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Climate Monitoring SAF: Sustained Generation of Satellite based climate data records

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In recent decades climate variability and change have caused impacts on natural and human systems on all continents. Observations are needed to understand and document these interactions. These observations are increasingly based on remote sensing from satellites which offer global scale and continuous coverage. Only long-term and consistent observations of the Earth system allow us to quantify impacts of climate variability and change on the natural and human dimension. From this understanding one can estimate and eventually predict future states of the Earth system and quantify its vulnerability and resilience to continuing anthropogenic forcing.

Since nearly 20 years, the European Organisation for the Exploitation of Meteorological Satellites (EUMETSAT) Satellite Application Facility on Climate Monitoring (CM SAF, www.cmsaf.eu) develops capabilities for a sustained generation and provision of Climate Data Records (CDRs) derived from operational meteorological satellites. The ultimate aim is to make the resulting data records suitable for the analysis of climate variability and the detection of climate trends. The product portfolio of the CM SAF comprises long time series of Essential Climate Variables (ECVs) related to the energy and water cycle as defined by the Global Climate Observing System (GCOS). Several data records have been released to the public by CM SAF and new editions of CDRs will be published in the coming years which will extend the time-range and the portfolio. In particular, existing products include, among others, surface and top of the atmosphere radiative fluxes, surface albedo, cloud products, as well as latent heat flux and freshwater flux over the global ice-free oceans. New products related to the following topics are currently developed and provided in near future: global precipitation (ocean and land) and global high clouds. All products are well-documented, carefully validated and were externally reviewed prior to product release.

This presentation will highlight results from the currently available CDRs from CM SAF. A focus will be on uncertainty characterisation and results from validation as well as exemplary applications. Finally, the presentation will present an overview of the upcoming new editions of CDRs.