



Using case studies to aid the development of a global flash flood prediction system

Tim Hewson

ECMWF, Forecast department - Evaluation section, Reading, United Kingdom (tim.hewson@ecmwf.int)

ECMWF (the European Centre for Medium range Weather Forecasts) is developing a global system for predicting flash floods. As its input this system will use forecast fields from the ECMWF global ensemble prediction system. Post-processing techniques convert the global model forecasts for gridboxes into probabilistic forecasts for rainfall at any point within those gridboxes. The post-processing techniques are key to the success of this system. They have been 'meteorologically informed'. This means that they rely on (a) a detailed physical understanding of rainfall generation mechanisms, and (b) study of individual cases of flash flooding. In (b) we want to ensure that the atmospheric structures that are believed to allow very large totals to accrue over small areas in a short time are present in real cases, and can be foreseen using output from the global model itself.

This study will highlight what we understand the key factors to be, using case studies such as the devastating Tbilisi floods of June 2015, and physical reasoning, to illustrate. Furthermore, it will be shown that standard global model output does contain information that is pivotal in identifying when the atmospheric configuration has the potential to deliver flash floods, even though the raw rainfall output from the model is not, itself, extreme, and so would not, if taken literally, provide any warning.