GIS FOR OCEAN SCIENCE

HYBRID SEMINAR

EVENT TITLE

"GIS for Ocean Science" World GIS Day 2022

DATE/TIME

14th November 2022 | 10:00 am to 12:30 pm

VENUE

Auditorium, National Institute of Oceanography, ST-47, Block-I, Clifton, Karachi

ORGANIZED BY

National Institute of Oceanography, Pakistan

INTRODUCTION

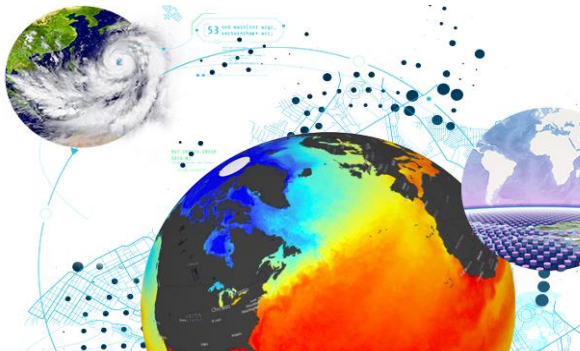
THEME SIGNIFICANCE OF GEOGRAPHY IN OCEAN SCIENCES

The relevance of geography in Oceanography is paramount on many levels, exploration and discovery, geomorphology of shores and sea-beds, climatology, water dynamics, and marine biotics. Geography investigates marine and coastal use, the interaction between human communities and the ocean. It contributes to the epistemological discussion of the evolution of ocean science and the formulation of coherent management strategies for sustainable development.

Geography and oceanographic exploration go hand and hand and aided by monitoring techniques from ships/submarines, exploration of the water column and seafloors and the satellite monitoring systems has made the horizon of this science limitless and adds to the excitement and mystery of the oceans.

Our ability to measure the change in the oceans (open, nearshore, or coast) has increased manifolds due to better measuring devices, scientific techniques and the power of the Geographical Information System (GIS). It adds strength to improved understanding, visual impacts of the dynamic environs. From collection and display of data to complex simulation, modeling, and the development of new research methods and concepts, evolving GIS continues to empower ocean scientists, resource managers, and conservationists.

Celebrating Ocean GIS



GIS IN OCEANOGRAPHY

*"Where does GIS come into all of this? I'll put it another way. Where doesn't GIS come into the understanding of the ocean? After all, marine ecosystems, just as those on the land, are geospatial, and therefore so are the solutions that we must craft as we go forward." (***DR. SYLVIA EARLE)**

Ocean environment is distinctive. The ocean's surface can be seen well by sensors on satellites and aircraft, but they are often unable to peer down into the water column because that is where the electromagnetic energy they use is dissipated. With the use of GIS technology, it is now possible to organize and integrate data on ocean characteristics and processes on extremely large scales, create maps, and conduct scientific analysis to deepen our understanding and assist us in making important decisions.

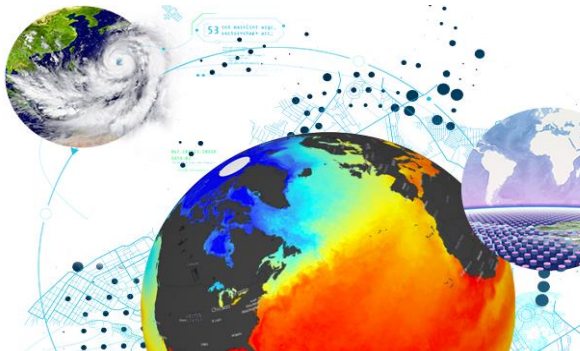
GIS effectively handle the enormous amounts of data (biological, chemical, physical, geological) collected in multiple ways from multiple instruments and platforms (ships, moorings, floats, gliders, remotely operated vehicles, aircraft, and satellites) and continues to provide the oceanographic community, policy, decision makers visualized information and therefore better insight. The applications of GIS evolved from merely displaying data to multidimensional visualization, simulation, and decision support.

Over the years, GIS continues to grow from applications that merely collect and display data, to complex simulation, modeling, and the development of new research methods and concepts. Some of the key applications include visualization of spatial dimensions of the ocean, from sustainable management of fish stocks, to looking in the oceans for energy, from coastal contingency plans to risks and disaster mapping. The GIS is a powerful, unique technology that is crucial to helping us manage the oceans in the most sustainable way.

OBJECTIVE

This hybrid mode seminar shares information of Pakistan's blue limits with applications of GIS across Oceanographic sub-disciplines.

- MARKING THE BLUE LIMITS | A GIS-based approach for mapping the coastal limits and zones of Pakistan
- MAPPING THE DEEP | To identify the challenges posed by the rapid transition from the sparse measurement of physical parameters with depth offered by the ocean.
- SAVING THE BLUE STUFF | Steps taken toward conservation and study of Pakistan's offshore boundaries.



Tentative Program

Speakers

Afia Salam — **Geographer, Indus Earth Trust**

Afia Salam is an avid geographer and her passion for the field reflects in her writing, professional work and her many other pursuits. She is a freelance journalist and activist, with a focus on the environment, climate change, and media matters. Her welfare work expands over several Non-Profit Organizations including Hisaar Foundation, Baahn Beli, and Indus Earth Trust among others and is not limited to humanitarian causes but also extends to environmental and geographic sustainability.

Prof. Dr. Jamil Kazmi — **Executive Director, MAPTEC, OCLITS, OCL-Karachi, GIS Specialist**

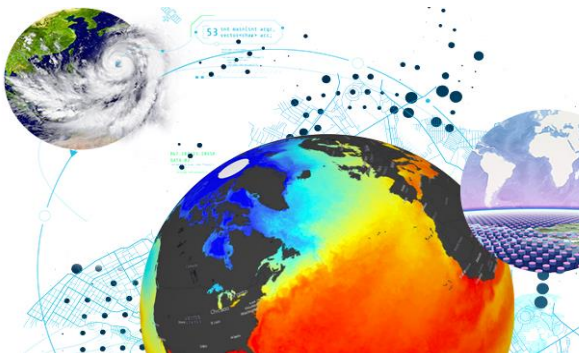
Prof. Syed Jamil H. Kazmi, is a Meritorious Professor, twice Chairman of the Department of Geography, and Ex-Director of ISPA, University of Karachi. Dr. Kazmi is a leading GIS Instructor in the country with over 10,000 trainees in GIS, Remote Sensing, and Drone Technology. Dr. Kazmi is the recipient of the "Special Achievement in GIS Award" by ESRI, USA. He has provided consultations nationally and Internationally to UNDP, FAO, UNICEF, World Bank, EU, IUCN, etc. He currently serves as Executive Director, MAPTEC in addition to his freelance consultancy.

Khalid Mehmood — **Senior Research Officer, NIO**

Khalid Mehmood is a researcher of the Geology and Geophysical section of the National Institute of Oceanography. Mr. Khalid was a significant member of the Continental Shelf Extension technical team, Currently, represents Pakistan on the International Seabed Authority (ISA) Legal and Technical working group. Khalid Mehmood employs GIS Technology from planning the field surveys to the visualization of data acquired.

Syed Mohsin Tabrez — **GIS Consultant, NIO Alumni (Former In charge NODC, NIO)**

Syed Mohsin Tabrez was in charge of NODC, NIO during his service. His research interests were Data Management, GIS, Physical Oceanography and Instrumentation. He was member of the Continental Shelf Extension (CSE) Program, played a key role in the successful submission of Pakistan CSE. Currently, GIS Consultant, ranked highest amongst the professionals with practical experience of tools of GIS in mapping the ocean sciences of Pakistan in National Institute of Oceanography. His expertise has contributed to major national level projects carried out by NIO and his services in the integration of hydrography and GIS are unsurmountable. He is veteran of the Pak Antarctic Expeditions (1991-92, 92-93)



Dr. Ibrahim Zia

Physical Oceanographer & GIS Specialist, National Institute of Oceanography, Pakistan

Dr. Ibrahim Zia, PhD in GIS, from the University of Karachi, Pakistan. He currently heads and leads the Physical Oceanography group at the National Institute of Oceanography Pakistan and is also the Project lead in the Seawater Intrusion, Sea level Rise, Land Subsidence project funded by the Government of Pakistan. He presents and publishes profusely and is well known in the oceanography circles of Pakistan.

Maryam Khan

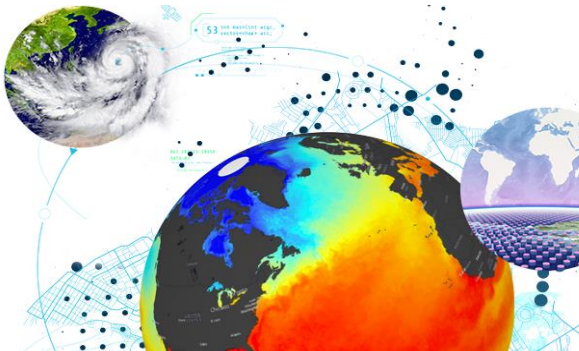
GIS Analyst, National Institute of Oceanography, Pakistan

Maryam is a GIS Analyst working under the PSDP's project on monitoring of sea water intrusion, coastal erosion, land subsidence and sea level rise along Pakistan coast being undertaken in Integrated Physical Oceanography Lab at NIO. She is the only recipient of ESRI GIS Young Scholars Award in Pakistan and has been acknowledged for her work in GIS by different International organizations.

Dr. Samina Kidwai

Oceanographer & Director General, National Institute of Oceanography, Pakistan

Dr. Samina Kidwai, a Biological Oceanographer by training with over 30 years of research experience in Pakistan and internationally. Her research expands the domains of bio-physical interactions, food-web dynamics, island, and deltaic ecosystems, the impact/resilience to climatic variability on marine ecosystems, Marine Protected Areas (MPAs), and multifarious oceanic aspects. She was part of the working group established by Ocean Biogeographical Information System (OBIS) for the Northwest Arabian Sea and an ardent supporter of the use of state of the art technology & tools for ocean observations. She is very well known internationally in the oceanography circles. She is the current Director General of NIO Pakistan.



AGENDA - TENTATIVE

Time	Speaker	Designation/ Organization	Title of the Talk
10:00 – 10:10		*Recitation of the Holy Quran & National Anthem of Pakistan*	
10:10 – 10:30	Ms. Afia Salam	Geographer, Environment Specialist	Why Geography matters?
10:30 – 11:00	Prof. Dr. Jamil H. Kazmi	MAPTECH, Osmani	PLENARY TALK - Exploring the unseen with GIS as a Power tool
11:00 – 11:20	Khalid Mehmood & Mohsin Tabrez	CSE, NIO, Pakistan	MARKING THE BLUE LIMITS- GIS in Continental Shelf Extension Program- "Bringing Success Home"
11:20 – 11:40	Dr. Ibrahim Zia & Maryam Khan	Physical Section NIO, Pakistan	SAVING THE BLUE STUFF- Finding Solutions to Real Issues- the SWI, SLR, LS & GIS
11:40– 12:00	Dr. Samina Kidwai	Director General NIO, Pakistan	THE WAY FORWARD- Oceanography in NIO- Technologies & Tools – towards 2040
12:00– 12:30		*Q/A Session*	

TARGET AUDIENCE

- Ocean Scientists
- Professionals
- Marine fraternity
- Coastal Planners & Managers
- Students & Faculty of Oceanography and GIS applications