



**National Symposium**  
on  
Recent Advances in Remote Sensing and GIS  
with Special Emphasis on Mountain Ecosystems  
&  
**Annual Conventions**  
of  
Indian Society of Remote Sensing &  
Indian Society of Geomatics



*Pre-Symposium Tutorials  
Technical Programme*



December 5 - 6, 2016  
Dehradun

**National Symposium on Recent Advances in Remote Sensing and GIS  
with Special Emphasis on Mountain Ecosystems &  
Annual Conventions of Indian Society of Remote Sensing & Indian Society of Geomatics**

December 7 - 9, 2016 | Dehradun

*Pre-Symposium Tutorial*

**PolSAR and PolInSAR Data Processing and Applications**

December 5, 2016 | Dehradun

**(Coordinator: Dr. R. S. Chatterjee)**

**Registration:** 08:45 hrs (IIRS Auditorium Foyer)  
**Inauguration:** 09:15 hrs (IIRS Auditorium)  
**Tutorial Venue:** Aryabhata Lecture Theatre (IIRS Main Building, Ground Floor)

**Schedule**

Time (hrs)	Topic	Faculty
09:45 – 10:45	Overview of Microwave Radar Remote Sensing	HSS
11:15 – 12:15	Introduction to Interferometric SAR (InSAR) and Polarimetric SAR (PolSAR)	RSC
12:15 – 13:00	PolSAR and PolInSAR Data Processing Techniques	SK
14:00 – 15:30	<b>Demo:</b> PolSAR Data Processing and Applications with emphasis on Quad-Pol and Compact Pol Data	HP/HSS
15:45 – 16:30	<b>Demo:</b> InSAR Data Processing and Applications	AB
16:30 – 17:00	<b>Demo:</b> PolInSAR Data Processing and Applications	SK
17:00 – 17:30	Closing	

*Tea Break: 10:45 – 11:15 hrs, 15:30 – 15:45 hrs* | *Lunch: 13:00 – 14:00 hrs*

**Faculty**

AB	Shri Ashutosh Bhardwaj, IIRS (ashutosh@iirs.gov.in)
HP	Dr. Hitendra Padalia, IIRS (hitendra@iirs.gov.in)
HSS	Dr. Hari Shanker Srivastava, IIRS (harishanker_srivastava@iirs.gov.in)
RSC	Dr. R. S. Chatterjee, IIRS (rschatterjee@iirs.gov.in)
SK	Shri Shashi Kumar, IIRS (shashi@iirs.gov.in)

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*Pre-Symposium Tutorial*

**Urban Planning for Development of Smart Cities**

December 5, 2016 | Dehradun

**(Coordinator: Shri Pramod Kumar)**

**Registration:** 08:45 hrs (IIRS Auditorium Foyer)  
**Inauguration:** 09:15 hrs (IIRS Auditorium)  
**Tutorial Venue:** CSSTEAP Conference Hall (CSSTEAP Building, Third Floor)

**Schedule**

Time (hrs)	Topic	Faculty
09:45 – 10:45	Geospatial Technologies for Smart Cities - Concepts and dimensions of Smart Cities - Applications of Geospatial technologies	PK
11:15 – 13:00	Smart Urban Energy and Governance - Solar Energy Potential - Property Taxation - Mobile Apps for Data Collection and Grievance Redressal	AS BDB HK
14:00 – 15:30	Smart Urban Environment and Urban Hazard - Urban Green Spaces - Urban Pollution - Seismic Hazard	KG AS SM
15:45 – 17:00	Smart Urban Planning - Urban Growth and Sprawl monitoring - Urban Suitability Analysis	SM KG
17:00 – 17:30	Closing	

*Tea Break: 10:45 – 11:15 hrs hrs, 15:30 – 15:45 hrs | Lunch: 13:00 – 14:00 hrs*

**Faculty**

AS	Ms. Asfa Siddiqui (asfa@iirs.gov.in)
BDB	Sh. B.D. Bharath (bharath@iirs.gov.in)
HK	Dr. Harish Karnatak (harish@iirs.gov.in)
KG	Ms. Kshama Gupta (kshama@iirs.gov.in)
PK	Sh. Pramod Kumar (pramod@iirs.gov.in)
SM	Dr. Sandeep Maithani (maithani@iirs.gov.in)

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*Pre-Symposium Tutorial*

**Watershed Management in Mountainous Landscape**

December 5 - 6, 2016 | Dehradun

(Coordinator: Dr. Suresh Kumar)

**Registration:** 08:45 hrs (IIRS Auditorium Foyer)  
**Inauguration:** 09:15 hrs (IIRS Auditorium)  
**Tutorial Venue:** Lectures – PRSD Lecture Hall (IIRS Main Building, First Floor)  
 Practical – Central Computing Facility

**Schedule**

Time (hrs)	Topic	Faculty
<b>Day-1 (December 5, 2016)</b>		
09:45 – 10:15	Need and Issues of Watershed Management in Mountainous Landscape	SK
10:15 – 10:45	Soil Erosion Factors and Processes in the Watershed	JG
11:15 – 12:00	Geospatial Approach in Modelling of Soil Erosion Risk Assessment	SK
12:05 – 13:00	<b>Practical:</b> Modelling Soil Erosion using RUSLE model	JG/AC
14:00 – 14:45	Digital Terrain Analysis for Watershed Delineation and Characterization	JG
14:45 – 15:30	Process based Modelling of Soil Erosion and Nutrient Loss at Watershed scale	SK
15:45 – 17:30	<b>Practical:</b> Process based Soil Erosion and Runoff Modelling	AC/JG/SK
<b>Day-2 (December 6, 2016)</b>		
09:15	<b>Departure</b> to visit Sitla rao Watershed, Langha, Dehradun	
11:00 – 11:30	Measurements of Surface Runoff and Sediment at Watershed Scale	SK
11:45 – 2:30	Demonstration of Field Instruments for Characterization of Soil Hydrology	JG/YG
12:30 – 13:30	Soil Erosion Survey, Characterization of Soil Erosion Factors and Soil Erosion Assessment	SK/JG
14:00 – 16:00	<b>Return to IIRS</b>	
16:30 – 17:00	Open Discussion on Watershed Management with Participants	SK/JG/AC
17:00 – 17:30	Closing	

Tea Break: 10:45 – 11:15 hrs, 15:30 – 15:45 hrs

Lunch: 13:00 – 14:00 hrs

**Faculty**

AC	Shri Arpit Chouksey, IIRS (arpit@iirs.gov.in)	JG	Shri Justin George K. , IIRS (justin@iirs.gov.in)
SK	Dr. Suresh Kumar, IIRS (suresh_kumar@iirs.gov.in)	YG	Shri Yogesh Ghotekar , IIRS (yogeshghotekar@iirs.gov.in)

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*Pre-Symposium Tutorial*

**Hyperspectral Remote Sensing and its Applications**

December 6, 2016 | Dehradun

**(Coordinator: Dr. Anil Kumar)**

**Registration:** 08:45 hrs (IIRS Auditorium Foyer)  
**Inauguration:** 09:15 hrs (IIRS Auditorium)  
**Tutorial Venue:** Aryabhata Lecture Theatre (IIRS Main Building, Ground Floor)

**Schedule**

Time (hrs)	Topic	Faculty
09:45 – 10:15	Hyperspectral Remote Sensing (HRS): An Overview and Applications	ASK
10:15 – 10:45	Hyperspectral remote sensing: Platform and sensors	DRMS
11:15 – 12:15	Hyperspectral Image Pre-processing	RUS & MM
12:15 – 12:50	Optical and Thermal Hyperspectral Image Classification	AK
12:50 – 13:15	Hyperspectral remote Sensing for Geological Applications	RUS
14:00 – 14:30	Hyperspectral Remote Sensing for Forestry Applications	SN
14:30 – 15:00	Hyperspectral Remote Sensing for Water and snow cover Studies	VG
15:00 – 15:30	Hyperspectral Remote Sensing for Urban Studies	AS
15:45 – 16:15	Hyperspectral Remote Sensing of Agriculture and soil Studies	JGK
16:15 – 17:00	<b>Demo:</b> Hyperspectral data processing followed by Summary and Discussion	VK
17:00 – 17:30	Closing	

*Tea Break: 10:45 – 11:15 hrs, 15:30 – 15:45 hrs* | *Lunch: 13:15 – 14:00 hrs*

**Faculty**

AK	Dr. Anil Kumar, IIRS (anil@iirs.gov.in)
ASK	Dr. A. Senthil Kumar, IIRS (senthil@iirs.gov.in)
AS	Ms. Asfa Siddiqui, IIRS (asfa@iirs.gov.in)
DRMS	Shri DRM Samudraiah, SAC (samudraiah@yahoo.co.in)
JGK	Shri Justin George K. , IIRS (justin@iirs.gov.in)
MM	Mrs. Manu Mehta, IIRS (manu@iirs.gov.in)
RUS	Mrs. Richa U Sharma, IIRS (richa@iirs.gov.in)
SN	Dr. Subrata Nandy, IIRS (nandy@iirs.gov.in)
VG	Dr. Vaibhav Garg, IIRS (vaibhav@iirs.gov.in)
VK	Shri Vinay Kumar, IIRS (vinaykumar@iirs.gov.in)

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*Pre-Symposium Tutorial*

**Close-range Photogrammetry and Terrestrial Laser Scanning**

December 6, 2016 | Dehradun

**(Coordinator: Dr. Poonam S. Tiwari)**

**Registration:** 08:45 hrs (IIRS Auditorium Foyer)  
**Inauguratio:** 09:15 hrs (IIRS Auditorium)  
**Tutorial Venue:** PRSD Lecture Hall (IIRS Main Building, First Floor)

**Schedule**

Time (hrs)	Topic	Faculty
09:45 – 10:15	Introduction to 3D Modelling	PST
10:15 – 10:45	Overview of Close Range Photogrammetry	HP
11:15 – 12:00	Overview of LIDAR for 3D Modelling	SR
12:00 – 13:00	LIDAR for Forestry Application	SN
14:00 – 15:00	<b>Demo:</b> Close Range Photogrammetry (including TRIVIM)	PST & HP
15:15 – 17:00	<b>Demo:</b> Terrestrial Laser Scanning	SR & SN
17:00 – 17:30	Closing	

*Tea Break: 10:45 – 11:15 hrs, 15:30 – 15:45 hrs* | *Lunch: 13:00 – 14:00 hrs*

**Faculty**

HP	Dr. Hina Pande, IIRS (hina@iirs.gov.in)
PST	Dr. Poonam S. Tiwari, IIRS (poonam@iirs.gov.in)
SN	Dr. Subrat Nandy, IIRS (nandy@iirs.gov.in)
SR	Shri Sara Raghavendra, IIRS (raghav@iirs.gov.in)

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*Pre-Symposium Tutorial*

**Health GIS**

**December 6, 2016 | Dehradun**

**(Coordinator: Dr. Sameer Saran)**

**Registration:** 08:45 hrs (IIRS Auditorium Foyer)  
**Inauguration:** 09:15 hrs (IIRS Auditorium)  
**Tutorial Venue:** Lectures – GID Lecture Hall (GID Building, First Floor)  
 Practical – GID Lab (GID Building, First Floor)

**Schedule**

Time (hrs)	Topic	Faculty
09:45 – 10:45	Overview of Health GIS	SS
11:15 – 12:00	Free and Open Source software for Health applications	KO/KSR
12:00 – 13:00	Statistical analysis of Health Data	KSR/PAV
14:00 – 15:30	<b>Practical:</b> Health data analysis using SatScan & visualisation on QGIS	KSR/PAV
15:45 – 16:30	<b>Practical:</b> Geospatial analysis using GIS tools and techniques	PAV/KSR/KO
16:30 – 17:00	Discussion	SS/KSR/KO/PAV
17:00 – 17:30	Closing	

*Tea Break: 10:45 – 11:15 hrs, 15:30 – 15:45 hrs* | *Lunch: 13:00 – 14:00 hrs*

**Faculty**

KO	Shri Kapil Oberai, IIRS (kapil@iirs.gov.in)
KSR	Shri K. Shiva Reddy, IIRS (shivareddy@iirs.gov.in)
PAV	Shri Prabhakar Alok Verma, IIRS (prabhakar@iirs.gov.in)
SS	Dr. Sameer Saran, IIRS (sameer@iirs.gov.in)

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*Pre-Symposium Tutorial*  
**UAV Remote Sensing and Applications**  
December 6, 2016 | Dehradun  
(Coordinator: Mrs. Shefali Agrawal)

**Registration:** 08:45 hrs (IIRS Auditorium Foyer)  
**Inauguration:** 09:15 hrs (IIRS Auditorium)  
**Tutorial Venue:** Lectures – CSSTEAP Conference Hall (CSSTEAP Building, Third Floor)  
Practical – MIDAS Lab (IIRS Main Building, Ground Floor)

**Schedule**

Time (hrs)	Topic	Faculty
09:45 – 10:15	Introduction to UAV Remote Sensing	SA
10:15 – 10:45	UAV Flight Mission Planning and data Acquisition	VS
11:15 – 12:00	UAV Remote Sensing for Agricultural Applications	RNS
12:05 – 13:00	UAV Data Processing and Photogrammetric Applications	SR
14:00 – 15:30	<b>Demo:</b> UAV Data Acquisition	CG
15:45 – 17:00	<b>Practical:</b> UAV Data Processing	VS/SR/CG
17:00 – 17:30	Closing	

Tea Break: 10:45 – 11:15 hrs, 15:30 – 15:45 hrs | Lunch: 13:00 – 14:00 hrs

**Faculty**

CG	Shri Chirag Gupta, NESAC (chirag.friends77@gmail.com)
RNS	Dr. R.N. Sahoo, IARI (rnsahoo.iari@gmail.com)
SA	Mrs. Shefali Agrawal, IIRS (shefali_a@iirs.gov.in)
SR	Shri Raghavendra Sara, IIRS (raghav@iirs.gov.in)
VS	Shri Victor Saikhom, NESAC (victor.saikhom@nesac.gov.in)