REPORT

on

ONLINE LECTURE ON FUNDAMENTALS AND APPLICATIONS OF REMOTE SENSING AND GIS

by

Dr. Tathagata Ghosh (Assistant Professor, Department of Geography, Balurghat Mahila Mahavidyalaya)

- **TITLE OF EVENT/ PROGRAMME (SEMINAR/ WEBINAR/ WORKSHOP/ EXTENSION LECTURE/ EXTENSION ACTIVITY/ ANY OTHER ACTIVITY):**
  FUNDAMENTALS AND APPLICATIONS OF REMOTE SENSING AND GIS

- **THEME OF THE EVENT/ PROGRAMME:**

  The lecture has covered the following aspects:

- **Remote Sensing: Introduction**
- **Physics of Remote Sensing**
- **Resolution and its importance in Remote Sensing**
- **Types of Remote Sensing**
- **Introduction to Aerial Photographs**
- **Introduction to Satellite Images**
- **Elements of Image interpretation**
- **Data types in GIS**
- **Introduction to Software in GIS**
- **Georeferencing, Digitization, interpolation etc. in GIS software.**
- **Brief introduction to GPS**
- **Integration of RS, GIS and Geostatistics.**
- **Cloud based remote sensing and GIS.**
- **Introduction to Google Earth Engine.**

- **Introduction to GIS**
- **Components of GIS**
- **Applications of Remote Sensing and GIS**

- **ACADEMIC SESSION: 2023-2024**
- **DATE: 25.04.2024**
- **VENUE: Google Meet**
- **OBJECTIVE/ PURPOSE: Knowledge sharing among the students, scholars, faculties and interested audience**
- **SPEAKER/S / RESOURCE PERSON/S: Dr. Tathagata Ghosh (Assistant Professor, Department of Geography, Balurghat Mahila Mahavidyalaya)**

  Dr. Tathagata Ghosh has been actively working in the field of groundwater hydro-geochemistry for the last 14 years. His areas of expertise are geospatial analysis, groundwater contamination, hydrogeochemical analysis and interpretation, application of GIS and remote sensing in crop phenology and geostatistical analysis. He did his Ph.D. from The M. S. University of Baroda, Vadodara, Gujarat, India on groundwater arsenic contamination in West Bengal. He is engaged in teaching Geography at UG as well as PG level for the last 10 years. He has already completed one ICSSR funded major project as Co-PI. Till date he has produced more than 20 national as well international research publication indexed in Scopus, Web of Science as well as UGC Care list.

- **TARGET AUDIENCE/ PARTICIPANTS: UG, PG students, research scholars, faculties and entire communities who have interest in Geomatics**
- **ATTENDANCE SHEET: 163 students attended the lecture and gave their attendance through Google form. Copy is attached herewith**
- **BRIEF REPORT ABOUT THE EVENT/ PROGRAMME:**

  As per Dr. Ghosh the Remote sensing is the science of acquiring information about the Earth's surface without direct physical contact. It involves using sensors to detect and record reflected or emitted energy from a distance. These sensors are deployed on satellites and aircraft, allowing us to observe our planet and other celestial bodies. By analyzing the data collected through remote sensing, we gain insights into Earth systems, enabling informed decision-making. He explained that

the physics behind remote sensing revolves around the interaction of electromagnetic waves with matter. Here are some key aspects: Energy Source, Transmission Path, Target Interaction, Sensors, Active vs. Passive Sensing, Applications.

The speaker said that the image resolution is a critical factor in remote sensing, influencing the quality and applicability of acquired data. It refers to the system's ability to capture and display fine details of ground features. Key points about resolution are: Spatial Resolution, Spectral Resolution, Temporal Resolution and Radiometric resolution. Based on different platforms, different types of remote sensing like active and passive remote sensing as well as different data products like aerial photographs, satellite images would be discussed in this section.

The lecture also gives focus on the Geographical Information System (GIS) involves multiple aspects for depiction of probable solutions of the real life problems. Data types like Raster and Vector datasets are indispensable aspects are associated with GIS softwares. In this section, basic practices like Georeferencing, Digitization, interpolation etc. would be discussed. Dr. Ghosh emphasized on Global Positioning Position (GPS) plays significant role in the data collection. In this section different types of GPS and its applications would be discussed.

He gave stress on the integration of RS, GIS and Geostatistics: In the present-day context, the solutions to the problems using single components like Remote Sensing or GIS or Geostatistics is becoming difficult. Hence, integration of different components is really significant. In this section, integration all these would be discussed.

The lecture also gave idea on the Cloud based remote sensing and GIS significantly bridge the gap between the limited resources in terms of softwares and hardwares in local machines. Hence it is really important to have basic understanding about the cloud based remote sensing and GIS in general and Goolge Earth Engine in specific. Different applications of remote sensing and GIS are discussed in the section. The specific applications are as follows: Groundwater, Agriculture, modeling, long term time series data processing, cloud remote sensing and GIS etc.

- **EXPECTED OUTCOME: Audience has got an overall knowledge regarding the arena of Geomatics, the applicability of RS, GIS, GNSS along with the emerging field of AI and machine learning.**

- **PHOTOGRAPHS:**


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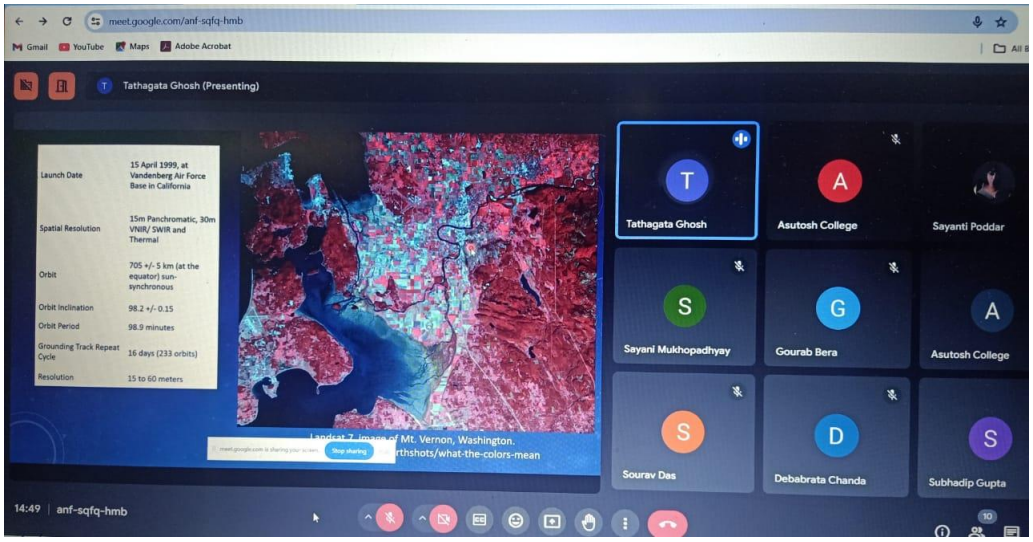
92, S.P.MUKHERJEE ROAD, KOLKATA - 26
Webinar on
FUNDAMENTALS AND APPLICATIONS OF REMOTE SENSING AND GIS
Speaker:
DR. TATHAGATA GHOSH
Assistant Professor and HoD
Department of Geography
Balurghat Mahila Mahavidyalaya
Balurghat, Dakshin Dinajpur,
West Bengal
Organised by
DEPARTMENT OF GEOGRAPHY
In collaboration with
IQAC, ASUTOSH COLLEGE
25
APRIL, 2024
2 P.M. ONWARDS
FACULTY EXCHANGE PROGRAMME UNDER MoU
BETWEEN
ASUTOSH COLLEGE AND BALURGHAT MAHILA MAHAVIDYALAYA
LIVE ON YouTube


meet.google.com/anf-sqfq-hmb
Tathagata Ghosh (Presenting)
Launch Date
15 April 1999, at Vandenberg Air Force Base in California
Spatial Resolution
15m Panchromatic, 30m VNIR/ SWIR and Thermal
Orbit
705 +/- 5 km (at the equator) sun-synchronous
Orbit Inclination
98.2 +/- 0.15
Orbit Period
98.9 minutes
Grounding Track Repeat Cycle
16 days (233 orbits)
Resolution
15 to 60 meters
Tathagata Ghosh
Asutosh College
Sayanti Poddar
Sayani Mukhopadhyay
Gourab Bera
Asutosh College
Sourav Das
Debabrata Chanda
Subhadip Gupta
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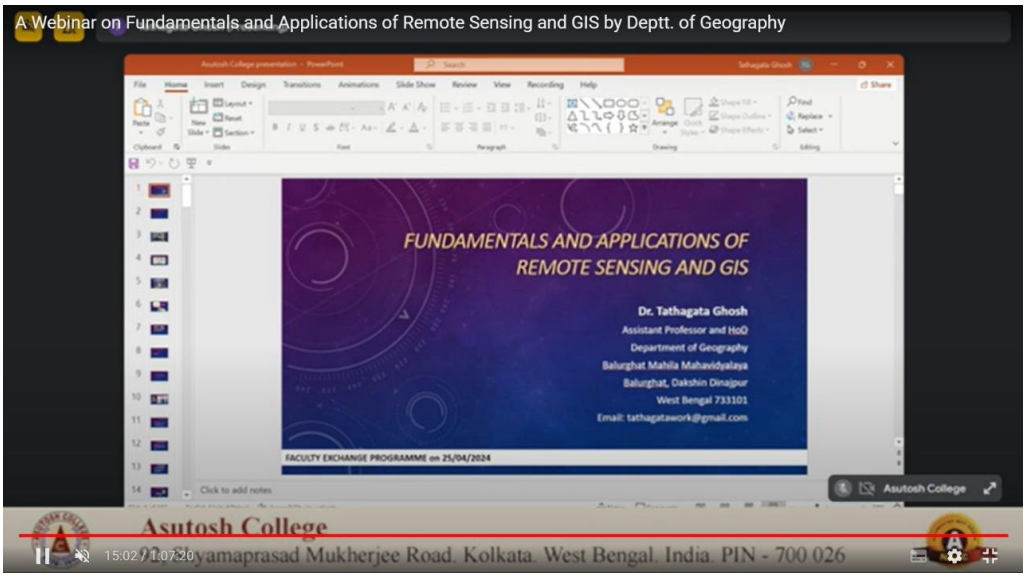
A Webinar on Fundamentals and Applications of Remote Sensing and GIS by Deptt. of Geography
FUNDAMENTALS AND APPLICATIONS OF REMOTE SENSING AND GIS
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FACULTY EXCHANGE PROGRAMME on 25/04/2024
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