# Do planets drive a 10-year solar cycle ?

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**Introduction.** Sunspots are dark spots on the surface of the Sun. They last from days to months. According to common knowledge the number of sunspots varies according to an 11-year solar cycle and the origin of sunspot development is still a matter of research (*1*). Sunspot variations may have effects on earth. This article presents a clear correlation between the Jupiter - Saturn cycle and the solar cycle and postulates that the basic solar cycle time is 10 years.

Common knowledge is that the solar cycle time is 11 years. Our largest planets are Jupiter and Saturn. They are in conjunction or opposition every 10 years. So that does not match this 11-year solar cycle. However, in figures 1 and 2 it can be seen that more than half of the sunspot cycles become visibly apparent about four years after a Jupiter - Saturn conjunction or opposition (JSco). Other cycles show up some years later.
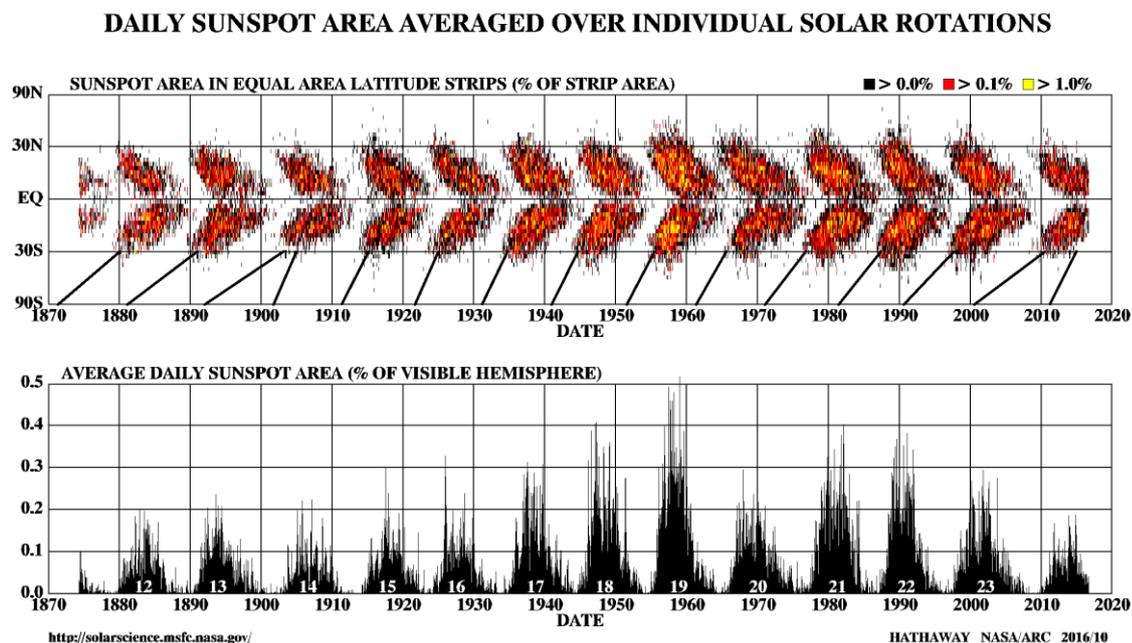


*Figure 1. Sunspots in the course of time and Jupiter - Saturn conjunctions or oppositions (2). The lines connect the moments of a JSco at the 90S line and the visual start of a Sun cycle at the 30S line.*
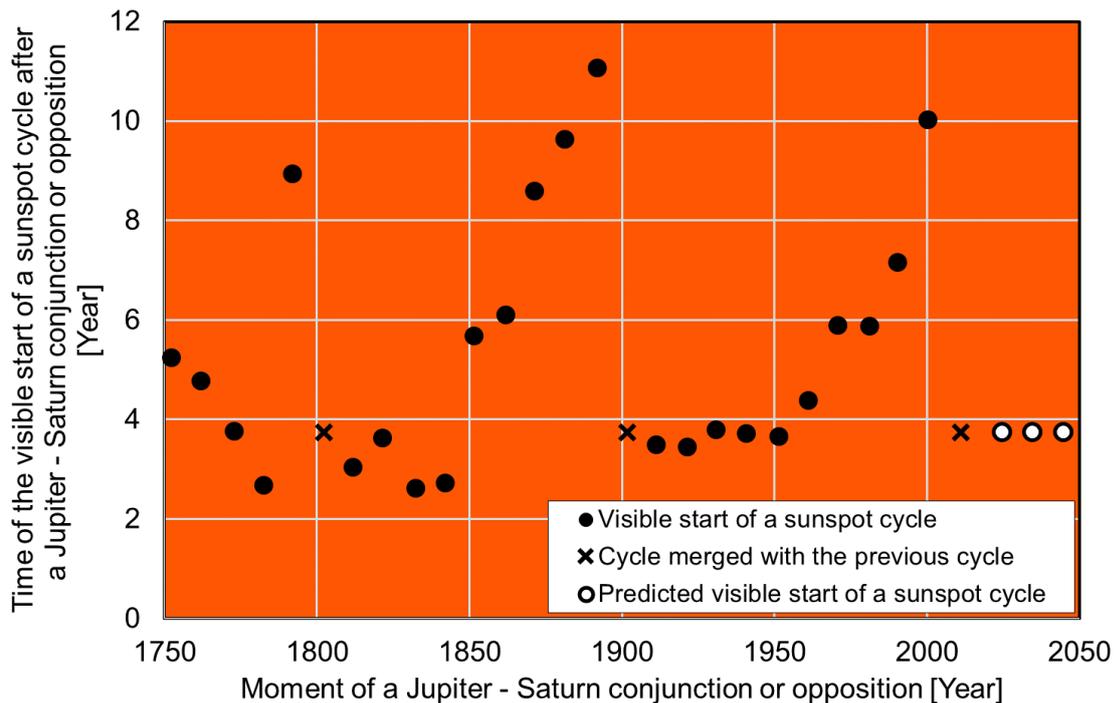
*Figure 2. Relation of the solar cycle to the Jupiter – Saturn cycle.*

A normal cycle seems schematically to look like this: A JSco triggers the cycle, the activity develops and about four years later the sunspot activity becomes visibly apparent. In the next years the cycle reaches its maximum activity and then fades away. After that the next cycle becomes apparent four years after its associated JSco.

However, sometimes the sunspot activity lasts longer. Then the next cycle becomes apparent later, the associated planet trigger seems to retain its validity during the delay. While this later cycle also ends later the subsequent cycle is delayed. When a delay lasts long a trigger drops in an active cycle and the new cycle is merged with the existing one. An individual cycle is missing. The two peaks of 2011 and 2014 in the most recent cycle contribute to this theory.

If these missing cycles triggered by the JSco's of 1802, 1901 and 2011 are included then over the last 250 years **each** JSco is followed by one real or one hidden sunspot cycle. This solar cycle exactly matches the 10 year Jupiter - Saturn cycle. More than half of the sunspot cycles are on schedule, some are delayed, a few seem to be missing. Like trains on a 10 minute schedule which cycle time seems to be 11 minutes because sometimes a delayed train is coupled to the next one.

This article is about the fundamental cycle, not about exceptions.

A comparison can be made with the sea tide cycle. Figure 3 shows the sea water level at the Dutch coast around the 1953 flood (*3*). This level is a result of the combination of the position of the Moon and the weather. By for example counting the crossings of the zero line one might miss some tide cycles, note different cycle times for the tide and the Moon crossings and not notice the correlation between them. Nature is not straight one to one mathematics.
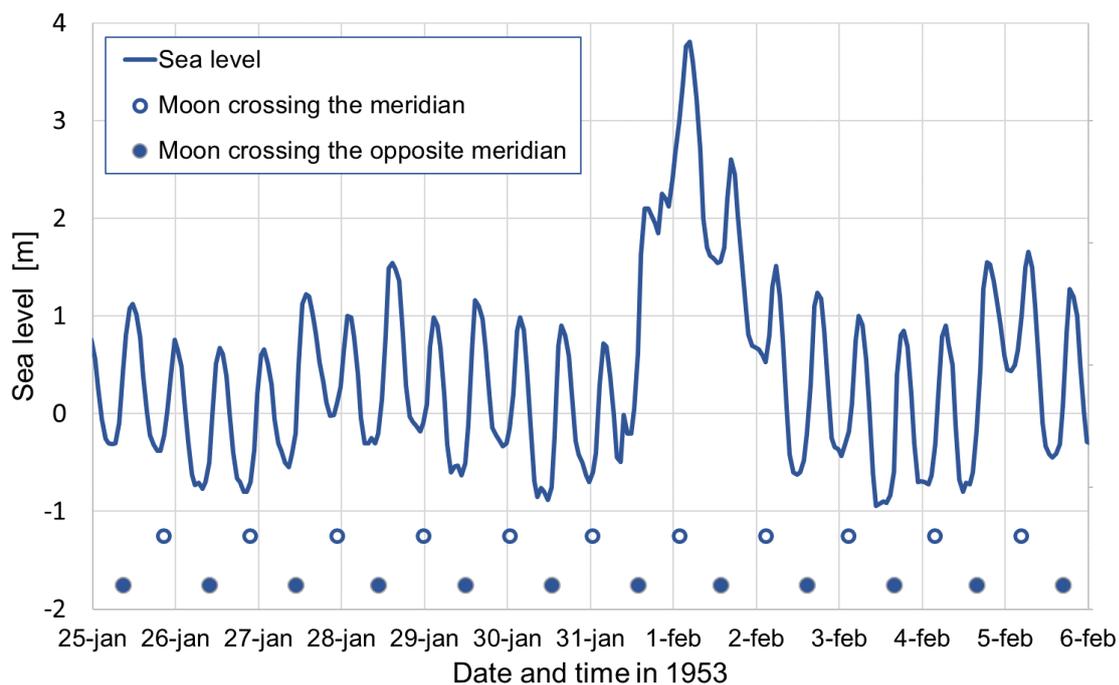


*Figure 3. Course of the sea level at the Dutch coast (Hoek of Holland) and Moon positions.*

**Conclusion:** It seems that the solar cycle is driven by Jupiter - Saturn conjunctions and oppositions with a cycle time of 10 years. Like the Earthly ocean spring tides are driven by the new Moons and full Moons. More than half of the sunspot cycles are on schedule, some are delayed, a few seem to be missing while they merge with the previous delayed cycle.

**Prediction:** After a missing cycle the next few cycles seem to be on schedule. So if this theory is valid the next sunspot cycles will be triggered by the JSco's of 2020, 2030 and 2040 and become visibly apparent about 2024, 2034 and 2044.

References.

1. https://solarscience.msfc.nasa.gov/SunspotCycle.shtml

2. http://solarcyclescience.com/solarcycle.html

3. https://waterinfo.rws.nl/#!/nav/bulkdownload/parameters/Waterhoogten/