

# The Satellite Application Facility on Climate Monitoring: Achievements and future plans

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This presentation provides an overview of EUMETSAT's *Satellite Application Facility on Climate Monitoring* (CM-SAF) being a joint activity of the meteorological services of Belgium, Finland, the Netherlands, Sweden, Switzerland, and Germany. The contribution will concentrate on the achievements obtained during the Initial Operations Phase (IOP) and the plans for the Continued Development and Operations Phase (CDOP).

Within the IOP CM-SAF established operational services for all its parameters that are related to the atmospheric part of the energy and water cycle, e.g., cloud fraction, cloud top temperature, cloud liquid water content, surface radiation fluxes and surface albedo, radiation fluxes at the top of the atmosphere, and atmospheric water vapour. In its so called product version 3 the products cover the whole Meteosat disc as well as Europe and the East Atlantic north of 60°N. Some products, e.g., cloud cover are also available over the complete Inner Arctic region. CM-SAF cloud and radiation products are mostly derived from EUMETSAT's SEVIRI and GERB as well as NOAA AVHRR measurements. Water vapour products are derived from NOAA ATOVS, SSM/I and SEVIRI measurements. First applications using CM-SAF products will be demonstrated, e.g., the analysis of anomaly patterns in solar irradiance maps, a comparison of CM-SAF water vapour products to MODIS estimates, and the potential role of CM-SAF products as validation tool for ECMWF (re-)analysis. Additionally, preparatory work for the use of MetOp instruments will be shown where especially the water vapour products benefit from the availability of the IASI and GRAS instruments.

The plans for the CDOP reflect the lessons learnt during the IOP and show a comprehensive development of the CM-SAF within the international framework. Of special

interest are the calibration and intercalibration of sensors, the use of the IASI instrument for cloud remote sensing, and the extension of the water vapour product to global scale. Especially the use of the MetOp instruments HIRS, IASI, MHS, GOME-2, and GRAS to derive water vapour in a federate activity of the CM-, GRAS-, and O3M-SAF is a development allowing for an improved understanding of error characteristics in the individual instrument records. Additionally, the CDOP plan contains the development of new products, e.g., aerosol optical depth derived from SEVIRI with ancillary information on aerosol type from the GOME-2 instrument. The inclusion of mature research products into the CM-SAF operations, e.g., the Hamburg Ocean Atmosphere Parameters from Satellite data (HOAPS) including a precipitation estimate over oceans and the continuation of the upper tropospheric humidity data set developed at the Laboratoire Météorologie Dynamique will enhance the role of the CM-SAF as the key institution for the provision of satellite-derived climate data sets in Europe.