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# The Spanish AEMET-$\gamma$SREPS convection-permitting LAM-EPS in Antarctica

Sergi Gónzalez Herrero (2) and Alfons Callado Pallarès (1)

(1) AEMet / Catalonia Delegation / Predictability Service, (2) AEMet / Catalonia Delegation / Antarctic Group

During the last austral summer Spanish Antarctic Campaign (1st December – 31st March), coinciding with the Southern Hemisphere Special Observation Period of the Year of Polar Prediction (YOPP), the 2.5 km AEMET-$\gamma$SREPS convection-permitting LAM-EPS was integrated daily at 00 UTC up to 48 around Livingston Island (South Shetland Islands, Antarctica) with the aim to improve the forecasts and consequently making Juan Carlos I Spanish Antarctic station activities safer.

$\gamma$SREPS is a 20-members multi-NWP model and multi-boundaries LAM-EPS system. However, it has been integrated around Livingston with only 12 members. In particular, the Antarctic version of $\gamma$SREPS comes up crossing four non-hydrostatic convection-permitting NWP models at 2.5 Km: HARMONIE-AROME (HIRLAM), ALARO (ALADIN), WRF-ARW (NCAR-NOAA) and NMMB (NCEP-NOAA); with three global NWP models' boundary conditions: ECMWF-IFS (European), NCEP/NOAA-GFS (USA) and CMC-GEM (Canadian).

Antarctic Peninsula, where Livingston Island is located, is strongly influenced by the Antarctic circumpolar trough and the quasi-stationary Amundsen–Bellingshausen Seas Low which generates during summer secundary lows, sometimes mesoscale cyclones, which cross west to east the region. Furthermore, the complex orography of the island strongly modifies the usually stable low-level flows which challenges the specific forecasts made for the different users.

The overall AEMET-$\gamma$SREPS forecasting system have been validated subjectively by forecasters and objectively verified against the few observations available with standard probabilistic verification scores in comparison to ECMWF EPS. It is concluded that AEMET-$\gamma$SREPS has a beautiful added value to ECMWF EPS due to its higher resolution and its multi-boundary multi-NWP model approaches which makes it a suitable forecast system in Antarctica..