



## Nowcasting in the FROST-2014 Sochi Olympic project

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FROST (Forecast and Research: the Olympic Sochi Testbed) 2014 is a WMO WWRP international project aimed at development, implementation, and demonstration of capabilities of short-range numerical weather prediction and nowcasting technologies for mountainous terrain in winter season.

Sharp weather contrasts and high spatial and temporal variability are typical for the region of the Sochi-2014 Olympics. Steep mountainous terrain and an intricate mixture of maritime sub-tropical and Alpine environments make weather forecasting in this region extremely challenging. Goals of the FROST-2014 project:

- To develop a comprehensive information resource of Alpine winter weather observations;
- To improve and exploit:
  - Nowcasting systems of high impact weather phenomena (precipitation type and intensity, snow levels, visibility, wind speed, direction and gusts) in complex terrain;
  - High-resolution deterministic and ensemble mesoscale forecasts in winter complex terrain environment;
- To improve the understanding of physics of high impact weather phenomena in the region;
- To deliver forecasts (Nowcasts) to Olympic weather forecasters and decision makers and assess benefits of forecast improvement.

46 Automatic Meteorological Stations (AMS) were installed in the Olympic region by Roshydromet, by owners of sport venues and by the Megafon corporation, provider of mobile communication services. The time resolution of AMS observations does not exceed 10 minutes. For a subset of the stations it is even equal to 1 min. Data flow from the new dual polarization Doppler weather radar WRM200 in Sochi was organized at the end of 2012. Temperature/humidity and wind profilers and two Micro Rain Radars (MRR) will supplement the network. Nowcasting potential of NWP models participating in the project (COSMO, GEM, WRF, AROME, HARMONIE) is to be assessed for direct and post-processed (e.g. Kalman filter, 1-D model, MOS) model forecasts.

Besides the meso-scale models, the specialized nowcasting systems are expected to be used in the project – ABOM, CARDS, INCA, INTW, STEPS, MeteoExpert.

FROST-2014 is intended as an ‘end-to-end’ project. Its products will be used by local forecasters for meteorological support of the Olympics and preceding test sport events. The project is open for new interested participants. Additional information is available at <http://frost2014.meteoinfo.ru>.