

Application of low-resolution ETA model data to provide guidance to high impact weather in complex terrain

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Peruvian ETA-model data is available for guidance at Peruvian Hydro-meteorological service (SENAMHI). The application of rather low resolution (22 km grid) data is not straight forward in complex terrain in terms of topography, climatic zones and sharp land-sea gradient. Finnish Meteorological institute and Peruvian Meteorological Service (SENAMHI) have a common project to tackle this problem among others.

SENAMHI ETA model has 22 km grid length for Peru. It runs twice a day (00z and 12z) and the GFS global model data is used for the lateral boundary conditions. No data assimilation is made. The data is used as guidance in operational weather service and the results are published at SENAMHI web pages.

The applicability of the data is evaluated and if some problems are encountered a solution will be searched. So far the data has been partly verified and tests with Kalman filter have started. The test data includes maximum and minimum temperature from January to 2009 until to December to 2010 for 21 synoptic stations around Peru. A frost situation can be a dangerous weather event in tropics. Another focus is also the heavy precipitation in Machu Picchu area resulting flooding and danger to life and property.

The preliminary results indicate that ETA model has problems with temperature forecasts in most regions; in tropical rain forest, at mountains and near coastline affected by cold sea current. The application of Kalman filter was used to minimize systematic errors from the ETA-model and rather encouraging results has been received. Later also other parameters like precipitation amount are looked in detail.