Correlation between the position of the moon and the quake beneath the Metropolitan area in the past 400 years -1 Correlation -

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[1] none

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 widely been carried out. Last year this study showed the tendency of earthquake-occurrence beneath the Metropolitan area 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. Results

Earthquakes causing damages occurred everywhere in the Kanto district. However, those occurring in the surrounding areas do not produce heavy damages to the central Tokyo, even if they are M7 level ones because of the distance. From above reason, the data examined in this report are the earthquakes of M4.5 and greater that occurred in the area surrounding Tokyo bay, stretching 70km both from east to west and from north to south, during the period from June 1615 to July 2005. The Keian-Edo earthquake of M7.1 in 1649, which occurred close to this area, is added also. The data are collected from the database prepared by the Meteorological Agency.

The earthquakes of M4.5 and greater only show some dependencies on LMS, those of M5.5 and greater, on the other hand, show it clearly.

∗LMS of 350-40 degrees, which is the new moon period, is the largest outbreak period. This group has many earthquakes of M6.0 and greater, taking the largest occurrence at 20 degrees. At 21 degrees the Ansei-Edo earthquake of M6.9 occurred in 1855.

∗LMS of 160-210 degrees, which is the full moon period, is an outbreak period. At 180 degrees there is a peak, and at 169 degrees the Edo earthquake of M6.6 occurred in 1706. In addition, there is another peak at 200 degrees and at 201 degrees the Meiji-Tokyo earthquake of M7.0 occurred in 1894. The 201 degrees is the completely opposite position of the mentioned 21 degrees. At 206 degrees, the Chiba-ken Hokuseibu earthquake of M6.0 occurred in July, 2005.

∗LMS of 280-310 degrees, which is the third quarter period, is an outbreak period. At 285 degrees the Edo earthquake of M6.7 occurred in 1630, and at 291 degrees the Kawasaki-Edo earthquake of M6.4 occurred in 1649. The 291 degrees are flat 270 degrees from the mentioned 21 degrees. At the 295 degrees, consecutive earthquakes of M4 level occurred under the Tokyo bay in June, 2005.

∗In addition, at the first quarter as well as middle of the full moon and the third quarter, there are occurrences of earthquake including the Keian-Edo earthquake of M7.1 in 1649.

∗Each group seemingly have peculiar areas of occurrence.

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.