HF Doppler Sounding Experiment in Japan - HFDOPE

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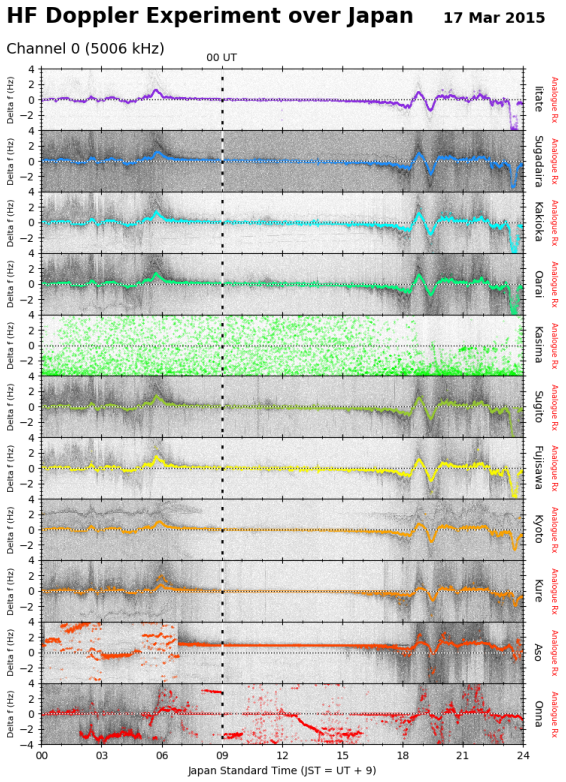
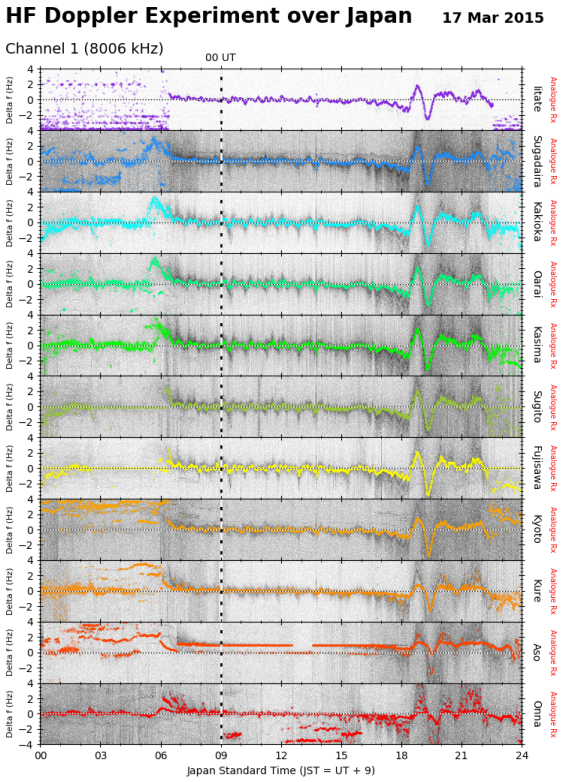
Since 2003, an HF Doppler sounding experiment has been conducted in Japan for the studies of atmosphere, ionosphere and magnetosphere. Currently, one transmitting station and 11 receiving stations are operative by a collaborative effort of four different research institutes. Multiple frequency sounding of the ionosphere enables us to observe the variations at different altitudes in a simultaneous manner.





The scientific targets of the experiment include:

1. Ionospheric dynamics
   - Sporadic E-layer (Es)
   - Medium-scale traveling ionospheric disturbances (MSTIDs) and atmospheric gravity waves (AGWs)
   - Large-scale traveling ionospheric disturbances (LSTIDs)
2. Magnetosphere-Ionosphere coupling (M-I coupling)
   - Global-scale electric field variation (penetration from the magnetosphere)
   - Sudden Commencement (SC) due to the solar wind pressure pulse
   - ULF pulsations (Pc3 - Pc5) at mid-latitudes
3. Vertical coupling in the Atmosphere-Ionosphere system (vertical coupling)
   - Ionospheric variation after large earthquakes/tsunamis
   - Ionospheric variation after volcanic eruptions/typhoons

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