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Pride Plaza Hotel
New Delhi, India

Conferences
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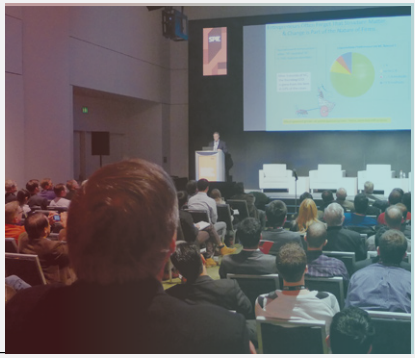
C. Call for Papers.



SPIE. ASIA-PACIFIC REMOTE SENSING

LOCATION

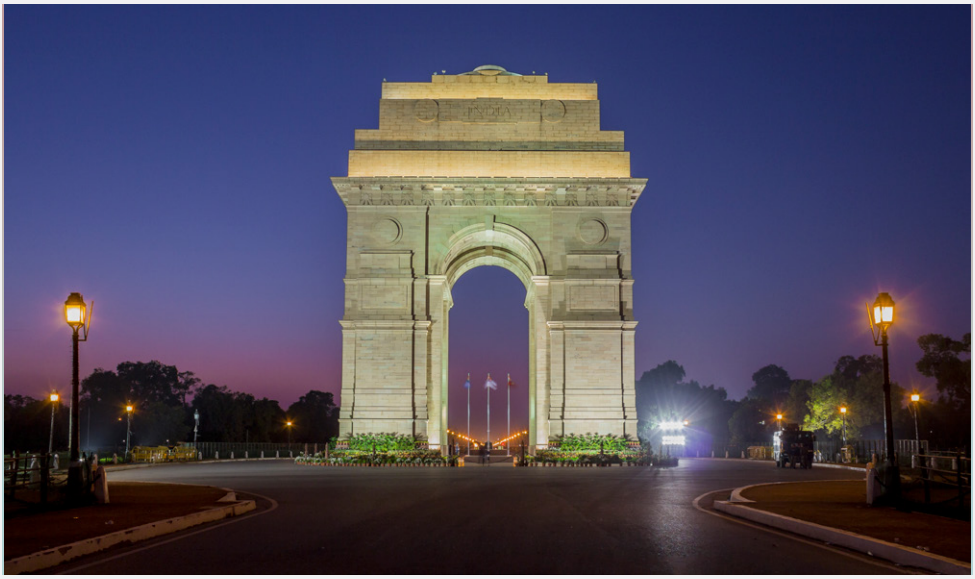
Pride Plaza Hotel
New Delhi, India

DATES

Conferences: 4–7 April 2016

TECHNOLOGIES

- Remote sensing of the atmosphere, clouds, and precipitation
- Land surface remote sensing
- Remote Sensing of the Oceans and Inland Waters: Techniques, Applications, and Challenges
- Lidar remote sensing for environmental monitoring
- Multispectral, hyperspectral, and ultraspectral remote sensing technology, techniques and applications
- Earth-observing missions and sensors: development, implementation, and characterization
- Remote sensing and modeling of the atmosphere, oceans and interactions



Plan to Participate.

Remote sensing data processing and characterization are an integral part of weather and climate predictions. Analysts use advanced remote sensing maps for the monitoring of hazardous phenomena, exploration of ocean resources, and tracking cryospheric changes that result from global warming. Advanced remote sensing and data processing is a crucial information resource for in-depth understanding of the interrelated processes of the atmosphere, ocean, geosphere, cryosphere, and biosphere.

The 2016 APRS symposium will focus on the application of remote sensing technologies for disaster mitigation and to better monitor global climate change. The deliberations of the conference will generate new initiatives and collaborative international efforts to direct governmental policies. Please submit your latest work and plan to join your research community to discuss the state of the art in remote sensing technologies. Join us in New Delhi and share your knowledge with your peers.

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NASA Langley Research Ctr. (United States)

Vinay Dadhwal,
Indian Space Research Organisation (ISRO) (India)

Swati Basu,
Earth System Science Organization, Ministry of Earth Sciences (ESSO-MoES) (India)

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Contents.

IMPORTANT DATES

Abstracts Due:

5 OCTOBER 2015

All submissions must include a 300-word abstract and a two-page supplemental file (see Submission Guidelines).

Author Notification:

14 JANUARY 2016

Manuscript Due Date:

7 MARCH 2016

PLEASE NOTE: Submissions imply the intent of at least one author to register, attend the conference, present the paper as scheduled, and submit a full-length manuscript for publication in the conference proceedings.

COOPERATING ORGANISATIONS

ESSO

RADI

JAXA Japan Aerospace Exploration Agency

NICT National Institute of Information and Communications Technology

Remote Sensing of the Atmosphere, Clouds, and Precipitation VI (AE101)

Conference Chairs: **Eastwood Im,** Jet Propulsion Lab. (United States); **Raj Kumar,** Space Applications Ctr. (India); **Song Yang,** U.S. Naval Research Lab. (United States)

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Advanced remote sensing instruments provide the vital component of global observing systems for planet Earth. New and emerging methods for atmospheric remote sensing, including clouds, precipitation, aerosol, pollutants, trace gases, greenhouse gases, atmospheric winds, etc., that combine different types of observations spanning over a huge range of the electromagnetic spectrum are now beginning to emerge with the advent of new global observing systems like the A-Train. Towards this, there are emerging developments taking place in the areas of atmospheric chemistry instruments involving advanced spectroscopy, high spectral resolution atmospheric sounders, cloud profiling and precipitation radars, as well as advanced optical and microwave imagers and earth radiation budget radiometers. Developments of such instrumentations bring challenging applications, not only in developing newer techniques to analyze them but new approaches to integrate the observations from the different sensors.

This conference will focus on the current accomplishments and future advancements of the remote sensing techniques and instrumentations to optimize the use of new and upcoming satellite data aimed at advancing our understanding of processes important for understanding on global environmental change. Community members are invited to bring to the meeting their interests in elements such as instrumentation, technology, modeling, algorithm, processing, information distribution, application, and the synergy among them. With individual and invited expert presentations and hallway informal discussions, this meeting will foster international, institutional, and personal collaboration and interaction to advance remote sensing knowledge and skill to meet increasing demands for understanding and management of our environment. Papers are solicited in the following and related topics:

- cloud, precipitation, and aerosol remote sensing and retrieval techniques including profiling approaches
- trace, greenhouse, and pollutant species remote sensing
- remote sensing of snowfall, cyclones, convective storms, tornadoes, hail, lightning, and other extreme weather events
- atmospheric sounding methods including next generation sounders and GPS methods
- orbital, suborbital, and ground-based atmospheric remote sensing instruments, including characteristics, calibration, algorithm development, data processing, and applications
- radiative transfer modeling of cloud and aerosol
- data assimilation and data fusion methods, especially as applied to 'non-traditional' atmospheric data
- multi-sensor methods particularly emphasizing combined active and passive remote sensing techniques
- novel sensor, and sensor data processing and compression techniques
- validation field campaign, in-situ data analysis
- recent advances in Arctic (Antarctic) research and strategy
- current and future operational and research remote sensing systems and missions.

Land Surface Remote Sensing III (AE102)

Conference Chairs: **Reza Khanbilvardi,** The City Univ. of New York (United States); **Ashwagosh Ganju,** Defence Research and Development Organisation (India); **A. S. Rajawat,** Space Applications Ctr. (India); **Jing Ming Chen,** Univ. of Toronto (Canada)

Conference Co-Chairs: **Shunlin Liang,** Univ. of Maryland, College Park (United States); **Koji Kajiwara,** Chiba Univ. (Japan); **Peng Gong,** Tsinghua Univ. (China); **M. Rajeevan,** Indian Institute of Tropical Meteorology (India)

Program Committee: **Ghassem Asrar,** U.S. Dept. of Energy (United States); **Bimal K. Bhattacharya,** Space Applications Ctr. (India); **Dara Entekhabi,** Massachusetts Institute of Technology (United States); **Mitchell Goldberg,** NOAA/JPSS (United States); **Venkat Lakshmi,** Univ. of South Carolina (United States); **Zhaoliang Li,** Institute of Geographic Sciences and Natural Resources Research (China); **Kyle C. McDonald,** City Univ. of New York (United States), Jet Propulsion Lab. {United States); **Thamban Meloth,** National Ctr. for Antarctic & Ocean Research (India); **Ashim Kumar Mitra,** India Meteorological Dept. (India); **Peter Romanov,** Ctr. for Satellite Applications and Research (United States); **Kamal Vatta,** Ctrs. for International Projects Trust (India

Global change resulted from natural climatic change and human activities is modifying our living environment and the planet. The interactions between human activities and the Earth system and its physical environment are substantial, cumulative, and accelerating. Our understanding needs to be improved. The land surface and cryosphere remote sensing conference seeks papers about recent research achievements on remote sensing monitoring of energy, ecosystem, cryosphere and polar science, hydrological, biochemical cycles, land surface properties in the fields of vegetation, agriculture, forestry, surface water, and topography, prevention and mitigation of natural disasters and extremes, and management of natural resources. It focuses on the active and passive remote sensing technologies and applications of developments of visible, infrared and microwave sensors, satellite programs, and relevant topics.

Contributions are solicited on the following and related topics:

- water resource management
- agriculture and crop production
- forest management and deforestation
- vegetation, carbon cycles, and photosynthesis
- biomass monitoring
- mapping, monitoring, and quantifying changes in the ice sheet, sea ice, etc.
- ice and snow hydrology
- land degradation and desertification
- soil moisture
- surface temperature
- SAR image application
- applications of recent and upcoming satellites (i.e. SMAP, JPSS)
- wildfire monitoring
- data assimilation
- natural hazard (flood, drought, and landslides)
- volcano, earthquake, tsunami
- mineral and petroleum exploration
- visible and infrared instruments
- monitoring of global change
- new sensor developments.

Remote Sensing of the Oceans and Inland Waters: Techniques, Applications, and Challenges (AE103)

Conference Chairs: **Robert J. Frouin,** Scripps Institution of Oceanography (United States); **Satheesh C. Shenoi,** Indian National Ctr. for Ocean Information Services (India); **K. H. Rao,** National Remote Sensing Ctr. (India)

Conference Co-Chairs: **Delu Pan,** The Second Institute of Oceanography, SOA (China); **Hiroshi Murakami,** Institute of Space and Astronautical Science (Japan); **Joo-Hyung Ryu,** Korea Institute of Ocean Science & Technology (Korea, Republic of)

Program Committee: **Prakash Chauhan,** Space Applications Ctr. (India); **Heidi M. Dierssen,** Univ. of Connecticut Health Ctr. (United States); **David P. Doxaran,** Observatoire Océanologique de Villefranche sur Mer (France); **Cécile Dupouy,** Institut de Recherche pour le Développement (New Caledonia); **Rashmin Dwivedi,** Ctr. for Marine Living Resources & Ecology (India); **Rakesh Mohan Gairola,** Indian Space Research Organization (India); **Joji Ishizaka,** Nagoya Univ. (Japan); **Zhongping Lee,** Univ. of Massachusetts Boston (United States); **Hubert Loisel,** Lab. d'Océanologie et de Géosciences (France); **Aneesh A. Lotliker,** Indian National Ctr. for Ocean Information Services (India); **Alvarinho Joaozinho Luis,** National Ctr. for Antarctic & Ocean Research (India); **Young Je Park,** Korea Institute of Ocean Science & Technology (Korea, Republic of); **Rashmi Sharma,** Space Applications Ctr. (India); **Menghua Wang,** NOAA National Environmental Satellite, Data, and Information Service (United States)

A variety of passive and active remote sensors, space-borne, air-borne, and ship-borne, are providing global, synoptic, and local observations of water composition, underwater objects, and benthic habitats. These sensors include passive visible and infrared radiometers, lidars, passive microwave radiometers, scatterometers, altimeters, and synthetic aperture radars. The data are interpreted in terms of surface temperature, chlorophyll concentration, sea level, wind stress, wave height, salinity, etc., and allow detection and monitoring of oil spills, pollution, river effluents, and navigational hazards. They are used in studies of ocean dynamics, water properties, marine boundary layer, air-sea transfer, sea-ice conditions, ocean and freshwater ecosystems, biological-physical interactions, and environmental change. This conference will address current and future remote sensing technologies to study and monitor the marine environment and inland waters, i.e., oceans, seas, bays, estuaries, river systems, lakes and reservoirs, lagoons and reefs, including land and atmosphere interactions. The focus will be on optically complex waters, atmospheric correction issues in coastal regions and over inland waters, and new applications and possibilities.

Papers are solicited on the following and related topics:

- advances in inversion of the electromagnetic signal
- scientific applications from existing satellite missions
- expected benefits from upcoming and future satellite missions
- technologies for enhancing current measurement capabilities
- new environmental research and operational applications
- combined active and passive remote sensing techniques
- new sensors and measurement concepts.

Lidar Remote Sensing for Environmental Monitoring XV (AE104)

Conference Chairs: **Upendra N. Singh,** NASA Langley Research Ctr. (United States); **Nobuo Sugimoto,** National Institute for Environmental Studies (Japan); **Achuthan Jayaraman,** National Atmospheric Research Lab. (India); **Mullapudi V. R. Seshasai,** National Remote Sensing Ctr. (India)

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Optical remote sensing techniques are being widely used for continuous, systematic monitoring of atmospheric constituents and meteorological parameters using ground-, air-, and satellite-based remote sensing instruments. The ability of laser/telescope systems to reach out to great distances in the atmosphere has opened up a major field of applied optics that now attracts the efforts of scientists and engineers from many countries.

This technology makes it possible to rapidly obtain profiles of atmospheric properties (e.g. temperature and wind) and constituents (e.g. H_2O, O_3, and CO_2). Time-dependent 3D mapping of the atmosphere has now become a reality through the international development of the lidar technique. Lidar practice now incorporates a wide variety of optical phenomena (absorption, fluorescence, etc.). Applications are increasing in the areas of meteorology, urban and industrial air pollution, aircraft safety, global monitoring of ozone and climate change, and the basic processes of atmospheric dynamics. Global wind profiling and CO_2 measurement from space requires high energy and high power lasers for extended operation. Laser risk reduction, technology maturation and life time testing at component and system level has become an important issue for space deployment. Similarly, thermal, contamination, and radiation effects are need to be fully understood for developing highly efficient, long life, high power laser sources for long-term operation in space. As the world moves towards increased population and industrial development, laser remote sensing will become more and more important as the method of choice for obtaining the environmental data needed in intelligent decision-making for resource management. This conference focuses on current and future laser remote sensing technologies, techniques, applications, and observations related to environmental monitoring.

To allow maximum participation, a wide range of topics will be considered for presentation and discussion at the conference. The suggested list of topics to be covered in this conference is:

- solid-state and fiber laser developments for lidar applications
- high-power laser diodes for space lidar applications
- innovative lidar detector and receiver technologies

(AE104) (continued next page)

Lidar Remote Sensing for Environmental Monitoring XV (AE104) continued

- efficient, compact, ground-, air-, and space-borne lidar systems
- laser ranging and imaging
- space reliability and thermal, contamination, and radiation effects on component and systems for space
- lidar methods for constituent monitoring (DIAL, Raman, Raman/DIAL, Resonance)
- lidar methods for natural resource management (vegetation, fishery)
- laser-based remote chemical and biological detection and analysis
- tunable IR to mid-IR lidar for chemical/pollution detection
- wind field profiling (coherent, direct)
- atmospheric aerosols and cloud studies lidar applications to global issues (ozone depletion, climate change, global transport of pollutants)
- lidar applications to regional issues (urban pollution, dust transport)
- polar cloud monitoring (PSCs, NLCs, PMCs)
- atmospheric dynamics (boundary layer, gravity waves, tides, etc.)
- multi-sensor stations and campaigns for comprehensive atmospheric characterization
- affordable lidar for cloud, aerosol, and pollution monitoring
- global scale monitoring by satellite-borne lidars.

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PLEASE NOTE: Submissions imply the intent of at least one author to register, attend the conference, present the paper as scheduled, and submit a full-length manuscript for publication in the conference proceedings.

Multispectral, Hyperspectral, and Ultraspectral Remote Sensing Technology, Techniques and Applications VI (AE105)

Conference Chairs: **Allen M. Larar,** NASA Langley Research Ctr. (United States); **Prakash Chauhan,** Space Applications Ctr. (India); **Makoto Suzuki,** Institute of Space and Astronautical Science (Japan); **Jianyu Wang,** Shanghai Institute of Technical Physics (China)

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Accurately calibrated multi-, hyper-, and ultra-spectral remote sensing measurement systems are rapidly becoming the instruments of choice for observing a wide variety of geophysical variables from ground-, aircraft- and satellite-based platforms. New data processing and analysis techniques are emerging for the optimum interpretation of resultant radiance measurements obtained by these spectrometer systems, covering a spectral range from the visible to the far infrared, to enable a wide range of research and operational applications; geophysical applications include, for example, surface and cloud property characterizations along with retrievals of atmospheric state, dynamics, and composition, all at high spatial resolution while simultaneously covering large areas. Geophysical remote sensing data products from multi- to ultra-spectral remote sensing systems promise to accelerate scientific research on environmental processes, enable efficient monitoring of environmental variables, and lead to improved predictive capability for such parameters and how they respond to natural and anthropogenic external forcings. New and improved technologies and techniques promise smaller and lighter next-generation sensor systems for enhancing current and enabling new future measurement capabilities. This conference will bring together the scientific, engineering, and data user communities to provide an international forum for exchanging information about the development, application of, and experimental results from multi-, hyper- and ultra-spectral resolution remote sensing measurement systems. Papers are solicited on all aspects associated with the design, development, and implementation of, as well as analysis and usage of data from, such remote sensing systems intended for environmental monitoring applications. These include the following and related topics:

- enabling spectrometer system technologies
- new measurement techniques and instrument concepts
- calibration and characterization techniques (spectral, spatial, and radiometric)
- laboratory instrument characterizations, testing and demonstrations
- ground-, balloon-, aircraft-, rocket-, and satellite-based measurements
- data sampling, processing, compression, and telemetry approaches
- radiative transfer modeling for efficient state parameter retrieval
- retrieval of atmospheric state, dynamics, and composition
- characterization of ecosystem physical and radiative properties
- remote sensing applications for environmental research and operations (e.g., weather, air quality, and climate; agriculture, land use and land cover, water resources and marine science, disaster management, etc.).

Earth Observing Missions and Sensors: Development, Implementation, and Characterization IV (AE106)

Conference Chairs: **Xiaoxiong J. Xiong,** NASA Goddard Space Flight Ctr. (United States); **Saji Abraham Kuriakose,** Space Applications Ctr. (India); **Toshiyoshi Kimura,** Japan Aerospace Exploration Agency (Japan)

Conference Co-Chairs: **James J. Butler,** NASA Goddard Space Flight Ctr. (United States); **Changyong Cao,** NOAA National Environmental Satellite, Data, and Information Service (United States); **Xingfa Gu,** Institute of Remote Sensing and Digital Earth (China)

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Many earth-observing missions, with sensors covering spectral regions from ultraviolet to infrared, have been developed and utilized for studies of changes in the Earth's land, oceans, atmosphere, and their interactions. These missions include the U.S. NASA's Earth Observing System (EOS) missions, the Suomi-National Polar-orbiting Partnership (S-NPP) mission, the Landsat 8 mission, the NOAA's Polar-orbiting Operational Environmental Satellite (POES) series, the ESA's MetOp and Sentinel series, the JAXA's Greenhouse gases Observing SATellite (GOSAT), Advanced Land Observation Satellite-2 (ALOS-2), and the joint NASA/JAXA GPM mission, the Indian Remote Sensing (IRS) satellite series, the South Korean Communication, Ocean and Meteorological Satellite (COMS), and the China's FY and HY satellite series. Successful development and operations of these missions and their applications have significantly contributed to recent progress of the Global Earth Observation System of Systems (GEOSS), which is being built as a public infrastructure interconnecting a diverse and growing array of instruments and systems for monitoring and forecasting changes in the global environment. Meanwhile, with technology advancements and design improvements, various follow-on and new missions are currently underway throughout the world, such as the U.S. Joint Polar Satellite System (JPSS) missions, the next generation of Geostationary Operational Environmental Satellite-R series (GOES-R), ESA's Sentinels and Earth Explorer missions, JAXA's Global Change Observation Missions (GCOM), GOSAT-2, the joint ESA/JAXA EarthCARE mission, and the next generation of China's FY and HY satellite series. In addition to these research and operational missions, many efforts and advances have been made for the development of commercial and low-cost small satellites. As more and more satellite observations and data products are made available to the science and user community, high quality calibration and characterization of individual sensors and accurate determination of their calibration consistency have become increasingly important and demanding. The establishment of CEOS reference standard test sites, development of a Quality Assurance Framework for Earth Observation (QA4EO) and the effort by the Global Space-based Inter-calibration System (GSICS) are such examples.

It is the purpose of this conference to provide an international forum to exchange information and promote discussion over a broad range of challenging topics concerning earth-observing missions and sensor development, technology implementation, new test equipment design, sensor calibration and characterization, performance verification, and data analysis techniques focusing on but not limited to wavelength regions from the ultraviolet through

near-infrared.Papers are solicited on the following and related topics pertaining to radiometer and imager systems:

- existing missions and sensors, including their status, performance assessment, and lessons learned
- pre-launch and on-board calibration and characterization methodologies and results
- sensor performance validation and vicarious calibration
- calibration inter-comparison and consistency among sensors
- sensor calibration accuracy and traceability
- new research, operational, and commercial missions and sensors, including their mission studies, design requirements, applications, and system implementation
- enabling technologies for sensor development and innovative techniques for sensor radiometric, spectral, spatial, and polarization calibration and characterization
- new sensor test concept and test equipment design
- improved test data analysis methodologies and techniques
- characterization and applications of CEOS recommended reference standard test sites.

Remote Sensing and Modeling of the Atmosphere, Oceans, and Interactions VI (AE107)

Conference Chairs: **Tiruvalam N. Krishnamurti,** Florida State Univ. (United States); **Madhavan Nair Rajeevan,** Indian Institute of Tropical Meteorology (India)

Conference Co-Chairs: **Riko Oki,** Japan Aerospace Exploration Agency (Japan); **Yihui Ding,** China Meteorological Administration (China)

Program Committee: **Ziad Haddad,** Jet Propulsion Lab. (United States); **Guosheng Liu,** Florida State Univ. (United States); **Michiko Masutani,** Joint Ctr. for Satellite Data Assimilation (United States), Earth System Science Interdisciplinary Center (ESSIC), Univ. of Maryland {United States); **Ravi S. Nanjundiah,** Indian Institute of Science (India)

The two day session on Remote Sensing and Modeling of the Atmosphere and Oceans will focus on assessing the present status of satellite data assimilation, interpretation and validation of satellite remote sensing data, application to atmospheric and ocean modeling at different scales, from mesoscale to climate. The WIND LIDAR is being considered as an important forthcoming remote sensing instrument from satellites.

Several data sets from different satellites are currently available for research on the impacts on the modeling of atmosphere and oceans. Some specific areas of interest for this workshop may include data and algorithms with regards to the sensors/missions such as AIRS/AQUA, HIRIS (NASA), METEOSAT, GOES, AQUA/TERRA-MODIA, NOAA Satellites, GOMOS, MIPAS, ENVISAT, DMSP, INSAT, KALPANA TRMM/ forthcoming GPM, CLOUDSAT,CALIPSO. The focus will also be placed on data assimilation and model forecasts impacts where other international satellites data products are being used. Because of the major recognition of mesoscale for problems on hurricanes/typhoons, floods, and extreme events arising from major rainstorms such as monsoon and related river basin scale hydrological budgets, newly emerging areas of mesoscale modeling and high resolution satellite data impacts will be encouraged. The list below on satellite platforms and data sets can serve as a guide for your paper presentation. Data from geostationary satellites (METEOSAT and GOES) and polar orbital satellites (AQUA/TERRA) are available from IR, VIS and WV (cloudy only, clear-sky only, or mixed) channels. Time series and maps of time-averaged mean fields are used to compute the atmospheric motion vectors. The following satellite datasets are currently used to monitor the atmospheric motion fields: METEOSAT_5,7,8, MTSAT_1, GOES 9,10,12, and MODIS.

We also encourage papers on OSSES that address possible impacts from future satellite observing systems, especially the WIND LIDAR. Aerosol impacts from the direct and indirect effects, where models exploit the use of satellites data sets such as those from MODIS are also encouraged.

There is considerable interest in the topic of moist rivers and heavy rains. This is also a topic that can invite a combination of modeling and remote sensing. Papers in this area are encouraged.

We encourage both regional and global models including ensemble methodologies for addressing the impacts of new data sets from satellites.

IMPORTANT DATES

Abstracts Due:

5 OCTOBER 2015

All submissions must include a 300-word abstract and a two-page supplemental file (see Submission Guidelines).

Author Notification:

14 JANUARY 2016

Manuscript Due Date:

7 MARCH 2016

PLEASE NOTE: Submissions imply the intent of at least one author to register, attend the conference, present the paper as scheduled, and submit a full-length manuscript for publication in the conference proceedings.

GENERAL INFORMATION

EVENT DATES: 4–7 APRIL 2016

The 2016 event will run from Monday through Thursday.

HOTEL & TRAVEL INFORMATION

SPIE Asia-Pacific Remote Sensing 2016 will be held in New Delhi, India.

Pride Plaza Hotel and Convention Center
AeroCity
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http://www.pridehotel.com/whats.aspx

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TECHNICAL PROGRAM

Registration information and online registration will be available in January 2016.

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All participants, including invited speakers, contributed speakers, session chairs, co-chairs, and committee members must pay a registration fee.

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The symposium, like our other conferences and activities, would not be possible without the dedicated contribution of our participants and members. This program is based on commitments received up to the time of publication and is subject to change without notice.

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- Commercial papers, papers with no new research/development content, and papers where supporting data or a technical description cannot be given for proprietary reasons will not be accepted for presentation in this conference.
- Please do not submit the same, or similar, abstracts to multiple conferences.

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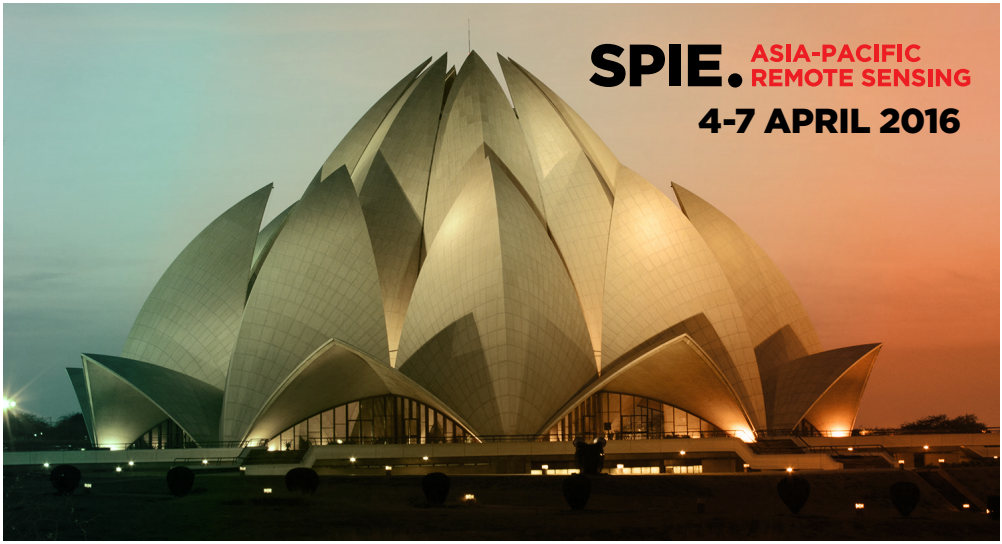

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India's capital, New Delhi, is said to be one of the oldest existing cities in the world and the hub of the country. The large metropolis has strengths in arts, commerce, education, entertainment, research and development, and more. Despite its recent metamorphosis into a cosmopolitan hub, it is also a green city, where whole areas feature gardens, parks, and protected woodlands. It is also remarkably diverse, with dozens of languages, ethnicities, and influences coexisting. It is also known as the unofficial food capital of India, from the tandoori chicken to kebabs and more, there is amazing street food, and international options abound.

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