New ECMWF ensemble products based on an extra-tropical cyclone tracker, and their utilisation in warning provision

Tim Hewson

ECMWF, Operations, United Kingdom (tim.hewson@ecmwf.int)

Algorithms for identifying and tracking extra-tropical cyclonic features that were initially developed at the Met Office have now been applied to the ECMWF ensemble, and expanded. A wide range of real-time web-based forecast products are being created from the output. These products assist with day to day forecasting, and in particular can provide alerts regarding the likelihood of extreme weather in the next 15 days. We are relying here on the fact that cyclonic features are the primary synoptic-scale cause of extreme rainfall over large catchments, extreme snowfall and extreme windstorms. Moreover, prolonged heat in summer, protracted cold in winter and drought can all relate to the absence of cyclonic activity, and so for anticipating these hazards too the products can also be a useful tool.

After providing a brief overview of how the identification and tracking work, the bulk of the talk will illustrate the new products that are becoming available, and will show, with examples from the last 12 months, how these can be used to forecast extreme weather. Products include storm-track strike probabilities for different thresholds, feature-specific plume diagrams, objective front spaghetti plots, and cyclonic feature 'dalmatian' plots showing various cyclone attributes. There are also clickable links to quickly visualise, in synoptic chart format, those ensemble members that depict the most extreme evolutions.

There is potential to develop similar 'products', in an aggregated way, from reanalysis data, and from climate model simulations of present and future climate. Intercomparison of data from these three categories can then hopefully provide policy-makers with a clearcut reference point for anticipating changes in extremes. This opportunity will be discussed in the context of the IMILAST project.