The visualisation of meteorological data

Royal Meteorological Society
National Meeting 30/9/15
Welcome and introduction
Bob Lunnon

Background to meeting

- At all National Meetings the Met Soc seeks feedback from attendees, including suggestions for future meetings
- A couple of years ago Chris Little suggested a meeting on visualisation
- On behalf of the Meetings Committee, I agreed to act as meeting organiser
- It was agreed to link meeting to visualisation week at ECMWF
- Stephan Siemen has acted as co-organiser

Programme – before tea break

- 14.00 Introduction and welcome. Robert Lunnon
- 14.10 The role of visualisation at ECMWF.
  - Dr Stephan Siemen (ECMWF)
- 14.40 WOW- Visualising the weather you experience.
  - Mr Dom Lethem (Met Office)
- 15.05 The visualisation of ManUniCast.
  - Dr Jonathan Fairman (University of Manchester)
- 15.30 Refreshment Break.

Programme – after tea break

- 15.30 Refreshment Break.
- 16.00 Making better scientific graphics.
    - Dr Doug McNeall (Met Office)
- 16.25 Visualisation at the Met Office.
    - Mr Neil Armstrong CMet FRMetS (Met Office)
- 16.50 A short personal history of weather visualisation.
    - Mr Chris Little (Met Office)
- 17.15 Discussion.
- 17.30 Meeting Close.

Example of Significant Weather Chart
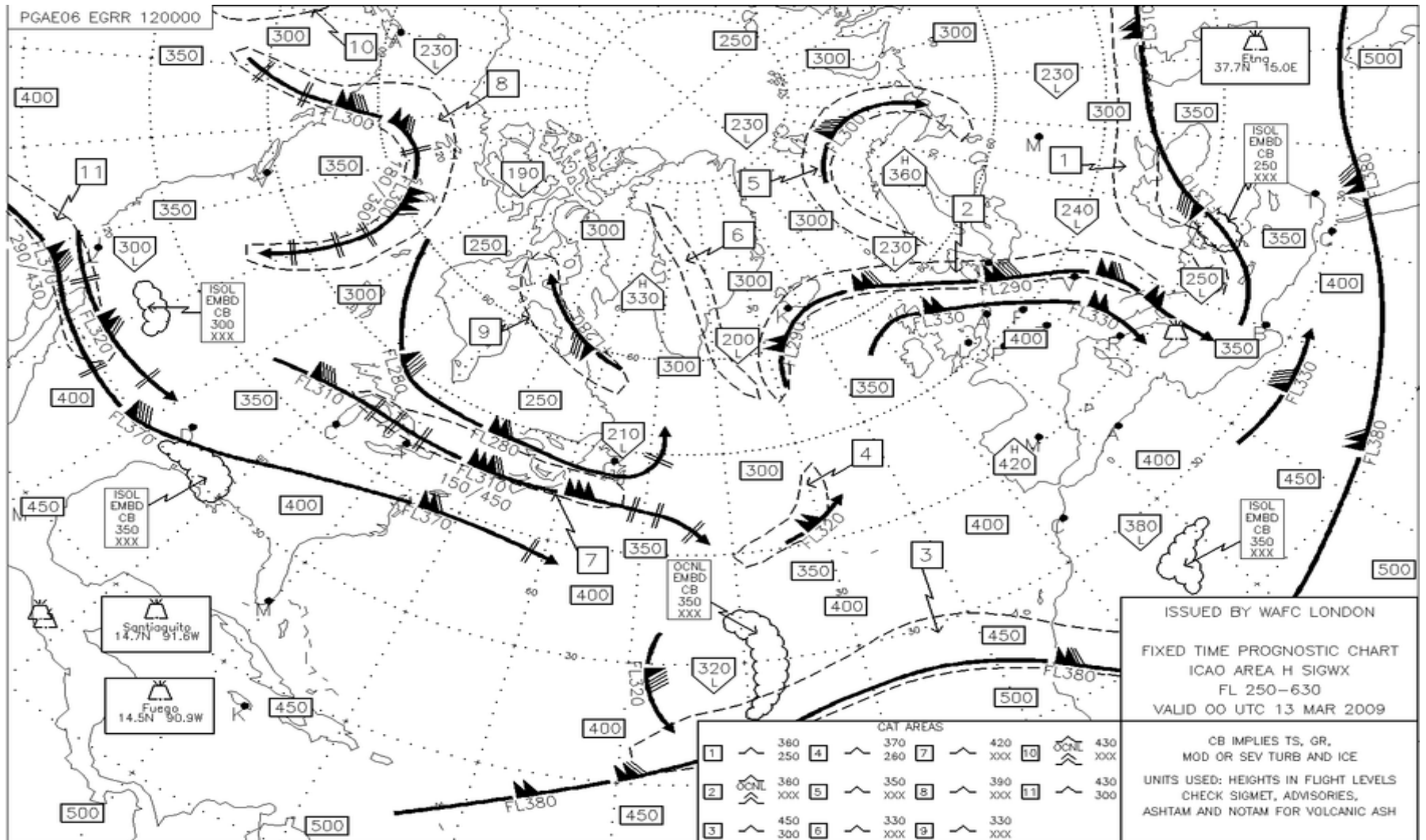
Current status of prediction of turbulence I

- On the global scale, the Met Office is a World Area Forecast Centre for aviation (together with USA) with responsibility for forecasting Clear Air Turbulence (CAT) near tropopause 6-36 hours ahead.

- Main mechanism for promulgating CAT forecasts is significant weather charts

- Since 2006, Met Office has been generating digital forecasts of CAT

- In the USA there are more detailed products available (Bob Sharman will address these)

Example of digital CAT forecast
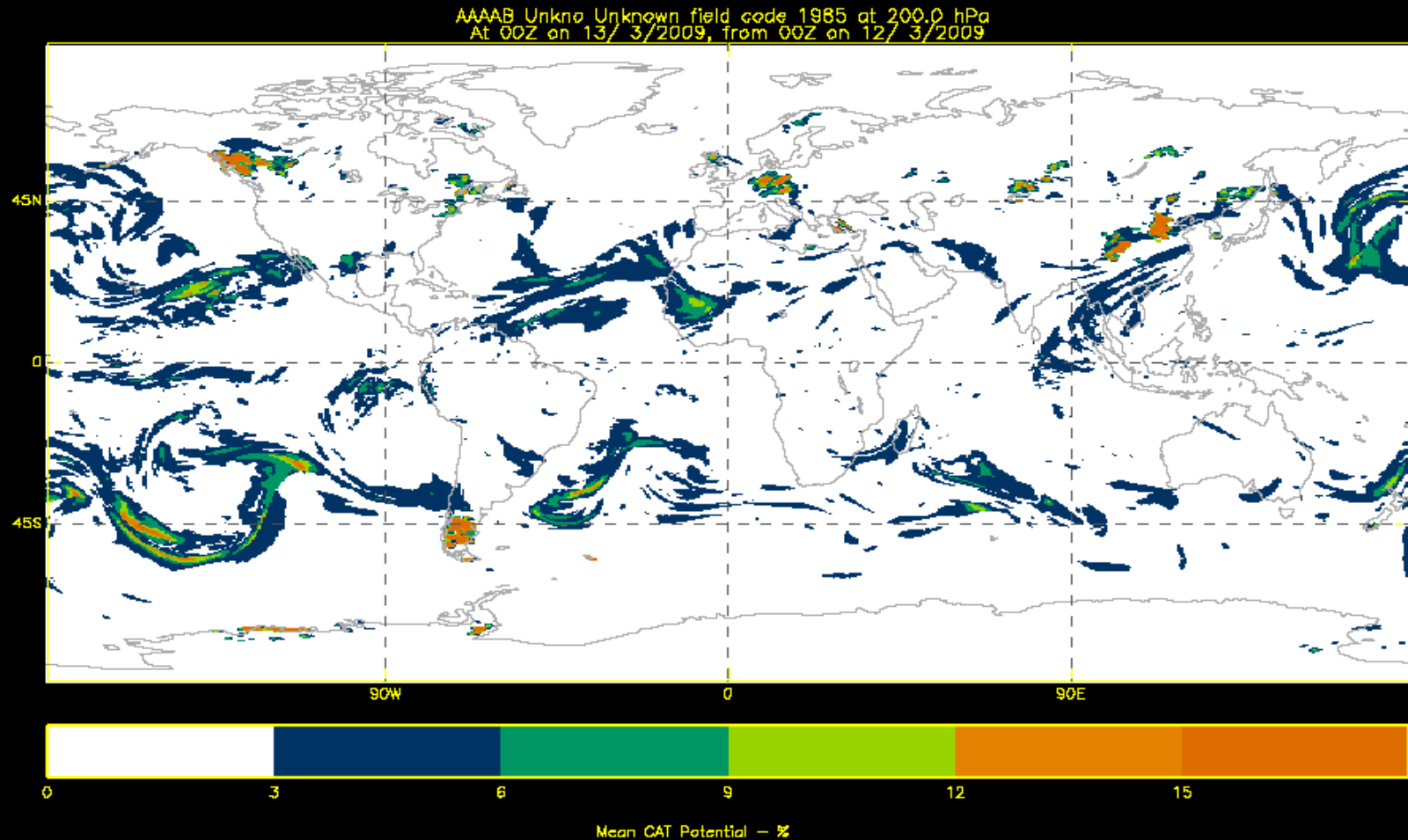
Current status of prediction of turbulence II

- SIGMETs - short range (0-6 hours ahead) warnings of aviation hazards are also issued, on a national basis

- Whereas Significant Weather Charts are driven by numerical weather prediction, SIGMETs are driven by observations

- Satellite data are particularly useful for this – Pete Francis will address this

- There are other initiatives to make short range forecasts available through updated communications systems

Future of observation of turbulence

- The DELICAT (DEmonstration of LIdar based CAT detection) project was designed to explore the feasibility of diagnosing turbulence a few kilometres ahead of the aircraft, using LIDAR

- Patrick Vrancken will describe the experimental design and give preliminary results

Future of prediction of CAT

- Bob Sharman will talk about use of very high resolution numerical models
- Paul Williams will talk briefly about application of Spontaneous Imbalance theory, a relatively new approach to predicting CAT
- Jacek Kopec will talk about theoretical work done during DELICAT
- Piers Buchanan, standing in for Phil Gill, will talk about the use of ensembles

Future of CAT

- Paul Williams will talk about how the probability and severity of CAT is likely to evolve under future climate change

Scope of meeting

- We will address turbulence (all causes) above the boundary layer (particularly in upper troposphere/lower stratosphere)
- We will not address wake turbulence (turbulence caused by aircraft themselves)
- Aviators can detect deep convection (using on-board weather radars) but not turbulence propagating away from large cumulonimbus clouds