# Effects of *lunar precessions* and solar activity on sea-level variations in the Gulf of Mexico and eastern US





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Month Name	Reference	Length (days)
Synodic Sy	New moon to new moon	29.530589
Anomalistic An	Perigee to perigee	27.554551
Sidereal Si	Moon revolution around Earth relative to fixed star (fixed star to fixed star)	27.321661
Tropical <i>Tr</i>	Moon revolution around Earth relative to vernal point (equinox to equinox)	27.321582
Draconic Dr	ascending node to ascending node	27.212221

	Sy	An	Si	Tr	Dr
Sy	-	1.1274	1	1	0.9490
An	1.1274	-	8.8503 PP	8.8474	5.9968 AP
Si	1	8.8503 PP	-	27,220	18.5998
Tr	1	8.8474	27,220	-	18.6126 NP
Dr	0.9490	5.9968 AP	18.5998	18.6126 NP	-

Solar Activity (SU): between 10 and 11 years

Interaction between Nodal Precession (NP) and Solar Activity (SU): 21.6109 and 26.8947 years

**16.87 years** 



**INTERACTIONS** (modulation or interference) between different periods, in years. An interaction is obtained from the difference in frequency between two lunar frequencies, i.e., 1/(1/Si - 1/An). NP, PP and AP denote Nodal Precession, Perigee Precession (or Apsis Precession), and Argument of the Perigee, respectively.

### **OTHER INTERACTIONS**

Interaction between Nodal and Perigee Precessions:

## 0.3 0.2 0.1 -0.1 -0.2 1920 1940 0.3 0.2 0.1 -0. b) -0.2 1920 1940 0.3

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