



Prince Sultan Bin Abdulaziz
International Prize for Water



3rd International Conference on the Use of Space Technology for Water Management

**Jointly organized by the United Nations, Morocco
and Prince Sultan bin Abdulaziz International Prize for Water (PSIPW),
in cooperation with European Space Agency (ESA), Inter-Islamic Network
on Space Sciences and Technology (ISNET) and Secretariat of the Group
on Earth Observations (GEO)**

**Hosted by the Royal Center for Remote Sensing (CRTS) on behalf of the
Government of Morocco**

Program of the Conference

(as of 28/03/2014)

Rabat, Morocco, 1 - 4 April 2014

**Venue: Centre International de Conference MOHAMMED VI,
Skhirat Plage, 12050 Skhirat
Morocco**

Day 1 – Tuesday, 01 April 2013

- 08:00 – 09:00 **Registration, welcome coffee**
- 09:00 – 10:30** **Opening ceremony**
09:00 – 10:00 **Opening remarks**
- *Representative of the Government of Morocco*
 - *Dr. Takao Doi, Head, Programme on Space Applications, United Nation Office for Outer Space Affairs (UN-OOSA)*
 - *Dr. Abdul Malek Al Al-Shaikh, General Secretary, Prince Sultan Bin Abdulaziz International Prize for Water (PSIPW)*
 - *Mr. Jean-Charles Bigot, European Space Agency (ESA)*
 - *Dr. Yasushi Horikawa, Chairman, United Nations Committee on the Peaceful Uses of Outer Space (UN COPUOS)*
 - *Mr. Arshad Siraj, Executive Director, Inter-Islamic Network on Space Sciences and Technology (ISNET)*
- 10:00 – 10:30 **Water Security: a Global Concern**
Keynote address by Prof. Mohammed AITKADI,
President of the General Council of Agricultural Development,
Morocco, and Chair, Technical Advisory Committee of the Global
Water Partnership (GWP)
- 10:30 – 11:00** **Coffee break**
- 11:00 – 12:00** ***Special Session: Prince Sultan bin Abdulaziz International Prize for Water (PSIPW)***
- 11:00 – 11:25 **PSIPW: Current Developments and Call for Nominations**
Dr. Abdul Malek Al AL-SHAIKH, General Secretary of PSIPW
- 11:25 – 11:50 **Space Technology, GIS and Modelling as Emerging Tools for Water Resources Engineering and Management**
Dr. Abdekader LARABI, Ecole Mohammadia d'Ingénieurs, Morocco
- 11:50 – 12:00 **Space Research Institute Capabilities and Activities in the Field of Water Resources Management**
Mr. Walid. Amin MOLLA, King Abdulaziz City for Science and Technology (KACST), Saudi Arabia
- 12:00 – 12:30** **Introduction to the objectives of the Conference, its programme and logistics by UN-OOSA and LOC**
- 12:30 – 14:00** **Lunch**
- 14:00 – 18:10** ***Technical session I: Space Application for Water Productivity and Economy***
- Co-Chairs: Dr. Abdul Malek Al Al-Shaikh, PSIPW and Dr. Driss Elhadani, CRTS, Morocco**
Rapporteur: Eng. Ali-Wafa Abu-Risheh, PSIPW
- 14:00 – 14:20 **Irrigation Monitoring for Water Resources Optimization**
Mr. M. MERDAS, CRTS, Morocco

- 14:20 – 14:40 **High Resolution Synthetic Aperture Radars for Water Resource Management in Low-Income Countries**
Dr. Giuseppe RUELLO, University of Napoli Federico II, Italy
- 14:40 – 15:00 **Identification of Rain Water Harvesting (RWH) Sites in Potohar Region of Pakistan, Using Geospatial Techniques**
Mr. Mirza M. WAQAR, Institute of Space Technology, Pakistan
- 15:00 – 15:20 **Advanced Hydro-Environmental Monitoring Technology System in the Transboundary Niger Basin of West and Central Africa for Preservation of Environment and Socio-Economic Development**
Mr. John Ayoade SHAMONDA, Hydrological Services Agency, Nigeria
- 15:20 – 15:40 **Applications of New Satellite Missions in Assessing Crop Development Conditions**
Dr. Katarzyna DABROWSKA-ZIELINSKA, Institute of Geodesy & Cartography, Poland
- 15:40 – 16:00 **Water Harvesting Potential for Agricultural Development of Some Areas in North Western Coast of Egypt Using Remote Sensing and GIS Techniques**
Mr. Ahmed SALEH, National Authority for Remote Sensing and Space Sciences, Egypt
- 16:00 – 16:30 Coffee break**
- 16:30 – 16:50 **Monitoring of Water Resources on South-Mediterranean Catchments through Remote Sensing and Hydrological Modeling: Case of the Tensift (Morocco)**
Mr. S. KHABBA, Université CAM, Marrakech, Morocco
- 16:50 – 17:10 **Remote Sensing for Water Resources Exploration in Dry Regions**
Dr. Eman GHONEIM, University of North Carolina, USA
- 17:10 – 17:30 **Monitoring of Irrigation Schemes by Remote Sensing: Phenology versus Retrieval of Biophysical Variables**
Mr. Kamal LABBASSI, Université Chouaib Doukkali, Morocco
- 17:30 – 17:50 **Water Productivity Mapping of Agricultural Fields in Saudi Arabia**
Prof. V.G. CHANNA BASAPPA GOUDA PATIL, King Saud University, Saudi Arabia
- 17:50 – 18:10 **ASI Activities and Achievements in Water Management**
Dr. Veronica LA REGINA, Italian Space Agency, Italy
- 19:30 – 21:30 Reception hosted by the Local Organizing Committee**

Day 2 – Wednesday, 2 April 2014

- 09:00 – 10:40 Technical session 2: International and Regional Initiatives to Integrate Space Technologies in Water Resource Management**
- Co-Chairs: Mr. Sergei Chernikov, UN-OOSA and Mr. Hammad Benchekroun, CRTS, Morocco**
Rapporteur: Ms. Amal Layachi, CRTS, Morocco
- 09:00 – 09:20 **The TIGER Initiative**
Dr. Benjamin KOETZ, ESA
- 09:20 – 09:40 **The World Bank-NASA Initiative on Regional Coordination for Improved Water Management and Capacity Building**
Dr. Shahid HABIB, NASA, USA

- 09:40 – 10:00 **Using Earth Observations for Integrated Water Resources Management**
Dr. Douglas CRIPE, Group on Earth Observations (GEO) Secretariat
- 10:00 – 10:20 **JAXA Water-related Activities in Various Regions**
Dr. Yasushi HORIKAWA, Chairman of the UN COPUOS
- 10:20 – 10:40 **GMES – AFRICA: The BRAGMA Project on Africa-Europe Cooperation**
Mr. Eric MWANGI, Ministry of Education, Science and Technology, Kenya
- 10:40 – 10:50 **The FAO Water Scarcity Initiative in the NENA Region: The Need for Benchmarking and Monitoring Crop Water Productivity via Satellite Remote Sensing**
Dr. Pasquale STEDUTO, Deputy Regional Representative for MENA Region, Food and Agriculture Organization of the United Nations (FAO)
- 10:50 – 11:10 Coffee break**
- 11:10 – 13:10 Technical session 3: Space Applications for Water Security and Risk Management**
- Co-Chairs: Mr. Arshad Siraj, SUPARCO, Pakistan and Prof. Abderrahman Touzani, CRASTE-LF, Morocco**
Rapporteur: Mr. A. Erraji, CRTS, Morocco
- 11:10 – 11:30 **Tsunami Risk Modeling Using Space Data**
Mr. A. ATILLAH, CRTS, Morocco
- 11:30 – 11:50 **Remote Sensing Based Hydrological Modeling for Flood Early Warning in the Upper and Middle Awash River Basin**
Mr. Sifan Abera KORICHE, Jimma Institute of Technology, Ethiopia
- 11:50 – 12:10 **Environmental Risk and Water Management in the Region of Safi, Morocco**
Mr. Ralf LOEWNER, Institute of Applied Geosciences, Germany
- 12:10 – 12:30 **Flood Vulnerability Assessment Using Geospatial Techniques**
Mr. Babar SHEIKH, SUPARCO, Pakistan
- 12:30 – 12:50 **Utilisation et application des technologies spatiales (Pouvoir Précipitant et RGB convection & Bispectrale des données SEVERI) pour la gestion des risques naturels**
Filali Boubrahmi Nouredine, Saouri tahar, Morocco
- 12:50 – 13:10 **Danube Flood Hazard and Risk Maps Atlas: an Integrated Approach for the Danube Basin**
Dr. Mary-Jeanne ADLER, National Institute of Hydrology and Water Management, Romania
- 13:10 – 14:30 Lunch**
- 14:30 – 18:00 Technical session 4: Geospatial Information for Ground Water Resources Management**
- Co-Chairs: Dr. Douglas Cripe, GEO Secretariat and Dr. Abdekader Larabi, Ecole Mohammadia d'Ingénieurs, Morocco**
Rapporteur: Mr. Nouredine Bijaber, CRTS, Morocco
- 14.30 – 14.50 **National Strategy for Water Resources Management - Role of Space Technology**
Mr. A. BENABDELFADEL, DRPE, Water Department, Morocco

- 14:50 – 15:10 **Using Radar Interferometric Satellite Data for Ground Water Management in the Arno River Basin**
Dr. Bernardo MAZZANTI, Arno River Basin Authority, Italy
- 15:10 – 15:30 **Use of Remote Sensing and GIS Technologies to Analyse the Pilcomayo River Complexity as International Boundary Between Argentina and Paraguay**
Mr. Miguel Angel GIRAUT, Undersecretary for Water Resources, Argentina
- 15:30 – 15:50 **Water resources management in Chad**
Mr. Olivier SENEGAS, UNOSAT/UNITAR, France
- 15:50 – 16:20 Coffee break**
- 16:20 – 16:40 **Satellite Data and Geospatial Technique Based Mapping of Groundwater Potential Zones in Nethravathi Basin, South India**
Prof. Ramesh HONNASIDDAIAH, National Institute of Technology Karnataka, India
- 16:40 – 17:00 **Management of Underground Water Quality in Semi Arid Environment Using Space Science Technology - Case Study Botswana**
Ms. B. MATHANGWANE, Ministry of Agriculture, Botswana
- 17:00 – 17:20 **Use of Satellite Imagery to Monitor Water Quality in Valle de Bravo Dam, One of the Main Providers of Freshwater to Mexico City**
Mr. Julio C. CASTILLO URDAPILLETA, Mexican Space Agency, Mexico
- 17:20 – 17:40 **Irrigated Lands Changes Mapping and Impact on Ground Water Resources**
Mr. A. ERRAJI, CRTS, Morocco
- 17:40 – 18:00 **Spatial Modelling of Groundwater Quality Assessment: a Case Study of Peshawar District**
Mr. Muhammad Ahsan MAHBOOB, National University of Sciences and Technology, Pakistan

Day 3 – Thursday, 3 April 2014

09:00 – 13:10 Technical session 5: Capacity Building and Cooperation Initiatives

Co-Chairs: Mr. Jean-Charles Bigot, ESA and Dr. Mahmoud ABU-ZEID, President of Arab Water Council, Morocco
Rapporteur: Mr. Atillah, CRTS, Morocco

- 09:00 – 09:20 **Role of International Cooperation in Capacity Building – Activities of CRAFT-LF**
Prof. A. TOUZANI, CRAFT-LF, Morocco
- 09:20 – 09:40 **CRTS Initiatives and Action for Capacity Building**
Ms. A. LAYACHI, CRTS, Morocco
- 09:40 – 10:00 **EarthLab Programme: a Galaxy of worldwide centres using remote sensing devoted to environmental survey including water management**
Mr. Didier RIGAL, Telespazio France
- 10:00 – 10:20 **Incorporating Use of Space Technology for Water Management in Mainstream Curriculum: Case for an Innovative Green MBA Program**
Dr. K. M. B. ISLAM, Institute of Management Kashipur, India

10:20 – 10:40	<p>Evaluation of Groundwater Potential of a Basement Complex Environment Using Geoinformation Technology (A Framework for Water Development in Developing Countries) <i>Dr. Yekini Biodun Adeleye ANIFOWOSE, Federal University of Technology, Nigeria</i></p>
10:40 – 11:10	Coffee break
11:10 – 12:10	<p>Overview of LDAS Project: Presentations from MENA countries on WB-NASA initiative “Coordination régionale pour une meilleure gestion des ressources en eau et renforcement des capacités“</p> <ul style="list-style-type: none"> • <i>Role of Regional Coordination in the Arab Region, Heba AL HARIRY, Arab Water Council</i> • <i>Capacity building of Tunisian institutions in improvement of water resources management and adaptation to climate change: state and perspectives, Sinan Bacha, CNT, Tunisia</i> • <i>Building Lebanon capacity for the assessment and monitoring of environmental hazards and sustainable management of natural resources, Tala DARWISH, Lebanon</i> • <i>LDAS-Maroc: Contribution to strengthening end-users capacities for Improving Water Resources Management and Climate Change Adaptations, Mr. Ahmed ERRAJI, CRTS, Morocco</i>
12:10 – 13:10	<p>Overview of the TIGER Ongoing Capacity Building Programmes:</p> <ul style="list-style-type: none"> • <i>TIGER Capacity Building Facility, Dr. Zoltan Verkerdy, ITC, The Netherlands</i> • <i>ESA/TIGER Water Observation Information System (WOIS), Dr. Silvia Huber, DHI GRAS A/S, Denmark</i>
13:10 – 14:30	Lunch
14:30 – 18:00	Working Groups Meeting
	<p>Two Working Groups will be established to prepare observations and recommendations of the Conference as well as proposals for follow up activities.</p>
	<p><u>Working Group 1: Cooperation and Capacity Building</u> Moderators: Dr. Douglas Cripe, GEO Secretariat and Dr. Katarzyna DABROWSKA-ZIELINSKA, Institute of Geodesy & Cartography, Poland</p>
	<p><u>Working Group 2: Future Challenges for Water Resources Management</u> Moderators: Mr. Felix Menicocci, CONAE, Argentina and Eng. Aliwafa Abu-Risheh, PSIPW</p>
14:30 – 14:45	<p>Introduction to and formation of Working Groups <i>UN-OOSA and LOC</i></p>
14:45 – 16:00	Working Groups Meeting
16:00 – 16:30	Coffee break
16:30 – 18:00	Working Groups Meeting (continued)

Day 4 – Friday, 4 April 2014

09:00 – 11:00 *Working Groups Meeting (continued)*

11:00 – 11:30 **Coffee break**

11:30 – 13:00 **Closing Session**

Co-Chairs: Mr. Sergei Chernikov, UN-OOSA and Dr. Driss Elhadani, CRTS, Morocco

11:30 – 12:00 Presentation of WGs observations, recommendations and proposals (by moderators of WGs)

12:00 – 12:30 Discussion and adoption of the Workshop observations and recommendations

12:30 – 13:00 Closing remarks:

- *Representative of LOC*
- *Representative of ISNET*
- *Representative of PSIPW*
- *Representative of ESA*
- *Representative of UN-OOSA*

Presentations scheduled for posters sessions

(Session1 – PM Tuesday; Session 2 - AM Wednesday; Session 3 - PM Wednesday; and Session 4 – AM Thursday)

Day/session	Title	Author
Session 1	Remote Sensing Tools for Land and Water Management in Sao Paulo Metropolitan Area in Brazil	<i>Ms.Andrea Ferraz YOUNG, CEPAGRI-UNICAM, Brazil</i>
Session 1	Remote sensing techniques in water management - proposition for the future activities	<i>Mr. Ratko VASILJEVIC, GEOSAT, Croatia</i>
Session 1	Potential Rainwater Harvesting Improvement Using Remote Sensing Application in Southern West Region of KSA	<i>Dr. Mohammed ELHAG, King Abdulaziz University, Saudi Arabia</i>
Session 1	Remote Sensing/GIS applications in Irrigation and Agricultural Water Management in Ghana - A Project Proposal	<i>Mr. Francis Danquah OHEMENG, Irrigation Development Authority, Ghana</i>
Session 1	The use of remote sensing and GIS in water harvesting to supply the communities around Gebeit-Sinkat Area, Red Sea, Sudan	<i>Prof. Khalid Abdelrahmn ELSAYED ZEINELABDEIN, Al Neelain University, Sudan</i>
Session 1	Rainwater Harvesting for Domestic Use: A Case Study of Water Supply to Low-income Urban Communities	<i>Prof. Md. Golam MOSTAFA, University of Rajshahi, Bangladesh</i>
Session 1	ArcGIS Application to Determine the Best Locations for Artificial Recharge of Groundwater by Treated Wastewater	<i>Mr. Mutaz AL-ALAWI, Ministry of Environment, Jordan</i>
Session 1	Growth and nitrogen use efficiency under drip irrigation on wheat grown on an arid region	<i>Mr. Mohamed Said Awad BAIouMY, ARC-Egypt</i>

Session 1	C.R.O.P. - Combined Regenerative Organic food Production: A base for an easy to use system for wastewater reclamation	<i>Ms. Gerhild BORNEMANN, German Aerospace Center (DLR), Germany</i>
Session 1	The functioning of the sebkha of Imlily revealed by Palsar Radar images. A relic of the past in the Moroccan Sahara witness climate change in improbable geological conditions	<i>Mr. Anas EMRAN, Université Mohammed V, Morocco</i>
Session 1	Remote Sensing Applications for Water Resources	<i>King Abdulaziz City for Science and Technology (KACST), Saudi Arabia</i>
Session 2	Linking water resources management and climate change adaptation in the Congo Basin countries through remote sensing technologies and GIS: An overview	<i>Mr. Maximilien TIOGANG DJOMO, Ministry of Environment and Nature Protection, Cameroon</i>
Session 2	Need and Importance of Space Technology for the Mitigation and Management of Disasters in Nepal and Beyond	<i>Mr. Meen Bahadur POUDYAL CHHETRI, Nepal Center for Disaster Management, Nepal</i>
Session 2	Prevention and mitigation water hazards project in Prachin Buri Province, Thailand	<i>Ms. Vipaporn WORASARN, Royal Irrigation Department, Thailand</i>
Session 2	Assessment of Meteorological and Agriculture Drought Severity in Barani Areas of Pakistan	<i>Mr. Saad Ul HAQUE, Institute of Space Technology, Pakistan</i>
Session 2	An integrated drought DSS based on remote sensing approaches and hydrologic modelling	<i>Mr. Ghaleb FAOUR, Center for Remote Sensing, Lebanon</i>
Session 2	Application of remote sensing and geographical information systems for flood disaster assessment: a case study of tori bund breach in Sindh, Pakistan, flood 2010	<i>Mr. Ansari A. MOHAMMED, Government of Sindh and Mr. Mangan Jamal UDDIN, Sindh Irrigation & Drainage Authority, Pakistan</i>
Session 2	Establishing a Saudi Arabia Land Data Assimilation System for Proper Water Resources Management	<i>Dr. Khalid Abdulrahman AL-GHAMDI, Umm Al-Qura University, Saudi Arabia</i>
Session 2	Assessment of Desertification Using Tasseled Cap Analysis Techniques - Case Study of Khor Habil Area, North Kordofan State, Sudan	<i>Ms. Tameni HAJ AHMED, Remote Sensing and GIS Authority, Sudan</i>
Session 2	Space Technology Based Early Warning System for Drought Monitoring”	<i>Mr. N. Bijaber, CRTS, Morocco</i>
Session 2	Etude et suivi de l'etat des eaux de la grande Sabkha d'Oran par l'analyse spectrale des donnees Landsat et l'integration du MNT	<i>Dr. Fatiha LAOUFI, Ecole Nationale Polytechnique d'Oran, Algeria</i>
Session 2	Use of Remote sensing and GIS in monitoring spatio-temporal evolution of the Idriss First's dam, northern Morocco	<i>Prof. Hassan TABYAOUI, Sidi Mohamed Ben Abdellah University, Morocco</i>
Session 2	Flood Hazard Mapping – Lebanon as a case study	<i>Dr. Chadi ABDALLAH, National Council for Scientific Research, Lebanon</i>
Session 3	Use of time series of optical and SAR images in the estimation of snow cover for the optimization of water use in the Andes of Argentina and Chile	<i>Dr. Nélide Graciela SALINAS DE SALMUNI, CONAE, Argentina</i>
Session 3	Application Of Remote Sensing And Geophysical Data To Site Characterization And Ground Water Investigation Of North Sinai, Egypt	<i>Dr. Safaa Mohamed HASSAN, NARSS, Egypt</i>

Session 3	GIS as a Tool for Trans-boundary Water Management in MENA Region	<i>Mr. Iskander TLILI, Ministry of Infrastructure and Environment, Tunisia</i>
Session 3	Evaluating the TRMM-3B43 v6 and v7 monthly precipitation using rain-gauge data over central Peruvian Pacific	<i>Mr. Wilson SUAREZ, Meteorological and Hydrological Service, Peru</i>
Session 3	Evaluation of Suitable Artificial Recharge for Groundwater Using Remote Sensing and GIS in Taiz City, Republic of Yemen	<i>Mr. Mohammed Ahmed Abdulrahim HODISH, Ministry of Water and Environment, Yemen</i>
Session 3	Satellite based water quality monitoring in Lake Chivero, Zimbabwe	<i>Mr. Mary CHAWIRA, Zimbabwe Open University, Zimbabwe</i>
Session 3	Applications of geospatial technology for mangle watershed management in Pakistan - a modelling approach	<i>Dr. Allah Ditta KHAN, Council of Research in Water Resources, Pakistan</i>
Session 3	Assimilation of satellite-observed snow albedo in a land surface model	<i>Mr. Muhammad Jahanzeb MALIK, SUPARCO, Pakistan</i>
Session 3	Detecting over irrigation and lake formation in eastern region , Saudi Arabia	<i>Prof. Yousef Abdulaziz ALRUMIKHANI, King Abdulaziz City for Science and Technology, Saudi Arabia</i>
Session 3	Using SAR derived information for the optimization of reservoirs management in semi-arid regions	<i>Dr. Maria Nicolina PAPA, Laboratorio di Idraulica Ambientale e Marittima, Italy</i>
Session 3	Analysis and monitoring of the siltation dynamics of small catchments in Tunisian semi-arid	<i>Ms. Olfa HAJJI and Ms. Sahar ABIDI, National Agronomy Institute, Tunisia</i>
Session 3	Global Water management for MENA region with nano-satellites technology	<i>Prof. Kamel BESBES, University of Monastir, Tunisia</i>
Session 4	Use of geospatial information toward water resource management in the Great horn of Africa	<i>Mr. Abdourahman HOUMED-GABA MAKI, ICPAC, Kenya</i>
Session 4	ISEPEI: In-Service ICT Training for Environmental Mid-career Professionals	<i>Mr. Victor LAGUTOV, Central European University, Hungary</i>
Session 4	Remote Monitoring of Water Balance to Achieve IWRM	<i>Mr. Ghazi Abdul Razzaq ABU RUMMAN, ICT International – MENA, Jordan</i>
Session 4	Monitoring Water Quaility with WorldView-2	<i>Mr. Pascal SCHICHOR, European Space Imaging, Germany</i>
Session 4	Use of space technology for mainstreaming water management in to developmental processes in rural areas	<i>Dr. Satya Parkash KATYAL, Indian Space Research Organization, India</i>
Session 4	Use of Space Technology for Water Resources Management in Syria	<i>Mr. Marwan Moustafa KOUDMANI, Environment Protection & Sustainable Development Society, Syria</i>
Session 4	Usage of Space Systems Capabilities in the Water Resources Management of Azerbaijan	<i>Mr. Alchin Alisafar SHIRIN-ZADA, National Aerospace Agency, Azerbaijan</i>
Session 4	Groundwater Water Limited Availability in Regions of Africa	<i>Mr. Famose Adul Qudiry OLUWOLE, Osun State Water Corporation, Nigeria</i>

- Session 4** **Physicochemical and microbiological evaluation of wastewater, used in Yemen vegetables production** *Mr. Muamar Abdullah AL-JABOUBI, Mhammad V. University, Morocco*
- Session 4** **Design and development of an Information System for the water resources management in Saiss basin of Morocco** *Mr. Abdelkader EL GAROUANI, Laboratory of Natural Resources and Environment, Morocco*
- Session 4** **Modeling the hydrological water balance for the Nile River due to the construction of Renaissance Dam in Ethiopia** *Mr. Mohammed EL BASTAWESY, National Authority for Remote Sensing and Space Sciences (NARSS), Egypt*