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ESA Cloud CCI: Generation of optimal estimation based, multi-sensor cloud property data set from AVHRR heritage measurements.

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In 2010 the ESA Climate Change Initiative (CCI) Cloud project was started with the objectives of generating long-term coherent data set of cloud properties. The cloud properties considered are cloud mask, cloud top estimates, cloud optical thickness, cloud effective radius and post processed parameters such as cloud liquid and ice water path. These data records are based on an optimal estimation (OE) retrieval and which enables the application to multiple sensors of past, existing, and upcoming European and Non-European satellite missions. The multi-sensor based datasets are characterized by high temporal and spatial samplings, high accuracy, homogeneity and stability. The OE approach further allows for a simultaneous, coherent and spectrally consistent retrieval of all cloud properties together with a provision of physically-derived, pixel-based uncertainty estimates for each cloud property. In the first project phase, two multi-annual datasets spanning 2007 to 2009 and based on carefully (inter-)calibrated radiances will be provided. The AVHRR-heritage dataset includes the sensors AVHRR, AATSR and MODIS. The synergy dataset is based on combined AATSR and MERIS measurements. Within the second phase of the project all datasets will be extended to the full lengths of the measurements records resulting in multi-decadal Fundamental Climate Data Records.

The presentation will give an overview of the CCI Cloud project, its objectives, timeline and progress. The datasets and their characteristics will be introduced, examples presented and evaluations against other satellite- and ground-based data presented.