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Satellite-based datasets for validation of regional climate models: EUMETSAT's CM SAF Climate data sets

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Increasing the confidence in model-based climate projections requires evaluation of climate simulations with high-quality observational datasets. Satellite data provide information on the climate system that are not available or difficult to measure from the Earth's surface like top of atmosphere radiation, cloud properties or humidity in the upper atmosphere. In particular over ocean and sparsely populated areas space-based observations are largely the only data source. Especially for evaluating the generality of climate models across varying locations, satellite-derived datasets have the strong advantage of consistent measurements and processing methodologies across regions. Existing satellite time series, especially from operational meteorological satellites, now reach a length that makes them useful for climate analysis. Following this idea, EUMETSAT's Satellite Application Facility on Climate Monitoring (CM SAF) is dedicated to the high-quality long-term monitoring of the climate system's state and variability. CM SAF facilitates the analysis and diagnosis of climate parameters in order to detect and understand changes in the climate system. One goal is to support the climate modelling communities by the provision of satellite-derived geophysical parameter data sets. CM SAF provides data sets of several cloud parameters, surface albedo, radiation fluxes at top of the atmosphere and at the surface, atmospheric temperature and water vapour profiles as well as vertically integrated water vapour (total, layered integrated). They are derived from geostationary (SEVIRI and GERB instruments) and polar-orbiting (AVHRR, ATOVS and SSM/I instruments) meteorological satellites. In the beginning of 2011, CM SAF released its first two climate data records: 1) The updated climate data record of SSM/I instrument data embarking the heritage of HOAPS. The CDR is covering 1987-2005 and is suitable for all climate related application over the global ice free ocean. 2) The surface radiation data set based on MVIRI measurements covering the entire Meteosat disk from 1982-2005. The poster will introduce EUMETSATs CM SAF and the data sets suitable for climate applications.