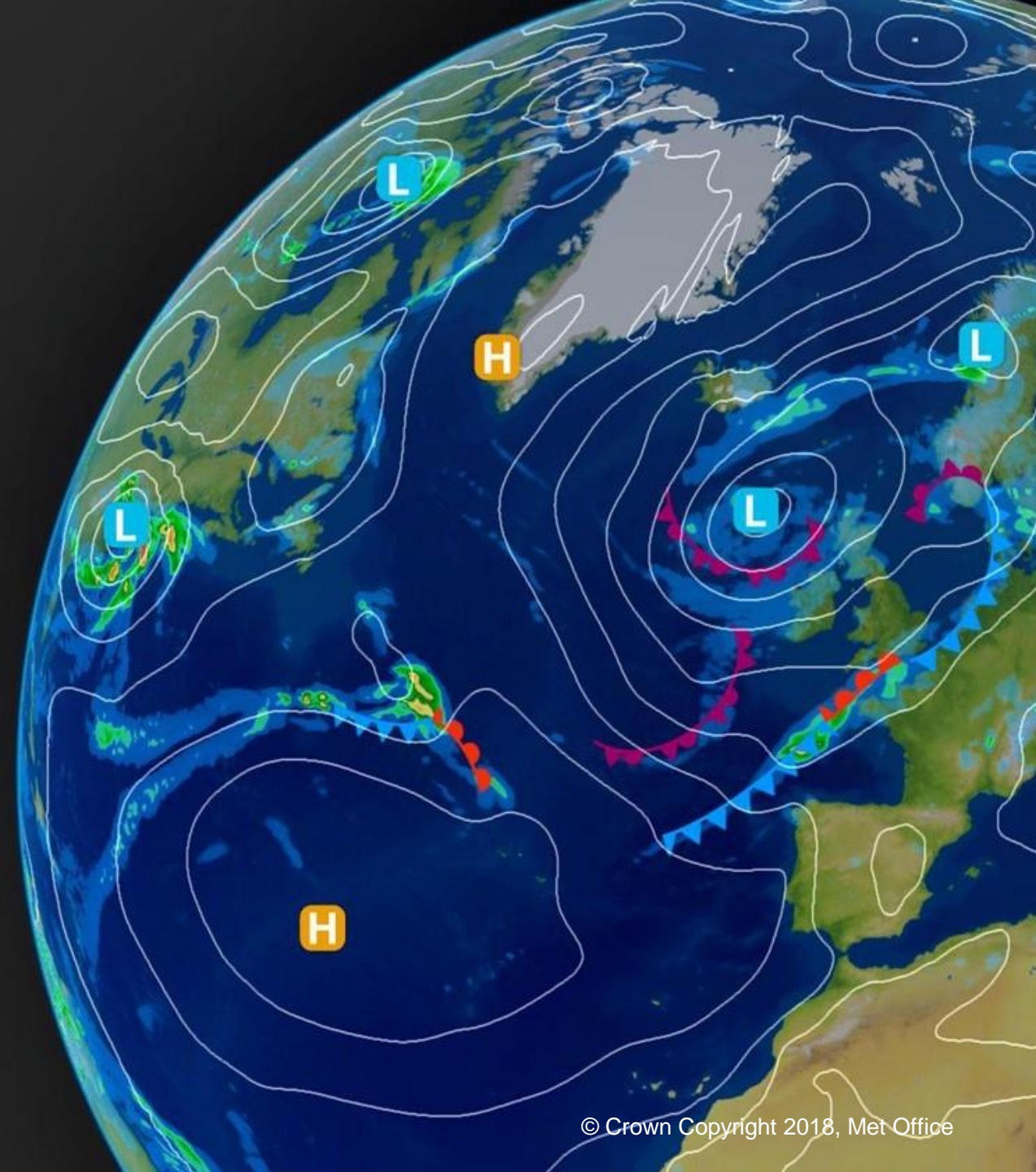


# Workshop on Member and Co-operating State requirements for ECMWF outputs in support of multi-hazard Early Warning

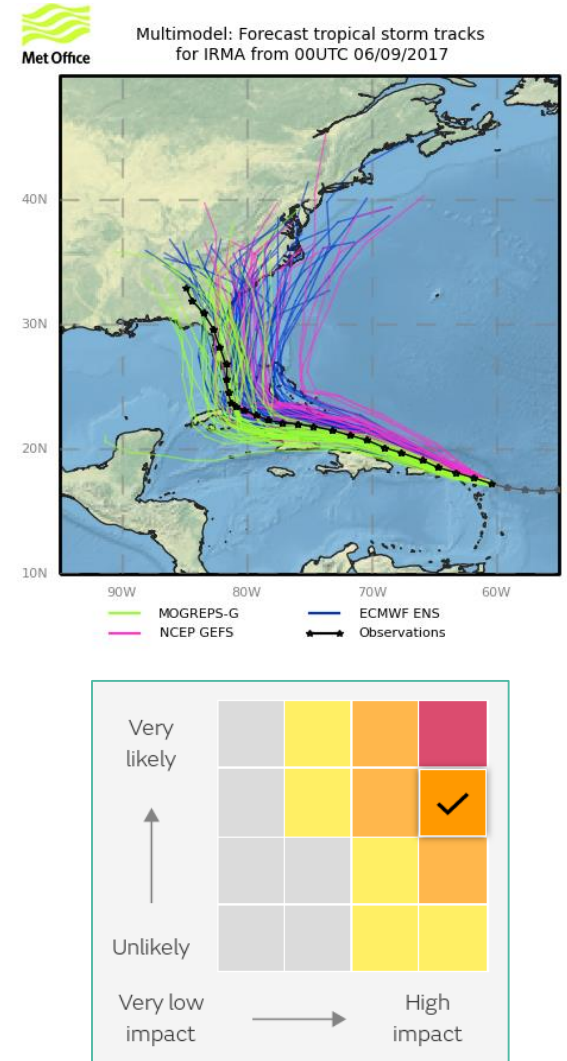
Ken Mylne

ECMWF, 4 June 2018



# What forecasting aspects are of particular concern to you and your organization in supporting activities of multi-hazard Early Warning Systems?

- Timely access to multi-model ensemble data in compatible formats
- Surface weather information relevant to impact-based warnings
  - Quantitative high-impact weather eg QPF for extremes; extreme gusts
- High-impact weather often very localised and local point probabilities very small – hence probs of events somewhere within a time and space window may be more useful
- Further high-impact feature identification e.g. sting jets
- Global coverage in support of international DRR activities
- Reanalysis and/or reforecasts for climate context and calibration
  - Larger ensembles and better methods to quantify stats of extremes
- Relevant multi-hazard coupled impact models where feasible globally in the medium-range eg storm surge
- Vulnerability layers, particularly global and ideally dynamic eg landslide zones, active volcanoes or earthquake zones, saturated soil, flood-prone vulnerable cities etc



# Are you developing or thinking of developing new and/or innovative products in supporting activities of multi-hazard Early Warning systems? If so, what, and **how could ECMWF help?**

- Global Hazard Map – global alerts to probs of climatological extremes
- Objective features (fronts etc)
- Decider – Regime probabilities and conditional probabilities of high-impact events
  - UK and now developing for India
- First-guess severe weather warnings
- Landslide risk
- Surface water flooding Impact Model
- Multi-model and downscaled TC ensemble forecasts
- Multi-model blended probabilistic post-processing system (IMPROVER)
  - Forecaster Dashboard of high-impact events
- **Attention to high-impact surface weather elements and features**

