OPERATIONAL ALGORITHMS FOR HIGHER LEVEL CLOUD PRODUCTS

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ABSTRACT

The operational processing scheme runs at the LCRS for the retrieval of cloud microphysical properties. Cloud types and precipitation estimates are integrated into the 2met! Processing scheme. Two examples are given here.

MODIS Product Line

Up until now the basic processing steps including decoding of satellite raw data, calibration, geo-location and projection are included in the 2met! Processing environment. The retrieval runs in an MS Windows environment based on modular pre-processing by MOPS. Cloud properties (effective cloud droplet radius, optical thickness, geometrical thickness and liquid water path) of day-time data are retrieved based on an adapted version of an algorithm by T. Nakajima, T. Y. Nakajima and K. Kawamoto with look-up tables for Terra-/Aqua-MODIS and MSG respectively. For night-time data an infrared technique developed at the LCRS is used taking into account near-infrared and infrared radiances. The processing chain is ready for Terra-/Aqua-MODIS and will also be available for MSG.

NOAA Product Line

The widely used NOAA-AVHRR imagery is used to produce standard products like the NDVI or cloud type classifications. The latter is performed for both day and night overpasses by applying several threshold tests which also include ancillary terrain information. The classification scheme generally follows the logic of the APOLLO-method by Saunders and Kriebel (1988) and Kriebel et al. (1999) for both day and night application. Existing tests were modified and additional tests have been introduced. For the remaining tests of the APOLLO scheme, thresholds have been carefully adjusted (Bendix et. Al. 2003).

The software presents examples of applications of how the algorithms can be used quasi operationally and provides a clear picture of how useful will be the results for weather nowcasting and forecasting purposes.