United Nations/Pakistan International Workshop on Integrated Use of Space Technologies for Food and Water Security

Organized in cooperation with the Inter-Islamic Network on Space Sciences and Technology (ISNET)

Hosted by the Pakistan Space and Upper Atmosphere Research Commission (SUPARCO) on behalf of the Government of Pakistan

Program

(as of 09/03/2013)

Dates: **11-15 March 2013**

Venue: **COMSTECH Secretariat**
33 Constitution Avenue,
G-5/2, Islamabad, Pakistan

Day 1 – Monday, 11 March 2013

09:00 – 09:45 **Registration**

Inauguration ceremony

Stage Coordinator: Mr. Abdullah Jamil Khan

10:00 – 10:20 **Recitation and opening remarks by representatives of:**

- *SUPARCO*
  Mr. Ahmed Bilal, Chairman
- *UN-OOSA*
  Mr. Sergei Chernikov, Programme Coordinator
- *ISNET*
  Mr. Arshad H. Siraj, Executive Director

10:20 – 10:40 Keynote address by Mr. M Javed Malik, Member Food and Agriculture, Planning Commission, Government of Pakistan

10:40 – 11:00 Presentation of UN-OOSA activities

11:00 – 11:10 Remarks by Chief Guest
H.E. Mohammad Moazzam Ali Khan Jatoi, Minister of State for National Food Security & Research, Pakistan

11:10 – 11:30 Coffee break, taking a group photo

Technical session 1: Space Applications for Water Security and Water Management

Co-Chairs: Dr. Amna Hamid Eltom, Sudan and Mr. Syed Zuhair Bokhari, Pakistan
Rapporteur: Mr. Siraj Munir, Pakistan

11:30 – 11:50 **GEOSS Water Cycle Integrator**
Mr. Douglas Cripe, Group on Earth Observations (GEO) Secretariat

11:50 – 12:10 **Current and Future Advanced Spaceborne Synthetic Aperture Radar Systems and Their Application for Food and Water Security**
Dr. Mohammed Dabboor, Science and Technology Branch, Environment Canada, Government of Canada, Canada

12:10 – 12:30 **Remote Sensing for Water Management and its Impact on Food Security**
Mr. Muhammad Jawad, SUPARCO, Pakistan

12:30 – 12:50 **Developing Public Policy on the Use of Space Technology for Assessment of Water Resources in Chile, and its Projection to Joint Regional Projects**
Mr. Juan Fernando Acuna Arenas, Executive Secretary, Chilean Space Agency, Chile

12:50 – 13:00 Workshop discussion

13:00 – 14:00 Lunch

Technical session 2: Space Applications for Agriculture and Food Security

Co-Chairs: Mr. Douglas Cripe, GEO Secretariat and Mr. Ijaz Ahmad, Pakistan
Rapporteur: Mr. Obaid-ur-Rehman, Pakistan

14:00 – 14:20	**Multi-scale Agriculture Monitoring in Mountain Areas of Pakistan** *Mr. Khuram Shehzad, International Center for Integrated Mountain Development (ICIMOD)*
14:20 – 14:40	**Decision Support System Development Through GIS for Computer Aided River Management and Enhanced Agricultural Productivity** *Faisal Nadeem Saher, University Malaysia Pahang, Malaysia*
14:40 – 15:00	**Africa RiskView - African Risk Capacity Project** *Mr. Malick Diagne, Centre de Suivi Ecologique, Dakar, Senegal*
15:00 – 15:20	**Food Security and Satellite-based Crops Intelligence System** *Mr. Ibrar ul Hassan Akhtar, SUPARCO, Pakistan*
15:20 – 15:50	**Coffee break**
15:50 – 16:10	**Food Security Monitoring Using Space Technologies in Sudan** *Ms. Enaas Ismail Abdalla, Ministry of Agriculture and Irrigation, Sudan*
16:10 – 16:30	**Mapping Crop Type Using Hyperspectral and Multispectral Datasets** *Mr. Atif Shahzad, SUPARCO, Pakistan*
16:30 – 16:50	**Evaluations of Changes in Land Cover for Land Management and the Development of Public Policies in Ecuador** *Ms. Sandra Barriga Curillo, National Secretary of Planning and Development (SENPLADES), Ecuador*
16:50 – 17:10	**Drought Prediction System for Improved Climate Change Mitigation** *Mr. Demisse Getachew Berhan, Addis Ababa University, Ethiopia*
17:10 – 17:30	Workshop discussion
20:00	**Banquet and Cultural Evening at Serena Hotel hosted by SUPARCO**

Day 2 – Tuesday, 12 March 2013

Technical session 3: Remote Sensing and Geospatial Technologies for Improved Agriculture

Co-Chairs: Mr. Marc Zebisch, EURAC and Mr. Hayat Khan, Pakistan
Rapporteur: Mr. Ibrar ul Hasan Akhtar, Pakistan

09:00 – 09:20	**Soil Erosion Mapping** *Prof. Seyed Hamidreza Sadeghi, Tarbiat Modares University, Iran*
09:20 – 09:40	**Land Cover as a Base for Food Security in Sudan** *Dr. Amna Ahmed Hamid Eltom, Remote Sensing Authority (RSA), Sudan*
09:40 – 10:00	**Wheat Yield Estimation Using Satellite Remote Sensing** *Mr. Uzma Rabab, NESPAK, Pakistan*
10:00 – 10:20	**Assessment of Flood Affected Population Using Geo-Spatial Modeling Techniques** *Mr. Syed Fawad Raza, UN World Food Programme, Pakistan Country Office*

10:20 – 10:50	**Coffee break**
10:50 – 11:10	**Integrated Geospatial Decision Support System for Food Security** *Ms. Hina Ibrar, Urban Sector Planning and Management Services Unit (Pvt) Ltd, Pakistan*
11:10 – 11:30	**Pakistan Flood Relief and Early Recovery Response Plan-Flood and Erosion Modeling and Impacts on Agriculture** *Mr. Christopher Hill, GeoData Institute, University of Southampton, United Kingdom*
11:30 – 11:50	**Geo-Informatics Technology for Agriculture Effectiveness and Efficiency Management in Thailand** *Mr. Thanakorn Sanguantrakool, Geo-Informatics and Space Technology Development Agency (GISTDA), Thailand*
11:50 – 12:10	**Detection of Soil Moisture in Al-Jazeera Region Based on Spectral Indices Derived from MODIS Data** *Ms. Eshtar Nasser, Ministry of Science & Technology, Iraq*
12:10 – 12:30	**Assessment of long-term land use\land cover change through hyper-temporal remote sensing** *Dr. Amjad Ali, SUPARCO, Pakistan*
12:30 – 13:00	Workshop discussion
13:00 – 14:00	**Lunch**

Special Session: Mountains Under Review - Experience Exchange on Remote Sensing-based Monitoring of Natural Resources in Mountain Regions (see Annex)

Moderator: Mr. Matthias Georg Jurek, UNEP

14:00 – 14.20	**Welcome Statement** *Mr. Lorant Czaran, UN-OOSA* *Mr. Marc Zebisch, European Academy Bolzano (EURAC)*
14.20 – 14.50	**Monitoring of Natural Resources in the Hindu Kush Himalayas** *Mr. Birendra Bajrachary, ICIMOD, Nepal*
14.50 – 15.20	**Mapping and Monitoring Natural Resources in the Alps** *Mr. Marc Zebisch, EURAC, Italy*
15.20 – 15.50	**Natural Resources Monitoring in the Andean Cordillera** *Mr. Miguel Saravia, Consorcio para el Desarrollo Sostenible de la Ecorregion Andina (CONDESAN), Peru*
15:50 – 16:10	**Coffee break**
16.10 – 16.40	**Studying the Outburst of the Merzbacher Lake of Kyrgyzstan Using Satellite Images and Field Data** *Mr. Anton Shabunin, Central Asian Institute for Applied Geosciences (CAIAG), Kyrgyzstan*
16.40 – 17.45	**Round Table Discussion**

Day 3 – Wednesday, 13 March 2013

09:00 – 18:00	**Technical tour**

Day 4 – Thursday, 14 March 2013

Special Session: SERVIR-Himalaya - Enhancing Use of Earth Observation and Geospatial Technologies in the HKH Region (followed by hands-on training)

Chair: TBA, Ministry of Climate Change, Pakistan

09:15 – 9:30	**Welcome remarks** *Mr. Abdul Wahid Jasra, Country Representative, Pakistan, ICIMOD*
09:30 – 10:00	**Overview of SERVIR-Himalaya and Science Applications** *Mr. Birendra Bajracharya, ICIMOD, Nepal*
10:00 – 10:30	**Agriculture Monitoring and Food Security Analysis in the HKH Region** *Mr. Faisal M. Qamer, ICIMOD, Nepal*
10:30 – 10:50	**Coffee break**
10:50 – 11:10	**Status and Change Assessment of Glaciers in the HKH Region** *Mr. Samjwal Bajracharya, ICIMOD, Nepal*
11:10 – 11:30	**Information Sharing for Resources Management - Decision Support Tools for Protected Area Management in CKNP** *Mr. Gari Khan, WWF, Pakistan*
11:30 – 12:30	**Demonstration of SERVIR Science Applications and Mountain Geoportal** *Mr. Birendra Bajracharya/ Faisal M. Qamer, ICIMOD, Nepal*
12:30 – 13:00	**Discussion (and Hands-on Training, time-permitting)**
13:00 – 14:00	**Lunch**

Technical session 4: Benefits of Space Applications and Planning for Water and Food Security

Co-Chairs: Mr Christopher Thomas Hill, UK and Mr. Muhammad Iftikhar Bhatti, Pakistan
Rapporteur: Mr. Muhammad Ibrahim, Pakistan

14:00 – 14:20	**Potential benefits of the WATPLAN project to Swaziland's Water Management in the Komati River Basin** *Ms. Sindy N. Mthimkhulu, Department of Water Affairs, Swaziland*
14:20 – 14:40	**An Operational Remote Sensing Algorithm for Food and Water Security** *Dr. Muhammad Jehanzeb Masood Cheema, Faisalabad University of Agriculture, Pakistan*
14:40 – 15:00	**Assessment of Sedimentation and Soil Erosion Effect on Inle Lake in Mountainous Region** *Mr. Htun Zaya Kyaw, Mandalay Technological University, Myanmar*

15:00 – 15:20	**Impact of Land Cover Change to Water Quality and Aquaculture Activity in Tondano Lake** *Mr. Bambang Trisakti, Indonesian National Institute of Aeronautics and Space (LAPAN), Indonesia*
15:20 – 15: 40	**Water and Food Security Through the Year 2050** *Dr. Muhammad Hanif, SUPARCO, Pakistan*
15:40 – 16:10	**Coffee break**

Working Groups Meeting

Two or three Working Groups will be established to prepare observations and recommendations of the Workshop as well as to develop proposals for follow up projects

16:10 – 16:30 Introduction to and formation of Working Groups:

- establish two or three Working Groups, identify themes of each group;
- identify group lead and rapporteur for each group, and their responsibilities;
- objectives of the Working Groups are: discuss issues and concerns in the thematic area; discuss potential solutions with using space technologies; prepare observations and recommendations of the Workshop; develop project ideas for follow up actions.

16:30 - 18:00 Working Groups Meeting

Day 5 – Friday, 15 March 2013

Working Groups Meeting

09:00 – 10:30	Working Groups Meeting (continued)
10:30 – 11:00	**Coffee break**

Closing Session
Chair: Mr. Ahmed Bilal, Chairman SUPARCO

11:00 – 11:30	Presentation of WGs observations &, recommendations (by chairs of WGs)
11:30 – 12:00	Discussion and adoption of the Workshop observations and recommendations
12:00 – 12:30	Closing remarks: • *SUPARCO* *Mr. Ahmed Bilal, Chairman* • *ISNET* *Mr. Arshad H. Siraj, Executive Director* • *UN-OOSA* *Mr. Lorant Czaran*
12:30 – 13:30	**Lunch**

Presentations scheduled for posters sessions
(one session per day, Monday, Tuesday and Thursday):

Day/session	Title	Author
Session 1 Monday	**Role of Remotely Sensed Data in Flood Vulnerability Mapping and Food Security: a Case Study of Cross River State, Nigeria, in the 2012 Flood**	*Mr. Olabamiji Oluwaseun Olojo, National Space Research and Development Agency, Nigeria*
Session 1 Monday	**Precision Agriculture for increased productivity using Continuously Operating reference stations (CORS) Network**	*Mr. Syed Zahid Jamal, SUPARCO, Pakistan*
Session 1 Monday	**Mutual Advantage for Lebanon & Syria to Collaborate over Water in Al-Kabeer River Basin for their Water & Food Security**	*Dr. Jalal Ahmad Halwani, Lebanese University, Lebanon*
Session 1 Monday	**Application of Space Technologies for Assessment the Glaciations Area for Some River Basins in Uzbekistan**	*Ms. Eleonora Semakova, Astronomical Institute, Uzbekistan*
Session 1 Monday	**Flood Vulnerability Assessment and Effective Utilization of Flood Water using Geospatial Techniques**	*Mr. Sanaullah Shah Syed, SUPARCO, Pakistan*
Session 1 Monday	**Monitoring and Mapping Batura Glacier using Remote Sensing**	*Ms. Sarah Hasan,University of The Punjab, Pakistan*
Session 1 Monday	**Rainfall Forecasting as Risk Management Strategy to Ensure Food Security**	*Mukhtar Ahmed, PMAS Arid Agriculture University, Pakistan*
Session 1 Monday	**P-WOPs Networking at Global, Regional and Local Level to Improve the Performance of Urban Water & Sanitation Utilities**	*Mr.Atta-Ur-Rehman,the Urban Unit, Pakistan*
Session 1 Monday	**Ground Water Situational Analysis Through GRACE (Gravity Recovery and Climate Experiment) data of Pakistan**	*Mr. Naveed Mustafa, Water Resources Research Institute, Pakistan*
Session 2 Tuesday	**Crop Monitoring in Agriculture Department Through Upper Space Technology By Remote Sensing**	*Mr. Alamdar Raza Memon, Agriculture Department, Pakistan*
Session 2 Tuesday	**Study of Land Use Changes for Marsh Region by using Landsat Images and by Calculate Normalize Difference Vegetation index (NDVI)**	*Ms. Faten Abed, Ministry of Science & Technology, Iraq*
Session 2 Tuesday	**Prospects of Satellite Remote Sensing in Cereal Disease Monitoring and Precision Crop Protection for Food Security Enhancement in Pakistan**	*Mr. Syed Jawad Ahmed Shah, Nuclear Institute for Food & Agriculture (NIFA), PAEC, Pakistan*
Session 2 Tuesday	**Land Suitability Assessment for Maize Crop in Okara District using GIS Techniques**	*Ms. Amira Babar Sheikh, University of the Punjab, Pakistan*
Session 2 Tuesday	**Space Technology in Means of Remote Sensing & GPS for Agriculture Development**	*Mr. Sarfaraz Ali Bhutto, Agriculture Department, Pakistan*
Session 2 Tuesday	**Future of Automated Farming in Pakistan**	*Mr. Muhammad Shahid Qureshi, SUPARCO, Pakistan*

Session 2 Tuesday	**Land Use trends prediction using GIS, Markov Chain Analysis and Cellular Automata**	*Mr. Muhammad Badar Munir, SUPARCO, Pakistan*
Session 2 Tuesday	**Agricultural Mapping to Monitor Food Security**	*Ms. Nora Khojali Abdelraheim, Ministry of Agriculture and Irrigation*
Session 2 Tuesday	**Monitoring Food and Water Resources with Remote Sensing and GIS: Case studies of selected countries in the Asian Region**	*Mr. Mobushir Riaz Khan, COMSATS Institute of Information Technology, Pakistan*
Session 3 Thursday	**Remote Sensing/GIS applications in agricultural data capture and management for Water and Food Security Assurance. A project proposal.**	*Mr. Francis Danquah Ohemeng, Irrigation Development Authority, Ghana*
Session 3 Thursday	**Space Technology Application in Lao PDR**	*Mr. Silap Boupha, Ministry of Science and Technology, Laos*
Session 3 Thursday	**Response of Different Organic Mulches on soil-moisture Conservation and Seed Cotton Yield**	*Mr. Nizamuddin Depar, Nuclear Institute of Agriculture (NIA), PAEC, Pakistan*
Session 3 Thursday	**An ArcGIS Road Network Dataset for Pakistan**	*Mr. James Gasson, UNDP*
Session 3 Thursday	**Responding to Climate Change in Mozambique**	*Mr. Xavier Gulele, National Institute for Disaster Management, Mozambique*
Session 3 Thursday	**Arsenic Monitoring and Mitigation Using GEO-Spatial Techniques**	*Mr. Kamran Ahmad, Pakistan*
Session 3 Thursday	**Satellite Technology for Soil Moisture Monitoring-A Case Study**	*Mr. Siraj Munir, SUPARCO, Pakistan*
Session 3 Thursday	**Temporal relative soil moisture mapping using MODIS data in Pakistan**	*Mr. Muhammad Usman Khan, SUPARCO, Pakistan*
Session 3 Thursday	**Mapping Temporal Soil Moisture Anomalities in Indus Basin**	*Mr. Faisal Karim, SUPARCO, Pakistan*

United Nations/Pakistan International Workshop on Integrated Use of Space Technologies for Food and Water Security

Special session

"Mountains under review - experience exchange on Remote Sensing based Monitoring of Natural Resources in Mountain Regions"

BACKGROUND INFORMATION

Mountains cover approximately one-quarter of the world's surface and are home to approx. 12 % of the global population. Mountains provide freshwater to half of the world's population and are home to half of all global biodiversity hotspots. On the other hand, mountains are among the regions in the world which are most sensitive to climate change and human impacts.

To date, there is no appropriate comprehensive mechanism in place for monitoring mountain environments and exchanging up-to-date environmental information between different mountain regions. Such a system would be important for providing accurate briefings to decision-makers covering the global mountain environment.

OBJECTIVES OF THE SESSION

This special session, organized in the frame of the "International Workshop on Integrated Use of Space Technologies for Food and Water Security" aims to highlight the various opportunities of satellite-based earth observation for monitoring changes and trends in mountain regions and the need for a comprehensive mountain information database in order to get a better understanding of the impacts of human activities. A focus will be set on snow/glacier/water, biodiversity and the impacts of human land use. The session aims, in particular, at presenting experiences and best-practices besides the Hindu-Kush Himalayas from other mountain regions such as Alps, Andes, Carpathians and Central Asia.

It also aims at presenting and discussing concrete opportunities, e.g. by highlighting planned joint initiatives and paving the way for possible strategic partnerships with other relevant actors, including in the space sector.

ORGANISATION

The session is jointly organised by UNEP Vienna – Interim Secretariat of the Carpathian Convention in collaboration with ICIMOD, EURAC.research and GRID Arendal. This session is the follow-up of the joint side-event "Mountains under review: human alteration of landscapes" organized by UNEP through its ROE/Vienna Office- ISCC in collaboration with EURAC and others in the Mountain Pavilion at the Rio+20 Summit on
16 June 2012.

The session will consist of two blocks. In a first block, invited keynote speakers will present concrete examples from various mountain regions all over the world including the Alps, Andes, Carpathians, Central Asia and the Hindu-Kush Himalayas. A second block will focus on an in-depth discussion, how knowledge and experience on monitoring approaches can be shared between the various mountain regions.

Outcomes of the discussions will be transferred into specific recommendations to be attached to the overall workshop meeting report. Recommendations and outcomes of this session will be, in particular, targeted at political stakeholders and interested donor agencies.

United Nations/Pakistan International Workshop on
Integrated Use of Space Technologies for Food and Water Security
11-15 March, Islamabad, Pakistan

Special Session
"SERVIR-Himalaya - Enhancing Use of Earth Observation and Geospatial Technologies in the HKH Region"
14 March 2013, 09.00 to 13.00 hours

Background

Climate change has placed the Himalayan region at the centre of international attention as one of the most vulnerable ecosystems in the world, as it is leading to severe impacts on mountain and downstream communities and their environments. As a result, the dynamics of the life support systems that rely on the mountain ecosystems are threatened, and the traditional adaptation and coping mechanisms of the local people are losing their effectiveness. Earth observation combined with modern geospatial tools are proving to be vital for our improved understanding of climate change, and its trends and impacts, and for predicting future scenarios.

ICIMOD through its Mountain Environment Regional Information System (MENRIS) programme has been promoting the access and use of earth observation in the region through various capacity building and application development initiatives. ICIMOD together with regional partners joined hands with USAID and NASA to establish SERVIR-Himalaya, the third regional node, to complement the initiatives already operational in the Mesoamerica and the East Africa. SERVIR is a regional visualization and monitoring system that integrates earth observations such as satellite imagery and forecast models together with in-situ data and other knowledge for timely decision making.

This special session, organized in the frame of the "International Workshop on Integrated Use of Space Technologies for Food and Water Security" aims to bring together the contributors and potential users of the SERVIR geospatial applications. The platform will provide an opportunity for mutual sharing and learning on the use of earth observation and geospatial tools and technologies for improved scientific knowledge and understanding of climate change in order to support climate policy and actions in the Himalayas.