

## **Utilization plans for Ku-band Scatterometer and Ocean Colour Monitor to be placed aboard Indian Satellite OCEANSAT-II**

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State of the art scatterometers have entered the arena of operational forecasting of weather and sea state and from 2006 onwards, international cooperative venture have been planned (e.g. METOP) to help in collection of observations for oceanic wind and temperature and humidity. Indian satellite OCEANSAT-II, will also contribute to this data base through observations from Ku-band pencil beam scatterometer, an advanced Ocean Colour Monitor and an AO payload from Italian Space Agency, Radio Occultation Sounder for Atmosphere (ROSA), which will provide temperature and humidity profiles along with electron density profiles in the ionosphere. This is the second in the series of Indian Remote Sensing satellites for oceanographic applications. The satellite is scheduled for launch in 2007, with a mission life span of five years.

With a microwave scatterometer on-board Oceansat-II, ISRO will also be in a position to effectively contribute to the operational forecasting activities in oceanography and meteorology in the country, demonstrate several semi-operational and science applications as well. Identification of vortices of active weather systems over oceans (which are likely to grow into cyclonic conditions), and associated sea states at early stages, are examples of potential operational applications of the scatterometer.

The Ocean Colour Monitor (OCM) will be a slightly modified version of its predecessor on OCEANSAT-I (already providing very useful data) for various biological and geo-physical applications like studying coastal processes, aerosol radiative forcing, studying oceanic warm pool phenomenon and physical-biological coupled processes, forecasting Potential Fisheries Zones (PFZ) and primary productivity estimates. Oceansat-II OCM Utilisation will be a continuation of the services over those from OCEANSAT-I, SeaWiFS and MODIS-AQUA/ TERRA. It will provide ocean-colour variables i.e. Chlorophyll-a, Total Suspended Matter, Coloured Dissolved Organic Matter and Diffuse attenuation coefficient.

The essential work components of Oceansat-II Utilisation are (1) Geophysical Retrieval, (2) Geophysical Validation, and (3) Demonstration of Applications of both Scatterometer and OCM. 'Geophysical Model Function' and 'Vector Wind Retrieval Algorithm' development are two critical elements in the Scatterometer Retrieval, while development of advanced statistical techniques is at the core of retrieval of Ocean Colour variables from OCM-II channel measurements.

Validation of geophysical variables, obtained with the help of retrieval algorithms developed exclusively for the Oceansat-II sensors, will be a major Post-Launch activity. This will consist of systematic comparison exercise of satellite-derived products with those acquired concurrently in-situ (e.g., ship/buoy measured), products of contemporary international satellites, and numerical/physically-based model analyses results. Geophysical validations (as also subsequent applications) will be carried out in close collaboration with several national user agencies, and expected to serve a confidence building exercise.