

Ionosphere precursor signals of the tsunami generated earthquake on global positioning systems data

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One of the most important consequences of extreme undersea earthquakes is tsunami. Empirically determined that tsunami wave intensity, having been registered on the oceanfront, correlates with an earthquake magnitude. On average, the higher magnitude, the greater tsunami intensity. This fact has been used for operational evaluation of tsunami threat. If an earthquake epicenter is located under the seafloor, then the seafloor movement can generate wave front shaping which run through the whole water column. The greater depth, the higher wave front speed at particular point, and the speed can reach 1000 km/h. Sudden initiation, unlimited propagation length, tremendous speed, and great destruction force make tsunami event forecasting of much-needed. Disturbances and anomalies allocation in earthquake surrounding spheres are characterized by space and time irregularity. In space it becomes apparent in sharper evidence of anomaly to particularly sensitive zones, which can be located at a distance of hundreds kilometers from the hotbed. The cause of anomaly in time can be irregular as well. So, taking into account that tsunami are generated only by strong (M-7) earthquakes, it can be supposed that ionospheric disturbances at an epicenter area can be surely detected under global monitoring of seismic offshore water areas. In the report it is considered opportunities of detecting anomalies originated in plasma shell of the Earth in the period of preparation and occurrence of seismic events by the example of undersea quakes taken place at different distances from seashore. There are results of monitoring of ionosphere conditions during the powerful undersea earthquake in Indian Ocean in December 2004. Registration of anomalies in ionosphere was accomplished by the method of radio-transparency using satellite navigational systems. There has been revealed signature of ionospheric variations in the period of tsunami generated earthquakes, which can be used for early warning of such catastrophic natural processes.