

## Correlation between the position of the moon and the earthquake occurred in the Sagami Trough in the past 400 years

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### 1. Introduction

The studies on the tidal forces of the moon and the sun working as trigger of earthquake continue for years, resulting better understanding in late years. (Tanaka et al., 2004) Under this situation, the theoretical understanding is deepening, detailed studies on regions, on the other hand, have not been carried out widely. Last year this study showed the tendency of earthquake-occurrence in the Sagami Trough by using the moon's age as an indicator of the moon's position. This report, by using the difference of ecliptic longitudes between the moon and the sun, which is called LMS in this paper, shows further results.

### 2. Dataset

The data examined in this report are the earthquakes of M6.0 and greater which 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 depth of 100km and less. The data were collected from the database prepared by the Meteorological Agency. The earthquakes examined totaled 94, 17 out of which are of M7.0 and greater.

### 3. Results

LMS: As for the earthquakes of M6.0 and greater, there is a relation between the occurrence and the position of the moon. Especially those of M7.0 and greater, as shown below, occurred intensively at LMS of 220-270 degrees (i.e. past the full moon to the third quarter). The position of the moon is equivalent to date of the lunar calendar, so such characteristic means dependency to specific date.

LMS.....(Moon's age, Date).....Earthquake
238.....(20.2, 21).....1633Kan'ei-Odawara(M7.1)
244.....(19.7, -).....1923Taisho-Kanto(M7.9)
262.....(22.1, 23).....1703Genroku-Kanto(M8.2)
269.....(21.6, 22).....1648Sagami-Edo(M7.1)

Time: Those at LMS of 220-270 occurred during 1-6 o'clock, the time when the moon was above the horizon. Especially when the moon was near zenith, they occurred intensively. They also occurred around 12 o'clock, the time when the sun was near zenith.

Location: The mentioned tendency is observed through the Sagami Trough, and it continues to the southern part of the Tokyo Metropolitan area.

### References

S. Tanaka, M. Ohtake, and H. Sato, 2004, Tidal triggering of earthquakes in Japan related to the regional tectonic stress, Earth Planets Space, Vol.56, No.5, pp.511-515.