



ESA - MOST Dragon 2 Programme

**2011 DRAGON 2 SYMPOSIUM**

中国科技部-欧洲空间局合作“龙计划”二期

“龙计划”二期2011年学术研讨会

## **Project Summary**

**id. 5316**

### **Demonstrating SAR Monitoring**

### **of Chinese Seas**

### **Friday, 24 June 2011**

## Main Results

The scientific results obtained by

**1) the Second Institute of Oceanography:**

Improvement of the

- sea surface wave retrieval method
- internal wave retrieval method
- oil spill detection method
- ship detection method
- shallow water bathymetry retrieval method.

**2) the Second Institute of Oceanography in cooperation with the University of Hamburg:**

Improvement of the interpretation of SAR images of the sea surface showing wave patterns. Discrimination SAR signatures originating from oceanic internal waves and atmospheric gravity waves.

## Main Results cont'd

### **3) the Hong Kong Observatory in cooperation with the University of Hamburg:**

Improvement of the knowledge on

- the generation and propagation of atmospheric gravity waves over the South China Sea
- the structure of coastal wind fields over the South China Sea associated with Winter Monsoon surges.

### **4) the Ocean University of China in cooperation with the University of Plymouth:**

Improvement of the knowledge on the multimodal structure of baroclinic tides in the South China Sea.

### **5) the Nansen Environmental and Remote Sensing Center in cooperation with IFREMER and CLS:**

- Improvement of the method to retrieve wind and current information from anomalies of SAR Doppler spectra with application to the Kuroshio current.
- Retrieval of surface current induced by oceanic internal waves.

## Joint research work carried out between Chinese and European partners in 2010/2011

**Jingsong Yang** of the Second Institute of Oceanography in Hangzhou visited ESRIN From July 2010 to January 2011 working on validating GobeWave data..

**Chungchen Guo** of the Ocean University of China carries out since early 2011 theoretical investigations on the generation and propagation of internal waves in the South China in the framework of a Ph. D. thesis at the University of Southampton (UK) under the supervision of Dr. Vasiliyi Vlasenko.



## List of **joint** publications by Chinese and European Dragon 2 partners in Dragon project 5312 in 2010/2011:

- Cheng, C. M., and W. Alpers, Investigation of trapped atmospheric gravity waves over the South China Sea using Envisat synthetic aperture radar images, *Int. J. Rem. Sens.*, 31(17-18), 4725-4743, 2010.
- Chan, P. W., C. M. Cheng, and W. Alpers, Study of wind fields associated with subtropical squall lines using Envisat synthetic aperture radar images and ground-based weather radar data, *Int. J. Rem. Sens.*, 31(17-18), 4897-4914, 2010.
- Alpers, W., and W. Huang, On the discrimination of radar signatures of atmospheric gravity waves and oceanic internal waves on synthetic aperture radar images of the sea surface, *IEEE Trans. Geosci. Rem. Sens.*, 49(3), 1114-1126, 2011.
- Alpers, W., P. W. Chan and W. K. Wong, A northerly winter monsoon surge over the South China Sea studied by remote sensing and a numerical model, *Int. J. Rem. Sens.*, 2011, in revision..

## List of **joint** publications by Chinese and European Dragon 2 partners in Dragon project 5312 in 2010/2011, cont' d:

- Vlasenko, V, N. Stashchuk, C. Guo, and X. Chen, Multimodal structure of baroclinic tides in the South China Sea, *Nonlin. Processes, Geophys.*, 17, 1–15, 2010.

## Project Planning: 2011/ 2012

**Werner Alpers** of the University of Hamburg will visit in October 2011 for 2 weeks the Second Institute of Oceanography in Hangzhou to carry out joint research with **Jingsong Yang** on the interpretation of Envisat ASAR images acquired over Chinese Seas.

**Chungchen Guo** of the Ocean University of China plans to carry out theoretical investigations on the generation of internal waves in the Luzon Strait at the University of Plymouth in the framework of a Ph. D. thesis.

# Issues and Recommendations

**Due to the fact that different project proposals having quite different scientific objectives (although they have a common area of investigation - the Chinese Seas), were put into one project, no optimal cooperation between the all partners has been achieved so far.**

**Furthermore, the project suffers greatly from the fact that no oceanographic in-situ data for comparison and validation can be provided from the Chinese side.**

## **Recommendations:**

- Improve the cooperation between the Chinese and European project partners.**
- Aim at writing more papers jointly with Chinese partners from different institutions and with Chinese and European partners.**
- Find a possibility to get access to Chinese in-situ data for comparison with satellite data.**