Abhishek
Lodh
Swedish Meteorological and Hydrological Institute, Norrköping
Oral
(Virtual Talk)
The current research in seamless numerical weather prediction particularly in land surface and soil processes involves accurate estimation of soil moisture, soil temperature and snow, particularly over the European domain. Over the Arctic land region the land surface variables like snow depth, snow temperature exerts deeper impact on evaporation, latent and sensible heat flux and influences weather. So, it is important to provide accurate initial condition of land surface variables like snow, soil
moisture and soil temperature to the land surface model across the different soil levels down to root zone. Both NWP and hydrology models requires proper root zone soil moisture data and microwave sensors provides only top few centimeters of soil moisture data. Even after getting soil moisture observations in real time, various sequential land DA techniques are being adopted by different modeling communities to properly initialize the soil moisture in the NWP models with a higher spread
extending down to root zone. In the CERISE project at SMHI we are in process of developing an Ensemble Kalman filter based land data assimilation to initialize soil variables from wide range of surface observations. Ensemble Kalman filter solves the limitations of saturated soil moisture in Extended Kalman filter, thus less requirements of non-linearity issues. Tests are ongoing for evaluating the spread in screen level observations and soil moisture (both surface and root zone) and to find the correlation between the screen level humidity and temperature to the soil moisture, soil temperature across the soil levels in the ISBA land surface model.
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