 18 parts as a measurement. 9 parts for light and 9 parts for dark. The use of "parts" is a scalable reference that can apply to any unit of measurement.

> "For example, you could simply say use 1 part water to 1 part soap. So, whether you are using a teaspoon or a gallon, the recipe is scalable. I believe the reason that 18 is used is that there are four seasons in 1 year. 18x4=72. It takes 72 years for the sun to move 1 degree forward through the constellations at the equinox. So, the use of 18 (9+9) would simply be another solar reference. This would not imply that the unit of the day was 18 hours, instead of 12, but rather would reflect on the portions of light and dark in a season as highlighted by the 4 yearly solar phenomena."[12]

So, if the daylight duration in the Book of Enoch converted into synodical day by using fraction, it can be calculated by formula:

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[11] Stacey Palen, *Schaum's Outline of Theory and Problems of Astronomy*, (United States of America: McGraw-Hill Companies Inc, 2008), 34-35.

[12] Asherit. *Interview*. Semarang, June 11th 2021.

$$real\ hour = \frac{part\ of\ daylight\ or\ darkness}{total\ part}\ x\ total\ hours\ a\ day$$

Based on the formula above, it can be calculated as follow:

Month	Duration		Total
1	Daylight	$\frac{10}{18}\ x\ 24\ hours$	13.3 hours
	Darkness	$\frac{8}{18}\ x\ 24\ hours$	10.67 hours
2	Daylight	$\frac{11}{18}\ x\ 24\ hours$	14.67 hours
	Darkness	$\frac{7}{18}\ x\ 24\ hours$	9.3 hours
3	Daylight	$\frac{12}{18}\ x\ 24\ hours$	16 hours
	Darkness	$\frac{6}{18}\ x\ 24\ hours$	8 hours
4	Daylight	$\frac{11}{18}\ x\ 24\ hours$	14.67 hours
	Darkness	$\frac{7}{18}\ x\ 24\ hours$	9.3 hours
5	Daylight	$\frac{10}{18}\ x\ 24\ hours$	13.3 hours
	Darkness	$\frac{8}{18}\ x\ 24\ hours$	10.67 hours
6	Daylight	$\frac{9}{18}\ x\ 24\ hours$	12 hours

	Darkness	$\frac{9}{18}\ x\ 24\ hours$	12 hours
7	Daylight	$\frac{8}{18}\ x\ 24\ hours$	10.67 hours
	Darkness	$\frac{10}{18}\ x\ 24\ hours$	13.3 hours
8	Daylight	$\frac{7}{18}\ x\ 24\ hours$	9.3 hours
	Darkness	$\frac{11}{18}\ x\ 24\ hours$	14.67 hours
9	Daylight	$\frac{6}{18}\ x\ 24\ hours$	8 hours
	Darkness	$\frac{12}{18}\ x\ 24\ hours$	16 hours
10	Daylight	$\frac{7}{18}\ x\ 24\ hours$	9.3 hours
	Darkness	$\frac{11}{18}\ x\ 24\ hours$	14.67 hours
11	Daylight	$\frac{8}{18}\ x\ 24\ hours$	10.67 hours
	Darkness	$\frac{10}{18}\ x\ 24\ hours$	13.3 hours
12	Daylight	$\frac{9}{18}\ x\ 24\ hours$	12 hours
	Darkness	$\frac{9}{18}\ x\ 24\ hours$	12 hours

Table 4. 3: Conversion of Daylight in the AB into Synodical Days Using Fraction

Then, from the table 4.3, it can be written as follow:

Month	Duration of		Total days
	Day	Night	
1	$13^h\ 20^m$	$10^h\ 40^m$	30
2	$14^h\ 40^m$	$9^h\ 20^m$	30
3	16^h	8^h	31
4	$14^h\ 40^m$	$9^h\ 20^m$	30
5	$13^h\ 20^m$	$10^h\ 40^m$	30
6	12^h	12^h	31
7	$10^h\ 40^m$	$13^h\ 20^m$	30
8	$9^h\ 20^m$	$14^h\ 40^m$	30
9	8^h	16^h	31
10	$9^h\ 20^m$	$14^h\ 40^m$	30
11	$10^h\ 40^m$	$13^h\ 20^m$	30
12	12^h	12^h	31

Table 4. 4: Duration of Daylight within 24 hours

If the table 4.3 and 4.4 plot in a chart, it will be like:

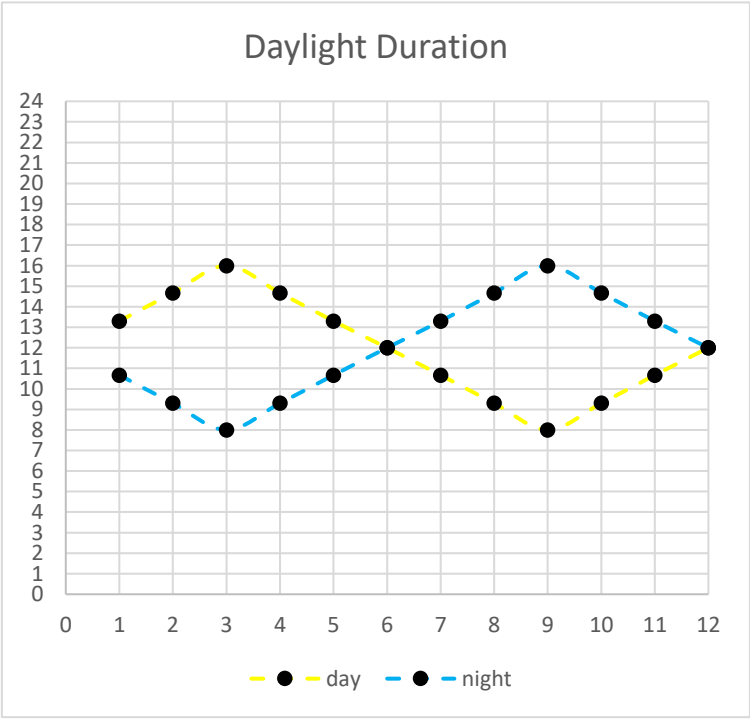

Figure 4. 3: Daylight Duration Using Fraction

Based on table 4.3, table 4.4 and figure 4.3, it shows equinox is occurred in the sixth and twelfth month. The highest duration of daylight is 16 hours in the third month and the lowest duration of daylight is 8 hours in the ninth month.

C. Analysis of which Month that the Sun located

On March 20 or 21, The Northern Hemisphere celebrates the vernal equinox, while the Southern Hemisphere celebrates the autumnal equinox. The Sun rises directly above the equator, and day and night are equal in length. On the 20th or 21st of June, The Northern Hemisphere observes the summer

solstice, while the Southern Hemisphere observes the winter solstice. On September 21 or 22, The autumn equinox occurs in the Northern Hemisphere and the vernal equinox occurs in the Southern Hemisphere. The Sun rises directly above the equator, and day and night are equal in length. On the 21st or 22nd of December, The Northern Hemisphere celebrates the winter solstice, while the Southern Hemisphere celebrates the summer solstice. Those explanations describe on table 4.2. Because of the tilt of the Earth's axis, solstices exist. Summer has the longest days and the highest Sun in the sky, whereas winter has the shortest.[13]

Equinox is derived from the Latin word for "equal". The term equinox is commonly used to refer to the days when day and night are of equal length at every point on the planet. Dates when the sun is at (one of two) points when the ecliptic and the celestial equator cross, so the declination is zero. Because the Earth's poles are 23.27 degrees tilted to its orbital plane, the Northern and Southern hemispheres normally get distinct daily periods of sunshine.[14] At the equinoxes, the planet's orbit is such that the sun shines "broadside," illuminating both hemispheres equally.[15]

The equinox occurs twice a year. First occur at the vernal or spring equinox, which normally falls on March 20 or 21 in the modern (Gregorian) calendar. Vernal is derived from the word for "green." The "green" equinox heralds the start of spring. The period at the end of the Northern Hemisphere winter when the Sun is at the intersection of the celestial equator and the ecliptic. The vernal equinox occurs at the end of the summer season in the Southern Hemisphere. The vernal equinox also

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[13] Britannica Illustrated Science Library Staff, *The Universe: Britannica Illustrated Science Library,* (Chicago: Encyclopaedia Britannica, Inc., 2018) 76.

[14] Muhammad Thoyfur, "Digitalization of Local Rashdul Qibla by Qibla Diagram", *Al-Hilal: Journal of Islamic Astronomy,* vol. 3, no. 1, 2021, 82-83.

[15] Clive Ruggles, *Ancient Astronomy: An Encyclopedia of Cosmologies and Myth,* (California: ABC-CLIO Inc, 2005), 148.

refers to the sun's position at this time: 0hRA and 0 declination.[16]

Second occurs at the autumnal equinox, which falls on September 22 or 23 in the modern (Gregorian) calendar. [17] The epoch at the end of the Northern Hemisphere summer when the sun is at the intersection of the celestial equator and the ecliptic. The fall equinox marks the start of spring in the Southern Hemisphere. Autumnal equinox also refers to a celestial sphere direction: 12h RA, 0 declinations, antipodal to the vernal equinox direction. After the autumnal equinox, the period of daylight in the Northern hemisphere shortens and the nights lengthen until the winter solstice.[18]

The term solstice is derived from the words "sun" and "stationary." The summer solstice (from the Latin words sol, meaning "sun," and stare, "to stand") is the point on the ecliptic where the Sun is at its northernmost point above the celestial equator. It marks the point in Earth's orbit where our planet's the North Pole is closest to pointing in the direction of the Sun. [19] This occurs on or around June 21. Six months later, the Sun has reached its southernmost position below the celestial equator—or, to put it another way, the North Pole has reached its farthest distance from the Sun.

The winter solstice (December 21) has arrived, marking the shortest day in the Northern Hemisphere and the longest in the Southern Hemisphere. The solstices are the times of the year

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[16] Richard Matzner, *A Volume in Comprehensive Dictionary of Physics: Dictionary of Geophysics Astrophysics, and Astronomy*, (Florida: CRC Press LLC, 2001), 493.

[17] Clive Ruggles, *Ancient Astronomy: An Encyclopedia of Cosmologies and Myth,* (California: ABC-CLIO Inc, 2005), 149.

[18] Richard Matzner, *A Volume in Comprehensive Dictionary of Physics: Dictionary of Geophysics Astrophysics, and Astronomy*, (Florida: CRC Press LLC, 2001), 30.

[19] Michael A. Seeds and Dana E. Backman, *Astronomy The Solar System and Beyond,* (Belmont: Brooks/Cole, 2010), 23.

when the Sun is farthest from the equator of the sky.[20] The orbit of the Earth is only very slightly elliptical. Earth is at perihelion, its closest point to the sun, around January 3, when it is only 1.7 percent closer than typical. Around July 5, Earth reaches aphelion, its farthest point from the sun, when it is only 1.7 percent farther than typical. This minor difference has no discernible effect on the seasons. [21]

However, the description of the equinox above is somewhat deceptive. Because it receives light before the sun rises and remains bright after the sun sets, the actual time of darkness at the equinox will be significantly less than twelve hours, with the exact amount dependent on latitude and how the boundary between twilight and night is defined. It is also inaccurate to say that the equinoxes are the days when the time difference between sunrise and sunset is the same as the time difference between sunset and sunrise because this definition implies a flat horizon and the lack of atmospheric phenomena, particularly refraction. In actuality, the equinox cannot be determined simply by calculating the time between sunrise and sunset.[22]

The definition of equinoxes is much obvious from an astronomical standpoint. They denote the points in the Earth's orbit where the axis connecting the two poles is neither tilted toward nor tilted away from the sun. Because the earth's orbit is elliptical rather than circular, these spots are roughly a quarter of the way around from the two solstices. This technical description can also be expressed from the perspective of an

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[20] Patrick Moore, *Philip's Atlas of the Universe,* (London: Philips, 2005), 37.

[21] Michael A. Seeds and Dana E. Backman, *Astronomy The Solar System and Beyond,* (Belmont: Brooks/Cole, 2010), 24.

[22] Clive Ruggles, *Ancient Astronomy: An Encyclopedia of Cosmologies and Myth,* (California: ABC-CLIO Inc, 2005), 148.

earth-based observer, utilizing the notions of the celestial sphere and declination.[23]

Because the earth does not orbit the sun at a constant speed, it happens one or two days later in March and earlier in September than the true equinox, at a time when the sun's declination is approximately +0.5 degrees.[24]

So overall, based on all explanation about the pseudo-motion of the Sun, (20-21 or almost the end of the month), summer solstice. And the lowest daylight duration is on December (21-23 or almost the end of the month), winter solstice. The equinoxes occur on March and September.[25] If they are linked with the daylight duration in the Book of Enoch, the third month on Enoch explanation is suitable with June 21st and the ninth month on Enoch explanation is suitable with December 22nd.

Month in the Book of Enoch	Name of Month in Gregorian Calendar
1	March – April
2	April – May
3	May – June
4	June – July
5	July – August
6	August – September
7	September – October
8	October – November
9	November – December
10	December – January
11	January – February
12	February – March

1[23] This concept of the equinox, in the way that astronomers use it today, was natural for Hellenistic Greek astronomers since they were striving to create geometric models that suited the available observational data.

[24] Clive Ruggles, *Ancient Astronomy: An Encyclopedia of Cosmologies and Myth,* (California: ABC-CLIO Inc, 2005), 148-150.

[25] Dinah L Moche, *Astronomy A Self-Teaching Guide,* (New Jersey: John Wiley & Sons, 2009), Seventh edition, 23.

Table 4. 5: Relation between Month in Gregorian Calendar and in Enoch Calendar

The explanation of table 4.5 why March is on the first month because the spring season is marked as time to reborn and renew. Because this reason, most of cultures celebrate vernal equinox as the first day of new year. The ancient Rome established that march is on the beginning of month while January and February are added on the next time.[26] The note of Enoch calendar is the Enoch year usually begins on the Sunday after the spring equinox, which occurs on March.[27]

Besides, there is a difference day in Enoch Calendar and Gregorian Calendar. In the Gregorian calendar, the number of days in a year is 365 for common year and 366 for leap year.[28] While the Enoch calendar, the number days in a year is 364.[29]

D. Analysis of which latitude it belongs

Climate zones are separate in an east-west direction around the Earth and can be identified using various climatic parameters. Climate zones are generally belt-shaped and circular around the poles. The climate[30] in an area is intimately

[26] Slamet Hambali, *Almanak Sepanjang Masa,* (Semarang: IAIN Pascasarjana UIN Walisongo, 2011), 28.

[27] John P. Pratt, *Enoch Calendar Model Details* (9 March 2020), access on 12/6/2021, https://johnpratt.com/items/docs/2020/enoch_cal_model.html.

[28] Slamet Hambali, *Almanak Sepanjang Masa,* (Semarang: IAIN Pascasarjana UIN Walisongo, 2011), 45.

[29] Tessa Sitorini, *Kitab Nabi Idris: The Book of Enoch* (Bandung: Pustaka Prajabati, 2017), 92.

[30] According to Nanda Yunisa (2017), climate is an atmosphere and state of quantity and quality regarding temperature or air temperature, humidity, clouds, rain and sunlight in a place for a long period of time. Climate and seasons are states of the interrelationship of the movement of the earth and moon on an axis around the sun in space. Meanwhile, according to Brenda Walpole (2014), Seasons occur because of changes in the tilt of the earth's axis towards the sun during the earth's orbit around the sun (revolution). Look at Handajani Asriningpuri, "Belajar dari Kearifan Lokal untuk Bersikap Tanggap Bencana Alam", *LAKAR: Jurnal Arsitektur,* vol. 1, no. 1, 2018, 41.

tied to its latitude and altitude on the Earth. The characteristics of the climate zones change with great altitude differences within a small area, like in mountain area, since temperatures decrease are rapid with altitude, changing the climate compared to valleys. So, climate zones can be broken up by mountains or oceans in some places.

The climate can be classified into two sorts based on latitude and altitude, namely physical climate and solar climate. First, Physical climate refers to the real conditions or facts that exist in a certain area of the earth's surface as a result of the natural environment's effect in that location. For example, the ocean's effect, huge terrain, earth's relief, wind, and rainfall.[31] In addition to the division of climate according to latitude and altitude, there are several experts describe the division of climate, including:

1. Division of climate based on Dr. Wladimir Koppen which divide into 5 zones.

Koppen climate division with basic parameters being the average temperature and monthly annual rainfall classified into five types, namely: [32]

Climate Type	Climate Name
A	tropical rainy climate
B	dry climate
C	warm temperate rainy climates
D	cold snowy forest climate
E	Polar climate

Table 4. 6: Koppen Type of Climate

2. Division of climate based on Junghuhn
3. Division of climate based on Mohr

[31] Edvin Aldrian, *Adaptasi dan Mitigasi Perubahan Iklim Indonesia*, (Jakarta: BMKG, 2011), 17-18.

[32] M. Fahmi Ishak, "Aplikasi Penghawaan Alami pada Bangunan Beriklim Tropis", *RADIAL: Jurnal Peradaban Sains, Rekayasa dan Teknologi*, vol.1, no.1, 2013, 21.

Mohr climate division with basic parameters being the relation of evaporation and monthly annual rainfall classified into three types, namely: wet month, humid month, and dry month.

4. Division of climate based on Schmidt Ferguson

Schmidt-Ferguson climate division with basic parameters being the wet month and dry month from Mohr classification classified into eight types, namely: A (very wet), B (wet), C (dampish), D (temperate), E (a bit dry), F (dry), G (very dry) and H (extremely dry).

Second, the solar climate is determined by the amount of sunlight that reaches the earth's surface. Based on latitude, the solar climate in the Earth is classified into four major climate zones, they are the tropic, sub-tropic, temperate, and boreal zones.[33]

1) Tropical Zone

A tropical climate is one type of climate that exists from the seasons in the hemisphere.[34] This zone lies from 0 degrees until 23.5 degrees (between the tropics) and nearly 40% of the Earth's surface.[35] While from other source, it said that tropics lies between 0 degrees until 30 degrees.[36] In the region between the equator and the tropics (equatorial region), the solar radiation reaches the ground nearly vertically at noontime during almost the entire year. Thereby, it is very warm in these

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[33] Justin van Wart et al., "Use of Agro-Climatic Zones to Upscale Simulated Crop Yield Potential", *Journal Field Crops Research,* vol. 143 (November, 2012), 48.

[34] M. Fahmi Ishak, "Aplikasi Penghawaan Alami pada Bangunan Beriklim Tropis", *RADIAL: Jurnal Peradaban Sains, Rekayasa dan Teknologi,* vol.1, no.1, 2013, 20.

[35] Ulfa Fiddini et al., "Analisis Kelayakan Gudang Baru Usaha Ekspor Buah Manggis (Studi Kasus: PT XYZ di Tasikmalaya), *e-Proceeding of Engineering,* vol. 5, no.3, (December, 2018), 6507.

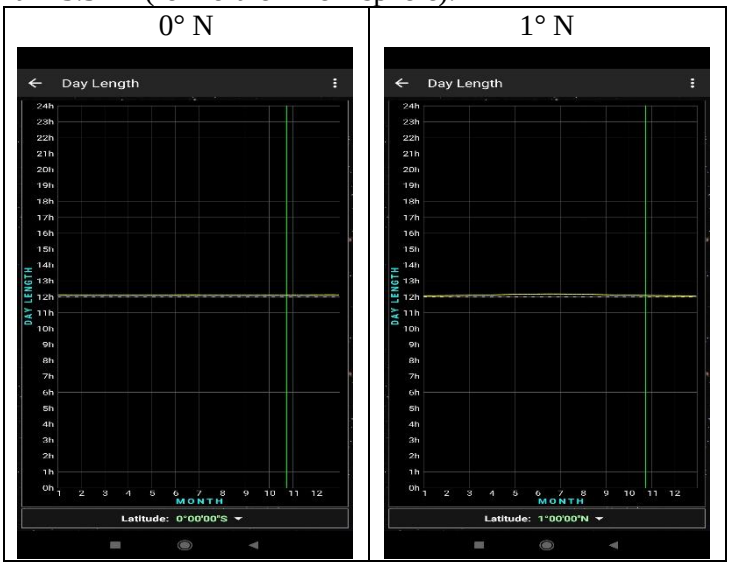
[36] Willie Soon and David R. Legates, "Solar Irradiance Modulation of Equator-to-Pole (Arctic) Temperate Gradients: Empirical Evidence for Climate Variation on Multi-Decadal Timescale", *Journal of Atmospheric and Solar-Terrestrial Physics,* vol. 93, (2013), 48.

regions. Through high temperatures, more water evaporates and the air is often moist. The resulting frequent and dense cloud cover reduces the effect of solar radiation on ground temperature. In the tropical zone, generally hot throughout the year and tends to experience the rainy season during the summer months and the dry season during the winter months.

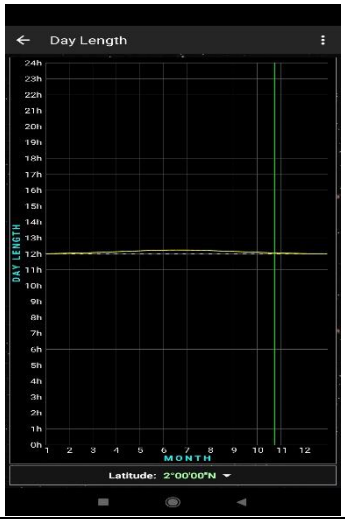
Sun Position	Equator
April – September	Dry season
October – March	Rainy season

Table 4. 7: Seasons in the Tropical Zone

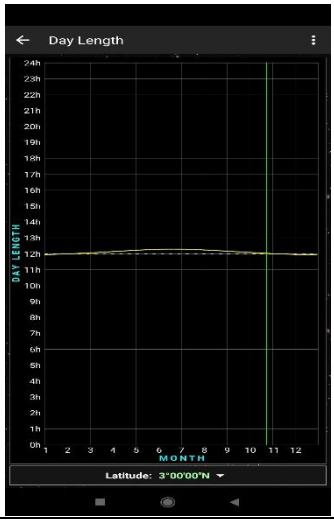
As for the graph of daylight duration is different at each latitude. For tropical zone, the range of latitude is from 0° N until 23.5° N (for northern hemisphere).



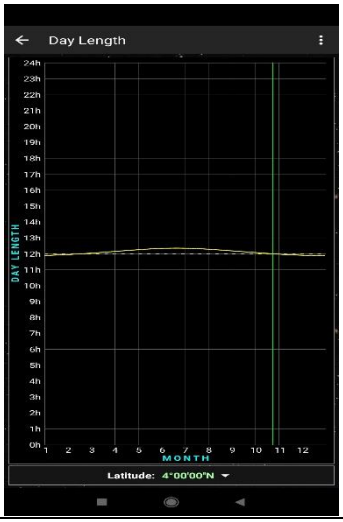
2° N


Day Length
DAY LENGTH
MONTH
Latitude: 2°00'00"N

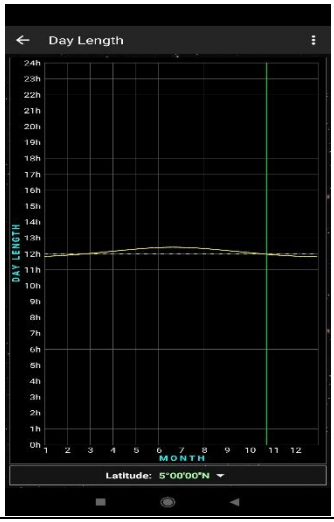
3° N


Day Length
DAY LENGTH
MONTH
Latitude: 3°00'00"N

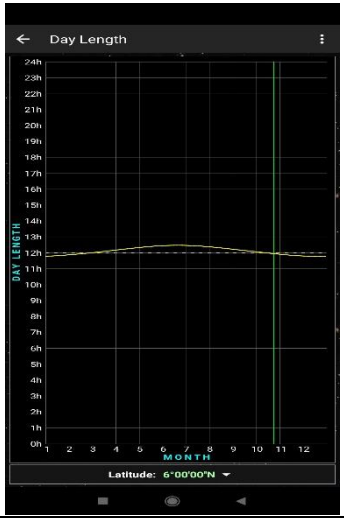
4° N


Day Length
DAY LENGTH
MONTH
Latitude: 4°00'00"N

5° N


Day Length
DAY LENGTH
MONTH
Latitude: 5°00'00"N

6° N


Day Length
DAY LENGTH
24h
23h
22h
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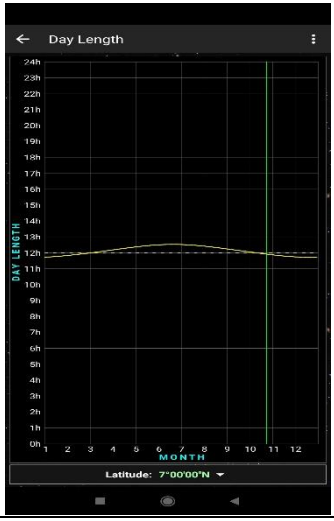
19h
18h
17h
16h
15h
14h
13h
12h
11h
10h
9h
8h
7h
6h
5h
4h
3h
2h
1h
0h
1 2 3 4 5 6 7 8 9 10 11 12
MONTH
Latitude: 6°00'00"N

7° N


Day Length
DAY LENGTH
24h
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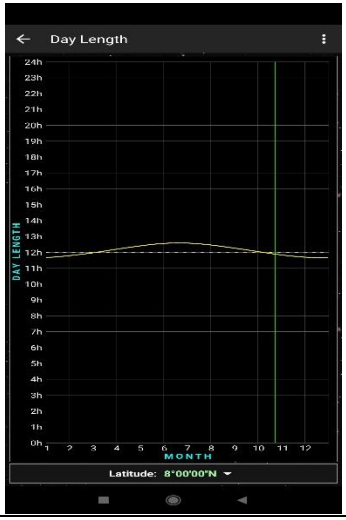
11h
10h
9h
8h
7h
6h
5h
4h
3h
2h
1h
0h
1 2 3 4 5 6 7 8 9 10 11 12
MONTH
Latitude: 7°00'00"N

8° N


Day Length
DAY LENGTH
24h
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9h
8h
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6h
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4h
3h
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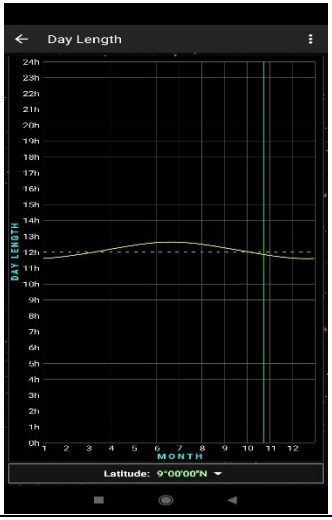
1 2 3 4 5 6 7 8 9 10 11 12
MONTH
Latitude: 8°00'00"N

9° N


Day Length
DAY LENGTH
24h
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11h
10h
9h
8h
7h
6h
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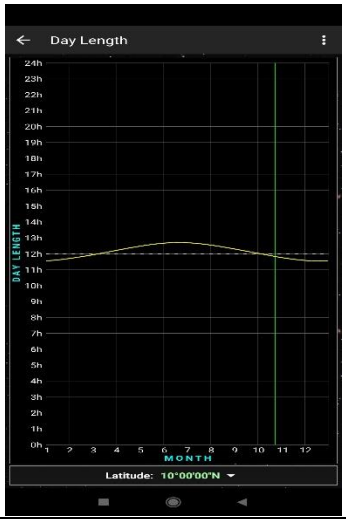
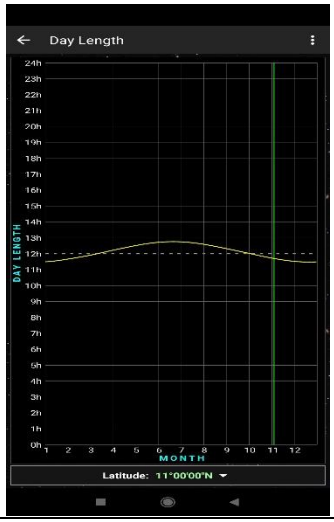
4h
3h
2h
1h
0h
1 2 3 4 5 6 7 8 9 10 11 12
MONTH
Latitude: 9°00'00"N

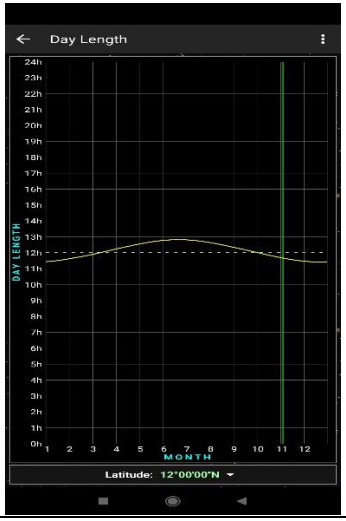
10° N



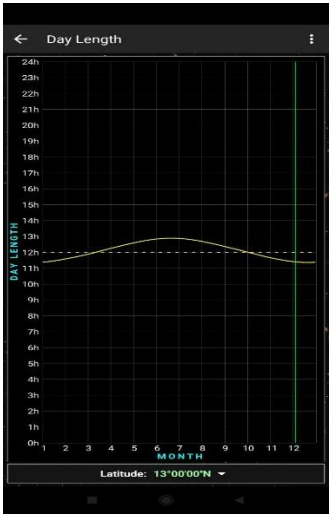
11° N



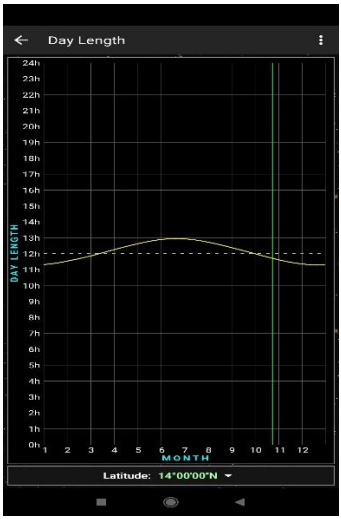
12° N



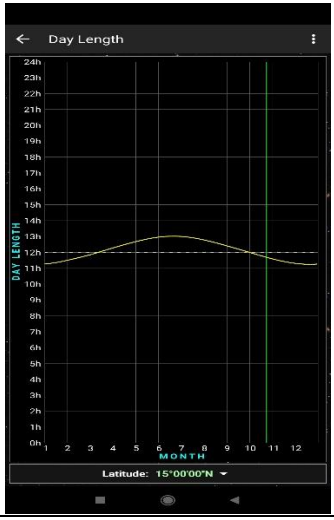
13° N



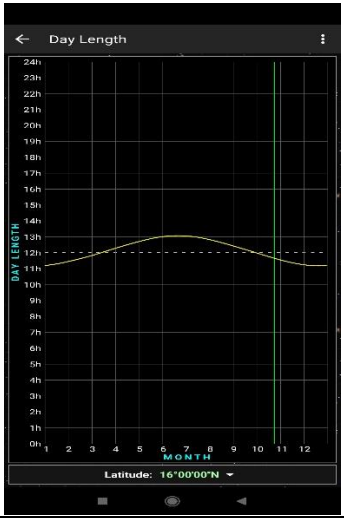
14° N



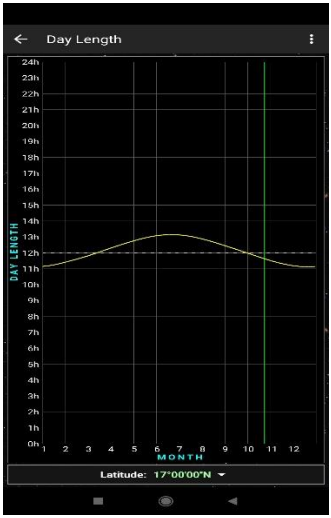
15° N



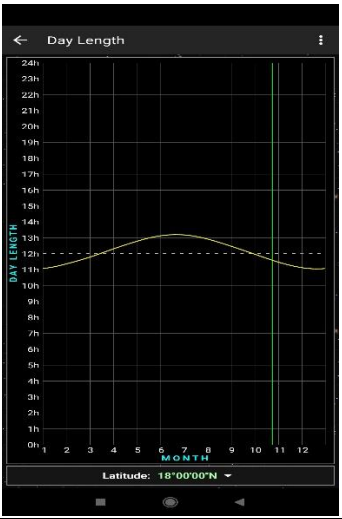
16° N



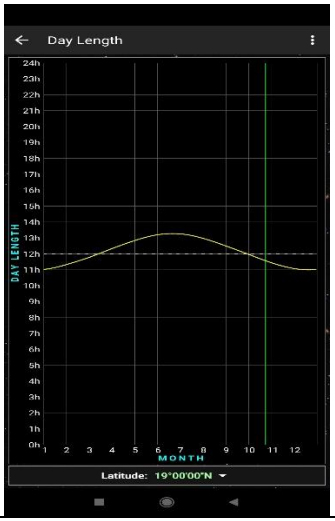
17° N



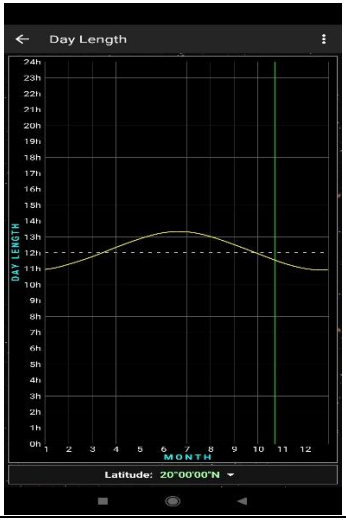
18° N



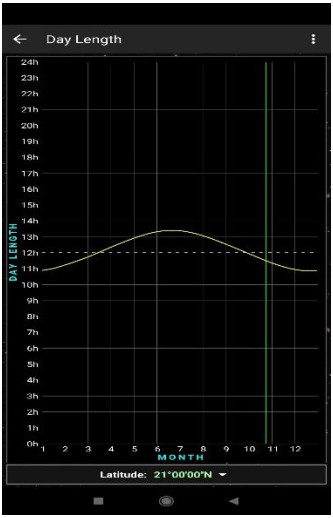
19° N



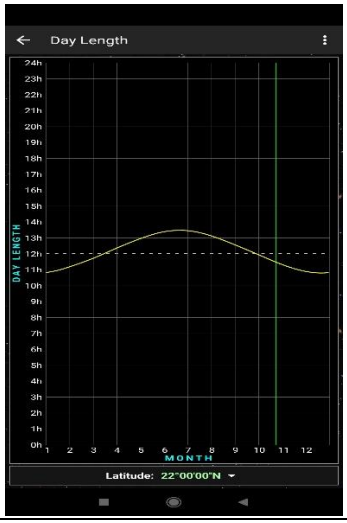
20° N



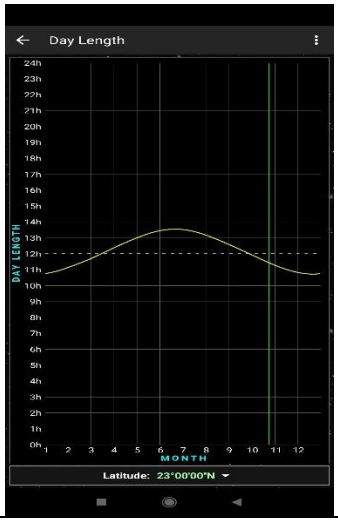
21° N



22° N



23° N



23.5° N

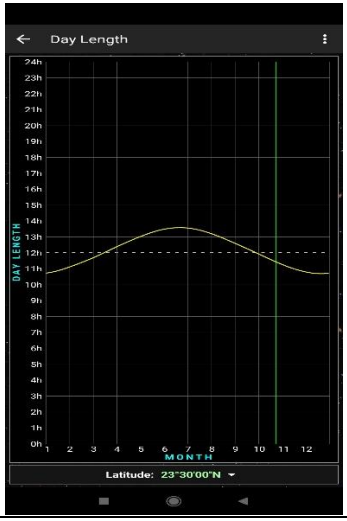
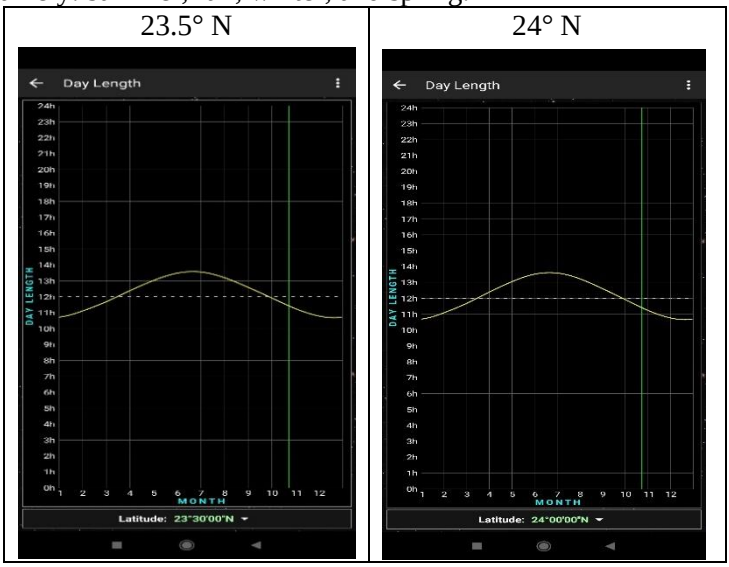


Table 4. 8: Daylight Duration in Tropical Zone[37]

[37] Screenshot of Daff Moon Phase.

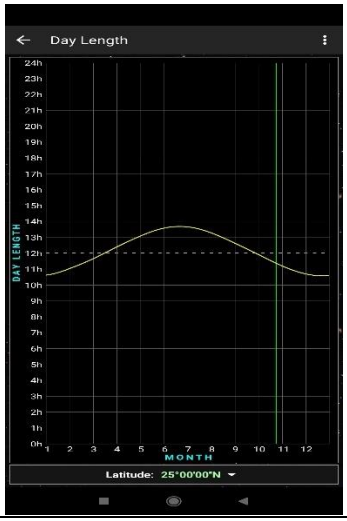
2) Sub-tropical Zone

This zone lies from 23.5 degrees until 40 degrees. This area is transitioning between tropical and temperate climates. The subtropics receive the highest radiation in summer since the Sun's angle at noon is almost vertical to the Earth, whilst the cloud cover is relatively thin. These regions receive less moisture what increases the effect of radiation. Therefore, most of the desert in the world is situated in this zone. In winter, the radiation in these regions decreased significantly, and it can temporarily be very cool and moist. This zone has four seasons, namely: summer, fall, winter, and spring.[38]

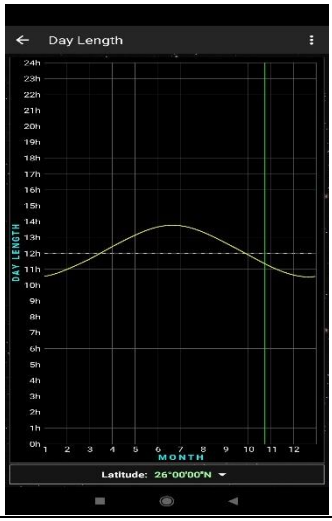


[38] Handajani Asriningpuri, "Belajar dari Kearifan Lokal untuk Bersikap Tanggap Bencana Alam", *LAKAR: Jurnal Arsitektur,* vol. 1, no. 1, 2018, 41.

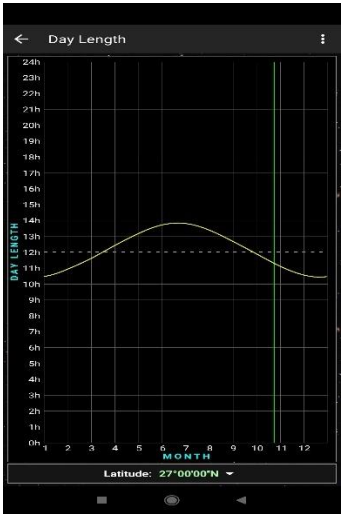
25° N



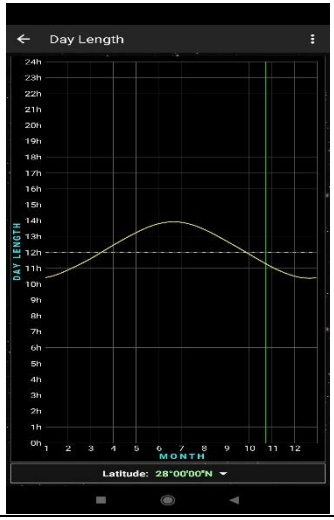
26° N



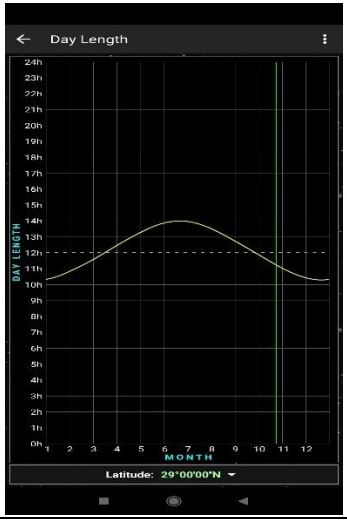
27° N



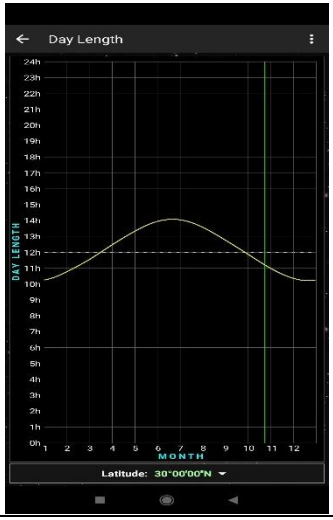
28° N



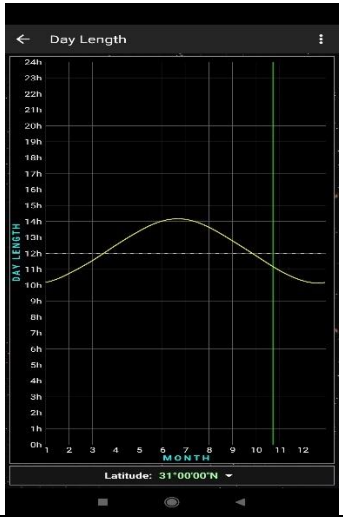
29° N



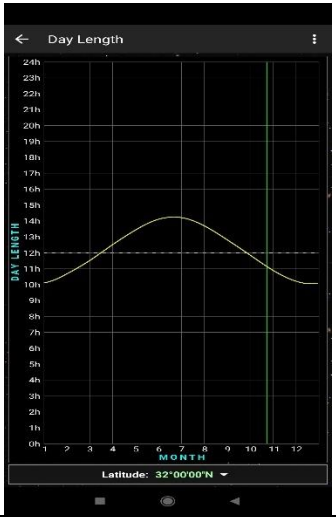
30° N



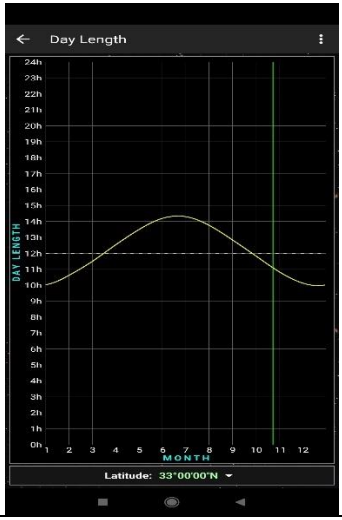
31° N



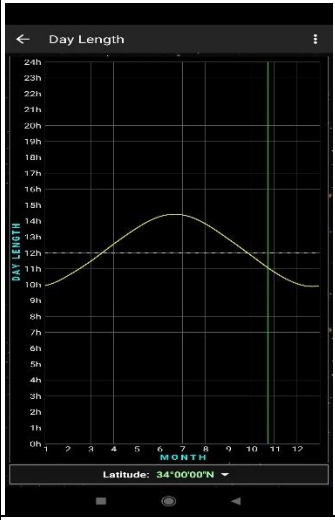
32° N



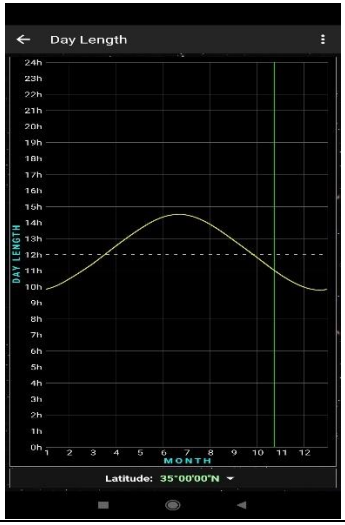
33° N



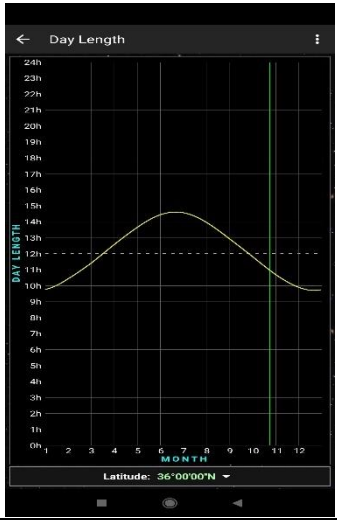
34° N



35° N



36° N



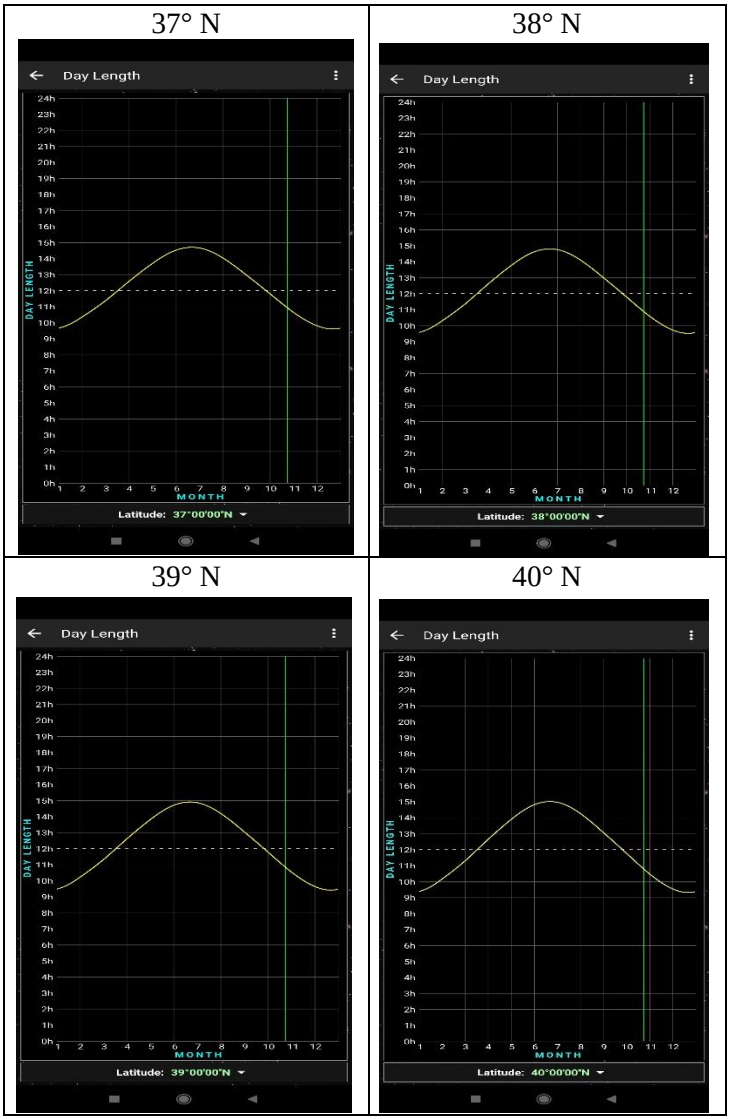
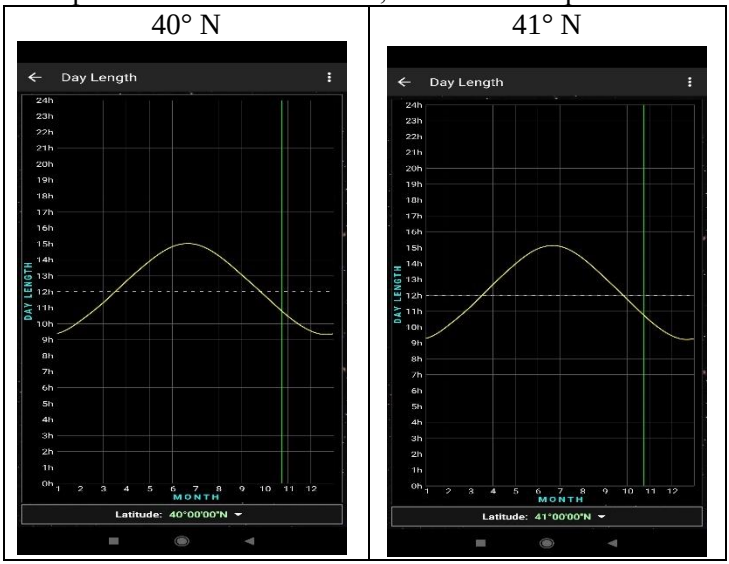


Table 4. 9: Daylight Duration in Subtropical Zone[39]

[39] Screenshot of Daff Moon Phase.

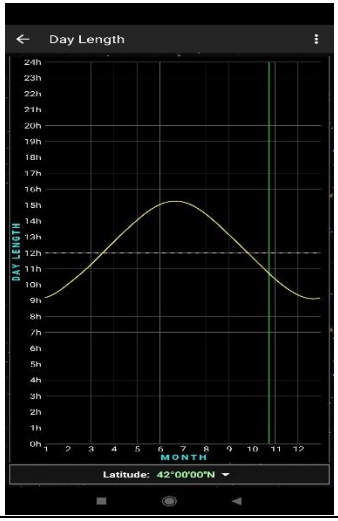
3) Temperate Zone

This zone lies from 40 degrees until 66.5 degrees, but sometimes the limit is not clear. In the temperate zone, the solar radiation arrives at a smaller angle and the average temperatures here are much cooler than in the sub-tropics. The season and daylight duration differ significantly in the year. The climate is characterized by less frequent extremes, a more regular distribution of the precipitation over the year, and a longer vegetation period. However, the temperate climate could occur in unexpected weather. Therefore, the name "temperate".[40]

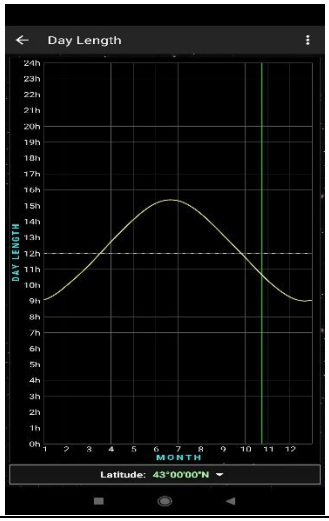


[40] Edvin Aldrian, *Adaptasi dan Mitigasi Perubahan Iklim Indonesia*, (Jakarta: BMKG, 2011), 17-18.

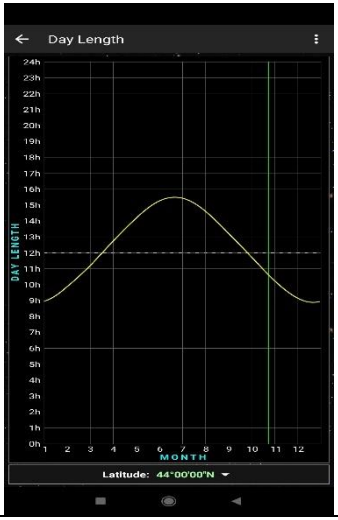
42° N



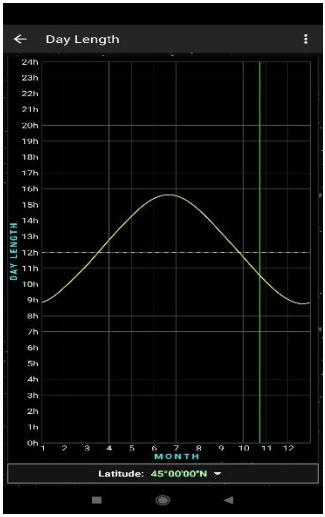
43° N



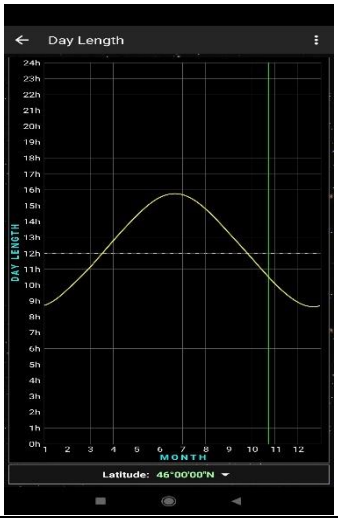
44° N



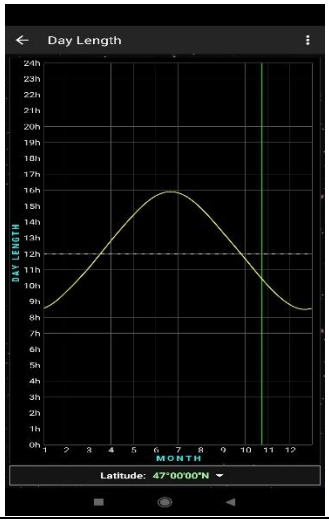
45° N



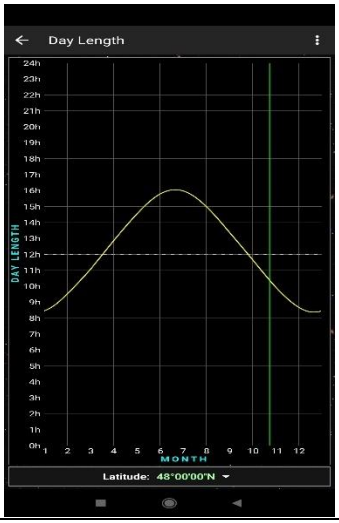
46° N



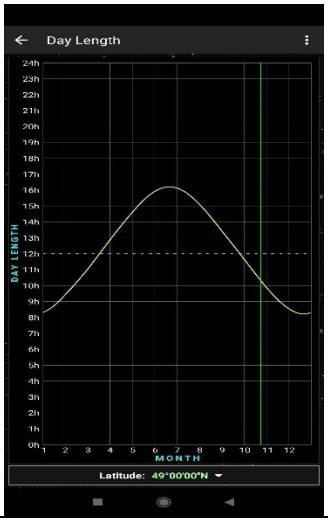
47° N



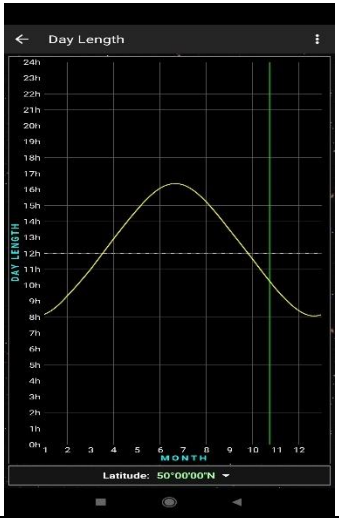
48° N



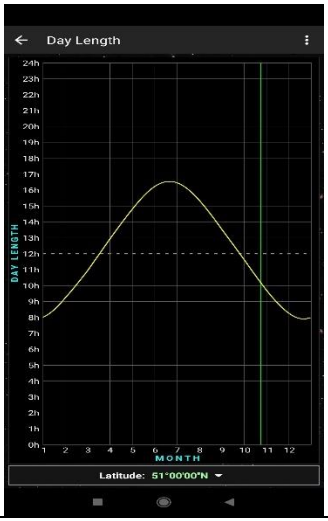
49° N



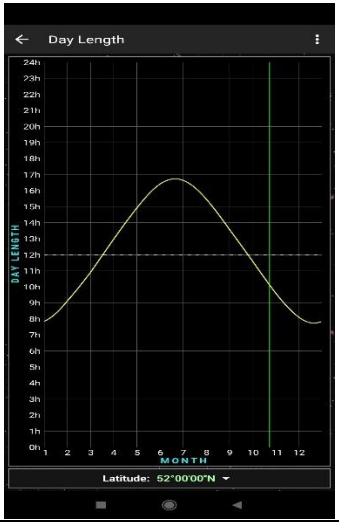
50° N



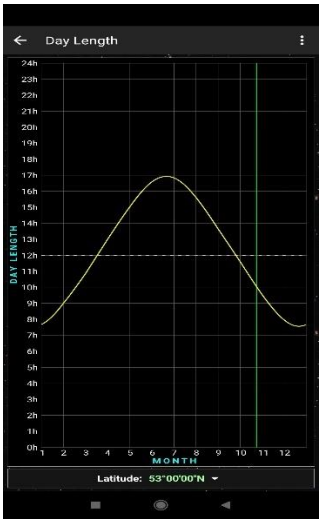
51° N



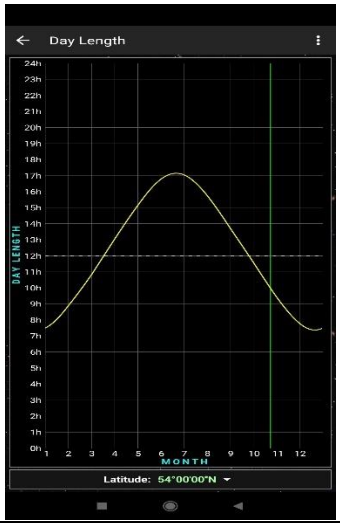
52° N



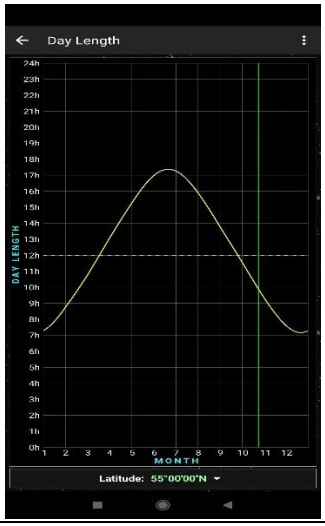
53° N



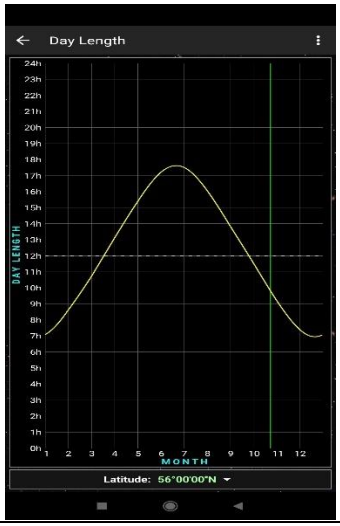
54° N



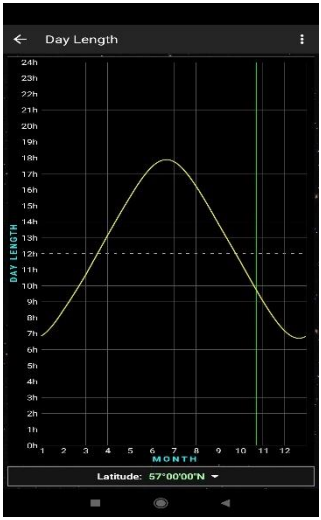
55° N



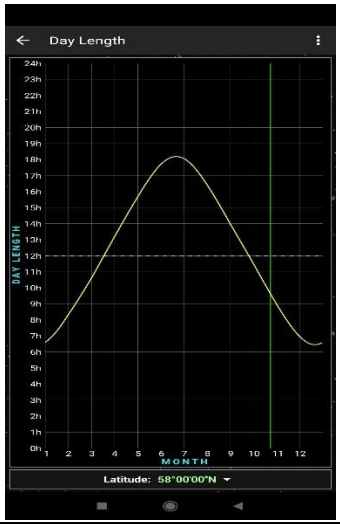
56° N



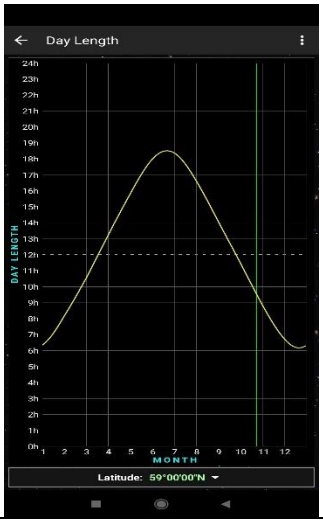
57° N



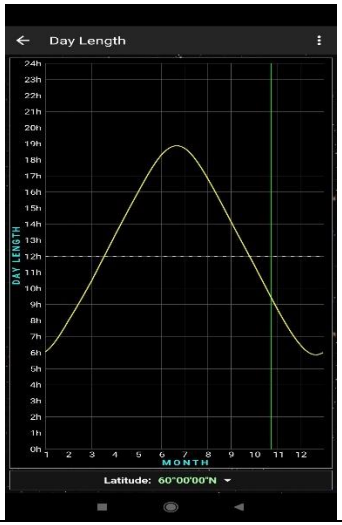
58° N



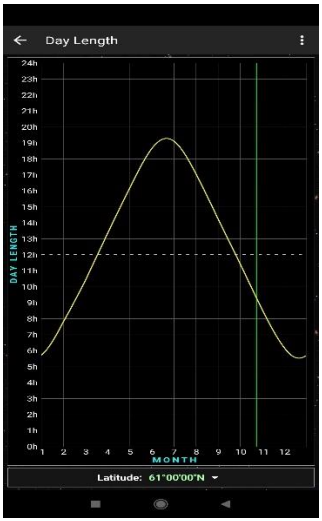
59° N



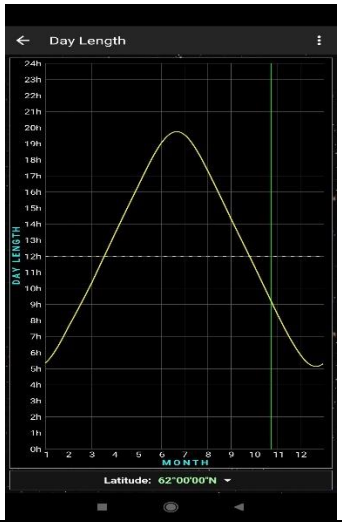
60° N



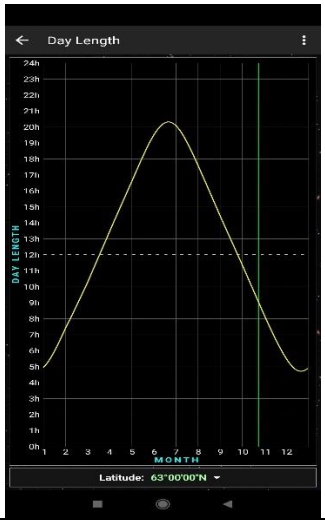
61° N



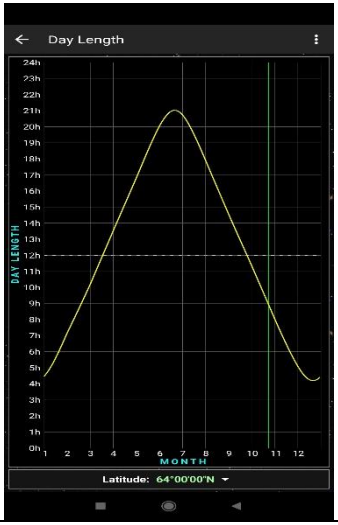
62° N



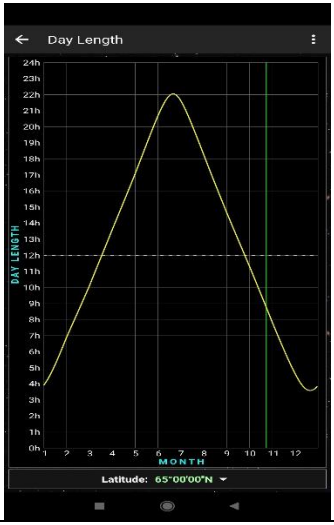
63° N



64° N



65° N



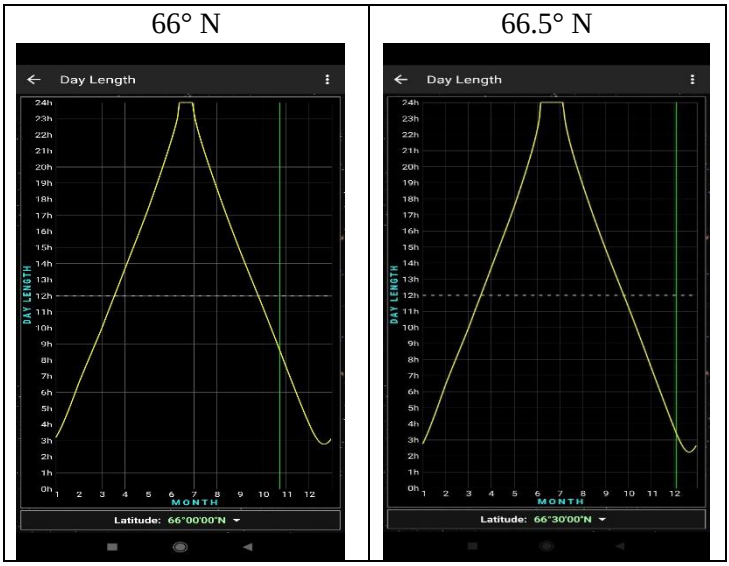


Table 4. 10: Daylight Duration in Temperate Zone[41]

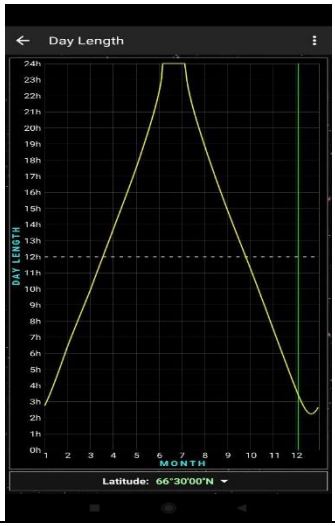
4) Polar Zone

This zone lies from 66.5 degrees until 90 degrees. This zone has a low temperature. The polar areas between 66.5 degrees latitude and the polar receive less heat through solar radiation. Since the Sun has a very flat angle towards the ground. Because of the change of the Earth's axis angle to the Sun, the daylight duration varies most in this zone. In the summer, polar days occur. Solar radiation strikes the ground at various angles in different places of the Earth. On the equator, sunlight almost perpendicularly strikes the earth, whereas, at the poles, the angle of the Sun is lower or even below the horizon during the polar night.[42]

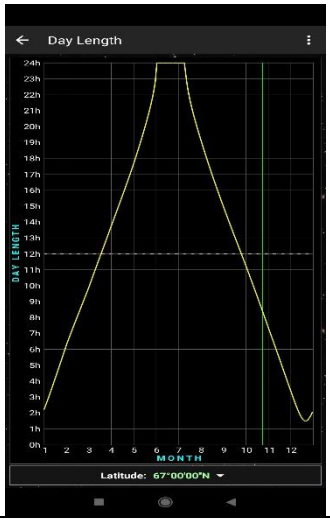
[41] Screenshot of Daff Moon Phase.

[42] Stacey Palen, *Schaum's Outline of Theory and Problems of Astronomy,* (United States of America: McGraw-Hill Companies Inc, 2008), 34-35.

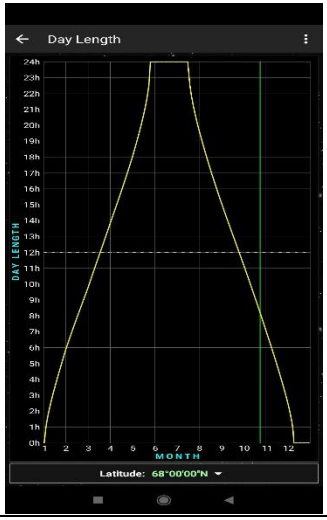
66.5° N



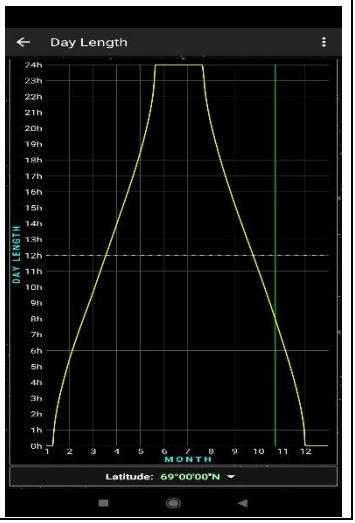
67° N



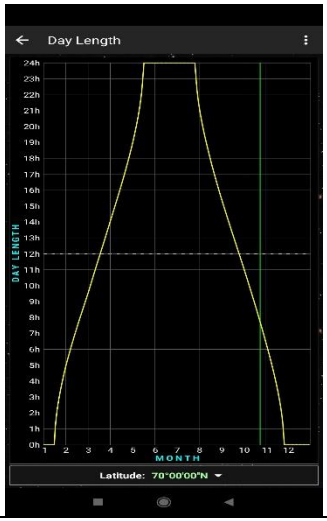
68° N



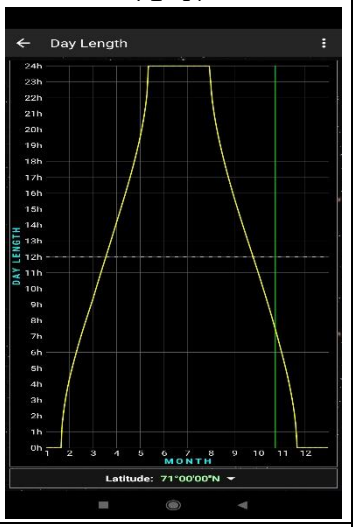
69° N



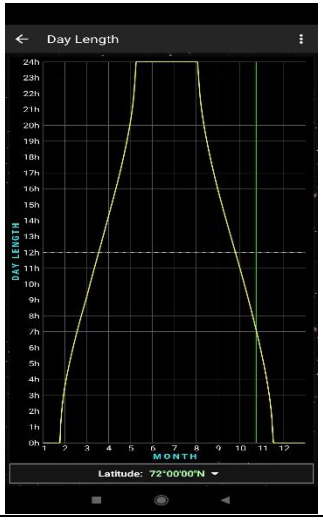
70° N



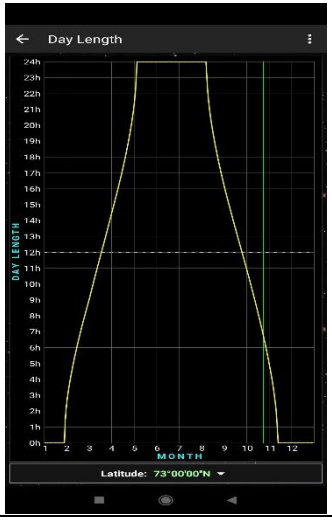
71° N



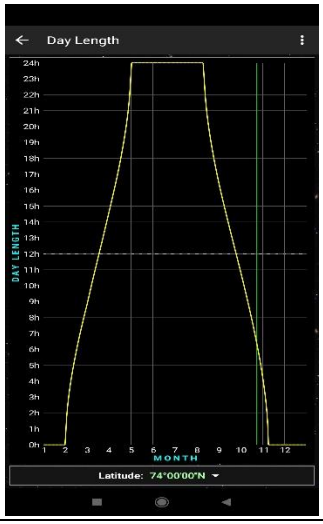
72° N



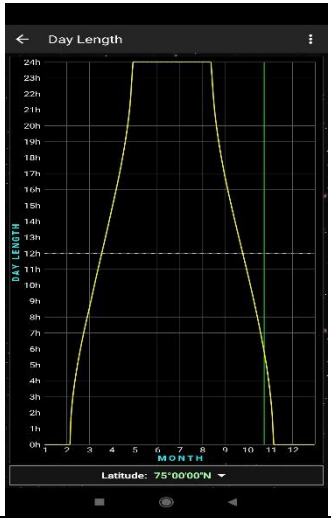
73° N



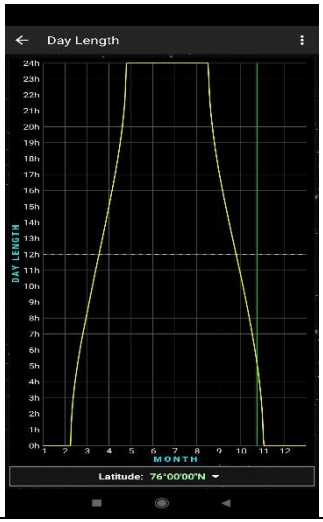
74° N



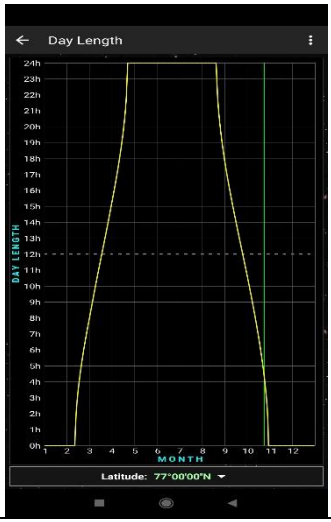
75° N



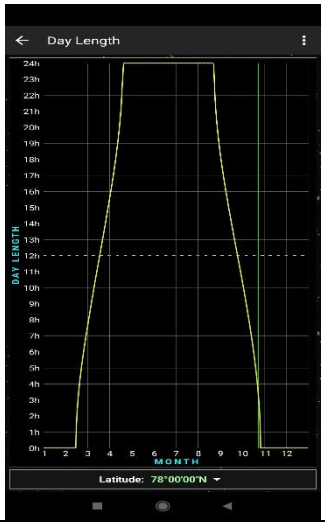
76° N



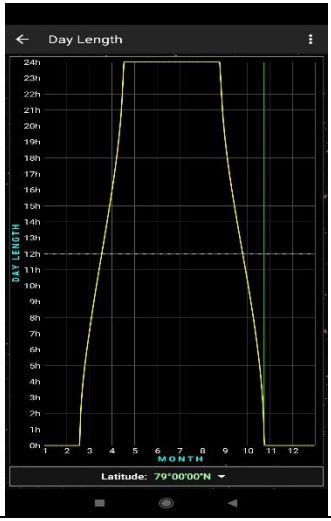
77° N



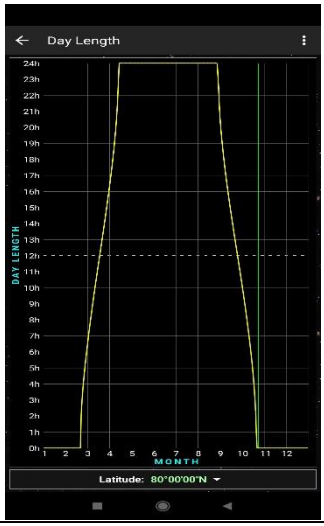
78° N



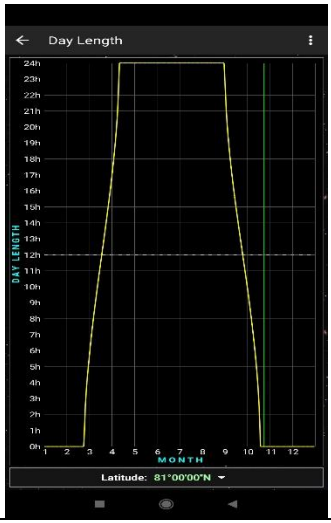
79° N



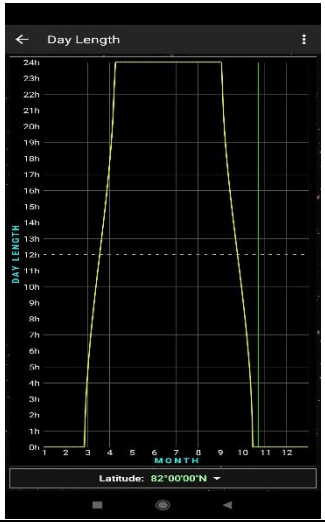
80° N



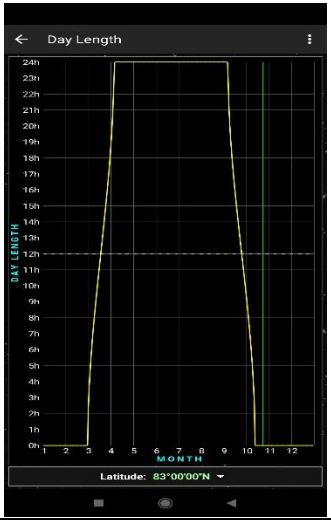
81° N



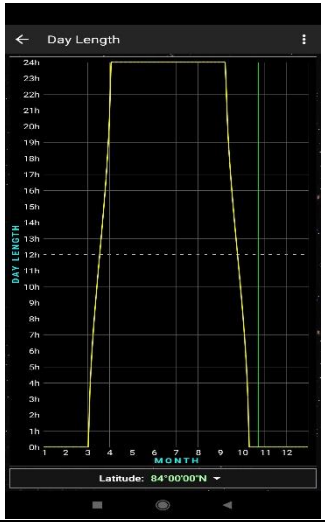
82° N



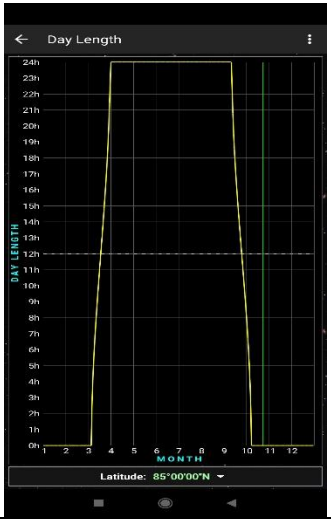
83° N



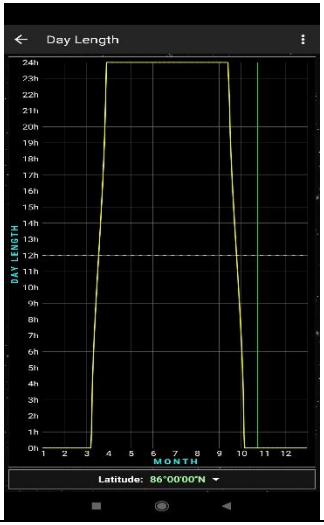
84° N



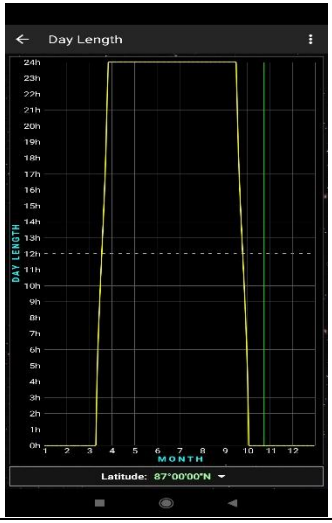
85° N



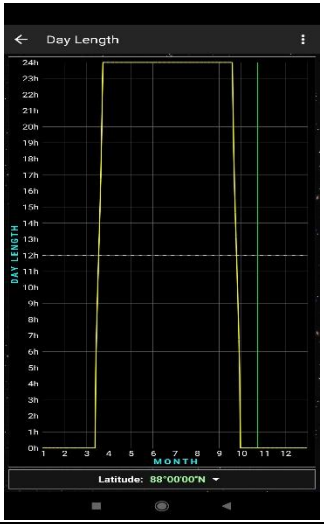
86° N



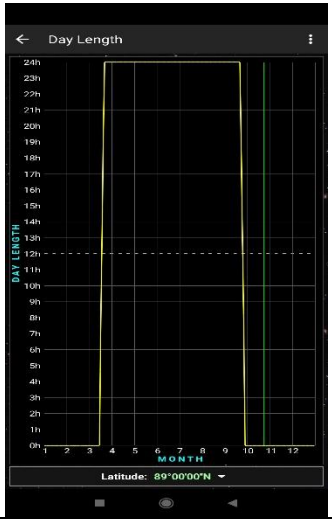
87° N



88° N



89° N



89° 59’ N

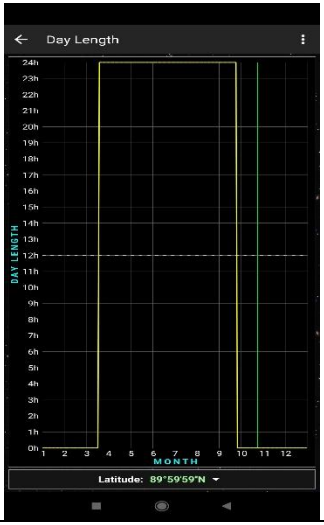


Table 4. 11: Daylight Duration in Polar Zone[43]

The Sun's location concerning the Earth changes with the seasons, as does the angle of incidence of sunlight. The Sun's noon angle ranges from perpendicular (90°) within the tropics to horizontal (0° = Sun does not or just partially appear on the horizon) within the polar circle. As a result, sunlight warms the Earth far more intensely near the equator than at the poles. Recurring climatic conditions, such as winter and summer, occur as a result of temperature changes produced by variances in radiation. These conditions are distinguished by a specific amount of precipitation in the summer or a specific average air temperature.

With the existence of seasons, the scientist could classify them into climate zone. And by looking which season that is occurred in the Book of Enoch, we could find in what zone the daylight is occurred, whether in tropical zone, sub-tropical zone, temperate zone or polar zone.

[43] Screenshot of Daff Moon Phase.

Based on the conversion of daylight duration in the Book of Enoch into synodical day, for the first conversion, for table 4.3, table 4.4 and figure 4.3, the highest point of daylight duration in the third month of Enoch calendar which suitable with May until June is 16 hours and the lowest point in the ninth month of Enoch calendar which suitable with November until December is 8 hours. If we see in the daylight duration from table 4.8 until 4.11, the limit line on 16 hours (the highest point) indicated at the point 48° N with the lowest point of daylight is around 8.3 until 8.5 hours. While the limit of the lowest point of daylight on 8 hours indicated at the point 50° N with the highest point of daylight is around 16.3 until 16.5 hours. So, the interval of coordinate is between 48° N until 50° N.

E. The journey of Prophet Enoch

Imam Thabrani on his *Tarikh* said that there is an argument which stated that in his era, Prophet Idris was sent down to all inhabitants of the Earth, and Allah gave him knowledge from the past (Adam and Seth) then Allah gave him addition of 30 *shuhuf* to him. To strengthen hadith from Abu Dzar, narrated from Ibnu Hibban no.361, Rasulullah ﷺ said that Enoch is Idris, and he is the first who use *Qalam* (pen), and he is one of Prophets who speak Syriac. As known, Syriac is an ancient language that developed in fertile crescent covering the large area in the north Arabia peninsula and is marked by three major rivers such as Euphrates, Tigris and Nile.[44] Fertile crescent is a region with crescent-shaped in the Middle East, spanning modern-day Iraq, Syria, Lebanon, Palestine, Israel, Jordan, and Egypt, together with the Northern region of Kuwait, southeastern region of Turkey and the western portion of Iran. Some authors also include Cyprus. Fertile crescent also defines as the region of southwest Asia, comprising the valley of the

[44] Tessa Sitorini, *Kitab Nabi Idris: The Book of Enoch* (Bandung: Pustaka Prajabati, 2017), viii-ix.

Tigris, Euphrates, and Jordan rivers and their adjacent hilly flanks, where the earliest farming sites are located.[45]

Besides that, the Book of Enoch was found in the Qumran cave or known as Dead Sea Scrolls. The Qumran cave is located at Judean desert. Judean desert is in Israel and the west Bank that lies east of Jerusalem and the Judean hills and west of the Jordan valley and Dead Sea.

According to stories of the Prophets by Imam Imaduddin Abul-Fida Ismail Ibn Kathir, Prophet Enoch was born and raised in Babylon, a city present-day Iraq, following the teachings and religion of Prophet Adam and Prophet Seth. Prophet Enoch and his followers left Babylon to Egypt. In Egypt, Prophet Enoch carried his mission to teach them certain prayers, calling people to what is just and fair, and instructing them to fast on certain days and give portion of their wealth to the poor.[46]

Name of Place	Coordinate		Solar Climate Zone
	Latitude	Longitude	
River Euphrates	31° 0’ 18” N	49° 26’ 31” E	Subtropical
	29° N - 43° N		
River Tigris	38° 26’ N	39° 46’ 22” E	Subtropical
	38° 26’ N - 38° 29’ N	39° 25’ E - 39° 46’ 22” E	
River Nile	30° 10’ N	31° 9’ N	Subtropical
	2° 16’ 56” S - 30° 10’ N	29° 19’ 53” E - 37° 15’ 53” E	
Iraq	33° 13’ 23.5” N	43° 40.575’ E	Subtropical
	29° N - 38° N	39° E - 49° E	
Syria	34° 48’ 7.5” N	38° 59.809’ E	Subtropical

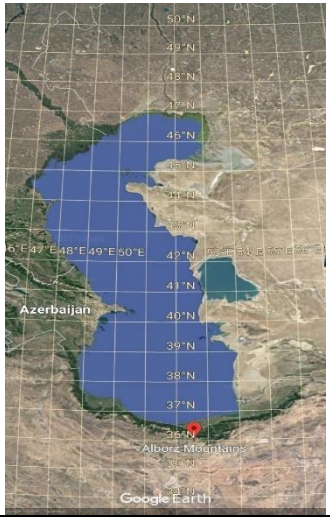
[45] Terence A. Brown et al., “The Complex Origins of Domesticated Crops in the Fertile Crescent”, *Journal of Trends in Ecology and Evolution,* vol. xxx, no. x, 1.

[46] Imaduddin Abul-Fida Ismail Ibn Kathir, *Stories of the Prophets* (Riyadh: Darussalam), 20.

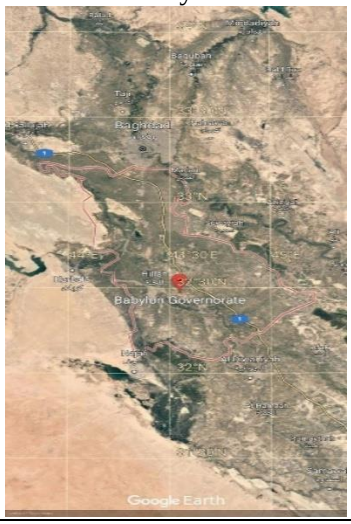
	32° N - 38° N	35° E - 43°E	
Lebanon	33° 52’ 24.81” N	35° 51’ 29.50” E	Subtropical
	33° N - 35° N	35° E - 37° E	
Palestine	31° 57’ 7.8” N	35° 13.989’ E	Subtropical
	15° N - 34° N	29° E – 30° E and 35° E - 40° E	
Israel	31° 2’ 45.8” N	34° 51.097’ E	Subtropical
	29° N - 34° N	34° E - 36° E	
Jordan	30° 35’ 6.6” N	36° 14.305’ E	Subtropical
	29° N - 34° N	34° E - 40° E	
Egypt	26° 50’ 8.76” N	30° 47’ 44.37” E	Subtropical
	22° N - 32° N	25° E - 35° E	
Kuwait	29° 18’ 42” N	47° 28.906’ E	Subtropical
	28° N - 31° N	46° E - 49° E	
Turkey	38° 57’ 49.5” N	35° 14.599’ E	Subtropical
	35° N - 43° N	25° E - 45° E	
Iran	32° 25’ 40.5” N	53° 41.283’ E	Subtropical
	24° N – 40° N	44° E - 64° E	
Cyprus	35° 7’ 35.1” N	33° 25.792’ E	Subtropical
	34° N - 36° N	32° E - 35° E	
Dead Sea Scrolls	31° 44’ 27” N	35° 27’ 31” E	Subtropical
Judaean Desert	31° 33’ 46.8936” N	35° 14’ 56.5548” E	Subtropical
Dead Sea	31° 33’ 32.5044” N	35° 28’ 23.4840” E	Subtropical
Babylon	32° 32’ 6.59” N	44° 25’ 8.99” E	Subtropical
	32° N - 33.25° N	44° E - 45° E	

Ethiopia	9° 08’ 57.03” N	40° 29’ 55.92” E	Tropical
	3° N - 15° N	33° E - 48° E	
Abyssinia	5° N - 15° N	35° E - 42° E	Tropical
Amhara	11° 39’ 39” N	37° 57’ 28” E	Tropical
Alborz Mountain	35° 57’ 20” N	52° 6’ 36” E	Subtropical

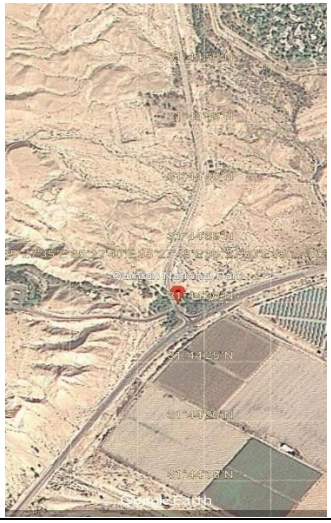
Table 4. 12: Coordinate of Place which linked with Prophet Enoch[47]

Amhara	Alborz Mountain
	

[47] Data from GPS.

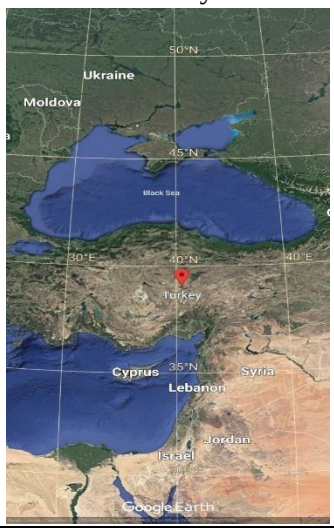
Babylon	Cyprus
	
Dead Sea	**Egypt**
	

Ethiopia	Iran
	
Iraq	**Jordan**
	

Judaean Desert	Kuwait
	
Lebanon	**Dead Sea Scrolls / Qumran**
	

Syria

Turkey



Palestine

Israel

Tigris River

Euphrates River

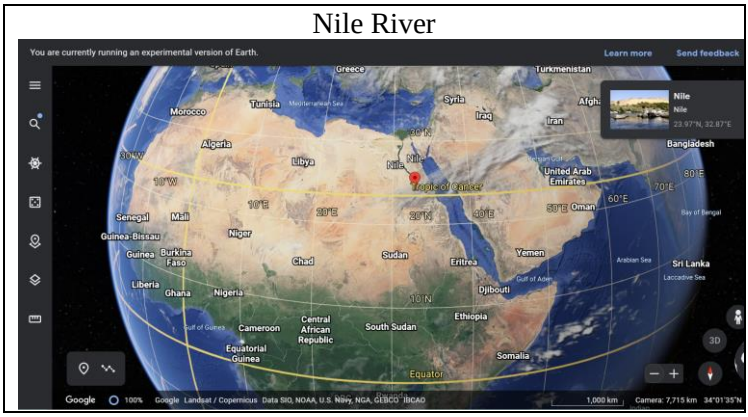


Table 4. 13: Map of place which linked with Prophet Enoch[48]

Based on conversion on daylight duration which is using fraction, table 4.4 shows the hours in temperate climate zone. The range of the coordinate is 48° N until 50° N. While all of the place which linked with Prophet Enoch do not show in the same coordinate with the result of the conversion daylight duration. There is no place in Enoch's journey which is suitable with the daylight duration from 48° N until 50° N.

F. Reanalyze with Different Conversion

While according to Jonathan Ben-Dov, the Astronomical Book (Third Book in the Book of Enoch) is not aware of the ecliptic and zodiacal coordinates. Instead, it calibrates the Sun's position by tracing its appearance and setting it on the horizon. Besides, the relation between the longest and the shortest day of the year was taken to be 2:1. The same ratio is followed in the Book of Enoch chapter 72, despite the fact that does not correspond with the reality. The division

[48] Data from GPS.

of the day into 18 "parts" is a system which is unknown elsewhere.[49]

The variation of the length of daylight and darkness during the solar year is here described by a numerical sequence that alternates, with constant difference when we add the daylight with the night it always equals by 18 parts. The length of daylight which is found in cuneiform texts two ratios. The first one is 3:2, the units of time are "large hours" (i.e., 4 of our hours). The second is 2:1, this case deals with "manas" such as weights of water, outflowing from a cylindrical water clock. But borrowing from comparatively early Babylonian material cannot be used as a chronological criterion for the time composition of the astronomical section of the Book of Enoch.[50]

The reason why "manas" or water clock could not be used as unit of daylight duration in the Book of Enoch is the oldest use of water clock to astronomical calculation is found back to the Old Babylonian period at 2000 – 1600 BC.[51] While Prophet Enoch lived long time before that period, Idris lived from 4533 until 4188 BC, according to Al-Maghluts.[52] It was 2188 years as the span time of Prophet Enoch live until the using of water clock.

Based on Ben-Dov note, Prophet Enoch was accustomed to calibrating the Sun's position by tracing its appearance and setting it on the horizon. It can see 24 hours minus 18 hours is 6 hours. There are 3 hours for day and 3 hours for night that is not counted by Prophet Enoch. This can be considered that there is a span time range such as the time between evening and night or from night to morning that does

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[49] Jonathan Ben-Dov, *Astronomy in the Book of Enoch,* (New York: Springer, 2015), 1891.

[50] Otto Neugebauer and Matthew Black, *The 'Astronomical' Chapters of the Ethiopic Book of Enoch (72 to 82),* (Danmark: Bianco Lunos Bogtrykkeri, 1981), 11-12.

[51] David Pingree, *Legacies in Astronomy and Celestial Omens,* (Oxford: Oxford University, 1998), 125-125.

[52] Syahruddin El-Fikri, *Dari Banjir Nuh Hingga Bukit Thursina* (Jakarta: Penerbit Republika, 2010), 18.

not count. If this portion is added into the daylight's explanation, it will result:

Month	Daylight		Darkness	
	Portion	Hours	Portion	Hours
1	10+3	13	8+3	11
2	11+3	14	7+3	10
3	12+3	15	6+3	9
4	11+3	14	7+3	10
5	10+3	13	8+3	11
6	9+3	12	9+3	12
7	8+3	11	10+3	13
8	7+3	10	11+3	14
9	6+3	9	12+3	15
10	7+3	10	11+3	14
11	8+3	11	10+3	13
12	9+3	12	9+3	12

Table 4. 14: Daylight Duration Conversion

If the table 4.14 plot in a chart, it will be like:

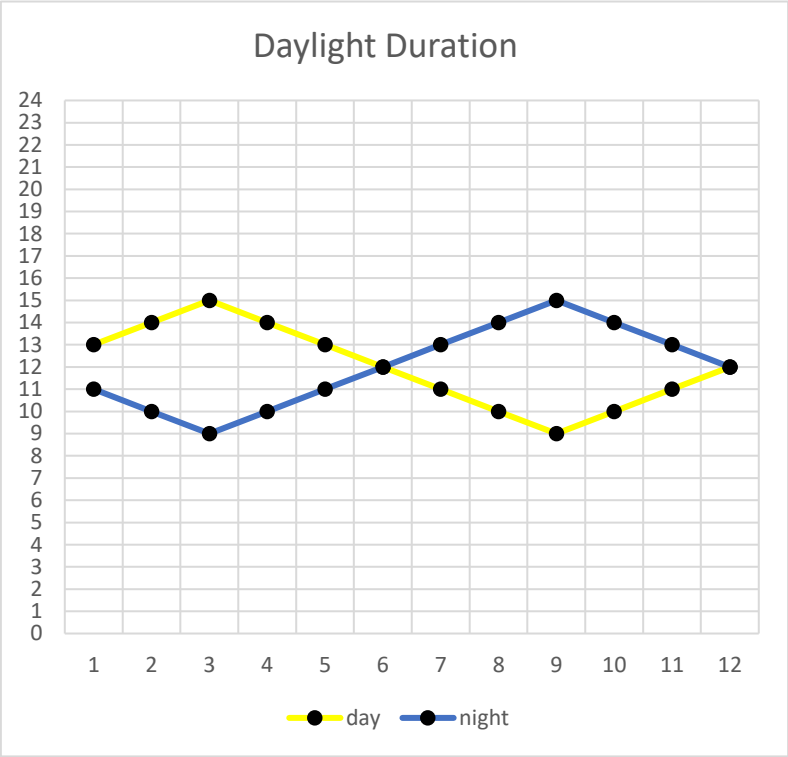

Figure 4. 4: Daylight Duration second Conversion

Based on table 4.14 and figure 4.4, the highest duration of daylight is 15 hours in the third month and the lowest duration of daylight is 9 hours in the ninth month. If we see in the daylight duration from table 4.8 until 4.11, the limit line on 15 hours (the highest point) indicated at the point 40° N with the lowest point of daylight is around 9.5 hours. While the limit of the lowest point of daylight on 9 hours indicated at the point 43° N with the highest point of daylight is around 15.3 hours.

While in this conversion, from the latitude analysis, the range of the place is between 40° N until 43° N. When this range is matched with the coordinate on Enoch's journey, it shows some place which lies on those range. On those range, the place

which is located on those latitudes are River Euphrates, Turkey, Alborz mountains[53] and Iran.

G. The Implication of Daylight Duration in the Book of Enoch on Fasting

The duration of daylight is tied to nisfu qausin nahar which is associated with worship for Muslim.[54] The time of fasting is determined by hijri calendar which is the part of lunar calendar. And the conversion from hijri calendar to the Gregorian calendar can fall in any month of Gregorian calendar because of the difference in the number of days and the beginning time of these two calendars.

Based on the conversion of daylight, if the result conversion of hijri calendar to Gregorian calendar lies on the first month of Enoch calendar which is suitable with March until April on Gregorian calendar and the fifth month or from the end of July to the end of August, the daylight duration on fasting is 13 hours. In the second month or from the end of April to the end of May and the fourth month or the end of June to the end of July, the daylight duration on fasting is 14 hours. In the third month or from the end of May to the end of June, the daylight duration on fasting is 15 hours.

In the sixth month or from the end of August to the end of September and the twelfth month or the end of February to the end of March, the daylight duration on fasting is 12 hours. In the seventh month or from the end of September to the end of October and the eleventh month from the end of January to the end of February, the daylight duration on fasting is 11 hours. In the eighth month or from the end of October to the end of

[53] A mountain range in northern Iran that stretches from the border of Azerbaijan along the western and entire southern coast of the Caspian Sea and finally runs northeast and merges into the Aladagh Mountains in the northern parts of Khorasan.

[54] Musyaiyadah, "Studi Analisis Metode Penentuan Awal Waktu Salat dengan Jam Istiwa' dalam Kitab Syawariq Al-Anwar", *Undergraduate Thesis IAIN Walisongo,* (eprintWalisongo, 2011), unpublished, 64-65.

November and the tenth month or from the end of December to the end of January, the daylight or the daylight duration on fasting is 10 hours. In the ninth month or from the end of November to the end of December, the daylight duration on fasting is 9 hours. If the description above was inputed in a table, it will be like:

Month in Enoch Book	Month in Gregorian Calendar	Daylight hours
1	March – April	13
2	April – May	14
3	May – June	15
4	June – July	14
5	July – August	13
6	August – September	12
7	September – October	11
8	October – November	10
9	November – December	9
10	December – January	10
11	January – February	11
12	February – March	12

Table 4. 15: The Daylight Duration and Month

From table 4.15, the highest daylight duration on fasting is 15 hours in the end of May until the end of June. And the lowest daylight duration on fasting is 9 hours in the end of November until the end of December.

According to Masjfuk Zuhdi on his book, the coordinate of the Prophet Enoch's journey is still in normal zone. The normal zone is from equator until the latitude of 45 degrees in the North and South hemisphere. While the abnormal zone is in the outside of the latitude of 45 degrees in the North and South. Hemisphere.[55]

[55] Masjfuk zuhdi, *Masail Fiqhiyah* (Jakarta: Masagung), 279-281.

With the research of daylight duration, the implications on fasting are the beginning of fasting is changeable depend on which month the fast fall, the daylight duration on fasting is different based on which month of Gregorian calendar the fast fall and different times for sahur and iftar.

CHAPTER V

CONCLUSION AND RECOMMENDATION

A. Conclusion

Based on the research and explanation above, the author concludes that:

1. The daylight duration in the Book of Enoch using the term "part". The Book of Enoch describes the daylight duration that occurs twelve months in a year. In the beginning of the month, the day is longer than night until it reaches the limit of daylight in the third month by 12 parts. From the third month, the part of "day" is decrease until the ninth month by 6 parts. From the ninth month, the part of "day" is increase until the twelfth month by 9 parts. And the night part occurs the opposite of the day part.
2. The daylight duration which explained in the Book of Enoch shows the phenomenon in the northern hemisphere by matching the Sun's position in real time with the daylight duration part in the Book of Enoch. The highest duration of daylight is 15 hours in the third month and the lowest duration of daylight is 9 hours in the ninth month. The first month of daylight duration in the Book of Enoch is the end of March until the end of April, the third month which is the highest daylight is the end May until the end June, the sixth month is the end August until the end September and the last month is the end February until the end March. The reason why March is on the first month

because the spring season is marked as time to reborn and renew. Because this reason, most of cultures celebrate vernal equinox as the first day of new year. The ancient Rome established that march is on the beginning of month while January and February are added on the next time. The note of Enoch calendar is the Enoch year usually begins on the Sunday after the spring equinox, which occurs on March. The latitude of daylight duration in the Book of Enoch is showed subtropical zone and a little of temperate zone. The coordinate of Prophet Enoch's journey matches with the conversion of daylight duration in the Book of Enoch. The implications on fasting are the beginning of fasting is changeable depend on which month the fast fall, the daylight duration on fasting is different based on which month of Gregorian calendar the fast fall and different times for sahur and iftar.

B. Recommendation

The author recommends, it is necessary to re-examine the difference between the Enoch calendar and the Gregorian calendar. Besides, it is necessary to review about the pattern conversion of daylight duration in the Book of Enoch.

C. Closing

By saying Hamdallah, all praises and thanks are due to Allah ﷻ, who has bestowed His grace and mercy and also has given the author the ability to complete this undergraduate thesis. The author has tried his best in writing this thesis, but the

author realized that this thesis is still far from perfection, there are still many shortcomings and weaknesses both in terms of content and writing.

Therefore, suggestions and constructive criticism to correct writer's writing and in order to make the next writing is better are always welcome. For progress and perfection in subsequent writings. And thank you to all parties involved in making this thesis to completion. The author really hopes and prays that this thesis can be useful for writers and readers.

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ATTACHMENT

Attachment 1 An Interview with Tessa Sitorini (the Author of the Book of Enoch Translation and Marginal Note by Tessa Sitorini) via Messenger Facebook

Source person : Tessa Sitorini

Interviewer : Youla Afifah Azkarrula

Date : October 20th 2021

Question and Answer List:

Question : Regarding the length of daylight described in the Book of Enoch with the note of the edge that you packed how do we convert these 18 “parts” into 24 hours a day?

“Mengenai lama waktu siang yang dijelaskan dalam kitab nabi idris dengan catatan pinggir yang ibu kemas, bagaimana cara kita mengkonversi 18 bagian tersebut kedalam 24 jam sehari?”

Answer : I haven't learned the technical details, just translated

“Saya belum mempelajari teknis detil mbak, baru sekadar menerjemahkan”

Question : In translation is there anything confused in the third wisdom section, about the circulation of celestial bodies?

“Dalam penerjemahan apakah ada yang rancu bu di bagian hikmah ke tiga, tentang peredaran benda langit?”

Answer : Hopefully not

“Semoga tidak ya”

Attachment 2 An Interview result with Tessa Sitorini, the author of The Book of Enoch Translation and Marginal Note by Tessa Sitorini via Messenger Facebook

Attachment 3 An Interview with Asherit (the leader of personal page of Zadok Enoch Priestly Calendar) via Messenger Facebook

Source person : Asherit

Interviewer : Youla Afifah Azkarrula

Date : June 11th 2021

Question and Answer List:

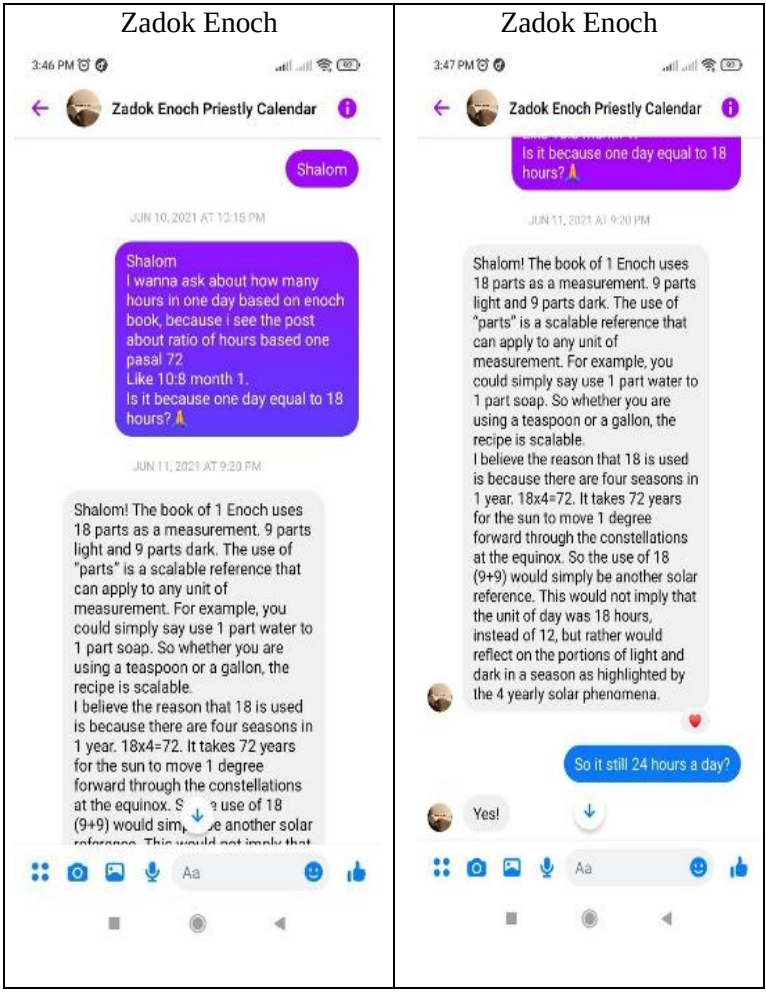
Question : Shalom. I wanna ask about how many hours in one day based on enoch book, because I see the post about ratio of hours based one pasal 72 Like 10:8 month 1. Is it because one day equal to 18 hours?

Answer : Shalom! The book of 1 Enoch uses 18 parts as a measurement. 9 parts light and 9 parts dark. The use of "parts" is a scalable reference that can apply to any unit of measurement. For example, you could simply say use 1 part water to 1 part soap. So whether you are using a teaspoon or a gallon, the recipe is scalable. I believe the reason that 18 is used is because there are four seasons in 1 year. 18x4=72. It takes 72 years for the sun to move 1 degree forward through the constellations at the equinox. So the use of 18 (9+9) would simply be another solar reference. This would not imply that the unit of day was 18 hours, instead of 12, but rather would reflect on the portions of light and dark in a season as highlighted by the 4 yearly solar phenomena.

Question : So it still 24 hours a day?

Answer : Yes!

Attachment 4 An Interview result with Asherit, the leader of personal page of Zadok Enoch Priestly Calendar via Messenger Facebook



CURRICULUM VITAE

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   4. Bintang Persada Elementary School, Tabanan, Bali (2007-2012)
   5. SMPN 1 Tabanan Bali (2012-2015)
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B. NonFormal Academics:
   1. Pesantren Kilat Ramadhan 1427 H SDIT Citra Az Zahra
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3. JR College Computer Course
4. Jolly Roger English Course
5. Darul Ulum Boarding School, Jombang, East Java (2015-2019)
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1. Second Treasurer OSIS in State Junior High School 1 Tabanan Bali
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5. Vice Chairman in IKAPPDAR East Indonesia
6. Member of FK2O Darul Ulum Jombang
7. Member of FK2I Darul Ulum Jombang
8. Member of LISAN
9. Al Husna Hisab Rukyat Team
10. Vice chairman in Life Skill Daarun Najaah
11. Treasurer in Life Skill Daarun Najaah