

## The Moon's age corresponding to the earthquakes occurred in Sagami Trough in the past 400 years

# Yoshiki Su'e[1]

[1] none

### 1 Introduction

In Sagami Bay, there have been such huge earthquakes as the 1703 Genroku Earthquake (M8.0) and the 1923 Kanto Earthquake (M7.9), both of which caused huge damages to the southern part of the Kanto district. They are subduction earthquakes as caused by the subduction of the Philippine Sea Plate in Sagami Trough. The objective of this report is to study the occurrence of earthquakes in Sagami Trough in light of the Moon's age.

### 2 Data set

The data examined in this report are of the earthquakes of M6.0 and greater that occurred during the period from February 1605 to July 2005, within the area from the city of Odawara to the triple junction of the plates off the coast with the width of 200km and the hypocentral depth of 100km and less. The data were collected from the database prepared by the Meteorological Agency. The major earthquakes in the data set include the 1605 Keicho Earthquake (M7.9) and the 1633 Kan'ei Odawara Earthquake (M7.1) in addition to those mentioned earlier. The earthquakes examined totaled 96, 37 out of which are of M6.5 and greater.

### 3 Results

As for the earthquakes of M6.0 and greater, there is a relation between the occurrence and the Moon's age. As for those of M6.5 and greater, the average number of occurrence is  $(37/29.5=)$  1.3. However, they occurred more than twice at 5 and 11 days (meaning the Moon's age, hereinafter), around the first quarter, at 13 to 17 days around the full Moon, at 19 to 22 days around the third quarter and at 28 days before the new Moon. Large earthquakes occurred more in the period from the full Moon to the third quarter, especially towards the third quarter period. Both the 1923 Kanto Earthquake (19.7 days) and the 1703 Genroku Earthquake (22.1 days) occurred in the third quarter period. On the other hand, no earthquakes occurred in 0, 2, 6-7, 10, 12, 25-26 and 29 days.

### 4 Summary

\*When the survey is set to such big earthquakes as those of M6.0 and greater that occurred within a small area, an influence of the Moon's age is observed in the date of occurrence. It is believed that such an influence exists because the direction of slips of the faults in the selected area is limited and earthquakes occurred by receiving the external forces of the Moon and the Sun from the directions specified by the Moon's age.

\*In Sagami Trough many huge earthquakes occurred in the period between the full Moon and the third quarter.

\*Earthquakes occurred in the Metropolitan area show a tendency different from those occurred in Sagami Trough, which is studied in a separate report. It is thought that this is due to the difference between the geologic structures of two areas.