

PLANS FOR POST-EPS

EUMETSAT has started the preparation for the follow-on of the EUMETSAT Polar System to be available after the three Metop satellites in the 2020 timeframe. This paper presents the scope and the status of the preparation activities.

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1 INTRODUCTION

The EUMETSAT Polar System (EPS) foresees the launch and operation of three successive Metop satellites from 2006 until about 2020. Given the time required for the definition and development of a new complex, operational satellite system, it is already time to start with the preparation for the follow-on system (Post-EPS).

With EPS being part of the Initial Joint Polar System including satellites from NOAA, there is an interest of NOAA and EUMETSAT to continue cooperation towards a future joint system, also in view of wider cooperation initiatives such the Global Earth Observation System of Systems (GEOSS).

The possible EUMETSAT contribution to the future joint system is still open. It will however take into account the commitment to providing the mid morning sounding mission within the Initial Joint Polar System and be open to the possibility of exchange of instruments and coordination of orbits. A key objective for EUMETSAT is to keep responsibility for one end-to-end system, including ground and space elements, and the facilities for data processing and distribution to the users.

The preparation activities are being conducted in coordination with ESA, according to a cooperation scheme in which EUMETSAT will identify the mission requirements, and ESA will define the requirements for the instruments and the satellites.

2 OVERALL PLANNING

On the basis of a launch of Metop-A in 2006 and a projected life of 5 years for the three Metop satellites, a replacement for Metop-C is needed in 2019.

A need date of 2019 is also in line with the prospect of a future agreement with NOAA on a joint system, noting that the NPOESS series of satellites should provide coverage even beyond this time.

From the above need date, the following timeline of phases has been derived:

Phase 0	Mission Analysis	2005 - 2007
Phase A	Feasibility	2008 - mid 2010
Phase B	Preliminary Definition	2010 - mid 2012
Phase C, D	Detailed Definition, Production	2012 - 2018
Phase E	Utilisation	2019

For the activities of Phase 0 - Mission Analysis, the following tasks have been agreed with ESA:

- EUMETSAT will establish the user needs, priorities, mission and programmatic requirements, by re-activating and expanding the Meteosat Third Generation (MTG) User Consultation, and conducting scientific, and user application studies. Application expert and user consultation workshops will be organised accordingly;
- ESA will identify candidate LEO observation techniques, establish technical requirements, conduct studies on sensor and system architecture concepts and identify technology development requirements;
- both EUMETSAT and ESA will analyse the relevant programmatic constraints, and hold a Mission Definition Review at the end of the phase in 2007.

3 THE EUMETSAT USER CONSULTATION FOR POST-EPS

For the definition of mission requirements for Post-EPS, EUMETSAT has re-activated and extended the process of user consultation initiated in the frame of Meteosat Third Generation activities, which focussed on the applications of Numerical Weather Prediction (NWP), Nowcasting and Very Short Range Forecasting (NWC).

Reusing to the maximum possible extent the output of the MTG user consultation on NWP and NWC, user requirements from additional applications are being collected and analysed within Application Experts Groups (AEG) as follows:

- atmospheric sounding and wind profiling;
- ocean topography and imaging;
- cloud, precipitation and large scale land surface imaging;
- atmospheric chemistry;
- climate monitoring.

The AEGs involve leading scientists in the relevant applications supported by EUMETSAT meteorological scientists and Satellite Application Facilities (SAF), and by remote sensing experts mainly from ESA. The AEGs are tasked to collect, review and prioritise user needs on the basis of the expected evolution of the applications in the timeframe of Post-EPS. Correspondingly, the geophysical variables calling for observations from LEO will be identified together with the required accuracy, spatial and temporal resolution, and timeliness. These parameters will be specified from the minimum value, in order for the observation to be useful to the application, to the maximum value, beyond which there would be no further benefit.

The sources of requirements that are being considered by the AEGs include those available from WMO, GCOS, IGOS (for the themes on Ocean, Atmospheric Chemistry, Carbon and Water Cycle) and GOOS.

Synergies are identified in the requirements being established for Post-EPS and for the Global Monitoring for Environment and Security (GMES) initiative, in particular as concerns the ocean and atmospheric chemistry applications. These synergies are being analysed in order to inform within both EUMETSAT and ESA the processes of definition of the relevant missions.

The work of the AEGs will be presented and discussed in an open workshop in spring 2006 at EUMETSAT. The outcome will be the basis for the subsequent formulation of mission requirements and the conduct of feasibility study with ESA on sensor and system architecture concepts.

In parallel to the formulation of user requirements EUMETSAT is in a dialogue with NOAA on how to share requirements in view of future programmes and the prospect of a joint system. Following an exchange of information on the respective requirements processes, ways will be sought of making requirements more directly comparable or even documented in a common database, as a basis of information for the future cooperation initiatives.