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Introduction

The Global Retrieval of ATSR Cloud Parameters and Evaluation (GRAPE) project makes use of visible and infrared measurements from the nadir viewing geometry of the Along-Track Scanning Radiometer instruments (ATSR-2/AATSR) to perform retrievals of cloud and aerosol properties on a global scale. When processing has been completed, a consistent dataset of cloud and aerosol properties spanning more than thirteen years (July 1995 to present) will be available.

At present, all of the ATSR-2 data has been processed to produce a six-year dataset. Some of the spatial and temporal patterns observed in the data are presented in this poster. In addition, work to validate the latest version of the data is described and plans to extend the GRAPE retrieval scheme are outlined.

Further information:

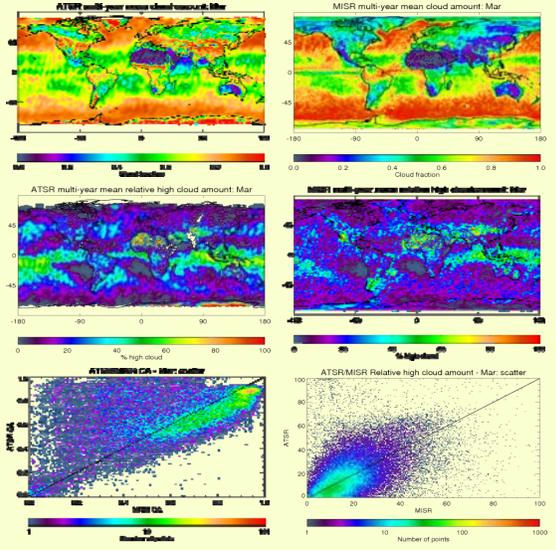
<http://www.atm.ox.ac.uk/project/grape>

<http://badc.nerc.ac.uk/data/grape>

Cloud fraction comparisons

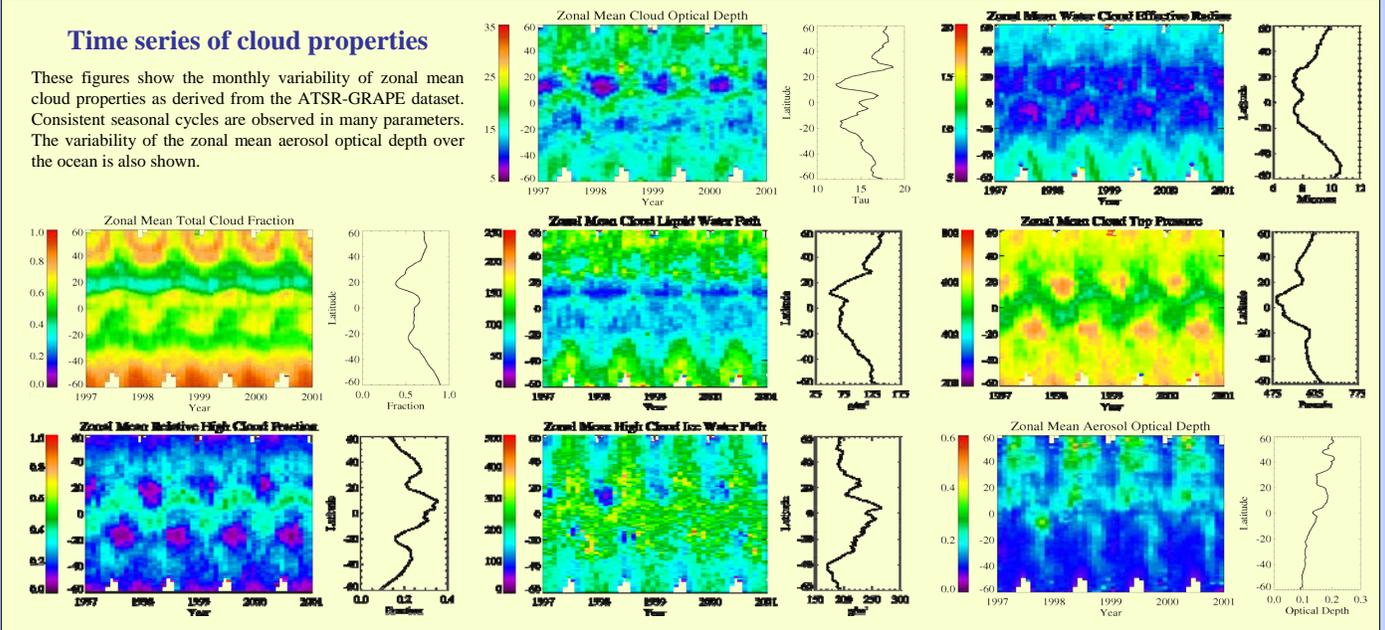
These figures show the cloud amount and relative high cloud amount for a 'mean March' using data from the GRAPE project (1997-2000) and the operational cloud retrieval for the MISR instrument (2001-2007). Both instruments report a similar spatial distribution of cloud amount and relative high cloud amount. While there is a very strong agreement between the products over the ocean, over the land the agreement is poor. The MISR data tends to show a greater land-sea contrast than the ATSR-2 data.

Similar monthly-mean maps of a number of cloud properties have been submitted to the Global Energy and Water Cycle Experiment (GEWEX) Cloud Assessment (CA) study. The study will compare cloud parameters retrieved using a wide variety of different methods and satellite instruments.



Time series of cloud properties

These figures show the monthly variability of zonal mean cloud properties as derived from the ATSR-GRAPE dataset. Consistent seasonal cycles are observed in many parameters. The variability of the zonal mean aerosol optical depth over the ocean is also shown.



Using forward-view data from ATSR-2

The operational version of the GRAPE cloud retrieval scheme uses only nadir-view measurements from the ATSR-2 instrument. The ATSR forward-view corresponds to an instrument zenith angle of 53°-55° and thus has the potential to provide more information on optically thin Cirrus clouds than the nadir-view (due to the longer atmospheric path).

Recently, the retrieval scheme has been adapted to allow the use of either the nadir or the forward-view measurements. The figures on the left show the brightness temperatures measured in the ATSR thermal infrared channels (11 and 12 microns) for a scene over the southern Atlantic Ocean, observed in January 2001. Both the nadir and forward-view measurements are shown. There is a greater contrast between the channels in the forward-view than the nadir, which is likely to be a result of the higher sensitivity of the forward view measurements to thin Cirrus clouds.

Ten orbits have been processed using first the nadir measurements and then the forward-view measurements. Normalised histograms of the cloud optical depth and cloud top pressure values retrieved in each case are shown on the right. A much higher fraction of high, thin clouds are retrieved when the forward view measurements are used.

