Environmental Impacts on Aviation Safety

German National Meteorological Service

Department for Aeronautical Meteorology

Eruption of Eyjafjallajökull in 2010

-A short operational review-

Eyjafjallajökull N6338 W01937

1666 m AMSL

VA-Operation

Volcanic Ash Operation started at 14th April 2010 based on close cooperation between DWD and DFS based on products of VAAC London

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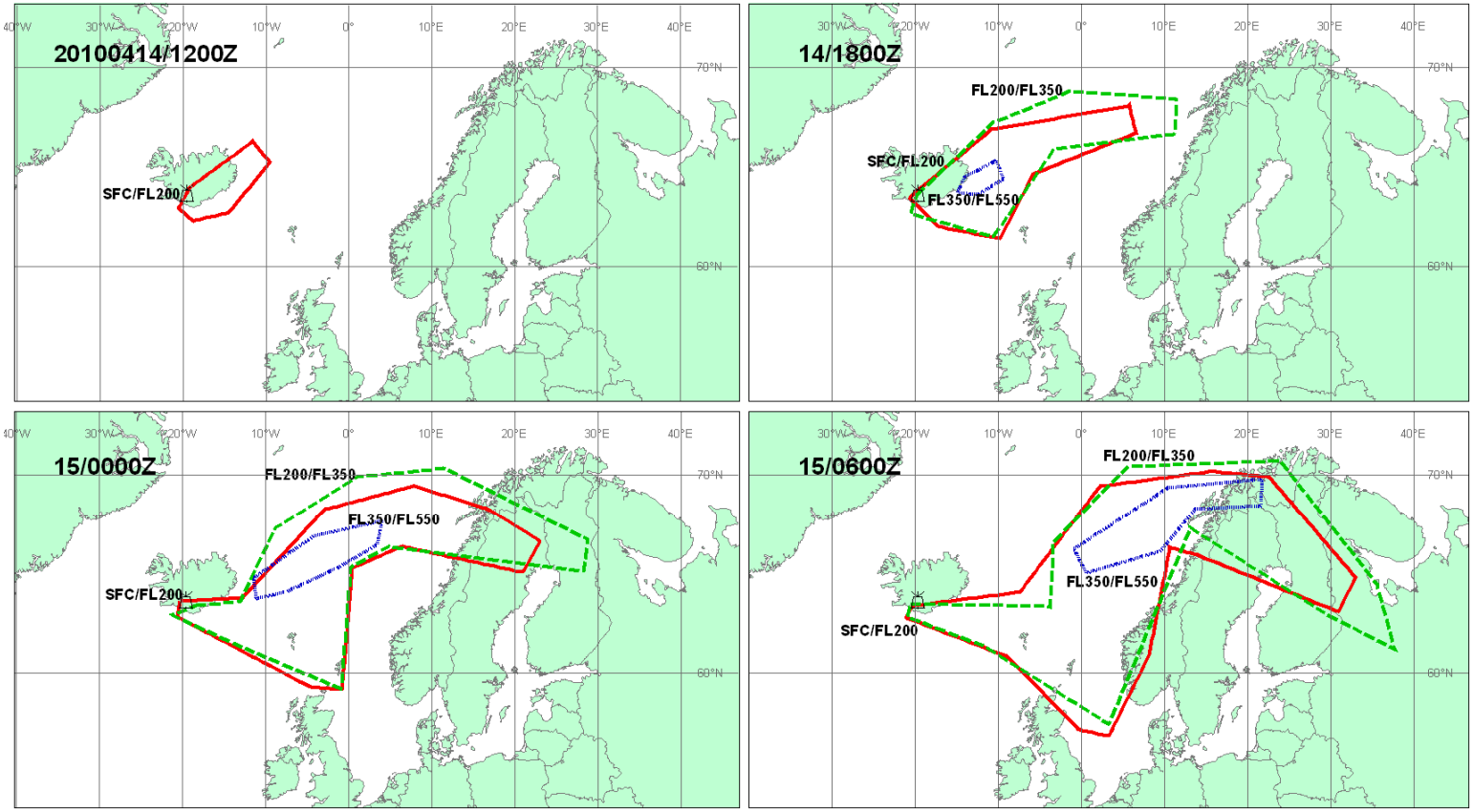

VA ADVISORY
DTG: 20100414/1200Z
VAAC: LONDON
VOLCANO:
EYJAFJALLAJOKULL
PSN: N6338 W01937
AREA: ICELAND

SUMMIT ELEV: 1666M
ADVISORY NR: 2010/001
INFO SOURCE: ICELAND MET OFFICE
AVIATION COLOUR CODE: UNKNOWN
ERUPTION DETAILS: PLUME FROM VOLCANO
REPORTED TO BE UP TO 6000M

RMK: NIL
NXT ADVISORY: 20100414/1800Z

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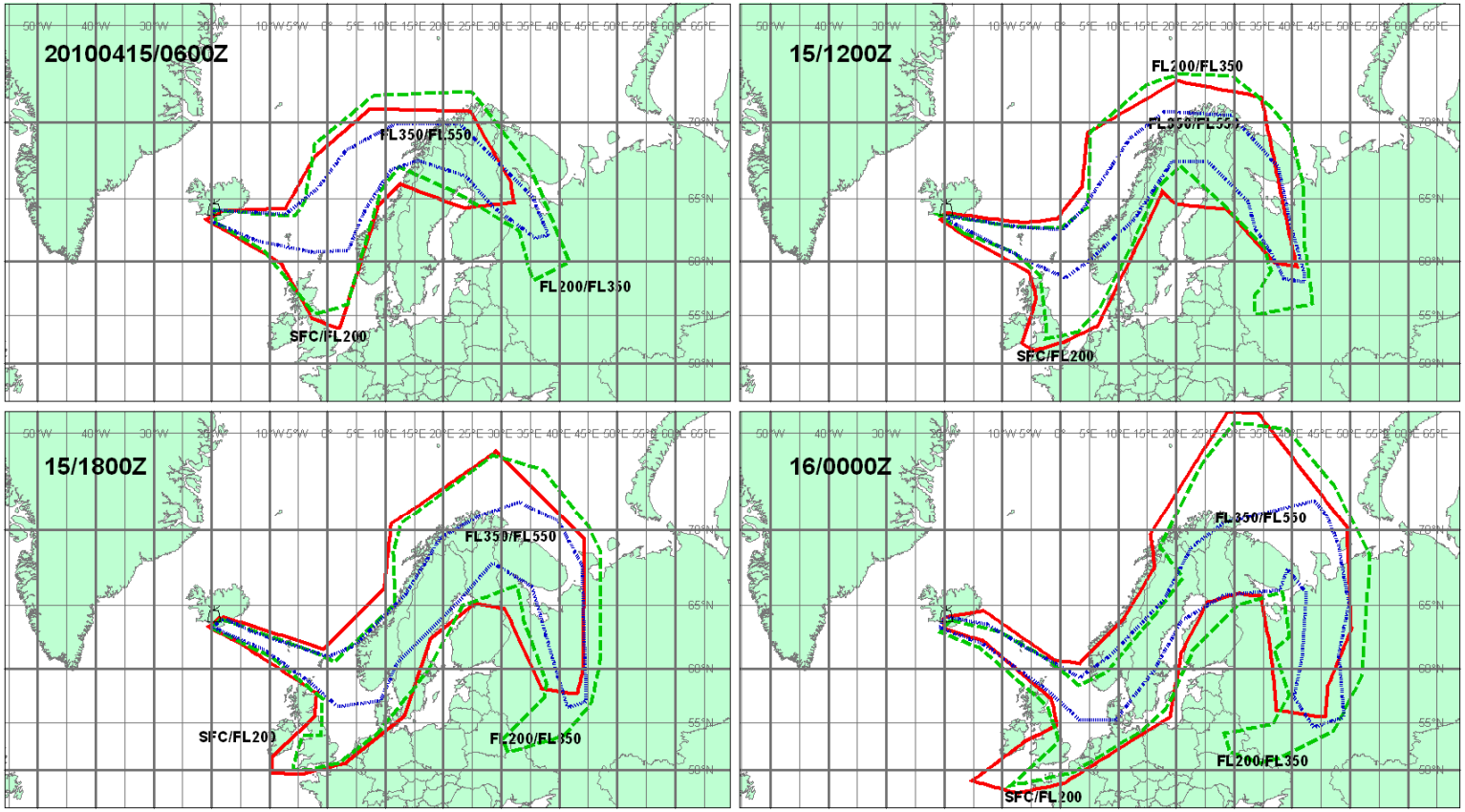


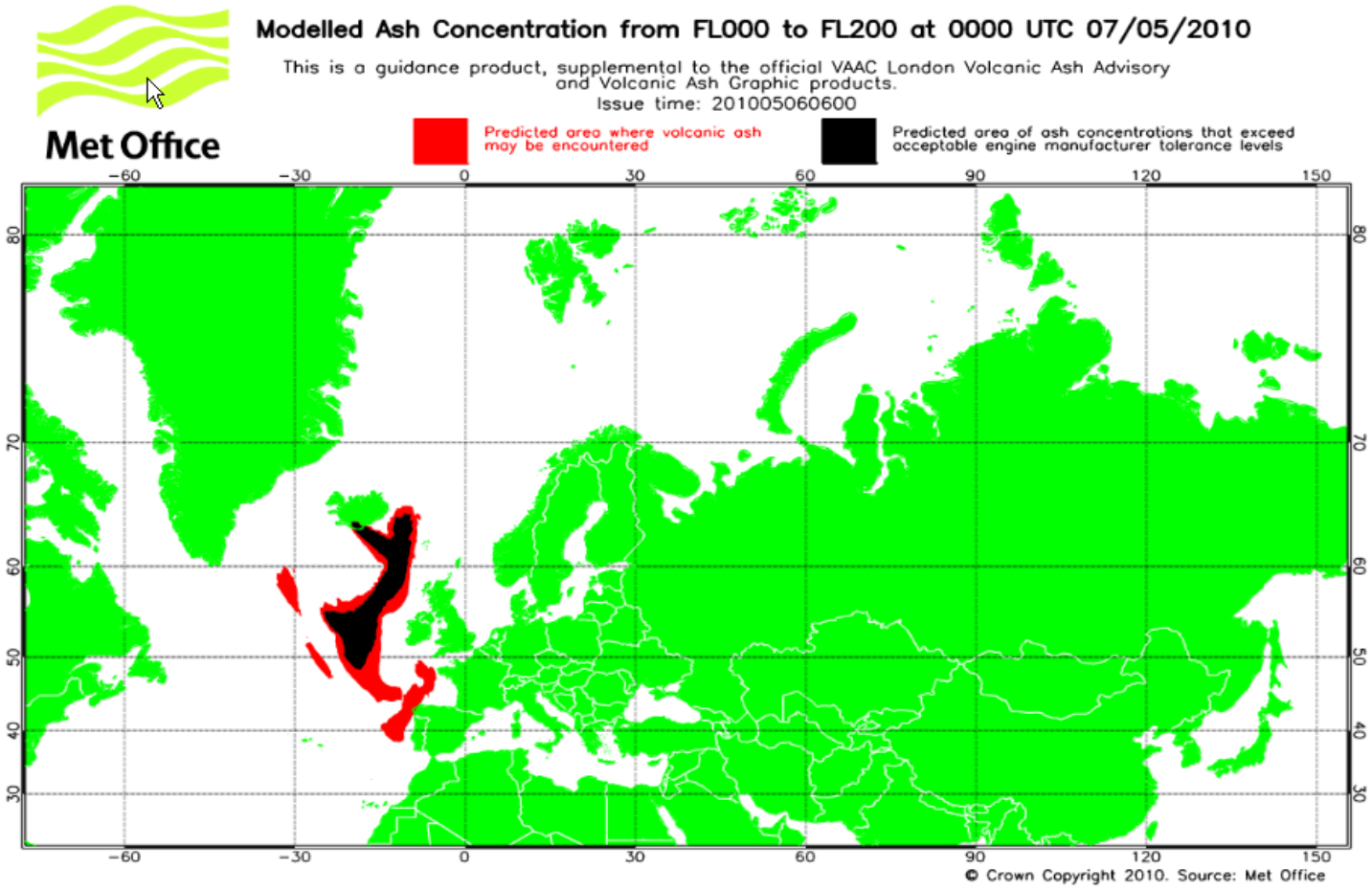
VA ADVISORY
DTG: 20100415/0600Z
VAAC: LONDON
VOLCANO:
EYJAFJALLAJOKULL
PSN: N6338 W01937
AREA: ICELAND

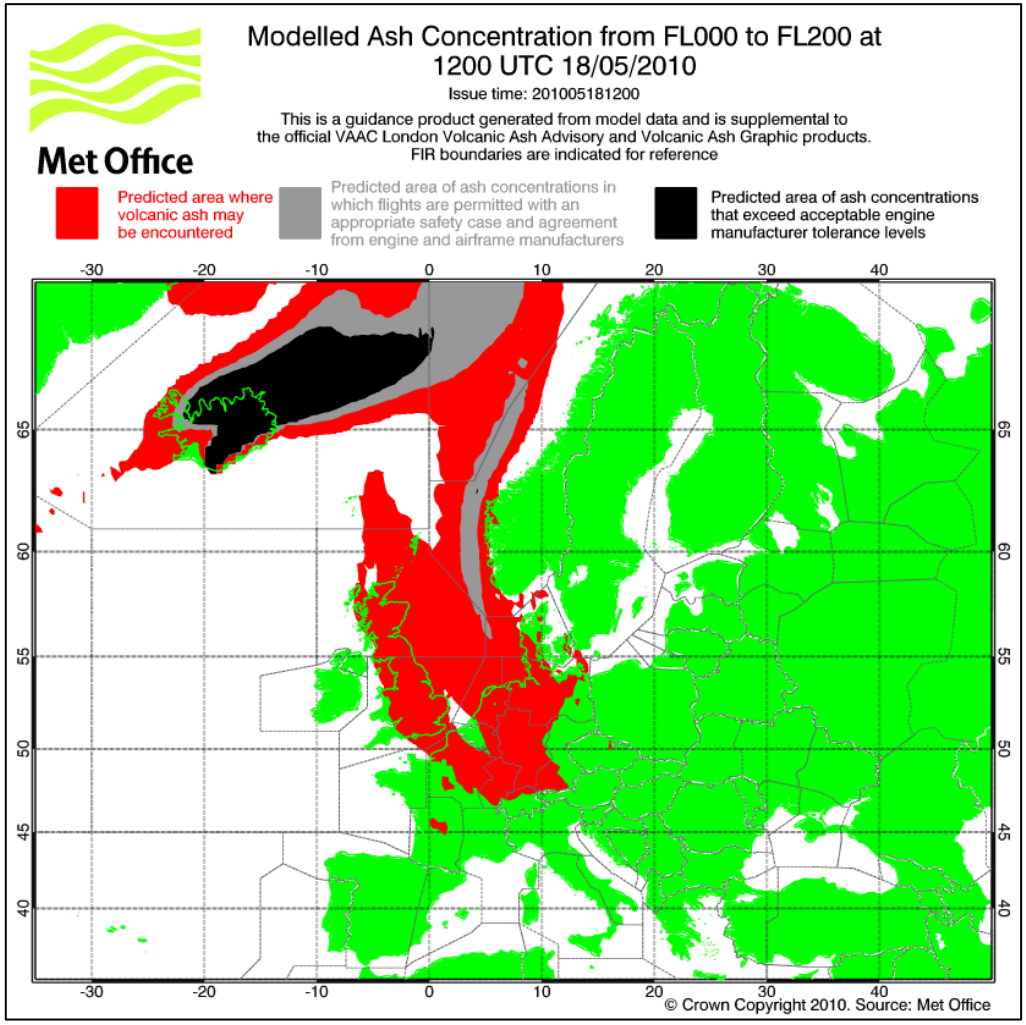
SUMMIT ELEV: 1666m
ADVISORY NR: 2010/005
INFO SOURCE: ICELAND MET SERVICE
AVIATION COLOUR CODE: UNKNOWN
ERUPTION DETAILS: PLUME FROM VOLCANO
WITH MAIN HEIGHTS 6KM, OCCASIONALLY
11KM

RMK: NIL
NXT ADVISORY: 20100415/1200Z

Valid time 20100507/0000

Volcanic Ash concentrations FL000 to FL200




Met Office
Modelled Ash Concentration from FL000 to FL200 at
1200 UTC 18/05/2010
Issue time: 201005181200
This is a guidance product generated from model data and is supplemental to
the official VAAC London Volcanic Ash Advisory and Volcanic Ash Graphic products.
FIR boundaries are indicated for reference
Predicted area where volcanic ash may be encountered
Predicted area of ash concentrations in which flights are permitted with an appropriate safety case and agreement from engine and airframe manufacturers
Predicted area of ash concentrations that exceed acceptable engine manufacturer tolerance levels
-30 -20 -10 0 10 20 30 40
65 60 55 50 45 40
© Crown Copyright 2010. Source: Met Office

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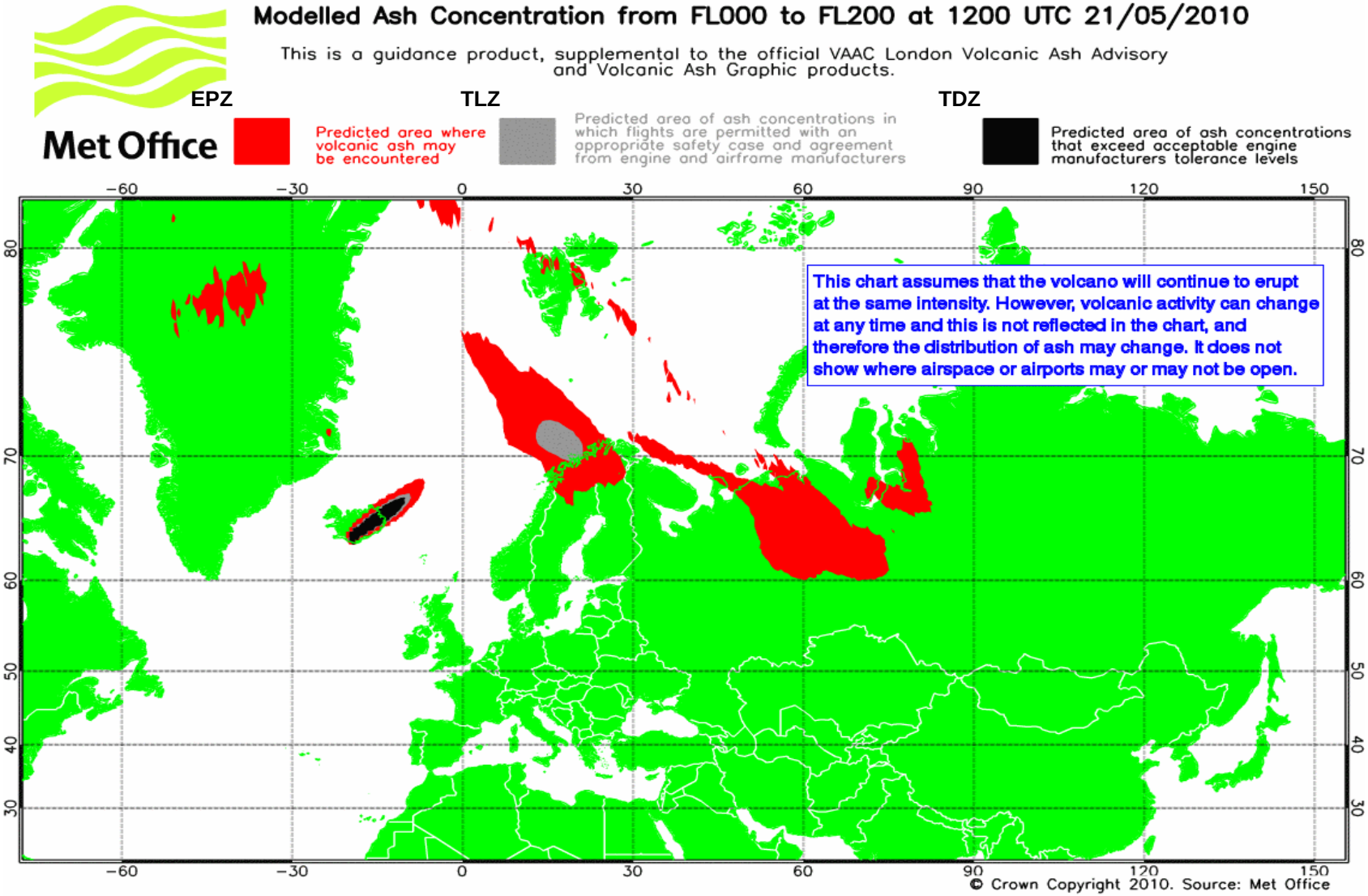


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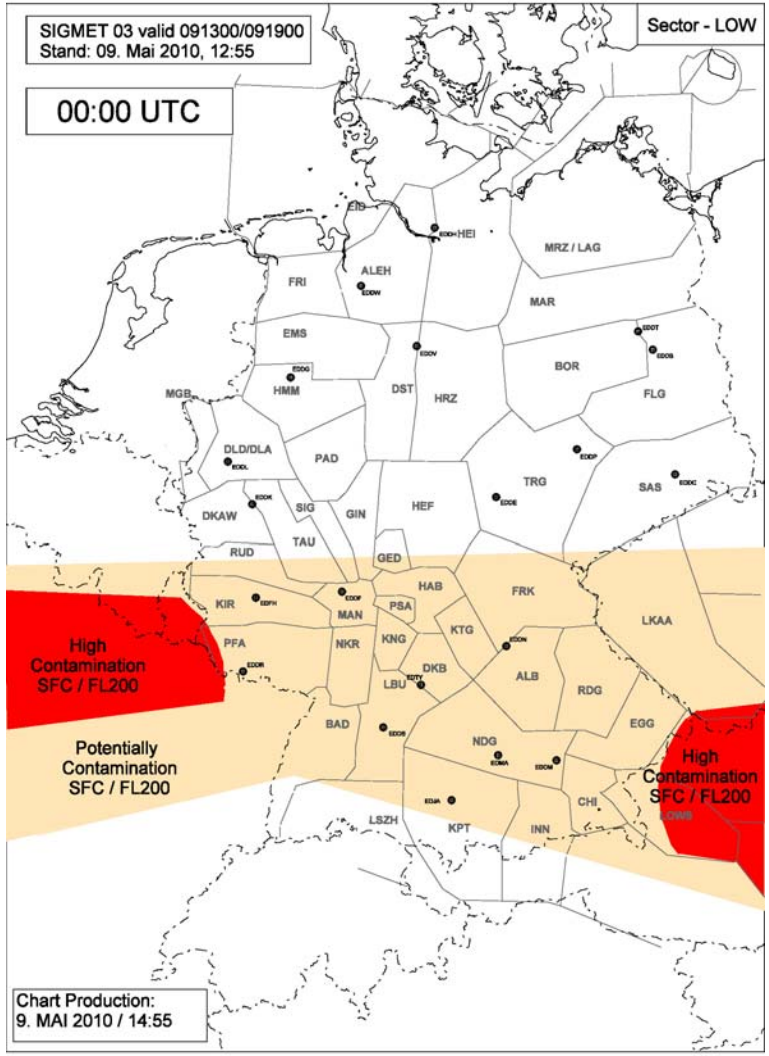
Airspace operation chart:

- contaminated areas



Conclusions

- to improve the data base and operational procedures of ANSPs regarding VA

- to provide detailed planning for recommendations and solutions, especially for improvements in (nearly) real-time measurements & numerical modelling of VA concentrations

Lessons learned!

Abstract: To provide valid information of volcanic ash contaminations to users.

What is to be done?

Abstract: To provide improved Volcanic Ash Regulations very soon.

Realization

A national Working Group of experts from

- ANSPs (DFS + DWD),
- measurement (DWD, DLR, Research centres, Universities, …)
- numerical modelling (DWD, DLR, Universities)
- users of data (Airlines, DFS, DWD)

provide recommendations/solutions for improved handling of situations of VA-contaminated airspace according to ministerial assignment

Importand measures (defined first steps)

1. Operational requirements
- consider second sources
- adapt operational requirements of the German Meteorological Service
- establish a common approach within FABEC

2. Measurements
- ground-based ceilometer measurements
- additional ground-based measurements
- airborne measurements
- satellite-based measurements

3. Modelling
- operationalise, operate and further develop data assimilation and model predictions with COSMO-ART
- employ ensemble system at the ECMWF

4. Operationalisation
- provide measurements and model results at the German Weather Service
- set up expert portal at the German Meteorological Service
- expand situation and information centre for radioactivity emergencies of the German Weather Service to cover volcanic ash events

5. Monitoring of volcanic activity
- seek opinion of experts in the relevant field

Implementaion

- end of 2010

Thank you for your attention