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Review

The Jerusalem Megalithic Rock Calendar Is an Identical Representation to That Found in Lanzarote Island (Canary Islands, Spain)

Antonio Arnaiz-Villena *,†, Marcial Medina †, Tomas Lledo †, Valentin-Ruiz del-Valle, Christian Vaquero-Yuste, Ignacio Juarez and Fabio Suarez-Trujillo

Department of Immunology, Faculty of Medicine, Complutense University of Madrid, 28040 Madrid, Spain

* Corresponding author. E-mail: aarnaiz@med.ucm.es (A.A.-V.); Tel.: +34-606-993-161 or +34-913-947-080 (A.A.-V.)

† These authors contributed equally to this work.

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ABSTRACT: We have recently found that a megalithic basaltic rock lunisolar calendar in Lanzarote, Canary Islands ("Quesera or Cheeseboard" of Zonzamas) has almost a twin monument in Jerusalem (Al Quds in Arab). These two unique monuments are on the West and East sides of the Sahara Desert and support the hypothesis of a common "Green" Saharan culture and a later migration of people towards the Atlantic, Mediterranean, Middle East and other areas when desiccation started after 10,000 years BC, thus spreading culture and genes. Traces of this culture can still be found in Iberian rock inscriptions on the Canary Islands and in the Sahara Desert, particularly at Tim-Missaou in Algeria.This is concordant with Usko-Mediterranean languages (Basque and Berber are related and also with Iberian and Etruscan), genetics and other common anthropological traits. In this paper, we analyse the Al Quds-Jerusalem megalithic monument as representing a solar calendar of Egyptian-type (365 days in 1 year) and show how it could be identical to the Lanzarote megalithic calendar ("Quesera or Cheeseboard" of Zonzamas). Both monuments,each crest/channel, are coincidental in each solar month assignment in both Lanzarote and Jerusalem rock calendars representation. Jerusalem's megalithic calendar was built at least 900 years BC, when it fell out of use. Therefore, it can be assumed that the Lanzarote megalithic calendar was constructed around a similar time, meaning an undetermined period over 2800 years ago.

Keywords: Lanzarote; Canary Islands; Middle East; Al Quds; Jerusalem; Lunisolar Calendar; Sahara; Mediterranean; Zonzamas; Quesera; Megalithic; Iberian-Guanche

1. Introduction

Archaeologists have discovered that the City of David in Jerusalem is one of the most ancient settlements in the area, dating back to around the 4th millennium BC, (Figure 1) (https://en.wikipedia.org/wiki/Jerusalem).

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Figure 1. The City of David archaeological site is located in Jerusalem. The name Jerusalem is currently known in English and in most non-Arab-speaking countries around the world. Al Quds is the Arab name for the city. However, this city got a variety of names through time, like uru-Salim in Sumerian/Acadian, Jebus (Jebuses), Yerusaljum in Hebrew, Aelea Capitolina (Roman) (https://en.wikipedia.org/wiki/Names_of_Jerusalem); Adam-Smith, G. (1907) pp 250, see https://archive.org/details/JerusalemByGeorgeAdamSmith/page/n8/mode/1up?view=theatre.

The name Jerusalem is currently known in English and most non-Arab-speaking countries around the world(https://en.wikipedia.org/wiki/Jerusalem).

They placed this site east of the Sahara Desert. At the same time, the nearly identical megalithic calendar was located at the westernmost part of the Sahara, on Lanzarote, one of Spain's Canary Islands. (Figure 2): the "Quesera"/Cheeseboard at the archaeological site of Zonzamas close to Arrecife city [1,2].

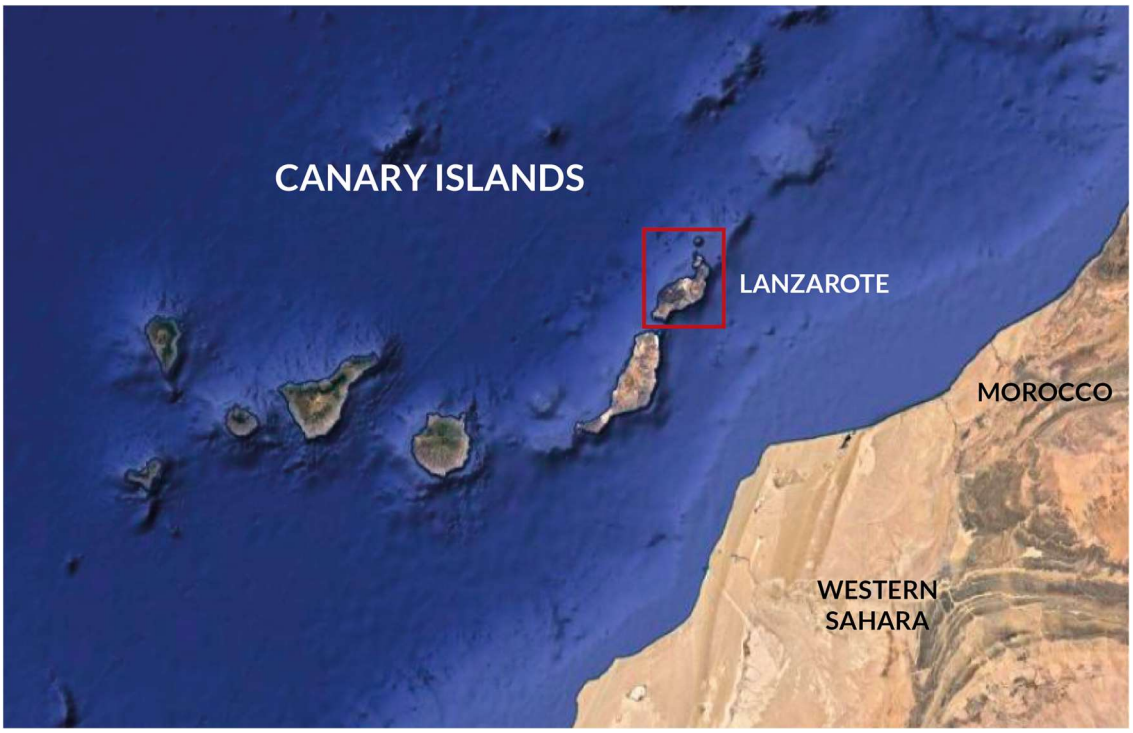

Figure 2. Map showing the location of the Canary Islands archipelago (Spain) with Lanzarote Island remarked and with a white arrow. They are located 90 km off the coast of West Africa.

Archaeologists discovered structures of unknown function in 2023 AD at the Jerusalem site known as the City of David (https://arkeonews.net/archaeologists-find-mysterious-2800-year-old-channels-in-jerusalem/) (Figures 3–5). People stopped using these carved stone structures in the 9th century BC, at some uncertain time more than 2800 years ago.This rock channel and crest monument was constructed at an undetermined time before this date. This Jerusalem twin to Lanzarote structure shown in Figures 3 and 4 is placed only 10 m apart from a similar structure shown in Figure 5. Both types of structures were carved in hewn rock. Channels were 30 cm wide, and crests were 50 cm high.No traces of blood were found, and Jerusalem archaeologists do not believe these artifacts were used to transport or contain a

large volume of water.Other possibilities for their use have been proposed. (https://arkeonews.net/archaeologists-find-mysterious-2800-year-old-channels-in-jerusalem/). In Figure 6 footnote, we explain the most likely utility of this rock structure based on Lanzarote's "Quesera"/"Cheeseboard" use.

Figure 3. A megalithic rock structure composed of channels and crests has been found in the archaeological site of the City of David (Jerusalem). This structure was almost identical to that of Lanzarote lunisolar calendar ("Quesera" or "Cheeseboard" of Zonzamas, Canary Islands, Spain), except for the central channel, which is forked in this case. https://arkeonews.net/archaeologists-find-mysterious-2800-year-old-channels-in-jerusalem/. IAA (Israel Archaeological Authority).

Figure 4. A view of the megalithic rock structure discovered at the City of David archaeological site (Jerusalem) is shown in Figure 3. Height and width of channels may be seen in this photograph compared to people's height. Photograph taken from https://arkeonews.net/archaeologists-find-mysterious-2800-year-old-channels-in-jerusalem/. IAA.

Figure 5. Another incomplete structure with carved rock channels/crests was also discovered at the City of David and close to the structures shown in Figures 3 and 4. It resembles the cart-ruts first described in Malta and later in Lanzarote, the Azores Islands and around the Mediterranean Basin area. This structure is placed a few meters from the one shown in Figures 3 and 4. It is not ruled out that this structure is similar to the one shown in Figures 3 and 4 (Cheeseboard type), and that it has been damaged, making it unlikely to be a cart ruts-like structure. Photograph was taken from https://arkeonews.net/archaeologists-find-mysterious-2800-year-old-channels-in-jerusalem/. IAA.

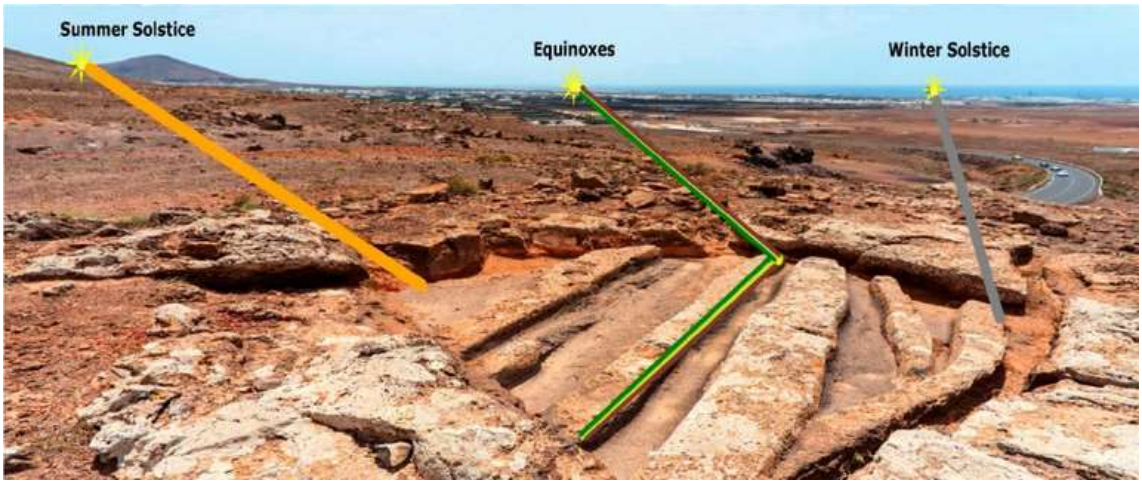

Figure 6. "**Quesera-Cheesboard" Megalithic Monument at Lanzarote**. The sunrise at the solstices and both equinoxes represents it.

The city of Arrecife and the Atlantic Ocean are visible on the horizon. Sunrises (2014 AD) at Summer Solstice between Maneje and Tahichevolcano hills (orange line). If"Quesera"is very ancient, the Sun rising could have been seen at the Tahiche volcano slope or vertex in Antiquity because Ecliptic obliquity varies about 0.47 arc seconds per year at present [3].The sunrise on both the Autumn and Spring Equinoxes is represented by a green line.Grey line represents the Winter Solstice sunrise point. Sunrises complete a yearly azimuth arch between 62° and 117° degrees from 21 June (starting of Guanche or Canary Islands firstinhabitants solar year to 21 December and back) (photograph by paper authors).

Cart-ruts were first identified on the island of Malta as widespread man-made structures from the Bronze Age [4–8]. They were later studied in a generously funded research project by the European Union, which found cart-ruts throughout the Mediterranean Basin. However, no conclusions were ever reached regarding their age or function[9]. A sample of Malta cart-ruts is shown in Figure 7 [10].

Figure 7. Tal-Mensija archaeological site, San Gwann village (Malta). A detail of this Cart-ruts site. Location: 35.911° N, 14.478° E. https://www.ancient-origins.net/unexplained-phenomena/malta-cart-ruts-020312 (Photograph taken by AA-V).

The age of cart-ruts and function are debated, although we believe they may measure space and time [10]. Some cart-ruts in Malta may have been built 5000 years BC, but construction time is uncertain in other places [5,6,8–10]. Cart-ruts also exist in the Azores Islands, although these and the Canary Islands were not recorded in [9], but were in [10–13]. Regarding other types of anthropological data, migrations between North Africa and Iberia have been recorded since very early prehistory [14–16]. This is reflected in the genetic close relativeness of Iberians, North Africans and Canary Islanders [17–19]. Also, the presence of typical Atlantic spiral and other petroglyphs, a megalithic construction on the Canary Islands [1] and also cart-ruts at the top of some Lanzarote volcanoes and probably in Fuerteventura (Puerto Lajas) (Figure 8) [20] points out to a most ancient population of Canary Islands before Phoenicians or Roman contact [21].

Figure 8. Volcano top, Mt. Mina.Cart-ruts are also found, in Lanzarote Island (Canary Islands): 29°00′06.3″ N, 13°35′39.8″ W. Cart–ruts are also found at the top of other Lanzarote Is. Volcanos and most of them follow solstices and equinoxes sunrises [20]. This figure may represent another type of calendar than "cheeseboard," constructed with a cart-ruts structure.

2. Comparisons

The representations of the lanzarote megalithic rock calendar and Jerusalem megalithic rock calendar are very similar. Detected analogies of megalithic Lanzarote calendar representation are shown in Figures 9 and 10. In Figures 9 and 10, footnotes and references show a detailed description of how this Jerusalem calendar representation also shows an Egyptian-type calendar having a 365 days year. This is concordant with the studied Saharan culture, which included Palestinian/Canaan areas and the Canary Islands (see Jerusalem Egyptian calendar representation in Figures 11 and 12).

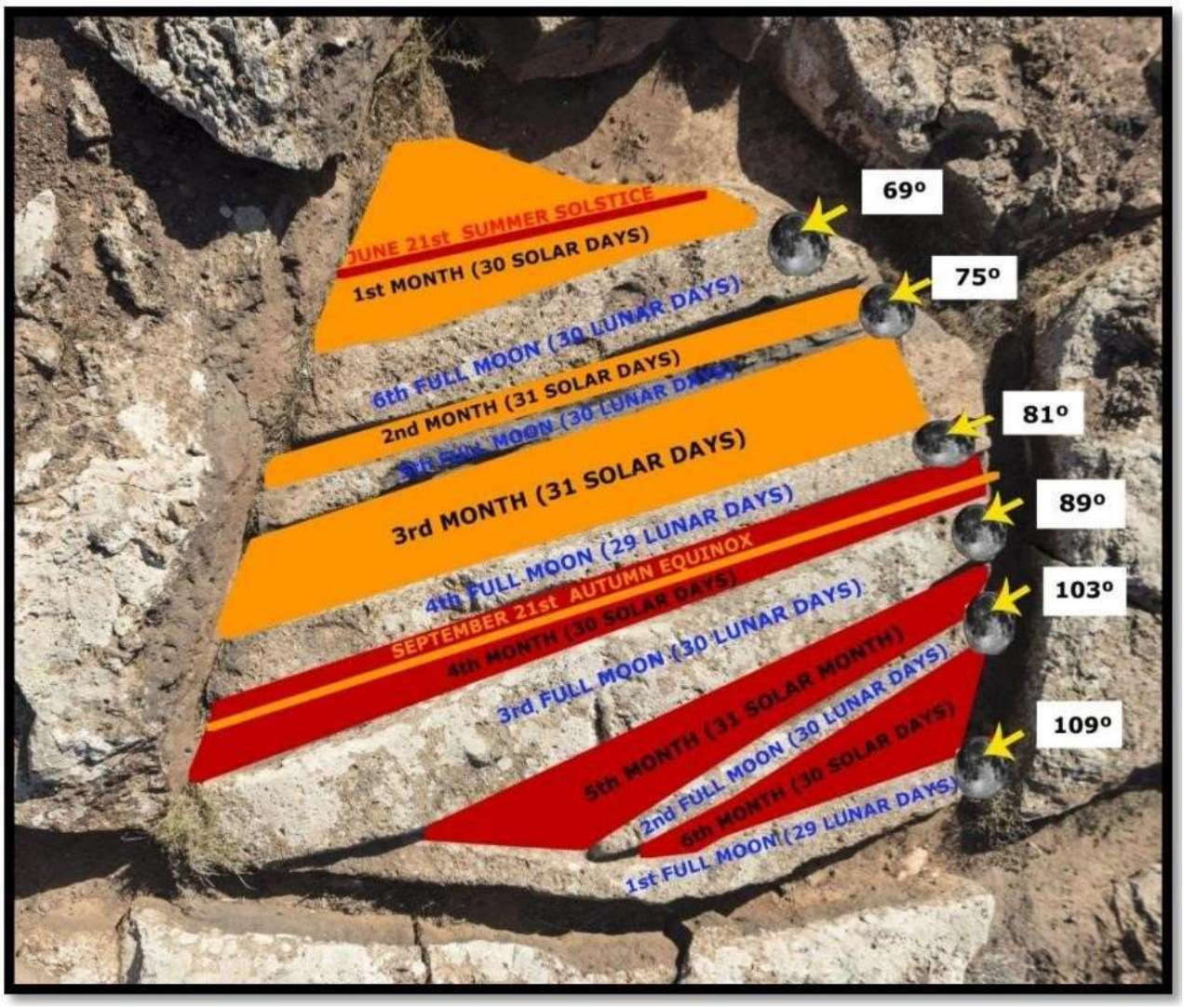

Figure 9. Lunisolar "Quesera"/Cheeseboard Prehistoric Canarian Calendar (first half year time). **Sun Calendar:** see Ref. [1]. The first six solar months of the Canarian Islanders' sun calendar begin on June 21st, the Summer Solstice, which marks the Guanche start of the solar year. The first 6 months are represented in carved channels;months representation follows from figure top to bottom up to 6th month. Sunrises and sunsets azimuths for solstices and equinoxes may be seen in Figure 6 of reference [1]. **Lunar Calendar:** It starts with its first prominent crest, the bottom rock crest. The subsequent lunar months (2nd–6th) are recorded in the following prominent crests upwards in figure. Starting the lunar month azimuth values are represented in white squares. See also Table 1, Appendix 1 of reference [2] for consulting the first lunar month day and values of moonrise azimuths [22–24].

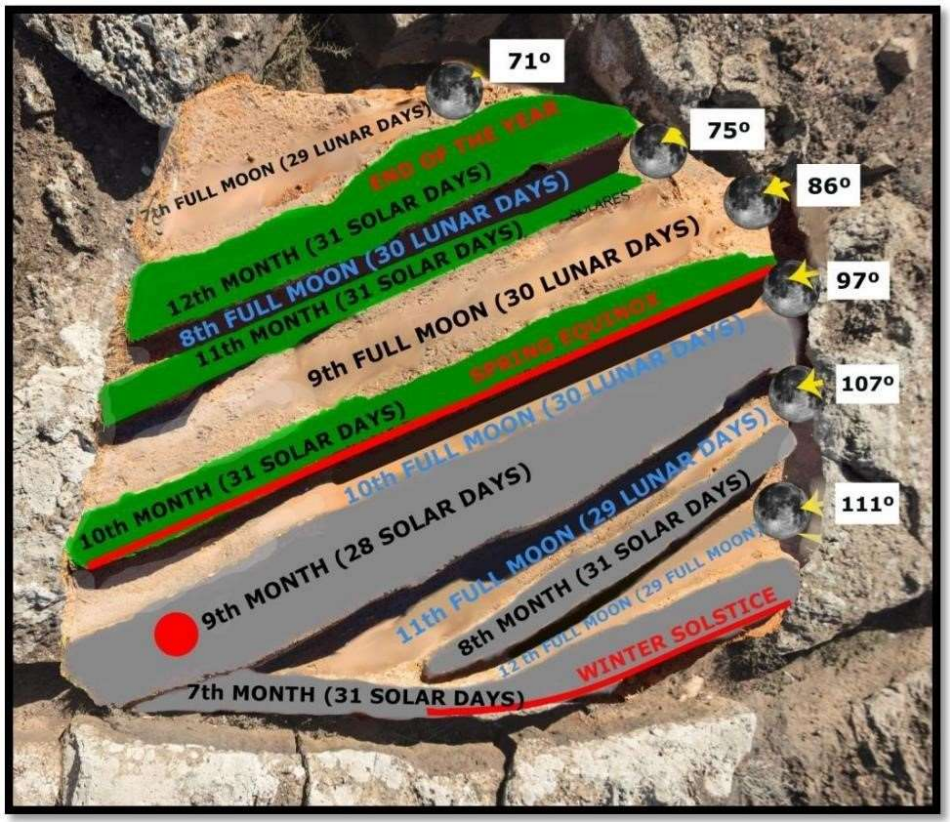

Figure 10. Lunisolar "Quesera"/Cheeseboard Prehistoric Canarian Calendar (second half-year time). **Sun Calendar:** was studied in [1].The second half of the year is represented in this figure. The 7th solar month is shown on the first bottom rock crest, with the following months depicted on the subsequent crests moving upwards. For azimuth values of Sunrises and Sunsets of Solstices and Equinoxes, see Figure 6 of reference [1]). 9th month had a prominence that may mean a leap year correction. **Lunar Calendar:** 7th lunar month is represented in 1st top rock channel strip at 71° moonrise azimuth on 7 January 2015; subsequent lunar months are represented in the channels towards the bottom.Azimuth values for the start of the lunar months are shown in white squares in this figure. See also Table 1 and Appendix 1 of reference [2] for consulting first lunar months day and values of moonrise and moonset detailed azimuths [22–24].

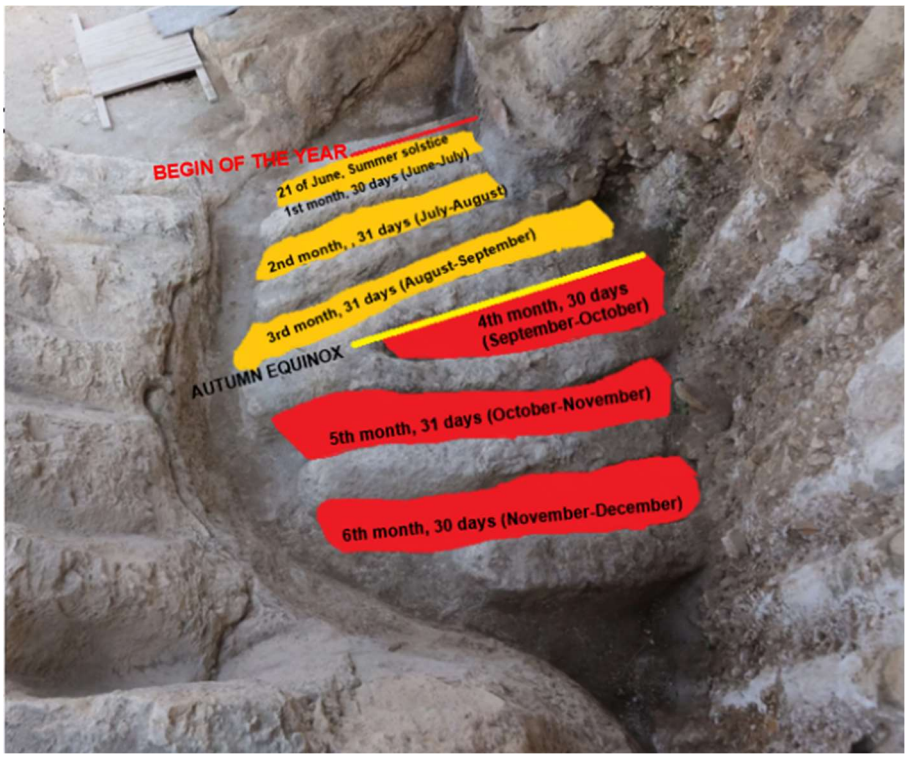

Figure 11. Solar megalithic calendar representation at Jerusalem. First solar month starts at the Summer solstice (upper left channel) and the following six solar months are represented in the following channels, exactly the same as in Lanzarote calendar.

In this Jerusalem calendar representation, there is a notable difference: the crests or channels for the equinoxes are forked into two branches. This clearly indicates two conceptually distinct sunrise points, marking important events. The Autumn Equinox is represented in this figure, while the Spring Equinox is shown in the following Figure 12. Orange color: summer months. Red color: Autumn months. We provisionally assign the same months lengths as in the Cheeseboard of Lanzarote, see Figure 9.

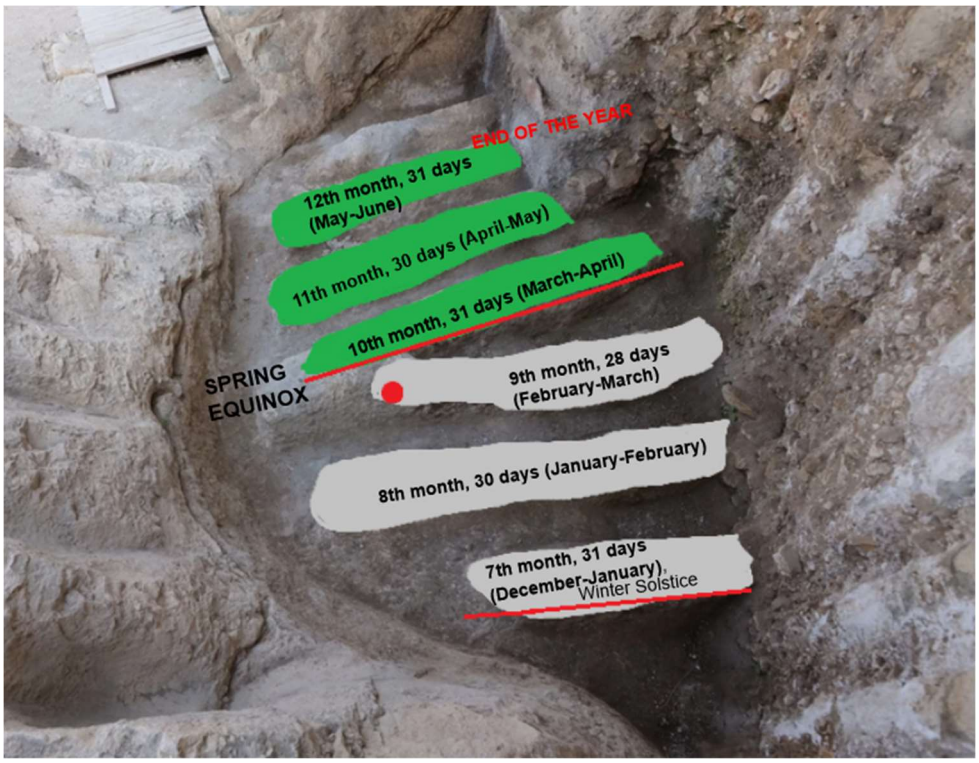

Figure 12. Solar megalithic calendar representation at Jerusalem. The seventh solar month starts at Winter solstice (downright crest) and the following six solar months are represented in the following channels, exactly the same as in the Lanzarote calendar. There is a difference in this Jerusalem calendar: the equinox line is forked into two branches, clearly indicating two important sunrise points—the Autumn Equinox, represented in this figure, and the Spring Equinox. Green color: Summer months. Grey color: Autumn months. We provisionally assign the same months lengths as in the Cheeseboard of Lanzarote, see Figure 10. It is striking that channels and crests represent the same months in both Jerusalem and the Lanzarote Canary Islands megalithic monuments.. Red dot is hypothesized for marking a leap year correction for the similarity to Lanzarote calendar (see Figure 10, 9th solar month; see also text " Solar year of ancient Canarians").

The most ancient solar calendars described are the Babylonian and Persian-Iranian approximately 2000 years BC, and they prefer it over a lunar one. Persians had a 360 days solar calendar with 12 months of 30 days, further divided according to lunar phases. One additional month was added every 6 years to synchronize seasons with the calendar. Even a more ancient calendar was used by Sumerians, which had 12 lunar months of 29–30 days (354 days with and an extra month which was periodically added for achieving Sun cycle connection) [25].

3. Ancient Egyptian Civil Calendars

It was a solar calendar that measured a year with 365 days, and it was divided into three different seasons (Flood, Growth, and Low Water); each month was divided into 30 days and segmented into decades (10 days). It was in use for approximately 2510 years BCE. This particular calendar exhibited a quarter of a day discrepancy compared to the contemporary solar year (Gregorian calendar). It is plausible that certain adjustments (which remain undocumented) may have been implemented periodically throughout its use. The civil calendar was associated with the heliacal rising of the star Sirius; however, its precision was not optimal, leading to the predominance of the solar calendar throughout Egypt's full splendor culture. The heliacal rising of Sirius occurred in Heliopolis between June and July over a time span extending from approximately 3500 years BCE until the 5th century of the Common Era. While this served as a civil solar calendar, it is noteworthy that an Egyptian lunar calendar was simultaneously used for religious purposes.This lunar calendar was more ancient than the solar calendar and started with the advent of a new moon phase [25,26].

4. Solar Year of Ancient Canarians

The "Guanches", the first prehistoric inhabitants of the Canary Islands, used a lunisolar calendar consisting of twelve months. Days were calculated based on the solar cycle, while months were likely determined by the lunar phases. Each week was composed of seven solar days. The annual cycle of ancient Canarians was named as "Achano" (Atxano) [22]. The start of the Guanche year was marked by the sunrise occurring at the Summer Solstice about June 21st [23]. Scholars including Gomez Escudero, Chil y Naranjo, Betancourt Afonso, Alvarez Delgado, and Anónimo de Cedeño further asserted that the Guanches or ancient Canarian calendar also started at the Summer Solstice. Consequently, the megalithic constructions known as "Quesera" or "Cheeseboard" are indicative of both lunar and solar calendaric systems in accordance with the ancient Guanche calendar [1,2,22,27]. The solar months exhibit a variability, between 30 to 31 days; however, one particular month is notably shorter, consisting of 28 days, which aligns with the second month of the contemporary Gregorian calendar (February). This month is the third following the Winter Solstice within the "Cheeseboard" calendar (as illustrated in Figures 9, 10 and 12). One of the strips had a conic salient (now destroyed) corresponding to this particular month [28], probably indicating that this month had to be periodically corrected by adding days. This correction resulted in a longer year that may have, for example, 366 days instead of 365, corresponding to a leap year.These adjustments show that ancient Canarians had high degree of advanced astronomical knowledge,even probably adding a leap year every 4 years (or other correction) according to the Quesera-Cheeseboard representation.

Atxano, like many other Canarian names, may be transcribed and translated from the ancient Basque language as *atx/ats* (stick, axis, hill) and *ano* (shadow). This translation is put forward from ancient Basque, considering its similarities to the ancient Iberian language [16], which is scripted throughout Canary Island rocks and first discovered in Fuerteventura and Lanzarote (Iberian-Guanche scripts). Thus, ancient Canarians could measure the time by an axis and its shadow (caused by the Sun) according to the postulated translation of "atxano" meaning. "Cheeseboard" type calendars were probably connected to these stick/shadow measurements in order to take another kind of additional ones relative to stars different thanthe Sun/Moon (i.e., Sirius). If the shadow on "Cheeseboard"pointedto the North,it would be minimal at Summer Solstice, middle-longitude at Equinox and largest at Winter Solstice.

This calendar basaltic construction found in Zonzamas is both a solar and a lunar calendar, probably used for religious and ritual purposes and also for sowing and harvesting (agricultural calendar). According to Anónimo Cedeño (1682) [22] and other authors,Canarian aborigines knew and used lunar calendar methodologies. People, including Basques, have used this type of lunar calendars since Paleolithic times[29]. Moon phases were also recorded in ZonzamasCheeseboard calendar (Figures 9 and 10).

5. Rock Scripts: Iberian-Guanche Inscriptions and Megalithic Lineal Scripts

Iberian rock scripts have been described to be spread over Lanzarote and Fuerteventura Islandrocks mainly, but also in all other Canary Islands (see [14,15,30]). They seem to be more ancient than other rock lineal (incise or piqueted) writings of Berber origin because sometimes they are found to overlap with the Iberian ones. Still, the latter is always under Berber inscriptions. Other features of Canary Islanders' culture, such as mummifications, pyramids and genetic data,take back the existence of Guanches and the population ofthe Canary Islands to thousands of years ago [17]. Existence of megalithic carved rock channels (similar to the so called "cart-ruts") in Lanzarote Island also gives us clues about ancient Canarians as being a part of Atlantic/Mediterranean Bronze Age Megalithic culture [11]. This is also supportedby other archaeologicaltraits and ancient ceramic studies in Lanzarote [21,31]. The Lanzarote "Quesera" calendar isan Atlantic/Mediterranean Megalithic artifact and built long before Phoenician and Roman culture reached the Canary Islands. Also, the recent finding of a scripted bronze hand (Irulegi Hand) in Pamplona (North Spain)with Iberian characters and a direct translation to Basque has made the Basque-Iberism return after 70 years of dismissal. The Basque language is considered the ancient language of Iberia, South France and some Mediterranean areas. Numeration system identity,similitudes between Basques and Iberians and the discovery of the Hand of Irulegi [32] have established again the Basque-Iberismcorrespondence; it was already established worldwide in the 19th century by Wilhem von Humboldt [14,15].

The origin of Iberian-Guanche writing is uncertain (also firstly classified as Latin or pre-Punic by other authors [33,34]); both African/ Iberian languages are postulated to have given rise to Iberian-Guanche, although Iberian-Guanche primitive characters could also be the origin of Iberian Tartessian scripts extant in the Iberian Peninsula [20,35–38]. Regarding the Basque-Guanche (first Canary Islanders) languages relationships, theyare accredited by the first Canary Islands Normand Conqueror, Jean de Bethancourt (Le Canarien,15th century AD), and Federico Krutwig (20th century), contained with additional information and analysis in references [14,15,32,37,38].

6. Genetics

North Africa and Iberia population stocks show a close genetic relationship [14,16–18,39]; Mediterranean, North African and Iberian populations are closely related according to HLA genes [19]. In fact, some authors may have confused Celts with Iberians [17,18]. Guanches have been placed near both Atlantic and North African (Berbers)-Mediterraneans according to genetics [17] and also on cultural archaeological traits bases [40]. Thus, it is useless to genetically try to distinguish North Africans, Iberians and Canarians since they all belong to the same genetic pool.

7. Jerusalem

Two types of carved channels/crests have been found in the City of David archaeological site (Figures 11 and 12):

(1) "Quesera" type (Figures 3 and 4): it may be an Egyptian-like lunisolar calendar (about 365 solar days and 27.5 lunar days lunar cycle) like the one found in Lanzarote (Figures 9 and 10).
(2) Cart-ruts type (Figure 7): this excavation representation cannot completely rule out that it is a cut "Quesera"/Cheeseboard type that has been damaged. It would have to be studied by a "in situ" careful research.

This is the first time that a "Quesera"-type and cart-ruts-type buildings have been described in the Middle East: however, they also could exist in Egypt close to Red Sea [9]. Cart-ruts are found in Malta, Italy, Spain, and other countries along the Mediterranean Basin, including Turkey and Azerbaijan. Similarly, in Egypt, near the Red Sea, it was found and may have been used to transport rock blocks for monument construction over a distance of 120 km, possibly utilizing the Nile River as well.Cart-ruts have also been documented in Tunisia, Dougga City, and the ancient Libyan Cyrene.

Cart-ruts are also found in the Azores and Canary Islands for the study where they exist [11–13]. The City of David archaeological site history may be enriched by Jewish author Flavius Josephus, who says about "the high-quality construction work that was achieved by the combined effort of Tyrians, Sidonians, Giblites and Israelites in the building of Solomon Temple" ([9] p. 91 final paragraphs). Bonnici deduces that the procedure of cutting and dressing blocks of stone in a rectangular waystarted to be used in the Malta archipelago introduced by Phoenicians ([9] p. 91).

Chronology

The study of the monuments located in the City of David, as illustrated in Figures 3 and 4, is based on two distinct chronological assessments: (1) Archaeologists from the Israel Antiquity Authority have determined that the structures were no longer in use approximately 2800 years ago; contemporary scholarship may suggest an even earlier construction date; (2) Analogous structures in Malta, specifically the cart-ruts, have been indirectly dated through the analysis of artwork depicting ceramics from the 5th to 4th millennium BC, which corresponds to a considerably earlier period coinciding with the construction of certain megalithic temples in Malta [10,20,35]. Despite the potential for cart-ruts to have been created over a prolonged temporal spectrum, the "Quesera"/Cheeseboard type structure depicted in Figures 3 and 4 appears to be particularly unique, as it has thus far been exclusively identified in Jerusalem and Lanzarote Is within the Canary Islands Archipelago.

8. Astronomical Observation

It is evident that the Zonzamas "Cheeseboard" megalithic calendar constitutes a representation of an Egyptian-style lunisolar calendar, situated at a sufficiently elevated position in a privileged orientation towards the East, thereby facilitating the observation of the annual phenomena of sunrise, moonrise, and the ascension of celestial entities, such as the Sirius star, throughout the entire year (Figure 6). Should axes, rods, and cords (and/or unidentified tools) have been positioned at this Zonzamas "Quesera"/Cheeseboard location, it would have enabled the casting of shadows for solar temporal observations and various astrological measurements, thereby contributing to the quotidian survival and/or ritualistic/religious practices (Figures 9 and 10). The lunar ascension could have been discerned either directly or potentially reflected upon the water-filled channels of the "Quesera"/Cheeseboard. At the same time, the City of David structures depicted in Figures 3 and 4, and possibly Figure 5 (assuming the rock constructions are not cart–ruts but rather a type of "Quesera"/Cheeseboard calendar) may have been used in prehistoric contexts for calendric and astronomical activities.

Thus, we postulate that cart-ruts may also be useful artifacts for measuring time and space and other astronomical observations. *Using only a stick or axis with ropes or strings, the measurement of time and space becomes easily possible* [10,20,35]. Finally,the finding of Quesera-Cheeseboard megalithic calendar representations only in Jerusalem

and Lanzarote Island could be due to a common ancient "green" Sahara culture, which had a dense population. Later, a widespread people migration occurred after desertification started in 10,000 BC (Figure 13). Lanzarote and Jerusalem are located at the westernmost and easternmost parts of the Sahara, respectively [14,37,39,41].

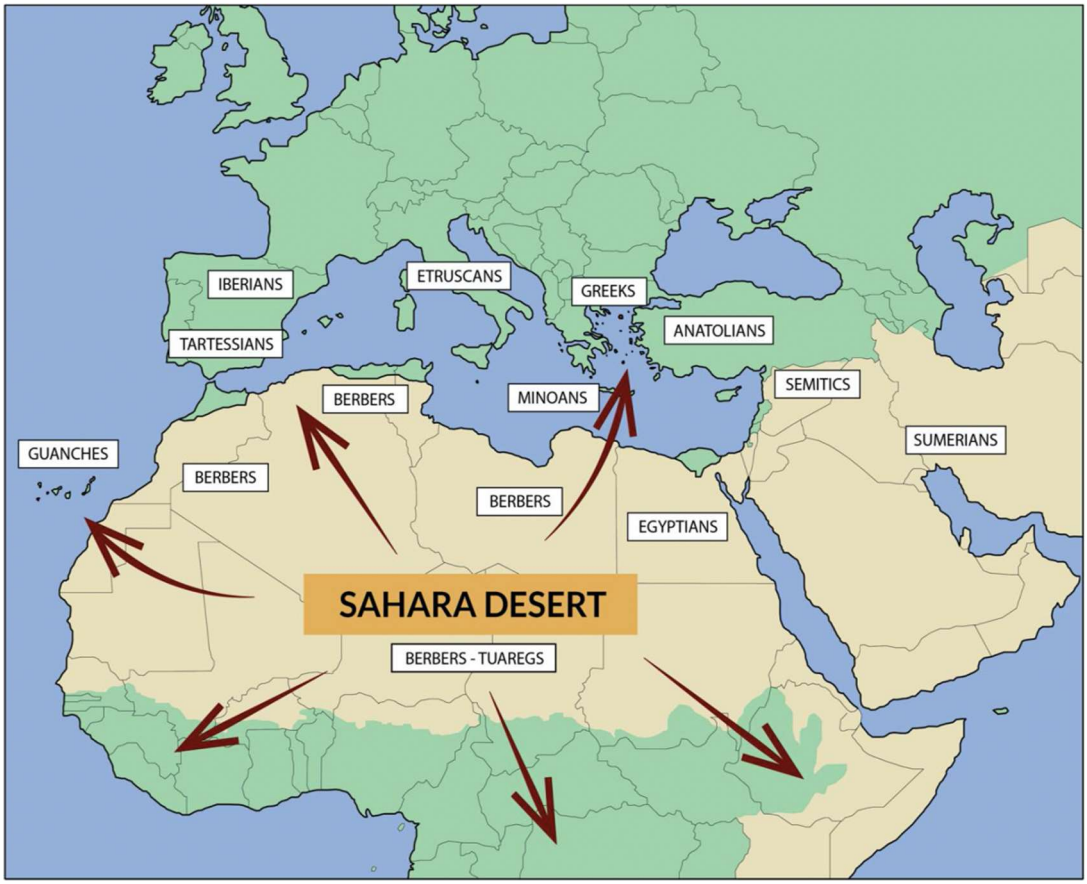

Figure 13. A postulated Saharan migration after desertification started 10,000 years BC. A common cultural bases are found in all classic cultures (squares), which was due to these climate migrants and are possibly responsible for both twin megalithic calendar representations at Lanzarote, Canary Island, Spain (westernmost Sahara) andJerusalem City of David (easternmost Sahara) [2,15,16,39].

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Author Contributions

Conceptualization, A.A.-V. and M.M.; Writing, Review & Editing, F.S.-T.; Writing and Figures, T.L. and F.S.-T.; Revision and References V.-R.d.-V., C.V.-Y. and I.J.; Supervision, A.A.-V.; Project Administration, A.A.-V.; Funding Acquisition, A.A.-V.

Ethics Statement

Not applicable.

Informed Consent Statement

Not applicable.

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Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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