



**4<sup>th</sup> FIGA Triennial Congress**  
**6-8 November 2025, INCOIS, Hyderabad**

***Focal theme: Geosciences for Blue Economy-  
Potential of Indian Ocean***

***Proposal:*** This focal theme emphasizes how geoscience research and innovation can unlock the full potential of the Indian Ocean for sustainable economic growth. Discussions will explore the role of oceanic resources (biological, mineral, energy) in driving blue economy initiatives, and the importance of managing and preserving the ocean environment for future generations

***Symposia themes:***

**I. Coastal and Ocean Processes**

**Coastal processes (OSI, INCOIS, NCESS)**

*Coastline changes, sediment transport, and Integrated management*

- *Proposal: This session will focus on the physical processes shaping coastal environments, including tidal movements, wave dynamics, and coastal erosion. Presentations will explore the environmental and socio-economic impacts of coastal processes, particularly in the context of climate change and human development. An integrated approach allows for balancing development with environmental protection, reducing risks from climate change impacts and human activities.*

**Ocean Dynamics (IGU, CSIR-NGRI)**

*Marine geodynamics, Ocean circulation, air-sea interaction*

- *Proposal: This session will explore the interconnected processes of marine geodynamics, ocean circulation, and air-sea interaction, which play a pivotal role in shaping Earth's climate and ecosystems. Presentations will cover the latest research on the physical and geological forces driving ocean currents, tectonic activity beneath the ocean floor, and the complex interactions between the ocean and atmosphere. Understanding these dynamic systems is crucial for improving climate models, predicting weather patterns, and assessing the impact of natural hazards. Additionally, the session*

*will examine how air-sea interactions influence global climate systems, including the role of the oceans in heat and carbon distribution.*

## **Climate change (NCPOR, OSI)**

*Sea-level changes, Marine heatwaves*

- *Proposal: As the global climate warms, rising sea levels and the increasing frequency and intensity of marine heatwaves pose significant threats to coastal communities, ecosystems, and economies. Presentations will highlight the latest research on the science of sea-level changes, including their drivers and projections, as well as the ecological and socio-economic consequences for coastal regions. This session will explore the critical impacts of climate change on coastal and marine environments, focusing on sea-level rise and marine heatwaves.*

## **II. Coastal and Ocean Resources**

### **Mineral resources (GSI, AEG, AMD, CSIR-NGRI)**

*placer deposits, polymetallic nodules, marine minerals*

- *Proposal: The Indian Ocean is rich in mineral resources, including polymetallic nodules, seafloor massive sulfides, and rare earth elements. This session will focus on the sustainable extraction of these resources, the technologies involved in seabed mining, and the environmental and ethical considerations surrounding deep-sea mining. Discussions will also touch on the economic importance of these resources to global industries.*

### **Bio resources (INCOIS, OSI, PSI)**

*Fisheries, drugs from the ocean, and Mangroves*

- *Proposal: This session will delve into the diverse and valuable resources the ocean provides, focusing on sustainable fisheries management, the development of drugs derived from marine organisms, and the conservation of mangrove ecosystems. Presentations will cover the importance of healthy fisheries for global food security and economic stability, as well as innovative approaches to sustainable fishing practices. Additionally, the session will explore the promising field of marine pharmaceuticals, highlighting marine species as sources of novel compounds for drug development. Mangroves, with their crucial role in coastal protection and biodiversity, will also be discussed, focusing on conservation efforts and their significance in climate change mitigation. The session will emphasize the need for integrated solutions that balance economic development with environmental sustainability.*

### **Coastal aquifers and Submarine discharges (AHI, NCESS, OSI)**

*Coastal aquifers, Seawater intrusion, submarine groundwater discharges*

- *Proposal: As coastal regions face increasing demands for freshwater and the pressures of climate change, understanding the dynamics of coastal aquifers and their vulnerability to seawater intrusion is more critical than ever. Presentations will explore the latest research on the processes driving seawater intrusion, the impacts of submarine groundwater discharges (SGD) on coastal ecosystems, and innovative solutions for*

*sustainable groundwater management in coastal areas. This session will provide an in-depth exploration of the critical issues surrounding coastal aquifers, seawater intrusion, and submarine groundwater discharges. By sharing the latest research and technological innovations, the session aims to foster discussions on sustainable water management practices and strategies to protect these vital coastal water resources.*

### **Energy resources (SPG, IGU, CSIR-NGRI, KDMIPE)**

*Gas hydrates, oil and gas, hydrothermal, wave, tide and wind energies*

- *Proposal: This session will explore the latest advancements in energy extraction and utilization from emerging sources, focusing on gas hydrates, oil and gas reserves, and renewable ocean energies, including hydrothermal, wave, tide, and wind energies. We will discuss the potential of gas hydrates as a future source of natural gas, the evolving technologies in the extraction and use of oil and gas, and the integration of renewable ocean-based energy systems. Presentations will highlight cutting-edge research in the extraction techniques for gas hydrates and hydrocarbons, as well as innovations in harnessing the power of ocean energy through wave, tide, wind, and hydrothermal systems. The focus will be on how innovative technologies and research are driving the exploration, extraction, and utilization of these diverse energy sources, while addressing global sustainability and energy security challenges.*

## **iii. Natural Hazards**

### **Geo Hazards (IIG, WIHG, ISES, CSIR-NGRI)**

*Cyclones, Storm surges, Tsunamis, Earthquakes, Pollution, Ecological hazards, Volcano eruption, submarine landslides, Flooding, Sinkholes*

- *Proposal: This session will address the complex challenges posed by natural disasters and ecological hazards, including cyclones, storm surges, tsunamis, earthquakes, volcanic eruptions, submarine landslides, flooding, sinkholes, and pollution. The session will explore the role of technology in early warning systems, disaster preparedness, and response, as well as examine how human activities contribute to ecological degradation and exacerbate natural hazards. By highlighting both the science behind these phenomena and innovative solutions, the session will explore effective ways to safeguard communities, preserve ecosystems, and build resilience in the face of these global challenges.*

## **iv. Recent Advances and Emerging Trends**

### **Recent Advances in Geoscience and Technology (INCOIS, IIG, CSIR-NGRI, GSI)**

*AI/ML, New observation technologies, Modelling, Early warning systems, Mining*

- *Proposal: This session will showcase the latest innovations at the intersection of AI/ML, observation technologies, and modeling in geoscience and mining. By highlighting their application in early warning systems, hazard mitigation, and resource management, we will illustrate the potential of these technologies to drive sustainable practices, improve safety, and foster innovation in these critical industries. The integration of technology with traditional geoscientific methods*

*opens new avenues for research, hazard mitigation, and sustainable resource management, positioning the field to address global challenges in the years ahead.*

### **3. *Pre-conference Workshop***

#### **Sea Level Changes (INCOIS/OSI/IGU)**

*Holocene Sea level changes; Global sea level reconstruction and projection; Indian ocean sea level reconstruction and projection; Specific to the Indian Coast and Islands; Impacts on Coastal Wetlands and estuaries of India; Coastal erosion and Shoreline changes and flood hazards; Coral Reefs- Vulnerability, adaptation and resilience*

### **4. *Young Scientist Conclave***

#### **Young Scientists Posters and flash presentations (IGU/AHI/AEG)**

### **5. *Popularisation of Ocean sciences***

#### ***Ocean awareness -School Children (INCOIS)***

*School and college children in and around Hyderabad- visit to INCOIS establishments*

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