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Sun in Makara as per sidereal ephemeris is NOT on fixed dates: Research analysis

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Abstract

Sun entering Makara Rashi or Capricorn as per Sidereal Ephemeris is NOT fixed. Using a software program developed by the author, we found out that for every 100 years, Sun entry to Capricorn will be delayed by almost "one-earth day".

Keywords: Sun, Capricorn, Makara, sidereal ephemeris

Introduction

Makara is a sea-creature in Hindu mythology. It is generally depicted as half terrestrial animal in the frontal part, in animal forms of an elephant, crocodile, stag, or deer, and in the hind part as an aquatic animal, in the form of a fish or seal tail. Sometimes, even a peacock tail is depicted.

Makara is the vahana (vehicle) of the Ganga - the goddess of river Ganges (Ganga) and the sea god Varuna. It is also the insignia of the love god Kamadeva. Kamadeva is also known as Makaradvaja (one whose flag a makara is depicted). Makara is the astrological sign of Capricorn, one of the twelve symbols of the Zodiac. It is often portrayed protecting entryways to Hindu and Buddhist temples.

Makara symbolized in ornaments are also in popular use as wedding gifts for bridal decoration. The Hindu Preserver-god Vishnu is also shown wearing makara-shaped earrings called Makarakundalas. The Sun god Surya and the Mother Goddess Chandi are also sometimes described as being adorned with Makarakundalas.

Makara Sankranti has an astrological significance, as the sun enters the Capricorn (Sanskrit: Makara) zodiac constellation on that day. This date remains almost constant with respect to the Gregorian calendar. However, precession of the Earth's axis (called ayanamsa) causes Makara Sankranti to move over the ages. A thousand years ago, Makara Sankranti was on 31 December and is now on 14 January. According to my calculations, from 2050 Makar Sankranti will fall on 15 January.

Many Indians believe that the sun ends its southward journey (Sanskrit: Dakshinayana) at the Tropic of Capricorn, and starts moving northward (Sanskrit: Uttarayaana) towards the Tropic of Cancer, in the month of Pausha on this day in mid-January. In India, Tropic of cancer passes through Madhya Pradesh^[1].



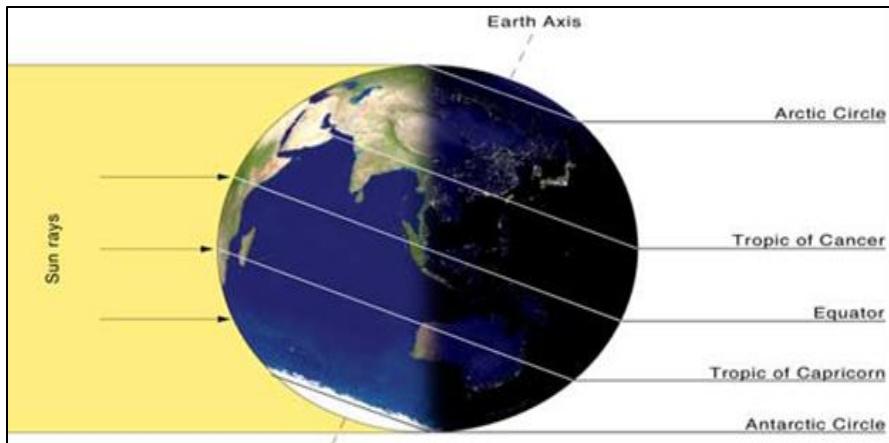
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Astronomically, the Earth is tilted 23.5 degrees with respect to its orbital plane. On the winter solstice, about December 21st, the Earth's south pole is tilted toward the sun,

and the most southerly latitude of Earth the sun's rays hit the ground at 90 degrees is at 23.5 degrees south - the Tropic of Capricorn [4].



According to Hindu Mythology, Saturn is son of Lord Surya and his wife Chhaya (Shadow). Saturn has strained relations with his father.

According to Hindu Astrology, Saturn is considered a malefic planet. Also, Saturn is considered as an "enemy" to Sun. Hence, whenever Sun enters the first zodiac sign owned by Saturn (Capricorn or Makara), the outcome is viewed very cautiously.

Materials and Methods

Using the Swiss Ephemeris available in Astro Databank website, I extracted the data files that contains ephemeris data of the regular planets, Sun, Moon, Mercury, Venus, Mars, Jupiter, Saturn, Uranus, Neptune, Pluto & the Lunar Nodes True Node and Mean Node. The SWISS EPHEMERIS^[5] is the high precision ephemeris developed by Astrodienst, largely based upon the DExxx ephemerides from NASA's JPL. The original release in 1997 was based on the DE405/406 ephemeris. Since release 2.00 in February 2014, it is based on the DE431 ephemeris released by JPL in September 2013². The authors provided a software aka. swetest.exe which is a command line Windows program which computes planetary positions. It is very versatile and can be used to create tables of ephemerides.

Using Java programming language, I developed a new software that executes this DLL and generated Sidereal Ephemeris with New Delhi as geographical location and time

of calculation as 05:30am.

With all the available data files, I was able to generate from 12,000 BC until 12,000 AD. Using a separate JAVA program, I analyzed the data and identified the day when Sun is in Capricorn with an inclination of just ZERO degrees.

Results and Discussions

Using Sidereal Ephemeris, I found that Sun entered Capricorn:

- a. In Year -5299 (5299 BC), on 3-Oct.
- b. In Year -5000 (5000 BC), on 6-Oct.
- c. In Year -4000 (4000 BC), on 20-Oct.
- d. In Year -3000 (3000 BC), on 4-Nov.
- e. In Year -2000 (2000 BC), on 18-Nov.
- f. In Year -1000 (1000 BC), on 3-Dec.
- g. In Year -100 (100 BC), on 16-Dec.
- h. In Year 1 AD, on 17-Dec (Closest possible to Winter Solstice – 21-Dec).
- i. In year 1099 AD, on 1-Jan.
- j. In year 1199 AD, on 3-Jan.
- k. In year 1299 AD, on 3-Jan.
- l. In year 1399 AD, on 5-Jan.
- m. In year 1999 AD, on 14-Jan.
- n. In year 2399 AD, on 19-Jan.
- o. In year 3399 AD, on 2-Feb.
- p. In year 4399 AD, on 16-Feb.
- q. In year 5399 AD, on 1-March.

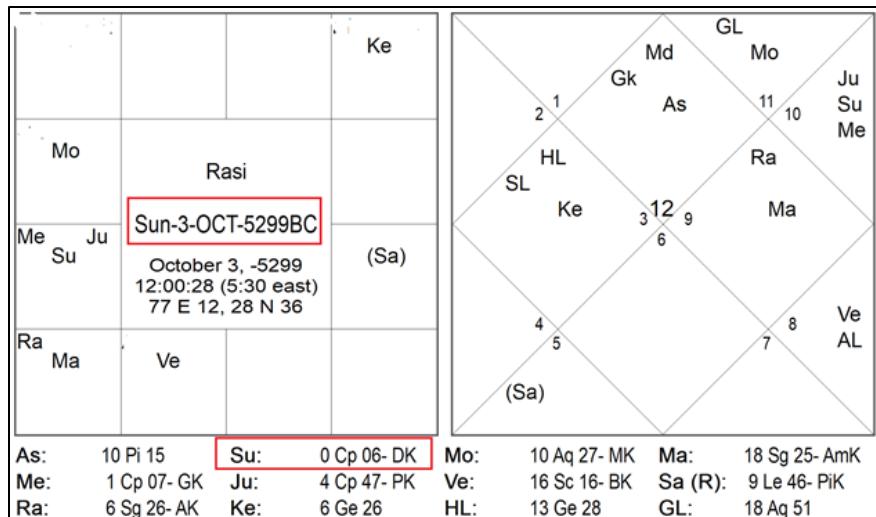
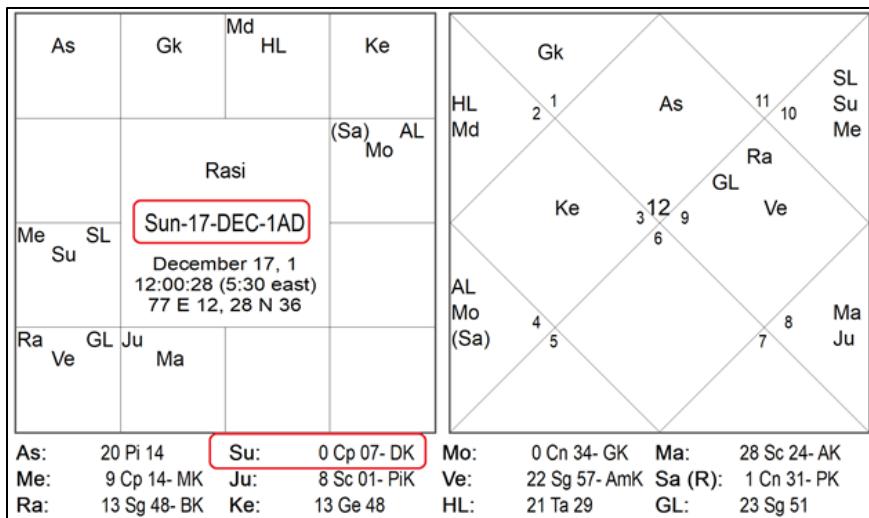


Fig 1: Position of Sun on 3-Oct-5299BC as per JHORA software

**Fig 2:** Position of Sun on 17-Dec-1AD as per JHORA software

Conclusion

In 12,000 years, Sun was slowed by 120 days (approximately), that means Sun is slowing by 1 day in every 100 years. Thus, for Sun to enter Makara (Capricorn) again on 21-Dec, it will take approximately 36,500 years (around 36,500 AD). This justifies that our Sun is NOT stationary like many other planets in our Milky Way Galaxy. According to Universe Today Magazine³, Sun and the entire solar system orbits around the center of the Milky Way galaxy. The average velocity of the solar system is 828,000 km/hr.

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