

EARTH OBSERVATION SYMPOSIUM (B1)
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ASSESSING THE WAVES AND OCEAN SURFACE WIND PROPERTIES: THE CFOSAT PROJECT

Abstract

1. INTRODUCTION

The Chinese and French Space Agencies propose to jointly carry out an innovative mission devoted to the monitoring of the ocean surface and its related science and applications : the China France Oceanography Satellite project (CFOSAT).

Monitoring, understanding and predicting the processes at ocean surface is of major importance and even more critical for maritime countries. The primary objective of CFOSAT is to monitor and characterize, at the global scale, ocean surface wind and waves which are key parameters of :

- wind and wave forecast for marine meteorology
- ocean dynamics modeling and prediction
- climate variability knowledge
- knowledge of surface processes

To meet these objectives, two scatterometers are embarked : SCAT, provided by China, to measure ocean surface wind vectors and SWIM, provided by France, to measure directional wave spectra.

CFOSAT will provide observations in open ocean regions as well as at the boundary of coastal regions, in order to feed data into the studies and models devoted to coastal processes.

2. THE MISSION IMPLEMENTATION AND STATUS

The CFOSAT program is carried out through a cooperation between French and Chinese Space Agencies (resp. CNES CNSA) which provide satellite and ground segment components. Both entities equally share the responsibilities at System and Management levels; the Science Requirements are managed by both co-PI who lead the Joint Science Working Group.

The system is based on a LEO sun synchronous orbiting satellite flying at a 519 km altitude, able to permanently carry out measurement through 2 Ku Band scatterometers for wind and waves monitoring (resp. SCAT & SWIM) . The scientific telemetry is then delivered to the French and Chinese Mission Centers. In addition, the system will have the capability to achieve a near-real time transmission of the data to the main centers which run atmospheric or wave prediction models for use in assimilation processes and forecast procedures.

Feasibility and Preliminary Design phases (phases A & B) were successfully carried out from 2006 until 2009. The project started the Detailed Design (phase C) beginning of 2011 and plans to complete the Manufacturing and Qualification (Phase D) so as to get a fully validated system on orbit in 2015.

3. CONCLUSION

CFOSAT is an innovative mission and a world premiere, jointly developed by CNES CNSA. The unique combination of instruments will allow to determine the directional wave spectra of waves in relation with surface wind.