



International workshop and Certified Winter School

On

Remote Sensing and Applications: Innovative Approaches to Water and Environmental Management for Sustainable Development

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Winter School (6th edition)

Optical and Radar Remote sensing: Image processing with free Software

At the Faculty of Sciences and Techniques, Tangier, December 2nd to 6th, 2024

Organizers: CBM-VR Laboratory

FST, Tangier, University Abdelmalek Essaadi, Morocco

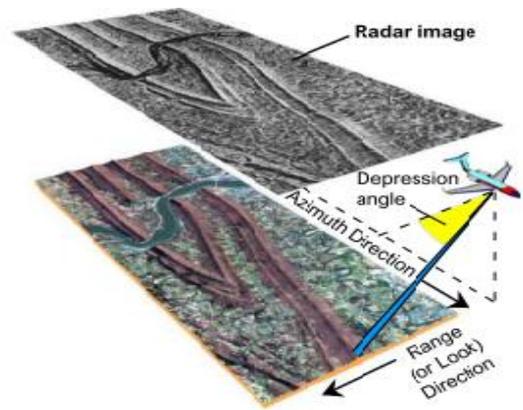
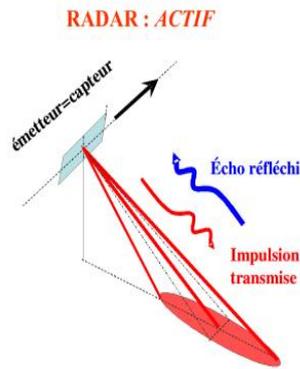
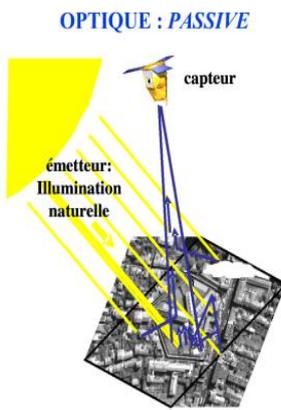
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Institut National Thématique de Recherche – eau ; INTR eau

AS PART OF THE PROJECTS

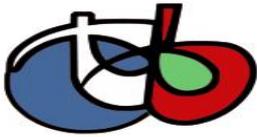
- PPR2/2016/79, OGI-Env : OUTIL DE GESTION INTÉGRÉE DE L'ENVIRONNEMENT FUNDED BY MESRSI AND CNRST, MOROCCO;
- AL KHAWARIZMI : OUTIL DE GESTION INTELLIGENTE DES EAUX D'IRRIGATION ET DU PATRIMOINE FORESTIER : FUNDED BY MESRSI, CNRST AND ADD, MOROCCO;
- FPCUP: FRAMEWORK PARTNERSHIP AGREEMENT FOR COPERNICUS USER UPTAKE FUNDED BY EUROPEAN COMMISSION (DG DEFIS)

This activity is co-funded in the MENAWAT Project (no. 57682821) that is sponsored by the German Academic Exchange Service (DAAD) with funds from the German Federal Foreign Office within the program Ta'ziz Sciences Cooperation.



Free Software: QGIS, Monteverdi / OTB et SNAP

Monteverdi



The ORFEO TOOLBOX

SNAP / Sentinels Toolbox



DESCRIPTION AND OBJECTIVES OF THE TRAINING

Beyond the general aspects affecting Geomatics and Remote Sensing, the objective of this training is to explore the latest technical developments in the field of remote sensing based on free access to satellite images and their processing by a set free software. Although very rich in theoretical knowledge, this training is based on examples and practical demonstrations, from data acquisition to processing. This training will focus in particular on putting into practice, via non-commercial software, the fundamental principles and conditions of application of each method or approach

At the end of the training, the learner will be able to:

- ✓ To handle free software (Monteverdi / OTB, SNAP and QGIS) for the exploitation and manipulation of optical and radar images;
- ✓ To carry out the entire processing process, from the initial image to the statistical and cartographic results;
- ✓ To extract useful information from different types of satellite images;
 - ✓ Evaluate the results obtained.

TRAINING SUPPORT



A digital support will be given to each participant containing:

- ✓ The course in electronic version and corrected exercises in satellite image processing;
- ✓ Freely accessible courses (*);
- ✓ Practical work in electronic version;
- ✓ Correction of practical work in electronic version;
- ✓ Optical and radar satellite data and images over Morocco (landsat8 image, Sentinel2, Sentinel1, PolSar, MNT, etc.) used in the training session.

TEACHING METHODS:

- ✓ Clear, concise, practical and up-to-date documentation provided to each participant;
- ✓ The courses are followed by practical work implementing the theoretical concepts taught. Processing and analysis of optical and radar remote sensing images through different applications;
- ✓ Speakers using remote sensing in their professional activities in order to present practical applications in different sectors of activity;
- ✓ The training will be supervised by Experts in optical and radar satellite image processing

ANIMATORS

- ✓ Pr. Mina AMHARREF, FSTT, University Abdelmalek Essadi, Morocco
- ✓ Pr. Abdes Samed BERNOUSSI, FSTT, University Abdelmalek Essadi, Morocco
- ✓ Pr. Hinde CHERKAOUI DEKKAKI, FSTH, University Abdelmalek Essadi, Morocco
- ✓ Pr. Hind ESSAOUINI, FSTT, University Abdelmalek Essadi, Morocco
- ✓ Pr. Pierre Louis FRISON, University Gustave Eiffel, Paris et IRD, Marrakech.
- ✓ Pr. B. FRUNEAU, University Gustave Eiffel, Paris
- ✓ Pr. Jean Paul RUDANT, University Gustave Eiffel, Paris, France.
- ✓ Pr. Edyta WOZNIAK, CBK PAN, Poland
- ✓ MSc. Michal Krupinski, CBK PAN, Poland
- ✓ Pr. Mustapha El Metoui, FSTT, Morocco
- ✓ Pr. Ilias Khaddor, FSTT, Morocco
- ✓ Pr. Jamal Eddine El Abdellaoui, FSTT, Morocco

TARGET AUDIENCE

Teacher-researchers, PhD students, Masters students, student engineers, executives and technicians from public and private establishments: executives from municipalities and urban agencies, executives in regional planning, executives at the High Commission for Water and Forests, executives from the ANCFCC, executives of Hydraulic Basin Agencies, executives of Regional Investment Centers, executives of INRA, executives of rural affairs directorates, public works executives, executives of ONEP, executives of Régies (Amendis, Lydec, RAMSA, REDAL, etc.) , executives of the Regional Agricultural Development Offices, executives of the Social Development Agency, executives of the Ministry of Housing, department of development and fight against unsanitary housing... etc.

TRAINING DURATION

5 days training from December 2, to 6th, 2024.

PLACE OF TRAINING

Faculty of Sciences and Techniques, Tangier

NUMBER OF PLACES DE PLACES

Limited (25 places)

MATERIAL

Each participant must bring their laptop PC on which the free software and data necessary for the training will be installed.

NB : Participants will handle large data and resource-intensive processing, it is desirable to have a laptop PC with RAM greater than or equal to 8 GB.

STEERING COMMITTEE:

- Pr. Mina AMHARREF, FSTT, University Abdelmalek Essadi, Morocco
- Pr. Abdes Samed BERNOUSSI, FSTT, University Abdelmalek Essadi, Morocco
- Pr. Hinde CHERKAOUI DEKKAKI, FSTH, University Abdelmalek Essadi, Morocco
- Pr. Jamal Eddine EL ABDELLAOUI, FSTT, Université Abdelmalek Essadi, Maroc
- Pr. Hind ES SAOUINI, FSTT, Université Abdelmalek Essadi, Maroc
- Pr. Mustapha OUARDOUZ, FSTT, Université Abdelmalek Essadi, Maroc

PROGRAMME

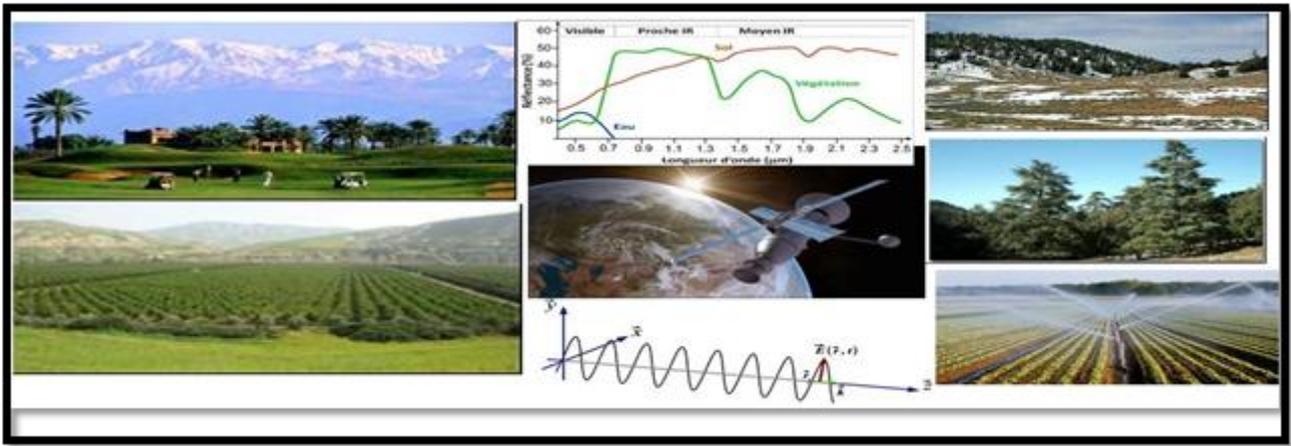
	From 9h to 12h 30		From 14h 15 to 17 h 45
Monday 2 December 2024	Pr. J. P. Rudant : Fondamentaux de l'imagerie Radar Fundamentals of Radar Imaging		Pr. B. Fruneau : Interférométrie radar : théorie et applications Radar Interferometry: Theory and applications
Tuesday 3 December 2024	Pr. J. P. Rudant : Image Radar : cas d'usage Radar Imaging: use cases		Pr. B. Fruneau : Interférométrie radar travaux pratiques Radar Interferometry: practical work
Wednesday 4 December 2024	Pr. E. Wozniak : Applications Pr. P. L. Frison : Sentinel-1 data processing by QGIS		Pr. Frison : Sentinel-1 data processing by QGIS (suite)
Thursday 5 December 2024	Prs. M. Krupinski, I. Khaddor, M. Elmetoui : Remote sensing and water management		
Friday 6 December 2024	Field trip : animation Prs. J El Abdellaoui, S. El Azizi and A. Ozer		

A poster session will be organized for PhD students during the seminar

(*)ENSG, Information Géographiques en général, et en particulier : télédétection optique et radar et QGIS.
<https://www.youtube.com/playlist?list=PLbyvawxScNbsmfg70AFO5r9ktXH0mpw-c>

cours videos 1 a 13, exercices videos 1 a 8

Call for abstract Poster



Abstract submission deadline: November 15th, 2024.

Abstracts, for Posters, must be limited to one page and should include the title, authors' affiliations, and 5 keywords. The required format is a Word document with 12-point font.

Registration fees for the training school will be covered by the organizers for participants whose abstracts are accepted.

Presentation

Environmental management, particularly in agriculture, forest heritage, coastal areas, and infrastructure, requires a multidisciplinary approach, ranging from data collection techniques to system modeling, analysis, and control in order to develop reliable decision-making tools.

With traditional methods, there are numerous challenges in data acquisition and updating, as management requires multiple types of data, most of which are characterized by spatio-temporal variability. The use of remote sensing techniques is therefore essential. These techniques are highly valuable for spatio-temporal monitoring of our environment, including, among other things, land use and natural or cultivated vegetation.

In this context, the Faculty of Sciences and Techniques of Tangier (UAE-FSTT) of Abdelmalek Essaadi University, through the PPR2/2016/79 project, along with the University Gustave Eiffel (France), CESBIO (Biosphere Center, Toulouse, France), and CBK PAN (Space Research Centre of the Polish Academy of Sciences, Poland), in collaboration with socio-economic partners DRATT, ORMVAL, and the Forestry Department of the Water and Forests Directorate, are organizing an international seminar in Tangier from December 2nd to 6th, 2024.

As part of this conference, a winter school on optical and radar remote sensing, along with image processing, will be conducted using open-source software.

CONTACT & INFORMATION

Pr. Abdes Samed BERNOUSSI, Faculté des Sciences et Techniques de Tanger,
Université Abdelmalek Essaadi, Maroc. Tél : 00 212 6 55 07 17 25, Email : abernoussi@uae.ac.ma

Topics

This seminar will focus on water and environmental management for sustainable development, with four key areas of emphasis:

- Remote sensing and its applications in the management of agriculture and forest heritage;
- Water and energy resources: Assessment of quantity, quality, climate change impacts, and water recharge strategies;
- The coastline and coastal ecosystems;

Without being exhaustive, the following themes are considered:

1. Remote sensing and environment;
2. Climate change and environment;
3. Systems and environment theory;
4. EDP and Cellular Automation modelling, software and environmental risks;
5. Processing of BIG DATA databases and information system applied to the environment;
6. Artificial intelligence applied to the environment,
7. Environment and sustainable development;
8. Water, energy and biodiversity resources
9. Forest management; agriculture,
10. ...

Winter certified training school

Optical and Radar Remote sensing and image Processing with free Softwares
Télédétection:
(6th edition)

Registration request

Nom et Prénom (name and surname) :

Sujet de thèse (Thesis title):

Année d'inscription (Inscription year) :

Directeur de thèse (Supervisor):

Structure de recherche (research structure):

Etablissement et Université (Faculty, University):