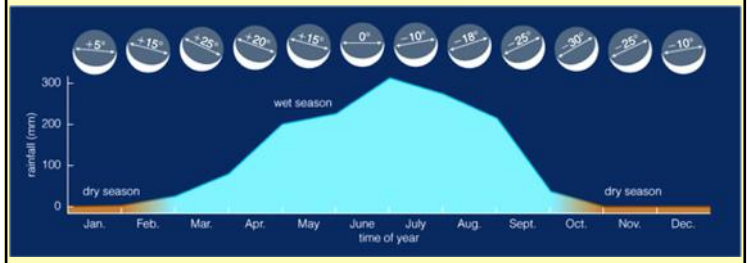
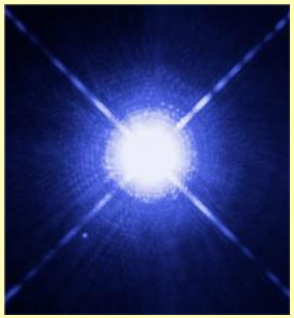
Early Astronomy

African Peoples

• *bone carvings* (6500+ BCE) record the use of the *orientation of the setting Moon* to predict *weather*



• must be ***careful*** in assessing other cultures
(eg) *Dogon tribe of Mali (west Africa) & star Sirius*



• info from ***aliens*** or ***cultural contamination***?

India

(*4000+ BCE*)

• believed that *Earth rotated*

• calculated the *solar year* as *365.3 days*

• assumed a *partially curved Earth*

• had *zero*, *decimal system*

• ***Aryabhatta's*** work on eclipses, moonlight & heliocentricity predated ***Galileo*** by ***1000 years***

Britain

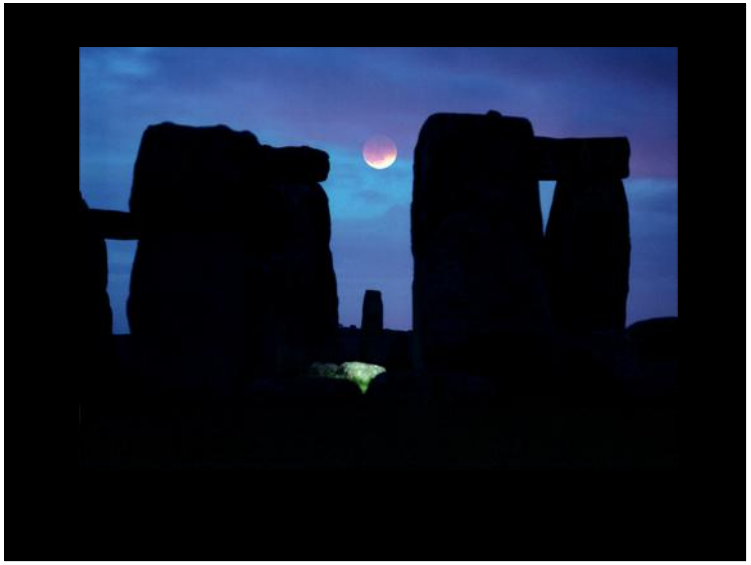
(2750 BCE)

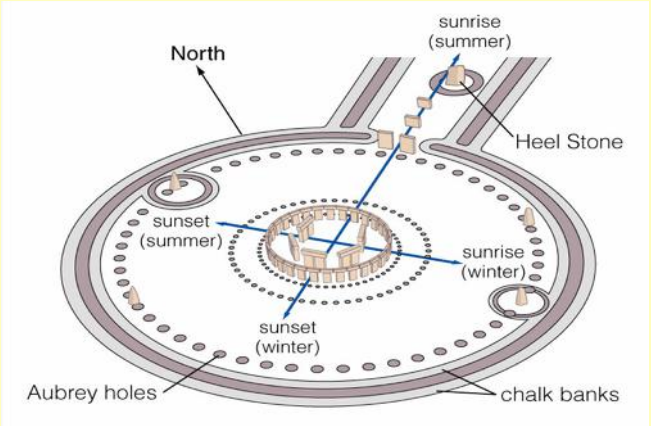
- *Stonehenge* (~1600 BCE)
- constructed over *a millenia*

- aligned with Sun at ***equinoxes*** *&* ***solstices***, so *likely* an ***ancient calendar***

Q: *What* ***was*** *its full purpose? Have to be careful…*

- ***eclipse*** prediction? burial site? ceremonial center?





- "***Sarsen***" stones - up to 25' high & 30 tons
- ***heelstone*** to SW, aligns with rise of solstice Sun

CLICKER: What aspect of Stonehenge do you think leads some people to claim alien assistance in its construction?

(a) the precision of its alignment(s)
(b) the size and mass of the stones used
(c) the distance over which the stones were moved
(d) other

Babylonians
(*2800-600 BCE*)

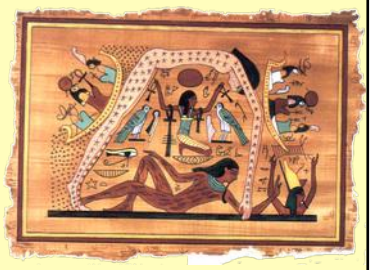
- several ancient kingdoms in ***Mesopotamia***
- developed *calendars* from the *motions* of *Moon* & *Sun*
- had *cuneiform* writing (*planting/harvesting*)
- *angular measure* & positional *number system*
- *"base 60"* led to ***60 s minute***, ***60 min hour***

- recorded ***eclipses*** back to 750 BCE
- noted '***wandering objects***' in sky (planets!)
- source for *oldest constellation names*

(eg) *Taurus, Leo, Scorpius*

(eg) *Ziggurat of Ur:* mountain of the gods

Egyptians
(*3000-300 BCE*)



(eg) sky goddess ***Nut*** arched over the earth god ***Geb***; ***Ra*** sailed skies daily in his boat

- predicted *flooding of the Nile* for irrigation based on the rising of the star ***Sirius***
- developed *water clocks* and the *24-hour day*

- The Sphinx and the Pyramids at Giza
- each pyramid took *decades* to build



- *pyramids (~2500 BCE) may* have been *oriented* astronomically with ***Osiris*** (present-day ***Orion***) & their "pole star" (***then*** the star ***Thuban*** in ***Draco***)

- Great Library of Alexandria, *then & now (2003)*
- founded by ***Alexander the Great***, 332 BCE
- center of learning for 700 years; 1/2 million books

Chinese
(*2500+ BCE*)

- *observations* & *star charts* back to 2500 BCE
- *longest* unbroken record of astronomical events
- *observatories* date back to 2000 BCE
- *lunar calendar* of 29.5 days ("*Chinese calendar*")
- *solar calendar* of 365.23 days by *~100 BCE*

• Armillary & Celestial Spheres, Henan Museum

• *astronomers/astrologers* served the Emperor
• *eclipses, comets* seen as *omens*

• *Book of Silk (400 BCE)*, a ribbon 5 feet long with 29 types of comets and their predicted catastrophes

• *universe* was *orderly*; not a sky filled with gods
• however, their *culture* was still not "***scientific***"

Polynesians (*100+ BCE*)

• ***Polynesians*** navigated vast areas in the Pacific (***Tahiti***, ***Hawaii***, ***New Zealand***)

• used *stars for navigation* (often out of sight of land)

• taught *prevailing winds, currents* through *poetry*

Islamic Peoples (*800 CE*)

• many star names are *Arabic* words, after the fall of the ***Roman Empire*** (~400 CE) & the ***Dark Ages***
(eg) *Aldebaran, Betelgeuse, Deneb, Zubenelgenubi*

• adopted from *Greek/Roman* lore & writings

• many of the names *mis-translated* over time

(eg) star ***Yad Aljauza*** ("*hand of the central one*") is currently called ***Betelgeuse*** ("*armpit of the hunter*")

Mayans (~250+ CE)

- an advanced culture in Mesoamerica
- Mayan culture has existed for ~***3000 years***!

- developed concept of ***zero*** and a ***decimal system***, but ***metal tools*** & ***wheel*** uncommon

- elaborate ***observatories***

- *accurate* solar year
- predicted ***potential*** *solar & lunar eclipses* ***very*** accurately

- several intricate *calendars*: ***Tzolkin***, ***Haab***, ***Long Count***, etc.

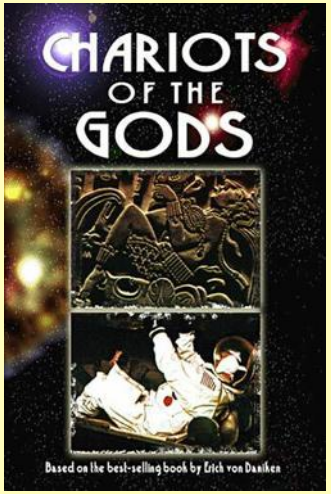
- based on astronomical cycles
(eg) *Tzolkin: Sun's zenial passage or perhaps Venus' period?*

- ***long-count calendar*** completed its 13th cycle on ***Dec 21, 2012***
(eg) 12.19.19.17.19 ⇒ 13.0.0.0.0
LC has 394 year periodicity!

- **Chichén Itzá:** El Castillo or "The Castle"

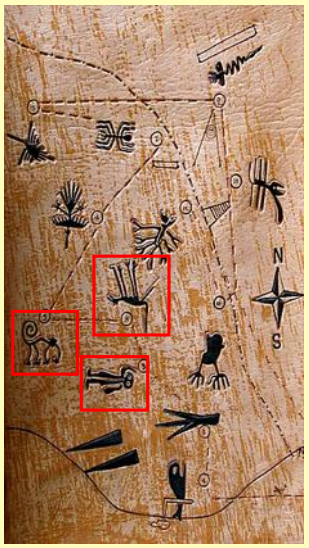
- *complex* Mayan culture frequently misrepresented ***(eg)*** 2012 LCC "prophecy"

- sarcophagus lid of ***Pakal the Great*** (Mayan god-king of ***Palenque***), which (***supposedly***) depicts him *in an astronaut suit & space capsule*
(eg) *Chariots of the Gods*



Nazca (*800 CE*)

- drew enormous *geoglyphs* in the ***Peruvian desert***
- 100's of feet across; served as … *calendar* (?)



- from the ground – can't see patterns well
- but easily visible *from the air* - ***why***?

Q: *is it* ***an alien astronaut, or…?***

- *petroglyphs near Harewood Mines Rd, Nanaimo*