

论文

全球5.0级以上地震活动与地球自转变化的Granger因果关系检验

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摘要:

采用国际地球自转服务中心(IERS)发布的日长变化(Length of the Day, LOD)数据和美国国家地震信息中心(NEIC)公布的地震目录中的震级在5.0级(含5.0级)以上的地震数据,对1973年以来的每日地球自转变化时间序列与地震时间序列之间的Granger因果关系进行检验,结果表明:地球自转变化与地震之间存在着双向Granger因果关系,即地球自转变化可能导致地震发生,地震也会对地球自转变化产生影响,检验结果暗示了两者之间可能存在着复杂的动力机制。

关键词: [地球自转](#); [地震](#); [Granger因果检验](#)

Testing for the Granger causality of the changes of the Earth's rotation and global earthquakes of magnitude above 5.0.

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Abstract:

Using the Length of the Day from the EOP C04 data provided by the International Earth Rotation and Reference Systems Service (IERS), and the time series data of the earthquakes whose magnitudes are 5.0 or more than 5.0 from 1973 to 2008 provided by the National Earthquake Information Center (NEIC), this paper gives an analysis of the Granger causality between the changes of the Earth's rotation and the global earthquakes. Granger causality tests show that there is indeed a two-directional causal relationship between the changes of the Earth rotation and the earthquakes: one direction is that the changes of the Earth's rotation may trigger the earthquakes, and the other is that the earthquake may induce the changes of the Earth's rotation. This testing result implies that there probably exists a much complex excitation mechanism between the Earth's rotation and the earthquakes.

Keywords:

[Earth rotation](#); [earthquake](#); [Granger causality](#)

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