

## The phases of the moon for the representing earthquakes occurred in the expected epicentral area of the Tokai earthquake

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### 1. Introduction

The studies on tidal forces of the moon and the sun in triggering of earthquakes continue for years, resulting recent better understandings. (Tanaka et al., 2004) Under this situation, the theoretical understanding deepens, while the details on regions are not yet studied widely. This study showed the tendency of earthquake-occurrence in accordance with the phase of the moon in several areas as the Sagami trough area and the Nobi area (Sue, 2009). Following them, this report shows the tendency of the expected epicentral area of the Tokai earthquake.

### 2. Dataset

The earthquakes, in the area expected by the Central Disaster Management Council, for the period from March 1589 to May 2005 and for the magnitude of greater than 5.7 are selected from the list of JMA catalogue. The Eicho-Tokai earthquake (M8.4) in 1096 and Meio-Tokai earthquake (M8.4) in 1498, which are thought to have occurred in this region are added. Major earthquakes in the list are shown below.

1096 Eicho-Tokai M8.4 (Death; Unknown)

1498 Meio-Tokai M8.4 (Death; Some ten thousand)

1854 Ansei-Tokai M8.4 (Death; Two thousand)

1855 Enshunada M7.3 (Death; Some)

The phase of the moon is measured by the ecliptic longitude difference between the moon and the sun.

### 3. Results

Dependencies to the phase of the moon are observed for the periods of 5-15deg., 40-65 deg., 90-120deg., 195-230deg., 260-305deg. and 320-340deg. The representing periods are explained below.

\*40-65deg.; There are several huge/large earthquakes occurred in this period. The Ansei-Tokai earthquake (M8.4) in 1854 and some M6 class earthquakes occurred.

\*260-305deg.; There are several huge earthquakes occurred in this period.

1096 Eicho-Tokai earthquake (M8.4)

1498 Meio-Tokai earthquake (M8.4)

1929 East off Shizuoka pref earthquake (M7)

### References

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

Sue Y., 2009, The effect of earth tides in triggering earthquake as clearly observed in some specific regions of Japan, J. Atmos. Electricity, Vol.29, No.1, 53-62.