EMS Annual Meeting Abstracts
Vol. 10, EMS2013-400, 2013
13th EMS / 11th ECAM

Combining multi-system forecasts of the FROST-2014 project for meteorological support of the Olympic Games «Sochi-2014»

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FROST-2014 (Forecast and Research in the Olympic Sochi Testbed) is a blended WWRP Research Development Project and Forecast Demonstration Project associated with the next Olympic and Paralympic Games «Sochi-2014» (hereinafter referred to as «Olympics»). The project is targeted at nowcasting and short-term numerical prediction of high-impact winter weather in complex terrain.

Sharp weather contrasts are typical for the region of the Sochi Olympics. Steep mountainous terrain and intricate mixture of maritime sub-tropical and Alpine environments make weather forecasting in this region extremely challenging. Precipitation intensity and type, gusting winds, visibility and cloud ceiling are critical weather elements for the Sochi Olympics.

Several specialized nowcasting systems are engaged in the FROST-2014 project: ABOM, CARDS, INCA, INTW, MeteoExpert. Besides that nowcasting potential of participating NWP models (COSMO, HARMONIE, AROME, GEM, and WRF NMMB) will be assessed for direct and post-processed model forecasts. Several models are implemented for the Sochi region with resolution of 1-2 km or finer. Ensemble prediction in FROST-2014 is represented by COSMO-S14-EPS, GLAMEPS, ALADIN LAEF, NMMB and Harmon EPSs. Additional information about the project is available at http://frost2014.meteoinfo.ru.

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. However, it is not simple for forecasters to deal with such an amount of information under the operational time constraints. To compress the available variety of information and to improve the accuracy of both nowcasting and short-range forecasting, an integrated approach is developed that generates the most accurate forecast based on the results of multiple project forecasting systems and the latest observations.

This work is supported by the Russian Foundation for Basic Research – grant № 12-05-00996.