



Training Workshop on Earth Observation Applications in Agriculture

NARC, Islamabad, Pakistan, 26-28 December, 2018

Background

The Climate Change, Energy & Water Research Institute (CEWRI) of the Pakistan Agricultural Research Council (PARC) in collaboration with the International Center for Integrated Mountain Development (ICIMOD) is organizing a 3 days International Training Workshop on *Earth Observation Applications in Agriculture* from 26th – 28th December, 2018 at NARC Islamabad under its regional project HI-AWARE.

Estimates and forecasts of crop area and yield are of critical importance to policy makers for the planning of agricultural production and monitoring of food supply. The operational use of satellite based open source information to monitor climate and crop at daily to seasonal along with models for integrated analysis of crop performance provides cost effective means to support decision making process.

Pakistan Agricultural Research Council (PARC) is the apex agricultural research organization at the national level. Its main objective is to strengthen Pakistan's agricultural research system, comprising the federal and provincial components. Capacity building of agriculture professionals in use of new technologies is one of its priority area to keep the research align with recent technological developments. Satellite Earth Observation (EO) technologies has tremendous potential to support the implementation of long-term and large-scale research and development programs resolving the data and information gaps concerning agriculture issues: the status and change in land use, the agricultural production, and the resilience for food security, among many other aspects.

Objective

This workshop aims to train professionals from relevant institutions on satellites data analysis for agriculture monitoring. In addition, this training will provide knowledge on theories of optical remote sensing, microwave radar data analysis and hands-on practice in Sentinel data analysis by utilizing Google Earth Engine (GEE) cloud computing platform. The training is also expected to initiate and foster further training by the workshop participants to promote institutional capacities in use of Earth Observation technologies for agriculture sector.

1. Agenda- Tentative

Day 1

| Time | Topic | Resource Person |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|
| 09:15-09:30 | Registration | |
| 09:30:10:30 | Session 1: Inaugural | |
| | <ul style="list-style-type: none"> Welcome by Director General- NARC | Dr. Ghulam Muhammad Ali |
| | <ul style="list-style-type: none"> Overview of Training - Programme Coordinator, SERVIR HKH | Mr. Birendra Bajracharya, (ICIMOD) |
| | <ul style="list-style-type: none"> Remark by Chairman- PARC | Dr. Yusuf Zafar ^{TI} |
| | <ul style="list-style-type: none"> Vote of Thanks by Sr. Director, CEWRI, NARC | Dr. M. Munir Ahmad |
| 10:30:10:45 | Group Photo | |
| 11:00-11:30 | Coffee/ Tea Break | |
| 11:30:12:15 | Session 2: Overview of Earth Observation Applications | Dr. Faisal Mueen |
| | <ul style="list-style-type: none"> Application Satellite Remote Sensing for Crop Area Estimation and Vegetation Health Monitoring Principles of Optical Remote Sensing | |
| 12:15-01:00 | Session 3: Introduction to Google Earth Engine | Dr. Hammad Gilani |
| | <ul style="list-style-type: none"> Overview of Google Earth Engine Data Explorer Explore Data Available in Earth Engine | |
| 01:00-01:45 | Lunch | |
| 01:45-02:45 | Session 4: Hands on Exercise in GEE | Dr. Hammad Gilani Mr. Salar Saeed, CEWRI |
| | <ul style="list-style-type: none"> Image Visualization Image Metadata | |
| 03:00-03:30 | Coffee/Tea break | |
| 03:30-04:30 | Session 5: Hands on Exercise | Dr. Hammad Gilani Mr. Salar Saeed, CEWRI |
| | <ul style="list-style-type: none"> Satellite Image Collection Reduce Image Collection Filtering and Image Collection Filtering by ROI Polygon | |

Day 2

| Time | Topic | Resource Person |
|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|
| 09:15-10:45 | Session 6: Image Objects and Methods | Dr. Hammad Gilani |
| | <ul style="list-style-type: none"> Image Analysis for vegetation monitoring Image Classification and Interpretation Time Series analysis | |
| 11:00-11:30 | Coffee/ Tea Break | |
| 11:30-12:45 | Session 7: Hands on Exercise | Dr. Faisal Mueen |
| | <ul style="list-style-type: none"> Image Analysis for vegetation monitoring | |
| 01:00-01:45 | Lunch | |
| 01:45-03:00 | Session 8: Hands on Exercise | Dr. Hammad Gilani Dr. Faisal Mueen |
| | <ul style="list-style-type: none"> Satellite Image Classification using Earth Engine | |
| 03:00-03:30 | <ul style="list-style-type: none"> Coffee/Tea break | |
| 03:30-04:30 | Session 9: Exercise (Continuous) | Dr. Hammad Gilani |
| | <ul style="list-style-type: none"> Crop Type Mapping Using Sentinel-2 Data On GEE Platform | |

Day 3

| Time | Topic | Resource Person |
|-------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|
| 09:15-10:30 | Session 10: Overview of Synthetic Aperture Radar (SAR) | Dr. Rajesh Thapa |
| | <ul style="list-style-type: none"> Principles Synthetic Aperture Radar (SAR) Remote Sensing Case Study On Use of SAR Applications | |
| 10:30-11:00 | Coffee/ Tea Break | |
| 11:00-12:45 | Session 9: Continuous | Dr. Rajesh Thapa |
| | <ul style="list-style-type: none"> Hands On Exercise Om Rice Crop Mapping Using Sentinel-1 (SAR) Satellite Data | |
| 01:00-01:45 | Lunch | |
| 01:45-02:45 | Session 11: Discussion & Feed Back | |
| 03:00-04:30 | Closing Ceremony | |
| 03:05-03:15 | <ul style="list-style-type: none"> Welcome by Member Natural Resources Division | Dr. Munir Ahmad (Member) |
| 03:15-03:25 | <ul style="list-style-type: none"> Remarks by MENRIS- Remote Sensing Specialist | Dr. Faisal Mueen |
| 03:25-03:35 | <ul style="list-style-type: none"> Summary of Training | Dr. M. Munir Ahmad (CSO/Sr. Director) |
| 03:40-04:00 | <ul style="list-style-type: none"> Certificate Distribution | |
| 04:10-04:20 | <ul style="list-style-type: none"> Remarks by ICIMOD Pakistan Director | Dr. Abdul Wahid Jasra (ICIMOD) |
| 04:20: 04:30 | <ul style="list-style-type: none"> Concluding Remarks by Chairman- PARC | Dr. Yusuf Zafar T.I |
| 04:30-04:40 | <ul style="list-style-type: none"> Vote of Thanks by Project PI- HI-AWARE | Dr. Bashir Ahmad (PSO/PI) |
| Coffee/Tea break | | |

Training Resource Persons:

1. Mr. Birendra Bajracharya (ICIMOD)
2. Dr. Faisal Mueen Qamer (ICIMOD)
3. Dr. Rajesh Bahadur Thapa (ICIMOD)
4. Dr. Hammad Gilani (IST- Islamabad)
5. Mr. Salar Saeed (HI-AWARE, CEWRI)

2. Venue Location

National Agriculture Research Centre
Park Road, Islamabad

Geographic Coordinates: 33.667565, 73.125867

