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# Interpretation of Phoenix pressure data with mesoscale model MLAM

**W. Schmidt (1),** A.-M. Harri (1), J. Kauhanen (1), S. Merikallio (1), J. Polkko (1), H. Savijärvi (2), T. Siili (3), P.Taylor (4)
(1) Finnish Meteorological Institute, Earth Observation, Helsinki, Finland (walter.schmidt@fmi.fi, +358 91929 3146), (2) University of Helsinki, Department of Physics, Finland, (3) ESA, Goddard Space Flight Center, Maryland, USA, (4) York University, Toronto, Canada

## Abstract

The Phoenix ’07 Lander landed successfully in the Martian northern polar region on May 25, 2008. The mission is part of the National Aeronautics and Space Administration’s (NASA’s) Scout program. Its Canadian Meteorology experiment (MET) [1] was providing the first surface based observations of atmospheric pressure, temperature and wind as well as dust and ice particles in the Martian Northern polar regions.

*Mars Limited Area Model (MLAM)*

The Mars Limited Area Model (MLAM) has been jointly developed by the Helsinki University and the Finnish Meteorological Institute to study mesoscale phenomena in the Martian Atmosphere [2]. To support the Phoenix mission to high Martian latitudes, the model is optimized in its grid definition and the way the influence of carbon-dioxide- and water-ice is treated. The MLAM based simulations are used to understand the conditions leading to the meteorological conditions as observed by Phoenix (fig.1).

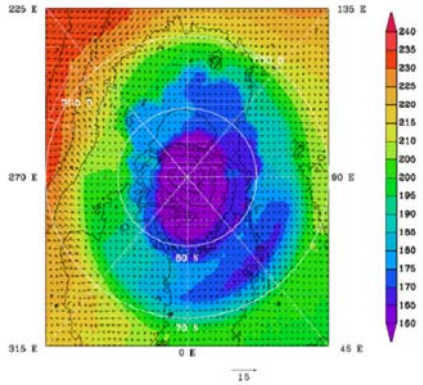


Figure 1: Simulation of polar near-surface Temperature / Wind Distribution for 15:30 local time at the Phoenix Landing site

*Pressure sensor data interpretation*

The pressure sensors provided more than 5 million atmospheric pressure measurements throughout the operational phase of Phoenix. Together with the other meteorological instruments they gave a detailed picture of the diurnal and seasonal change of the local climate from late summer to the onset of winter conditions with passing dust devils [3], dust storms, clouds and precipitation. The results of comparisons between data and mesoscale simulations will be shown for several time intervals, putting the local observations into a larger topographic context.

## References

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[3] Ellehøj, M. D., et al. (2009), 40th Lunar and Planetary Science Conference, 2009LPI....40.1558E