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Retrieval of liquid cloud properties from POLDER/PARASOL instrument and comparison with MODIS products

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It is now well established that clouds play an important role in the energetic balance of the Earth. It is therefore fundamental to accurately represent their role in climate change studies, and understand their evolution in term of global distribution of physical properties. In recent years a number of different satellite sensors have been used, with their specific algorithms and assumptions, to obtain this global vision.
Among them, the POLDER/PARASOL instrument with its multi-viewing polarized measurements capability is used to retrieve liquid cloud microphysical properties. Thanks to the high sensitivity of such measurements to liquid cloud size distribution and cloud top layer pressure, we are able to accurately retrieve, from a variational approach, three important parameters (e.g. top layer pressure, droplet size distribution effective radius and variance) along with the uncertainties inherent to the measurements and forward model errors covariance matrix.
The mathematical framework of such a method gives also a very interesting tool to understand where the information (in the sense of the Shannon information content) comes from and on which parameters it is spread on.
In this study we will briefly describe the method used to retrieve these parameters as well as the information content of such measurements. The results of comparison between our liquid cloud microphysical properties retrievals and those obtained from MODIS bispectral technique will be discussed.