



1 Vertical profiling of the atmosphere for the validation of space-borne rainfall retrievals

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With the forthcoming Global Precipitation Mission and its proposed application at higher latitudes than the current TRMM mission, new impetus is given to the development of retrieval algorithms and validation procedures in the moderate climate zones. Retrieval algorithms of rainfall rate, latent heat flux or wind fields require a good physical understanding of the rainfall process as well as a good model of the microphysical structure of the full atmospheric column. With higher frequencies being used in passive sensors from space, the level of detail microphysical information needs to be enlarged.

This presentation describes the capacity of the Dutch CESAR Observatory to measure the required information. CESAR Observatory, located in the heart of The Netherlands, consists of a multitude of remote sensing and in situ instruments, augmented by observations from space. The observatory is a key tool in the national Dutch program to monitor the physical properties of the complete atmospheric column with as much detail as possible. Specific research programs are developed to measure the hydrological cycle, land-atmosphere processes and the cloud-aerosol-radiation interaction.

While the main motivation of the work at the site is given in by regional climate change, other applications are also envisaged, most notably:

- satellite validation through the characterization of the physical properties of the atmosphere to improve observations from space, e.g. CloudSat, GPM, Calipso
- retrieval algorithm development.

The presentation will address the capacity of the observatory, retrievals of microphysical properties of clouds and rain, and the general philosophy on how to use observatories like CESAR for validation of profiling satellite sensors like GPM.