AOGS 2005

Iononami - Ionospheric Tsunami Signature

JANN-YENG LIU[1, 2,3], YI-BEN TSAI [4], KUO-FONG MA[4], YUH-ING CHEN[5], HO-FANG TSAI[6], CHIEN-HUNG LIN[1, 8], & MASASHI KAMOGAWA[7]

[1]*Institute of Space Science*
[2]*Center for Space and Remote Sensing Research*
[3]*Department of Atmospheric Science*
[4]*Institute of Geophysics*
[5]*Institute of Statistics, National Central University, Taiwan*
[6]*National Space Program Office, Taiwan*
[7]*Department of Physics, Tokyo Gakugei University, Japan*
[8]High Altitude Observatory, National Center for Atmospheric Research, Boulder, CO, USA

Lithosphere-atmosphere-ionosphere coupling
An earthquake of moment magnitude 9.0 occurred in the Indian Ocean off the western coast of northern Sumatra, an island of Indonesia and activated devastating tsunami waves on 26 December 2004. The tsunami waves further triggered atmospheric gravity waves near the sea surface, which then traveled into the ionosphere and significantly disturbed the electron density within it. Iononamis, the ionospheric tsunami signatures, of the total electron content (TEC) are detected by ground based receivers of the global positioning system (GPS) in the Indian Ocean area. These data show that the giant iononamis which have maximum heights of about 60 km, periods of 10-20 minutes, and horizontal wavelengths of about 200 km, travel away from the epicenter with an average horizontal speed of about 700 km/hr. Based on these results we propose a new method for monitoring tsunamis by using GPS networks.