CALL FOR PARTICIPATION
One-Day Workshop on
SODAR Technology: Applications in Environmental & Disaster Management
Friday, September 26, 2014

Patron:
Bimal K. Roy,
Director, ISI, Kolkata

Organising Chair:
N. C. Deb, ISI, Kolkata

Organising Committee:
S. Pal, ISI, Kolkata
D. P. Mukherjee, ISI, Kolkata
G. S. Dillon, Punjabi University Patiala
B. Kumar, MAIT, Indra Prastha University, New Delhi
Kh. Gajananda, Center for Environmental Science, Addis Ababa University, Ethiopia.
R. Kaur, Physics Dept., NIMS, University, Jaipur
H. N. Dutta, NPL, New Delhi
P. P. Mohanto, ISI, Kolkata
R. K. Chatterjee, ISI, Kolkata
D. K. Gayen, ISI, Kolkata
D. Shaw, ISI, Kolkata
S. S. Das, ISI, Kolkata
C. Mukherjee, ISI, Kolkata
D. Chanda, ISI, Kolkata
S. Sarkar, ISI, Kolkata
S. Deb, ISI, Kolkata
S. Sharma, ISI, Kolkata
B. Pramanik, ISI, Kolkata

Organised By
Electronics and Communication Sciences Unit (ECSU)
Indian Statistical Institute (ISI)
203 B.T. Road, Kolkata-700 108

There is always a need for real-time measurement of atmospheric data for various environmental applications like Environment Impact Assessment (EIA), rapid EIA, site assessment, base line data collection, fog and low-level cloud monitoring, environmental awareness, disaster management, monitoring & assessment of urban climate, air quality in urban areas, forest environment, coastal zone management, sea breeze, land-breeze, and earthquake precursor for forecasting of earthquake in advance. This aim can be fulfilled by SODAR (SOund Detection And Ranging) technology, which is an internationally accepted environmental monitoring technique. A JAVA based SODAR system has been indigenously developed at the ECSU, ISI. This workshop aims to provide details about the SODAR so that participants get first hand experience of availability of SODAR in India and its utility in various environmental applications. Students both at PG and Ph.D. levels will get knowledge for environmental modelling experiments. Hardware / software of the latest SODAR unit installed at ISI shall be practically demonstrated.

Venue: Platinum Jubilee Academic Building Auditorium
Indian Statistical Institute
203 B.T. Road, Kolkata-700 018
http://www.isical.ac.in

Registration Fee: Student: 500 INR; Others: 1000 INR

Those who wish to attend the Workshop must submit the REGISTRATION FORM by 5th September, 2014 to The Convener: ecsuworkshop2@isical.ac.in. The registration shall close as soon as the required seats are full.

**Please do NOT send the registration fees along with the registration form. The process of payment of registration fees will be intimated to the participants individually through email.

Accommodation in ISI Guest House: ISI has a beautiful Guest House accommodation available within the Campus. It can be availed by paying accommodation charges on arrival. However, for those who wish to avail accommodation in the ISI Guest House*, they must book in advance. To make an advance booking, please fill up the attached Proforma and mail it to The Convener: ecsuworkshop2@isical.ac.in by 5th September, 2014

*Only limited seats are available in the Guest House. Accommodation shall be reserved on First Come First Serve basis.
### Proposed Workshop Program:

- **Welcome Address** - Prof. Bimal K Roy, Director, ISI
  - **Time:** 1000-1010 hrs

- **Sodar-Basic Theoretical & Technical Considerations** - Dr H N Dutta
  - **Time:** 1010-1130 hrs

- **Sodar Software & Demonstration in the Field** - Dr N C Deb
  - **Time:** 1145-1315 hrs

- **Sodar Data Interpretation and its Applications** - Dr H N Dutta
  - **Time:** 1415-1515 hrs

- **Atmospheric Pattern Classification and Prediction** - Dr S Pal
  - **Time:** 1515-1615 hrs

- **Interaction with the Participants & Concluding Remarks**
  - **Time:** 1615-1700 hrs

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### Who would be benefited from the Workshop?

- **EIA Consultants** - SODAR in EIA applications, onsite data generation
- **Environmental Planners** - Atmospheric dynamics
- **Airport Managers** - Fog monitoring, formation and dissipation timings
- **Air-pollution Professionals** - Atmospheric dynamics, stability classes, mixing height
- **Environmental Modellers** - 24 hours Atmospheric dynamics
- **Disaster Management Professionals** - Atmospheric dynamics
- **Atmospheric /Environmental Instrument Manufacturers** - Opportunity for technology transfer/utilization
- **Earthquake Precursor Researchers** - Earthquake precursor detection
- **Research & Development Professionals** - Online atmospheric monitoring over desert, ocean, forests, mountains, valleys etc.
- **Agriculturists** - Online atmospheric monitoring
- **M. Tech./Ph. D. Students** - Data availability and understanding atmospheric dynamics. Sky is the limit for its applications.

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### What is Special about ISI SODAR?

SODAR technology is in use for the past 30 years but over these years, the technological changes are so drastic that one has to incorporate the latest hardware and software to meet the challenges. The ISI SODAR incorporates these special requirements and offers some unique features:

- **Platform Independence**: The application runs on JAVA and hence it is platform independent.

- **Utilization of the potential of PC**: The PC itself becomes a standalone system for complete control and information processing.

- **Database oriented**: Data collected are stored in the PC/Laptop itself; however, a centralized databases can be requested to store the data as a global servers.

- **User authentication**: Databases are password protected therefore no unwanted access and tempering of data is possible.

- **SODAR Portability**: SODAR system can be developed for any climate and terrain. Group has established these systems at various places in India, onboard various ships and in Antarctica.
Brief about SODAR developed at ISI, Kolkata

ISI, Kolkata has been working in the area of SODAR technology and its applications for the past 25 years and over these years, it has mastered SODAR technology and its applications in various fields. ISI has pioneered itself in the development of pattern recognition software of the SODAR facsimile data.

In the SODAR system developed at the ISI, Kolkata, a powerful pulse of sound (Audio frequency between 1000-2000 Hz and pulse length between 10-100 ms depending upon the requirement) is transmitted vertically up into the atmosphere and the echo returns are received back to map atmospheric dynamics of the lower 1 km region of the atmosphere on continuous basis. It takes only 6 seconds for the acoustic pulse to probe up to a height of 1km and display the most simplified facsimile pictures, revealing atmospheric dynamics.

The hardware is the minimum and extremely simple so that one is able to manage its operations in the field without much effort. Moreover, looking at the requirement of the industry and the academics, it is based on totally indigenously available components in the local market. The entire operation of the system, signal processing and display is handled by advanced software specifically developed to run on JAVA platform. An example of the data recorded at ISI, is shown in Figure 1.

Figure 1. SODAR facsimile charts show atmospheric dynamics and almost all the processes that mankind can imagine being present in the lowest 1 km region of the atmosphere. With fine vertical resolution, processes like, surface based inversion, elevated inversion, thermal convection, sea breeze, land breeze, gravity waves, Kh-waves, rising layer, fronts etc. are easily identifiable. At the same time, hourly stability class and mixing height can be determined. The equipment can be installed easily at any location for various purposes.
REGISTRATION FORM

One-Day Workshop on
SODAR Technology: Applications in Environmental & Disaster Management
September 26, 2014

I /We wish to attend the Workshop and the details of each individual are as follows:

1. Name of the participant:
2. Designation:
3. Name of the Organization:
4. email address*:
5. Mobile No.
6. Name of the accompanying member:
7. Do you wish to avail Guest House accommodation? Yes / No
8. Any specific reason to attend the Workshop?

Place Date

* Confirmation shall be sent on this email address.

For any further details, please contact Dr. N.C. Deb-Mobile :09874832021
GUEST HOUSE ACCOMMODATION FORM

One-Day Workshop on
SODAR Technology: Applications in Environmental & Disaster Management

September 26, 2014

I /We wish to attend the Workshop and avail the Guest House accommodation facility. The details are as follows:

1. Name of the participant:
2. Designation:
3. Name of the Organization:
4. email address*:
5. Mobile No.:
6. Name of the accompanying member:
7. Arrival Date and Time at the ISI Guest House.
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8. Departure Date and Time from the ISI Guest House:
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Place
Date

* Confirmation shall be sent on this email address.

For any further details, please contact Dr. N.C. Deb-Mobile: 09874832021