

## Variations of Estuarine Turbid Plumes and Mudflats in Response to Human Activities and Climate Change

### European PI(s)

Dr. David DOXARAN, email: doxaran@obs-vlfr.fr

Dr. Suhyb SALAMA, email: salama@itc.nl

### Chinese PI(s)

Prof. SHEN Fang, email: Fshen@sklec.ecnu.edu.cn

Prof. ZHOU Yunxuan, email: zhouyx@sklec.ecnu.edu.cn

The research programme is divided into two parts which will be run as follows:

#### WP1:

1. Calibration / validation of EO data products, like SSC product in highly turbid waters
2. Possible suggestion for the improvements of retrieval algorithms and future missions
3. Expanding the interdisciplinary research and application of EO data and contribution to relevant global coastal themes, e.g. LOICZ, MAB, IMBER etc.

#### WP2:

Understanding the bio-geophysical, biogeochemical and ecological function of the Yangtze estuary in the context of global change and changed land use is crucial to sustain these marine ecosystems. Our proposal contributes to the coastal zone, hydrology and climate themes of the DRAGON 3 call in four major aspects.

##### 1. Ecosystem management:

The research will provide a cost effective monitoring method of the ecological status of the Yangtze estuary. Ecological indicators will be developed which will aid in determining natural and manmade causes affecting ecosystem performance and these tools will improve ecosystem management. It will also facilitate monitoring of inter-annual variability in aquatic ecosystems of the Yangtze estuary and its effect on habitat.

##### 2. Coastal water quality:

The research will form a corner stone in the assessment of estuarine water quality status

##### 3. River project impacts on estuarine ecosystems:

The project will contribute to our understanding of ecosystem's response to anthropogenic induced changes, in particular the effect of the Three-Gorges project.

##### 4. Climate Change:

The project will provide the needed tools allowing us to quantify climate change induced changes on the Yangtze river and the coastal environment influenced by the rivers' discharge and the effect of changes upstream in the river/plateau through monitoring of environmental fluctuations and persistent hydrological changes. The research may also contribute to assessing the uptake of CO<sub>2</sub> by biotopes through a better quantification of light absorbed by mudflat algae and phytoplankton, which provides essential information to refine the coverage of global ecosystem and carbon cycle models.

## 河口沉积羽流及潮滩对人类活动和气候变化的响应

中方项目负责人: 沈芳, Fshen@sklec.ecnu.edu.cn 周云轩, zhouyx@sklec.ecnu.edu.cn  
欧方项目负责人: David DOXARAN, doxaran@obs-vlfr.fr Suhyb SALAMA, salama@itc.nl

WP1 :

校准及检验对地观测在浑浊海岸水域的海洋水色产品,例如浑浊水体中的悬浮泥沙浓度。分析对比以高悬沙浓度为优势的长江口和吉伦特河口的沉积羽流的动态变化,以及人类活动和全球气候变化影响下的响应。卫星反演算法的改进及未来观测任务的建议。扩展交叉研究领域及对地观测数据在国际海岸观测计划(如IMBER, LOICZ, MAB等)中的应用。

WP2 :

通过对地观测,研究聚焦于(1)生态系统管理:提供一个具有成本效益的泥沙为主的河口生态状况监测方法。通过研制生态指标分析影响生态系统的自然和人为因素,以改善生态系统管理。它也将促进在水生生态系统及其栖息地的影响年际变异的监测;(2)沿海水质状况的评估;(3)河口生态系统对人类活动的响应,例如对流域大型工程建设的响应;(4)提供必要的工具,量化分析由气候变化导致的流域来水来沙变化对河口近岸的影响,以及通过监测环境和水文变化分析河流上游/高原变化。