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Atmosphere and ocean loading and their interactions with the earthquake cycle

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Oral presentation

Abstract:

The most powerful disturbances in atmosphere and World Ocean – tropical cyclones (storms, typhoons, hurricanes) achieve the daily dissipation energies which orders are compared to the strongest earthquakes $M=7-8$. The interaction of these formidable natural disasters running in adjacent geospheres is discussed in our recent publications. This report presents the new comparison of tiltmeter and strainmeter data with an activity of tropical cyclones in the World Ocean timed to the strongest earthquakes during February and April 2014. General features of the observed processes reiterate the conformity to their display previously obtained for $M=9.1$ Sumatra 2004 earthquake. Time-frequency data analysis and comparison with anomalous geomagnetic and ionospheric activity have been performed. The obtained results verify the found correlation, which can be interpreted as appearing or increase in amplitude the wide-band oscillations disturbed by typhoons and hurricanes in atmosphere and upper lithosphere. These powerful processes together with quasi-static pressure loading on the ocean bottom provoke powerful earthquakes through the triggering effect. Investigation of the observed phenomena and deployment the detailed interaction mechanisms of the atmosphere, lithosphere, and ionosphere would give a chance to find the regularity and origins of such natural disasters as earthquakes and hurricanes.

Scientific Topic:

Instrument and software developments (Thomas Jahr)

Presentation date time:

Thursday, June 9, 2016 - 15:15 to 15:30

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