Geophysical Research Abstracts,
Vol. 11, EGU2009-13083, 2009
EGU General Assembly 2009

Wintertime component of the THORPEX Pacific-Asian Regional Campaign (T-PARC)

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The winter component of the T-PARC is an international field project that aims at improving high impact weather event forecasts for North America. The main objective is to understand how perturbations from the tropics, Eurasia and polar fronts travel through waveguide and turn into high impact weather events. Through adaptive observations by using manned aircrafts (NOAA G-IV and US Air force C-130s) and Russian rawinsonde network over data sparse regions, it is expected that accurate initial conditions will improve the numerical weather forecasts. Non-adaptive aircraft measurements over the Pacific Rim and part of India are also deployed through E-AMDAR program, which is expected to improve the background field over Asia where perturbations are initiated. The campaign is led by NOAA and joined by agencies and universities from US, Canada, Mexico, Japan, ECWMF, and Russia. While most observational data will be assimilated by operational centers to improve real time numerical weather predictions, post field studies will focus on aspects such as: data impact on forecast and analysis, dry and moist processes that affect the formation and propagation of perturbations, meso-scale storm structure, error growth, forecast “busts” under certain atmospheric regimes, and socio-economic applications such as costs and benefits of improved forecasts and their use by the public for high impact weather events. In particular, a Winter Olympics demonstration project (February 12 – February 28) is expected to be a test bed during winter T-PARC for real user outreach and application purposes. Effectiveness of existing targeting methods as well as new targeting methods in the 3-5 day lead time range will be pursued and other aspects related to data assimilation and numerical forecasts (both deterministic and ensemble forecasts) will be investigated within this project as well.