



Earth Science Informatics Technical Committee

Chairs:

Peng Yue, Wuhan University

Rahul Ramachandran, NASA/MSFC

Peter Baumann, Jacobs University Bremen

Standards Group:

Siri Jodha S. Khalsa, University of Colorado

Meixia Deng, George Mason University

GRSS AdCom Meeting

IGARSS 2016

Beijing, China, July, 2016



Content

- | **Presentation of the TC**
- | **Review of what has been done in 2016 with a highlight**
- | **IGARSS sessions (shortly) and the main thematic focus**
- | **Ongoing and new initiatives for 2016/2017**
- | **Publications**
- | **Others**



ESI TC Mission Statement



Earth Science Informatics Technical Committee

- | **The mission of the Earth Science Informatics Technical Committee (ESI TC) is to advance the application of informatics to the geosciences and remote sensing, to provide a venue for ESI professionals to exchange information and knowledge, and to give technology advice to major national and international ESI initiatives.**



Research Areas

- | **Data and information policies**
- | **Data stewardship (preservation, provenance, quality, etc.)**
- | **Knowledge representation and information models**
- | **Interoperability and standards**
- | **Data discovery and access**
- | **Web-based services and analysis**
- | **Semantic representation of entities in the Geosciences (e.g., spatial and process ontologies, vocabularies, semantic web)**
- | **Sensor web and applications**
- | **Cloud computing**
- | **Information and knowledge extraction; decision support systems**
- | **Earth system modeling**
- | **Software tools to visualize and analyze geoscience data**
- | **Emerging information technologies and their applications in the geosciences**
- | **...**



ESI TC membership status

- | **Currently ESI TC has more than 100 members**
- | **Countries/Areas represented:**
 - **Australia** - **Germany**
 - **Belgium** - **India**
 - **Brazil** - **Italy**
 - **Canada** - **Japan**
 - **China** - **New Zealand**
 - **France** - **South Africa**
 - **Switzerland**
 - **Taiwan**
 - **Turkey**
 - **UK**
 - **USA**

Agro-Geoinformatics 2016

ESI TC has been supporting the international conference series on Agro-Geoinformatics

- The Fifth International Conference on Agro-Geoinformatics
- Dates: July 18-20 July 2016 (after the IGARSS 2016 July 10-15)
- Location: Tianjing, China (a half-hour high-speed train ride from Beijing)
- ESI TC is technically co-organizing the conference: ESI TC chair Peng Yue is the scientific committee co-chair

Over 250 abstracts received



The screenshot shows the website for the Fifth International Conference on Agro-Geoinformatics 2016. The main banner features a globe and the text "Agro-Geoinformatics 2016 18-20 July 2016 | Tianjin, China". Below the banner is a navigation menu with the following items:

- Home
- News & Events
- Theme & Scope
- Committees
- Keynote Speakers
- Important Dates
- Call for Papers
- Special Sessions
- Submission
- Registration
- Programs
- Publications
- Venue & Travel
- Accommodation
- Visa Application

The "Submission" section contains the following text:

>>>>Abstract-submission is extended to April 15, 2016: <<<<<

The Fifth International Conference on Agro-Geoinformatics (Agro-Geoinformatics 2016) will be held in Tianjin, China, on July 18-20, 2016. This conference is organized and hosted by Tianjin Polytechnic University, with technical and financial sponsorships from George Mason University, CSISS Foundation Inc, Open Geospatial Consortium (OGC), Turkish Ministry of Agriculture, TARBL Agricultural Informatics Applied Research Center and Istanbul Technical University (ITU), Chinese Academy of Agricultural Science, Chinese Society of Agricultural Resources and Regional Planning, Chinese Association of Agricultural Science Societies, Tianjin Polytechnic University and Wuhan University.

Agro-geoinformation is critical for the agricultural sustainability, food security, environmental research, bioenergy, natural resource conservation, land use management, carbon accounting, global climate change, health research, agricultural industry, commodity trading, economy research, education, agricultural decision making and policy formulation, etc. The Agro-Geoinformatics conferences were successfully held in Shanghai, China (Agro-Geoinformatics 2012), Washington DC, USA (Agro-Geoinformatics 2013), Beijing, China (Agro-Geoinformatics 2014) and Istanbul Turkey (Agro-Geoinformatics 2015). The Agro-Geoinformatics conferences have provided and will continue to provide an ideal venue for professionals and students to exchange their ideas, research results, professional experiences, the latest developments and future vision of agro-geoinformatics. The Agro-Geoinformatics 2016 conference will continue covering the recent advances in the life cycle of Agro-geoinformatics, from data collection (including field surveys and remote sensing), processing, storing, archiving, preservation, retrieving, transmitting, accessing, visualization, analyzing, synthesizing, presenting, disseminating to decision making.



2016 Geoinformatics Summer School

- | 2016 International Geoinformatics Summer School, Wuhan University, Wuhan, China, June 19-30, 2016.
- | 70 participants from 11 countries





ESI Invited Session: IGARSS 2016

- | **Earth Observing Data Science**
 - Session number: I.16 Number of Papers: 9
 - Session Chairs: Peng Yue, Wuhan University, Peter Baumann, Jacobs University Bremen

- | **Session Focus: Big Data and Data Science**
 - The rapid development of sensor and cyberinfrastructure technologies makes Earth observing data an important part of Big Data. Big data technologies are being widely practiced in the geoscience and remote sensing communities to support Earth observing data access, processing, and knowledge discovery.
 - The Earth Observing Data Science will encompass various aspects of big Earth observing data, including
 - » Big data management (curation, discovery, and access to Earth observing data)
 - » Web and Cloud-based processing of Earth observing data
 - » Methods/tools/best practices for big data analytics
 - » Applications of big Earth observing data
 - » Directions and trends of big Earth observing data science.



Session Name: MO3.L6: Earth Observing Data Science I [Room 306A]

- | **MO3.L6.1: EXPLOITING DARK INFORMATION RESOURCES TO CREATE NEW VALUE ADDED SERVICES to STUDY EARTH SCIENCE PHENOMENA**
- | **MO3.L6.3: DATACUBES AS A SERVICE PARADIGM**
- | **MO3.L6.4: BIG DATA AND ITS APPLICATIONS IN AGRO-GEOINFORMATICS**
- | **MO3.L6.5: SPATIAL GRID BASED OPEN GOVERNMENT DATA MINING**

Session Name: MO4.L6: Earth Observing Data Science II [Room 306A]

- | **MO4.L6.1: IMPLEMENTING NEXT-GENERATION NATIONAL EARTH OBSERVATION DATA INFRASTRUCTURE TO INTEGRATE DISTRIBUTED BIG EARTH OBSERVATION DATA**
- | **MO4.L6.2: DEEP LEARNING APPROACH FOR LARGE SCALE LAND COVER MAPPING BASED ON REMOTE SENSING DATA FUSION**
- | **MO4.L6.3: GEOMATICS EDUCATION IN THE ERA OF BIG DATA**
- | **MO4.L6.4: NEAR REAL-TIME SATELLITE DATA QUALITY MONITORING AND CONTROL**
- | **MO4.L6.5: GEOGATEWAY: A SYSTEM FOR ANALYSIS OF UAVSAR DATA PRODUCTS**



GRSS-OGC Joint Invited Session: IGARSS 2016

- | **Advancing Interoperability for Geoscience Information Systems**
 - Session number: I.7 Number of Papers: 9
 - Session Chairs: Trevor Taylor, Open Geospatial Consortium (OGC), Peng Yue, Wuhan University

- | **Session Focus: Interoperability and Standards**
 - Interoperability allows proprietary geoscience information systems developed by different vendors to exchange freely information from various sources and work cooperatively to accomplish complex tasks.
 - IEEE GRSS, the Open Geospatial Consortium (OGC) and other organizations are coordinating to advance the state of open standards for geoscience and remote sensing.
 - This invited session proposal is a coordinated action of Dr. John Kerekes, IEEE-GRSS and George Percivall, CTO/Chief Engineer OGC. The proposal supports the GRSS-OGC MOU work plan.



Session Name: WE3.L6: Advancing Interoperability for Geoscience Information Systems I [Room 306A]

- | **WE3.L6.1: A VOYAGE THROUGH DIMENSIONS: RECENT INNOVATIONS IN GEOSPATIAL COVERAGES**
- | **WE3.L6.3: COUPLING OF EARTH SCIENCE MODELS AND EARTH OBSERVATIONS THROUGH OGC INTEROPERABILITY SPECIFICATIONS**
- | **WE3.L6.4: SEMANTIC LOCATION-BASED SERVICES**
- | **WE3.L6.5: THE OGC® DISCRETE GLOBAL GRID SYSTEM CORE STANDARD: A FRAMEWORK FOR RAPID GEOSPATIAL INTEGRATION**

Session Name: WE3.L6: Advancing Interoperability for Geoscience Information Systems II [Room 306A]

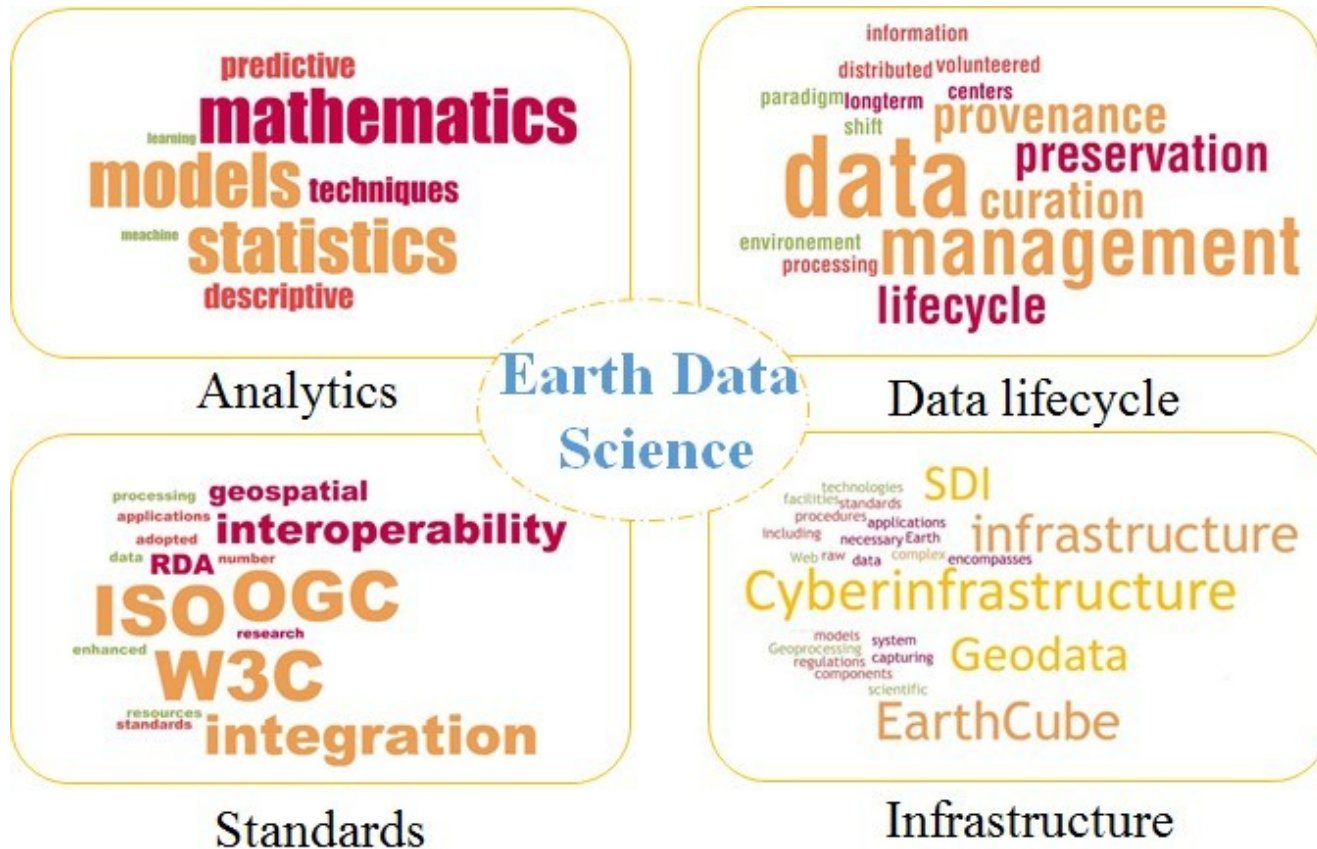
- | **WE4.L6.1: EASY TO USE TIME-SERIES DATA ACCESS AND ANALYSIS TOOLS USING STANDARD-BASED GEOPROCESSING SERVICES**
- | **WE4.L6.2: SENSOR WEB ENABLEMENT (SWE) FOR CITIZEN SCIENCE**
- | **WE4.L6.3: EARTH OBSERVATION DATA ACCESS INTEROPERABILITY IMPLEMENTATION AMONG SPACE AGENCIES**
- | **WE4.L6.4: WEB SERVICE-BASED SMAP SOIL MOISTURE DATA VISUALIZATION, DISSEMINATION AND ANALITICS BASED ON VEGSCAPE FRAMWORK**
- | **WE4.L6.5: A WEBGIS APPLICATION: TUNA FISHING GROUND FORECASTING INFORMATION SERVICE SYSTEM FOR THE OPEN SOUTH CHINA SEA**



ESI TC 2017 New Initiative Proposal – Submitted

- | **2017 International Workshop on Big Geospatial Data and Data Science**
 - Continuing IEEE GRSS Sponsored Workshop Series on Geospatial Data Science
 - Sept. 20 - 21, 2017 , will be held adjunctly with the ISPRS Geospatial Week 2017 in Wuhan, China
- | **Lead:**
 - Peng Yue, Wuhan University
- | **Funding**
 - Seeking \$20K to reimburse travel expense for invited experts or additional travel costs and facilities.
- | **Return on Investment**
 - Promoting activities of Globalization Committee and ESI TC
 - Enhancing the reputation of IEEE GRSS in the geospatial field
 - Fostering collaboration with sister societies including ISPRS and OGC
 - Potential new members of IEEE GRSS
 - Advancing theories and practices on big geospatial data

ESI TC Article for GRSM 2016 September Issue (submitted)





Member Contributions: Miscellaneous

- | **ESI TC member Hampapuram K. Ramapriyan**
 - Distinguished Lecturer Series : one in Bangalore, India, one in Los Angeles, CA to GRSS Chapters, and another one in Ahmedabad, India in December 2015
 - active in ISO TC 211 WG-7 and involved in ISO 19165



GRSS and Standards Development

- | **GRSS is represented on ISO/TC211 Project to revise 19115-2 Metadata for Imagery and Gridded Data**
 - Important evolution of the ISO suite of metadata standards

- | **Khalsa providing standards expertise to ISIS TC**
 - Participated in ISIS Cal/Val Workshop in Edinburgh
 - Working with OGC on possible standards development project for hyperspectral imagery and cal/val data



GRSS and Standards Development: Peter Baumann

| OGC functions:

- member, OGC Architectural Board (OAB)
- founder and co-chair, Big Data Domain Working Group (BigData.DWG)
- co-chair, Web Coverage Service (WCS) Standards Working Group (WCS.SWG)
- co-chair, Coverages Domain Working Group (Coverages.DWG)
- co-founder, Temporal Domain Working Group (Temporal.DWG)

| OGC technical work:

- Editor of the „Datacube“ standard (Coverages)
- Editor of the „Big Geo Data“ suite, Web Coverage Service (WCS)



GRSS and Standards Development: Peter Baumann

| ISO:

- TC211: OGC liaison for adoption of OGC Coverage Implementation Schema (CIS) and OGC WCS by ISO (under work)
- SC32: initiator and co-editor of SQL/MDA („Multi-Dimensional Arrays“)

| INSPIRE:

- German delegate & WCS expert

| Research Data Alliance:

- co-chair, Big Data Interest Group
- co-chair, Geospatial Interest Group

| World-Wide Web Consortium (W3C):

- member, Spatial Data on the Web Working Group