

The phase of the moon at the earthquakes occurred in the central off-Sanriku region

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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 recent better understandings. (Tanaka et al.,2004) Under this situation, the theoretical understanding is deepening, the 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 Miyagi region by using the phase of the moon as an indicator of the moon's position.

Succeeding it, this report shows the tendency in the central off-Sanriku region where is located just north of Miyagi region. Among the damaging earthquakes occurring in this region, the biggest one is the Meiji Sanriku earthquake occurred on June 15, 1896, causing more than 20,000 victims by tsunami.

2. Dataset

In the area ranging from 39d00m to 40d13m North and 141d54m to 144d31m East, from May 1717 to January 1995, and with M6.8 or higher earthquakes listed in the JMA catalogue and others are used. The total number of the data is 23.

3. Result

A remarkable dependency to the phase of the moon is observed.

During 20-80 degrees in the difference of the ecliptic longitudes between the moon and the sun, all major damaging earthquakes including the abovementioned one occurred. This range is equivalent to 3rd-8th day in the lunar calendar.

During 185-230 degrees, a group of the other outbreak exists and there were several large earthquakes, but no significant damages were created.

During 270-290 degrees, a group of another outbreak exists and an earthquake produced the some damages.

The earthquakes less than M6.7 occurred regardless of the period mentioned above.