



# Hāpaiali‘i

## Tracking Time

Noi’ī ‘ia e Kalei Nuuhiwa

Kamehameha Schools – Keauhou Kahalu‘u Educational Group

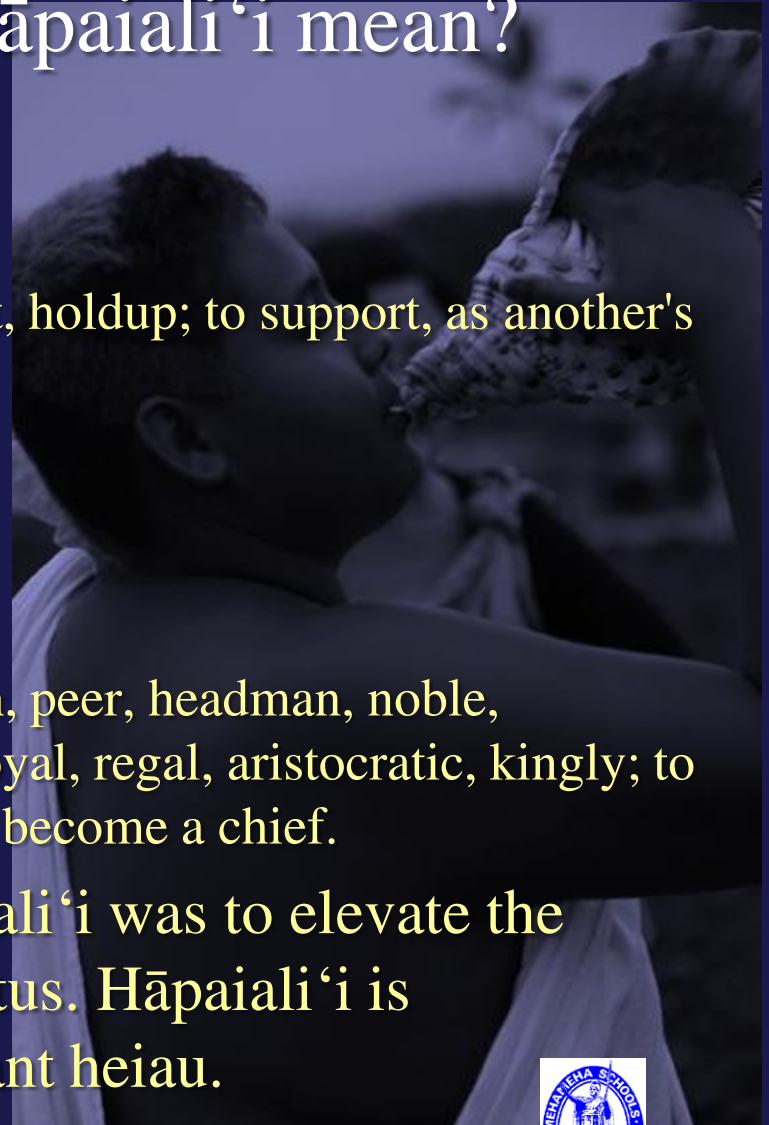
Kahalu‘u Mānowai



# What does the name Hāpaiali‘i mean?

- Hāpai
  - To carry, bear, lift, elevate, raise, hoist, holdup; to support, as another's testimony.
  - Pregnant; to conceive.
  - To encourage, support.
- Ali‘i
  - Chief, chiefess, officer, ruler, monarch, peer, headman, noble, aristocrat, king, queen, commander; royal, regal, aristocratic, kingly; to rule or act as a chief, govern, reign; to become a chief.

Perhaps one of the functions of Hāpaiali‘i was to elevate the Kona chiefly lines into a higher status. Hāpaiali‘i is surrounded by many other significant heiau.



# History of Hāpaiali‘i

- Was said to have been built by chief Kalaninui‘īamamao (Lonoikamakahiki), the son of Keaweikekahiali‘iokamoku and Lonoma‘aikanaka.
- Was rebuilt and rededicated during the time of Kalaunuiohua and the kahunanui wahine Wa‘ahia.
- Both Līloa & ‘Umi utilize Kahalu‘u as a home base.
- Was rebuilt again by the kahuna kuhikuhipu‘uone Ma‘a who was from Maui. He was “commissioned” by Lonoikamakahiki (2<sup>nd</sup>).
- Utilized as a home by Kamehameha during the Makahiki ceremonies.
- Utilized by the kahuna Lāna‘i during the time of Kamehameha in the 1800s.
- Kalākaua visits Kahalu‘u in the 1880s
- Was mapped in 1906 by the anthropologist J.F.K. Stokes.
- Grandson of Lāna‘i, Naluahine Ka‘opua lived in the vicinity.
- Remapped in 1953 by Henry Kekahuna, \_\_\_\_\_ & Mitchell Fujisaka
- Reconstructed, restored & rededicated in 2003- 2005





# What is a heiau?

- Pre-Christian place of worship, shrine; some heiau were elaborately constructed stone platforms, others simple earth terraces. Many are preserved today.
- Let's take a closer look at the word heiau and its function.
- Hei
  - Net, snare, stratagem, ruse; to ensnare, entangle, catch in a net; to festoon with leis.
  - String figure, cat's cradle; to make such.
  - Adept, deft; to absorb, as knowledge or skill. Ka ʻī ikeā ka makua, he hei na ke keiki, the knowledge of the parent is absorbed by the child.
  - Var. of hai, to sacrifice. Cf. *hai*au, *heiau*. Hei kapu, sacred place.
  - Water oozing from a cliff and trickling down.
- Au
  - Period of time, age, era, epoch, cycle, the passing of time.
  - Current; to flow, as a current. Au kanai ʻī, a strong current; *fig.*, a strong warrior.
  - Movement, eddy, tide, motion; to move, drift, float, walk, hurry, stir; succession or train, as of thought, trend.
  - Weather.
  - To set, as a net or fish trap.



What kind of heiau is Hāpaiali‘i?





To understand the function of Hāpaiali‘i, an introduction into how Hawaiians keep track of time is important.



A calendar is a tool that helps us keep track of time.

Our calendar:

- Follows the sun
- 7 days in a week
- 4.5 weeks in a month
- 365.25 days in a year
- 12 months in a year



-Metonic Year:

Leap Year or Makahiki Lele 'Oi has an extra day added to the year. Leap year happens once every four years.



# Hawaiian Time



Hawaiian time utilizes the cycle of the stars, the moon & the sun.

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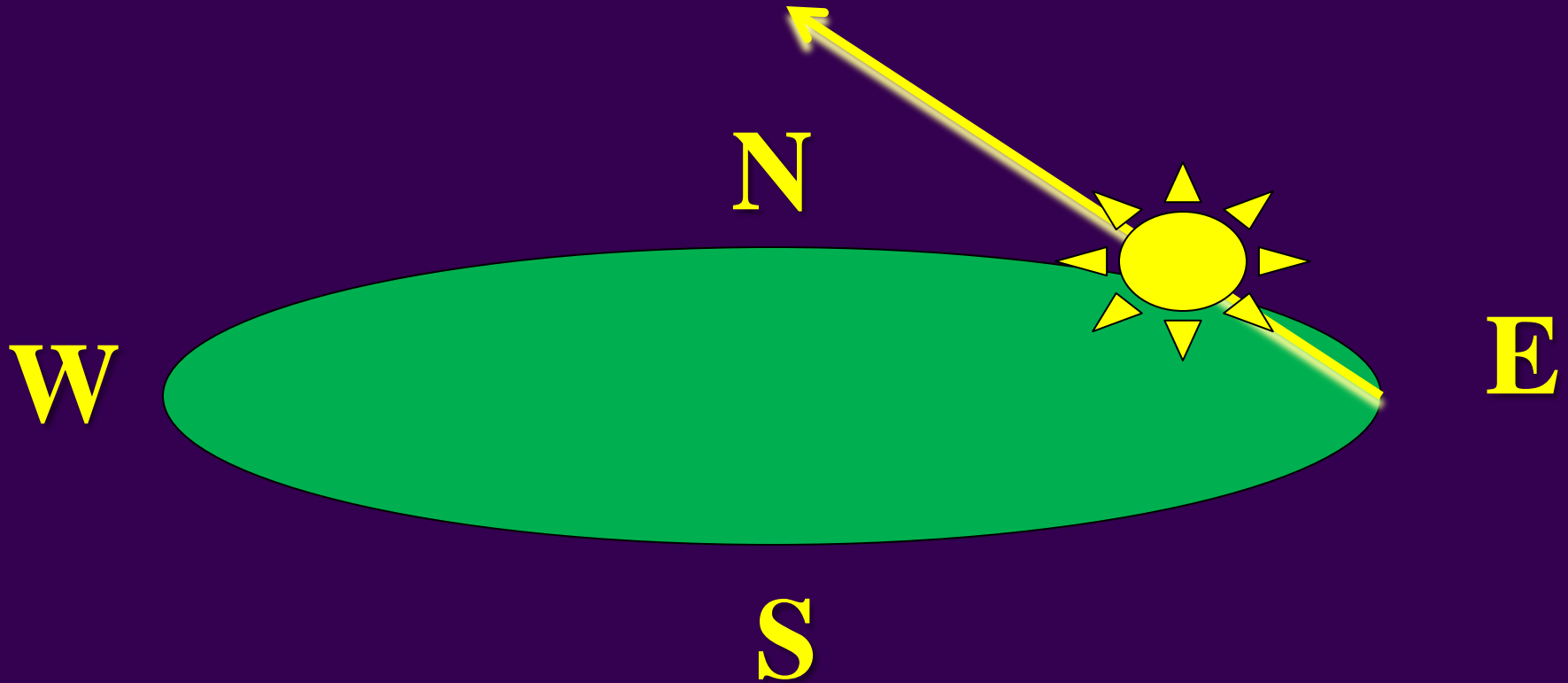


# La – Sun Cycle

Hawaiians track the movement of the sun. One important movement tracked is the daily rising and setting. The sun determined what the diurnal time was each day. The other movement tracked is the sun's horizontal trek. This movement determines the seasonal times in Hawai'i.



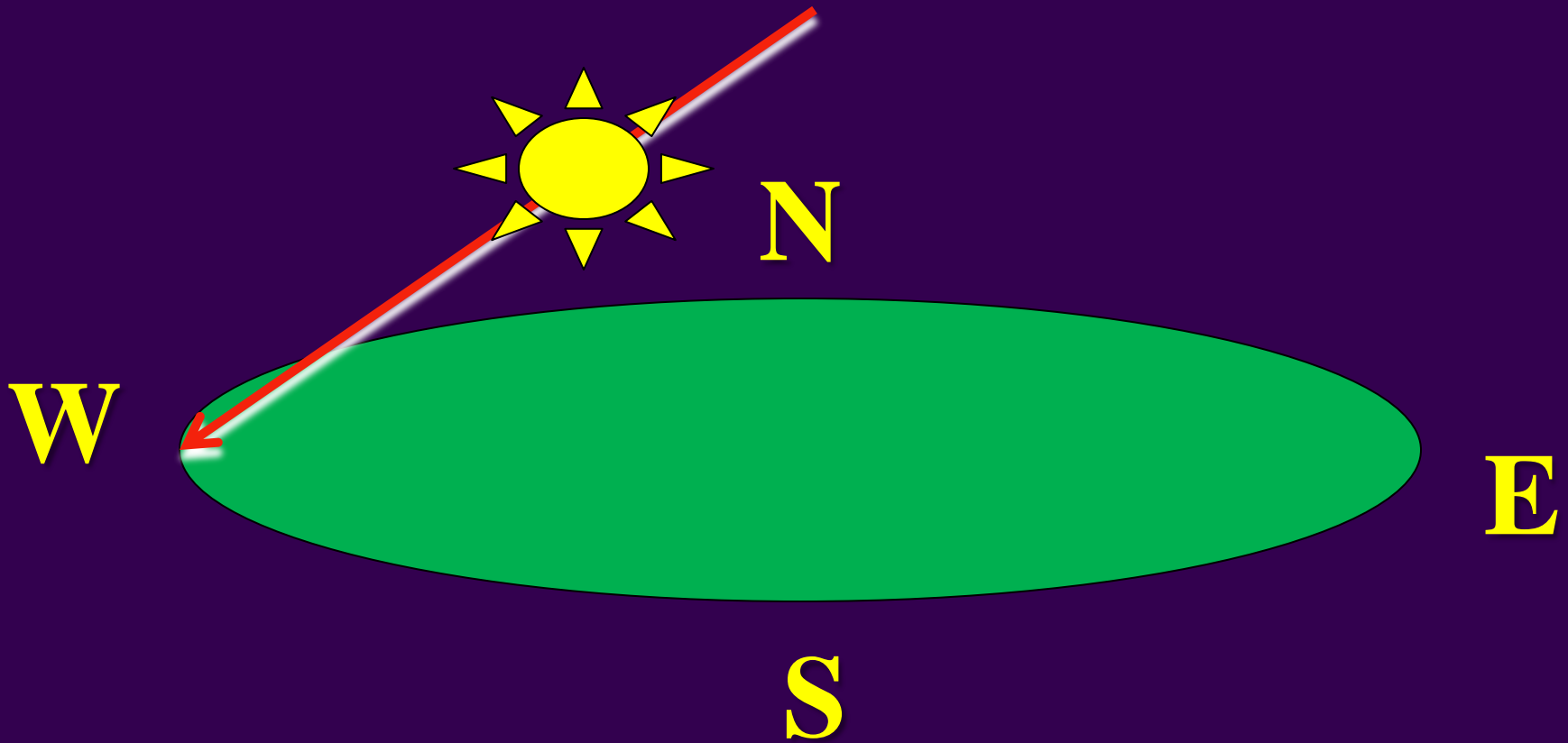
# Measures the daily movement



The sun rises in the east every morning. Hawaiians keep track of the sun as it ascends into the sky reaching its daily zenith.



# Descension



The sun sets in the west every evening. Hawaiians continue keeping track of the sun as it descends towards the horizon. Each day is counted based on the rising and setting of the sun and also on its location in the sky throughout the day.





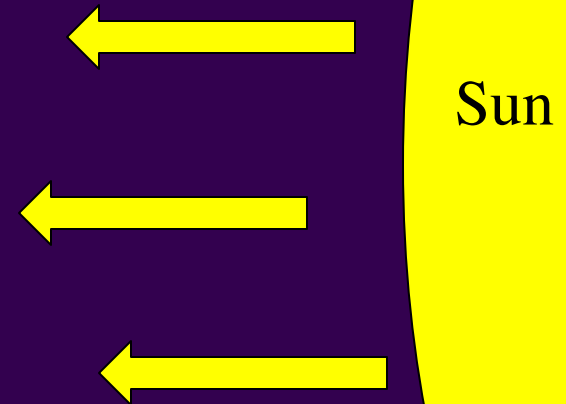
# Annual Movement of the Sun



The other important solar movement that Hawaiians tracked was the sun's location on the eastern and western horizon.



The sun appears to move back and forth across the horizon as a result of the earth's orbit around the sun. While the earth is orbiting the sun, the earth tilts back and forth throughout the year.



*\*Not to scale*



This illustration shows the furthest forward the earth will tilt towards the sun.



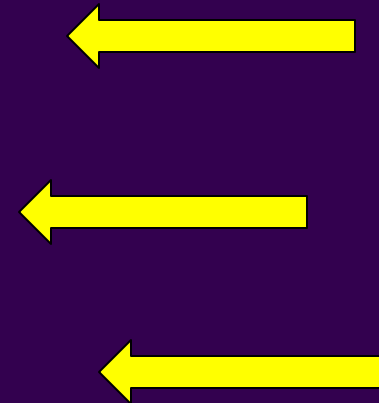
Sun

*\*Not to scale*





This illustration shows the furthest back the sun will tilt away from the sun.

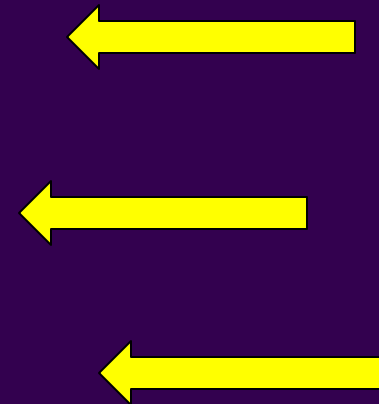


Sun

*\*Not to scale*



# Animation of tilting

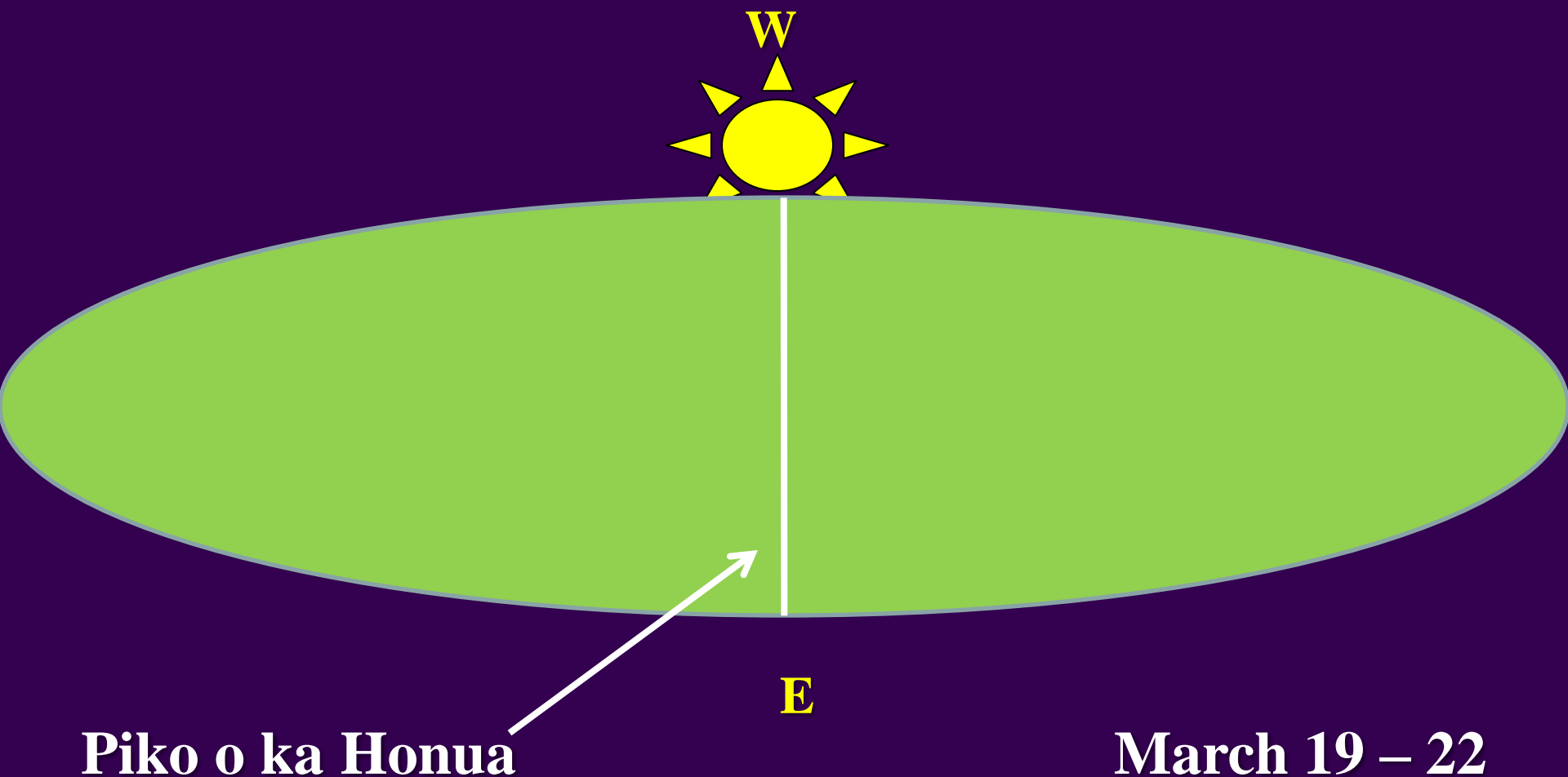


Sun

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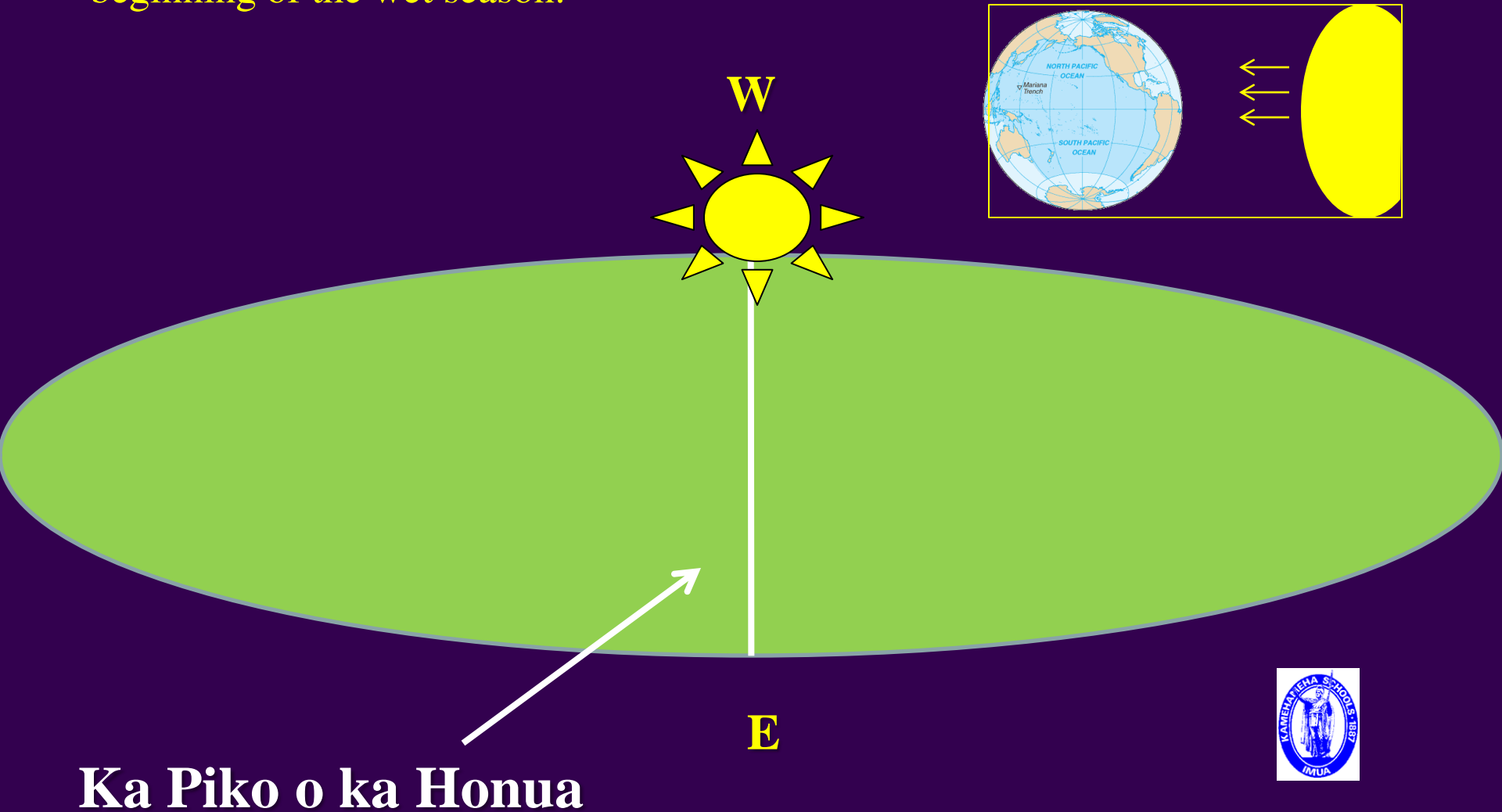


This slide illustrates what we see on the horizon as the earth is tilting back and forth. The white line in the center represents the Piko o ka Honua, the equator. The Piko o ka Honua divides the earth in half. The top portion is the northern hemisphere . The bottom portion is the southern hemisphere .

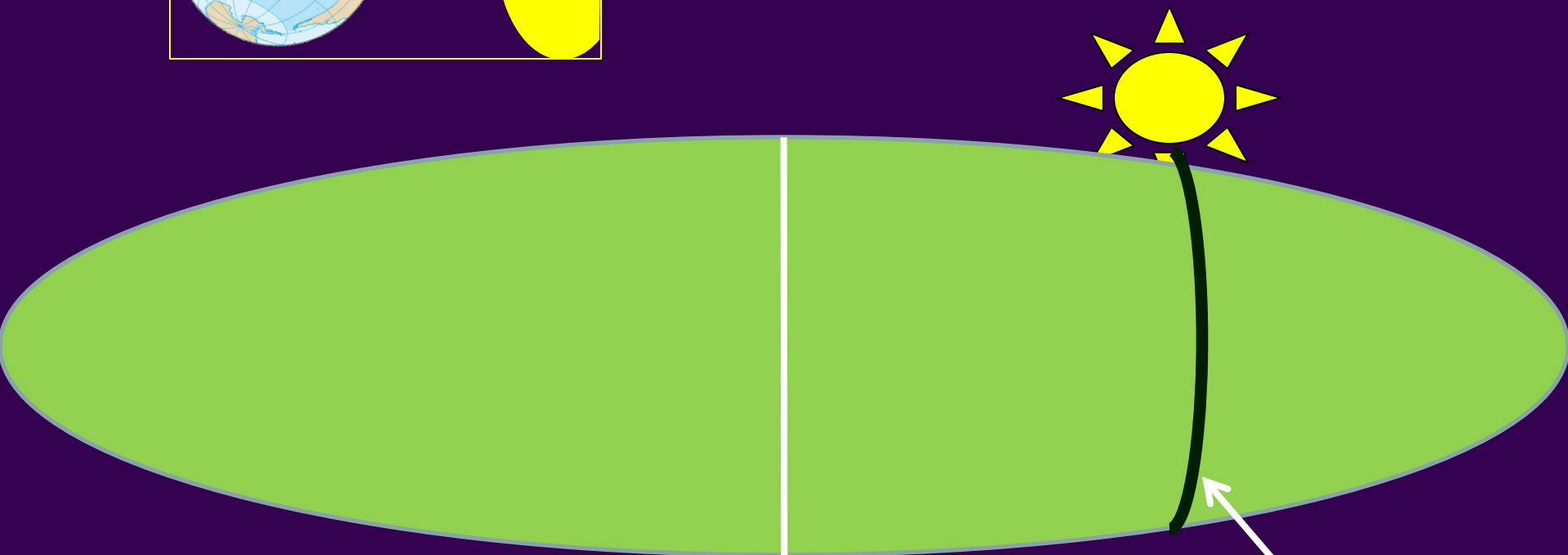
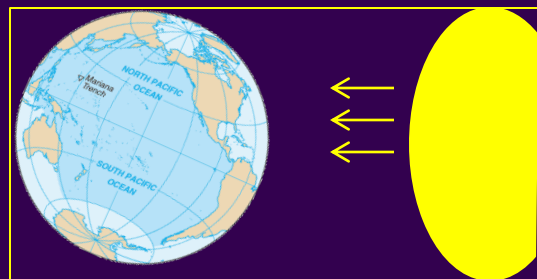




When the sun appears over the Piko o ka Honua, both the night and day are equal. This occurs twice a year. Once in March from the 19<sup>th</sup> -22<sup>nd</sup> which marks the end of the wet season and the beginning of the dry season. Once in September from the 19<sup>th</sup> – 22<sup>nd</sup> which marks the end of the dry season and the beginning of the wet season.



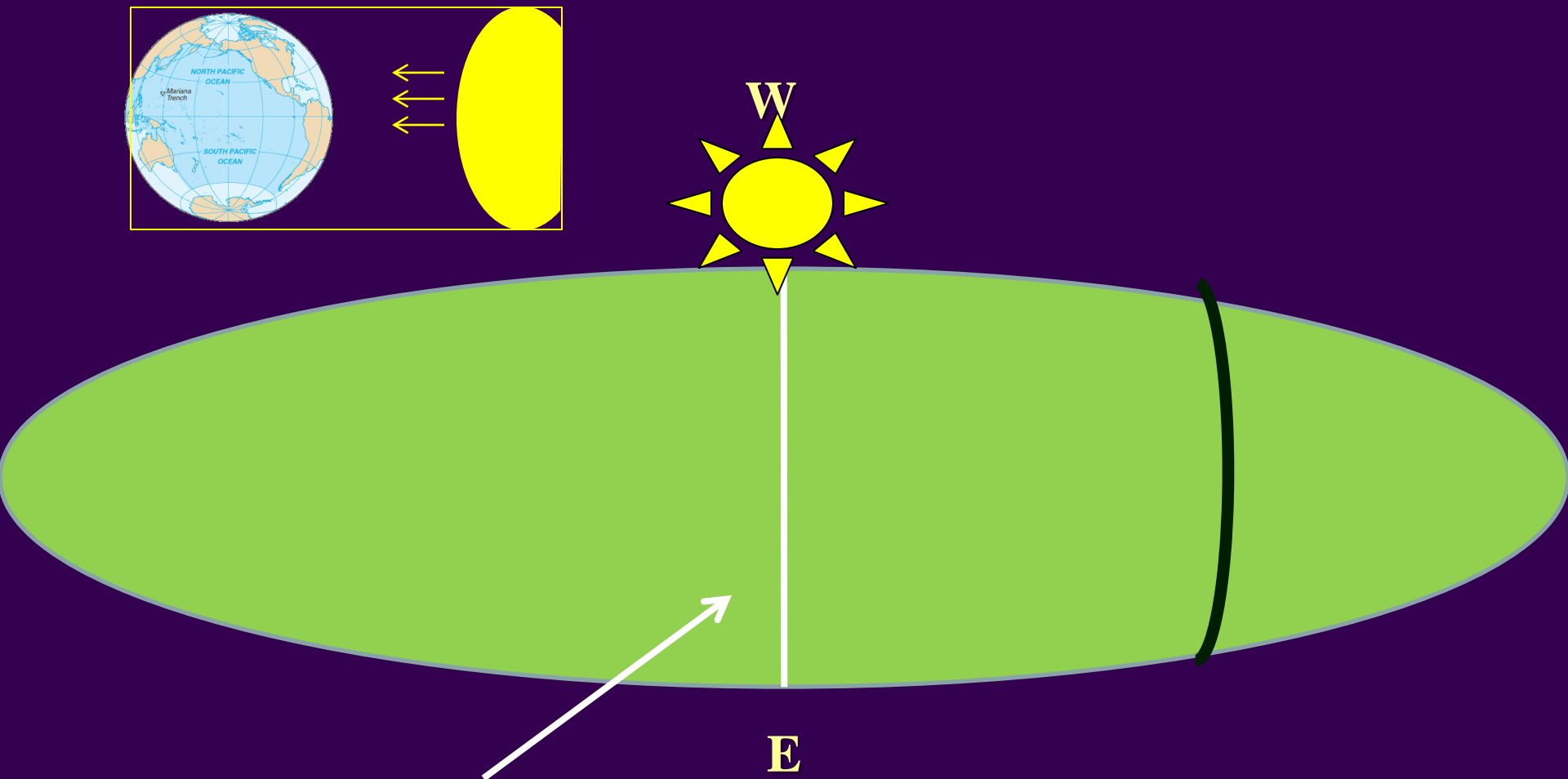
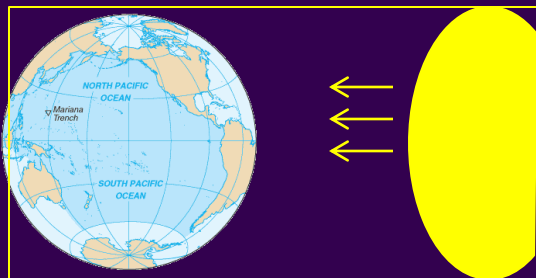
From the Piko o ka Honua the sun travels north. It takes the sun approximately four days to move one degree. Therefore, the sun doesn't reach its northern boundary until June 19<sup>th</sup> – 22<sup>nd</sup>. While the sun is in the northern hemisphere, the days are long and the nights are short. The northern boundary is called the *Ala Polohiwa a Kāne*.



**June 19 - 22**

**Ala Polohiwa a Kāne**

It takes the sun another 3 months to return back to the Piko o ka Honua.  
September from the 19<sup>th</sup> – 22<sup>nd</sup> which marks the end of the dry season and the beginning of the wet season.



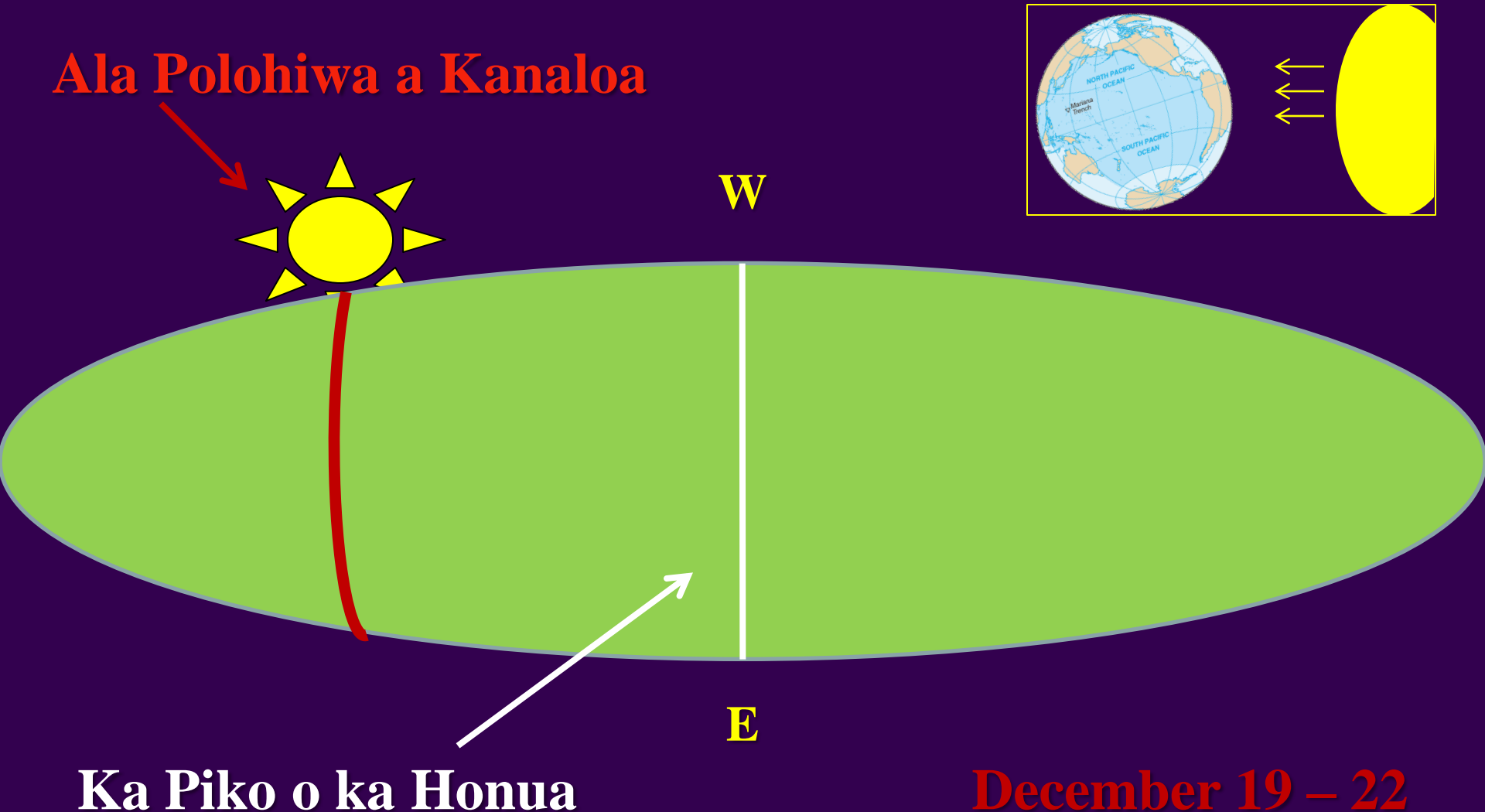
**Ka Piko o ka Honua**

**September 19 – 22**



From the Piko o ka Honua the sun travels south. It takes the sun approximately 3 months to reach its southern boundary arriving between December 19<sup>th</sup> – 22<sup>nd</sup>. While the sun is in the southern hemisphere, the days are short and the nights are long. The southern boundary is called the **Ala Polohiwa a Kanaloa**.

**Ala Polohiwa a Kanaloa**

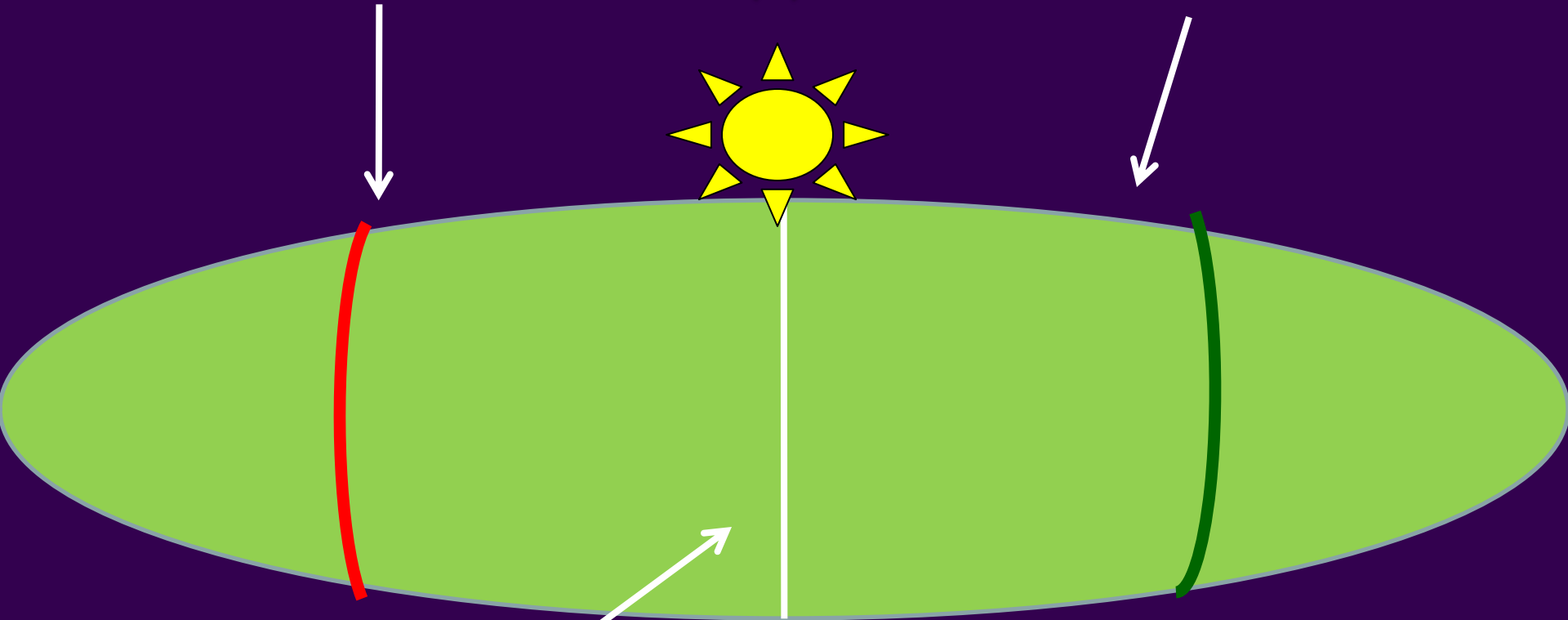


**Ka Piko o ka Honua**

**December 19 – 22**

Ala Polohiwa a Kanaloa **W**

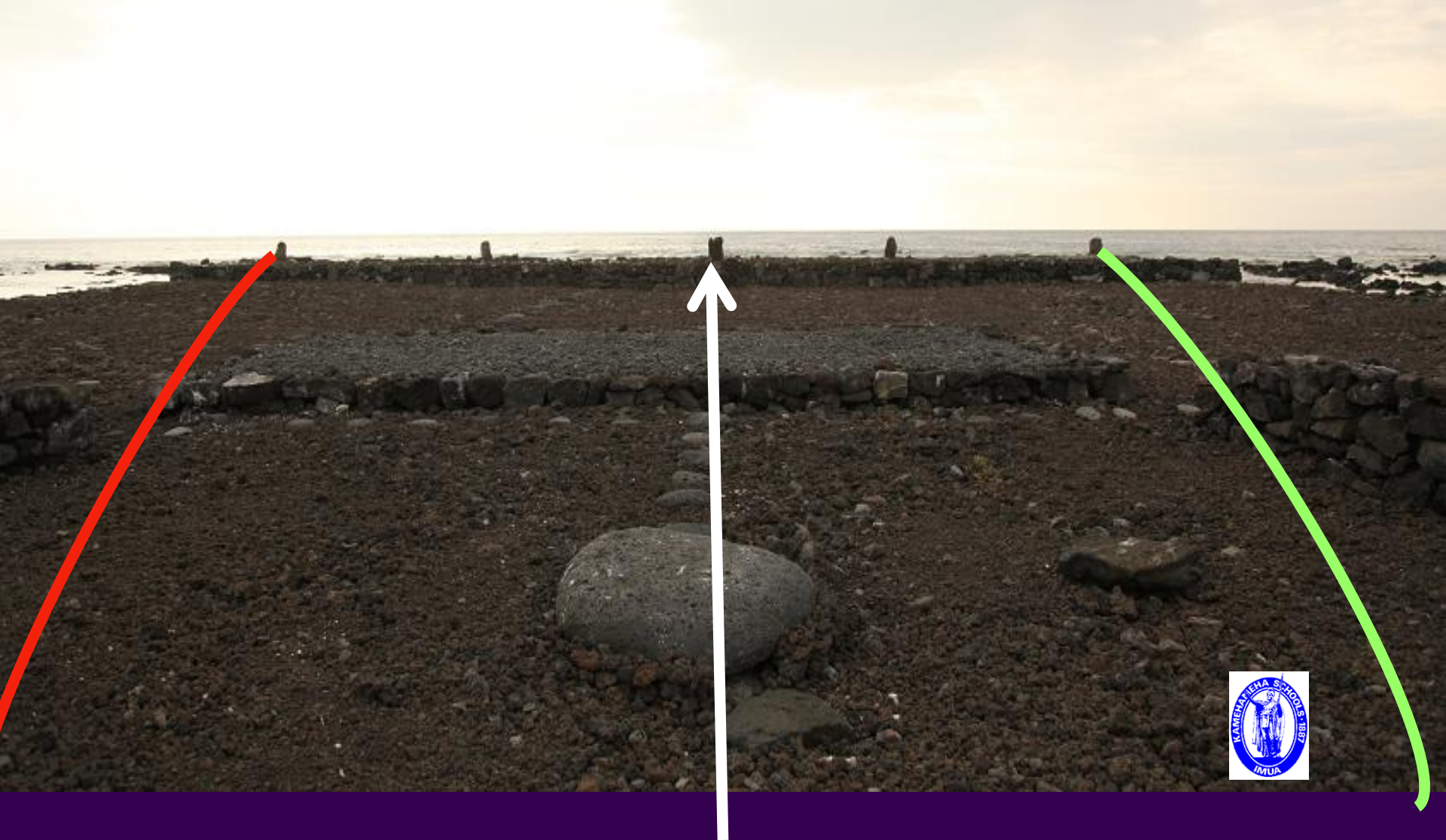
Ala Polohiwa a Kāne



Ka Piko o ka Honua

**E**

Hāpaiali‘i directly faces the western horizon. Hāpaiali‘i has the perfect view to track the horizontal movement of the sun. The center is directly on the Piko o ka Honua, the right corner is directly on the Ala Polohiwa a Kāne and the left corner is directly on the Ala Polohiwa a Kanaloa. Hāpaiali‘i is a tool which measures and tracks the horizontal movement of the sun. The next slide will illustrate each sunset







While the sun is in the southern hemisphere of Kanaloa, several things occur. It usually marks the wet season and the governance or political conduct belongs to Lono and is less stringent. Maintenance and rationing storage occurs. The makahiki season begins, the winter surf is active and migrating animals arrive in Hawai‘i. For those on the dry side of the islands, vigorous planting occurs. For those on the wet side of the island, mending gear occurs.



While the sun is in the northern hemisphere of Kāne, several things occur. It usually marks the dry season and the governance or political conduct belongs to Kū which is all about gathering, acquiring and increasing the health of the community. The luakini season & fishing season begins, the earth is green and active. For those on the wet side of the islands, vigorous planting occurs. For those on the dry side of the island, vigorous harvesting occurs.





Hāpaiali‘i was constructed to observe the movement of the sun to accurately keep track of the seasons and the appropriate activities necessary to keep a community healthy and sustainable. The ingenuity of the Hawaiian architects and engineers is amazing. We are fortunate to be able to work on Hāpaiali‘i. Many more discoveries of its function are yet to be discovered.

*He manomano a lehulehu ka ‘ikena a ka Hawai‘i.  
The wisdom of Hawaiians is infinite and immense....*

