



Centre Royal de  
Télédétection Spatiale



## **TRAINING WORKSHOP ON SPACE OCEANOGRAPHY** **Organized by CRTS and COSPAR**

**In collaboration with**  
**NWRA, NOAA, INCOIS, NRC Italy, LOV**

***CRTS, 12 - 16 September 2022***

### ***NOTE***

#### ***INTRODUCTION***

For several decades, space observation techniques have allowed huge progress in providing the possibility of analyzing and monitoring the oceans. Hydrographic measurement (maritime topography), its evolution over time, wave measurement, surface temperature and biological indicators are all information now obtained permanently and instantaneously.

All of this data collected by meteorological and ocean observation satellites provides a better description and understanding of ocean phenomena and contributes significantly to the management of marine risks and marine resources.

These large amounts of data from Earth observation as well as simulation and modeling tools available at the international and national level open an unprecedented path for applied research activities whose orientations remain dependent on a good knowledge and appropriation by national researchers of these data, methods and models used as well as their applications in the national context.

#### ***OBJECTIVES***

**This workshop, organized in partnership with COSPAR, will be an opportunity**

- to develop a platform for exchange between national scientists involved in the marine and coastal fields;
- to share knowledge on the associated use of oceanic space remote sensing and in situ data;
- to understand the tools for extracting marine and coastal parameters from satellite images;
- to understand the physical models used for ocean forecasts integrating satellite images;
- to appropriate computer tools for visualization, processing, modeling and simulation;
- to use new data processing methods such as AI, Deep learning ...

The scientific themes selected aim to promote the use of altimetry, thermal infrared radiometry and ocean color data and their potential applications in the region.

## ***AREAS OF THE TRAINING WORKSHOP***

The training workshop is organized face-to-face at the CRTS with lectures and practical exercises. It is structured in five modules:

### **1- Introduction to space oceanography**

Main space missions for ocean observation; main parameters, products and applications.

### **2- Operational oceanography: Modeling - Assimilation - Forecasting**

Data assimilation methods; ML methods; integration of the methods into existing global and regional ocean physical analysis and forecasting systems; applications of forecasting methods.

### **3- Applications to marine resources**

Ocean Color Fundamentals and Applications ; use of several databases and services: ERDDAP (NOAA server), NASA Oceancolor portal, INCOIS LAS, etc.; use of different software BRAT Toolbox, BEAM... for the extraction and production of parameters.

### **4- Applications to marine and coastal risks**

Radar Altimetry; use of several databases and services: SARVATORE GPOD and ESA's EarthConsole® Altimetry Virtual Lab; data processing using Matlab.

### **5- Applications to coastal ecosystems**

Turbidity of coastal waters from satellite observations; methods for estimating biochemical products: turbidity, concentration of suspended solids, organic matter, etc.; use of ACOLITE, SeaDAs, SNAP tools for the extraction and production of parameters.

## ***PROFILE OF PARTICIPANTS***

The workshop is intended for researchers and national executives wishing to use spatial oceanographic data and to acquire the skills necessary to participate in research work. In particular, it is aimed at:

- members of the National Coordination Committee in the fields of Hydrography, Oceanography and Marine Cartography (CNCHOC)
- doctoral and post-doctoral students in national universities and research institutions,
- Engineers or technical staff national government institutions working in the fields of ocean research.

Working language: French / English

The number of places is limited

### **Prerequisites :**

- Have abilities to manipulate scientific computer tools
- Have basics in programming
- Master English

## **SPEAKERS**

The lecturers are scientists and experts specializing in the exploitation of satellite images dedicated to the marine and coastal domain as well as in the design of oceanographic analysis and forecasting systems:

- **Dr. Abderrahmane Atillah**, Centre Royal de Télédétection Spatiale
- **Dr. Gad Levy**, NorthWest Research Associates (NWRA), Seattle, Washington, USA
- **Dr. Andrew Geiss**, Pacific Northwest National Laboratory, Seattle, Washington, USA
- **Dr. Stefano Vignudelli**, National Research Council, Italy
- **Dr. Cara Wilson**, NOAA, National Marine Fisheries Service, USA
- **Dr. Nimit Kumar**, Indian National Centre for Ocean Information Services, INCOIS, India
- **Dr. David Doxaran**, laboratoire d'océanographie de Villefranche, France

## **VENUE**

CENTRE ROYAL DE TELEDETECTION SPATIALE/ ROYAL CENTRE FOR REMOTE SENSING

**Address:** Secteur 21, Angle avenue Allal al Fassi et avenue Assanawbar, Hay riad, Rabat

**Tel:** 00 212 5 37 71 54 48/98

**Fax:** 00 212 5 37 71 14 35

[www.crts.gov.ma](http://www.crts.gov.ma)

## **CONTACT**

Mme Amal Layachi

Mail: [layachi@crts.gov.ma](mailto:layachi@crts.gov.ma)