

# **Centre for Earth System and Sustainability**

## **(Centre of Excellence)**

.....

### **About the Centre**

The Centre for Earth System and Sustainability (CESS) is dedicated to addressing environmental challenges through cutting-edge research, academic excellence, and technological innovation under the umbrella of Centurion University of Technology and Management, Odisha. The vision of the centre is to be a leading centre of excellence in Earth system and sustainability, leveraging advanced geospatial technology and oceanographic research to drive innovative solutions for environmental challenges and benefits to the community. Currently, the centre engage with the following research activities to support sustainable development and environmental conservation; (a) Bio-geochemical study of sea water, (b) Monitoring the impact of climate change on marine biodiversity, (c) Using satellite remote sensing to monitor water quality and ocean productivity, (d) Hyperspectral study of water, soil, and vegetation (e) Developing algorithms for chlorophyll estimation and harmful algal bloom detection, (f) Potential Fishing Zone (PFZ) mapping and validation, (g) Toxic element analysis of drinking water, waste water, and surface water, (h) Air quality index monitoring and mapping, (i) DGPS and UAV usage, data processing, and mapping.

### **Vision**

To be a leading centre of excellence in Earth system and Sustainability, leveraging advanced geospatial technology, state-of-the-art numerical modeling, and oceanographic research to drive innovative solutions for environmental challenges and benefits to the community.

### **Mission**

- Our mission is to bridge scientific research with policy and community engagement to enhance environmental resilience and sustainable resource management.
- To advance scientific understanding and innovative solutions for Earth systems and sustainability, focusing on coastal ecosystems, geospatial technology, and environmental studies.
- To provide high-quality academic programs in Earth System sciences fostering the next generation of researchers and professionals.
- To offer expert consultancy services supporting evidence-based policymaking and sustainable resource management.

### **Focus Areas**

1. **Remote Sensing, GIS and UAV Mapping:** UAV / satellite derived data (RGB, Multispectral & Hyperspectral) for environmental monitoring, natural resources management and land dynamic study etc.

2. **Coastal Dynamics & Erosion:** Studying shoreline changes, sediment transport, and mitigation strategies. Investigating impacts of Sea-Level Rise on coastal communities and resilience planning.
3. **Marine Biodiversity & Ecosystems:** Assessing habitat health, conservation, and sustainable management.
4. **Marine Pollution & Plastics:** Assessing contaminants and mitigation strategies for ocean health.
5. **Carbon Sequestration & Blue Carbon:** Studying oceanic and coastal carbon storage solutions.
6. **Ocean Circulation & Climate Interactions:** Examining Ocean currents and their role in climate systems.
7. **Climate Change Modeling:** Developing and utilizing predictive models for climate change research.
8. **Urban Extreme Events:** Analysing heatwaves, flooding, and climate risks in urban environments.
9. **Urban Heat Waves & Mitigation:** Studying rising urban temperatures, heat islands, and cooling strategies.
10. **Renewable Ocean Energy:** Exploring tidal, wave, and offshore wind energy potential.
11. **Environmental Impact Assessment (EIA) monitoring:** Real-time monitoring of pollution levels (Air & Water), land-use change detection, habitat mapping, and coastal monitoring.
12. **Hi-Tech Surveying:** Surveying using ETS, DGPS and UAV.

#### **Advisory Board Members**

1. **Dr. Rajeevan Madhavan Nair:** Vice Chancellor, Atria University, Former Secretary, MoES India
2. **Dr. Suvarna Fadnavis:** Scientist-F, Indian Institute of Tropical Meteorology, Pune
3. **Dr Biswajeet Pradhan;** Distinguished Professor and Director, Centre for Advanced Modelling and Geospatial Information Systems (CAMGIS), Faculty of Engineering and IT, University of Technology Sydney.
4. **Dr. Grinson George,** Director of the Central Marine Fisheries Research Institute (CMFRI), Kochi.
5. **Dr Aneesh Lotliker;** Scientist-F & Division Head, OON, Indian National Center for Ocean Information Services (INCOIS), MoES, Hyderabad.
6. **Dr Sanjiba Kumar Baliarsingh,** Scientist, Indian National Center for Ocean Information Services (INCOIS), MoES, Hyderabad.
7. **Dr. Asutosh Acharya,** Chief Climate Scientist, Aurassure Pvt. Ltd, India





## INCOIS and Centurion University unite for massive beach clean-up in Odisha

PBD BUREAU

KONARK/ASTARANGA, SEP 20

IN a major effort to combat marine pollution, the Indian National Centre for Ocean Information Services (INCOIS) and Centurion University (CUTM) spearheaded a beach clean-up initiative at Odisha's iconic Konark and Astaranga beaches. The drive, part of the "Swachh Sagar, Surakshit Sagar" (Clean Ocean, Safe Ocean) campaign, resulted in the collection of a staggering 1620 kg of marine waste.



Over 120 volunteers, including local fisherfolk, students, CUTM officials and INCOIS scientists, gathered at Chandrabhaga Beach in Konark and Tandahar Beach in Astaranga on Saturday, marking International Coastal Cleanup Day 2025. At Chandrabhaga, participants cleared 1,400 kg of waste, while the team at Tandahar Beach removed another 220 kg.

The event, which brought together a diverse group of community members and environmental advocates, also included educational sessions on sustainable fishing practices and the dangers of single-use plastics.

Dr. Sanjiba Baliarsingh and Dr. Alakes Samanta from INCOIS highlighted the critical need for collective action to preserve fragile coastal ecosystems and support local livelihoods.

Centurion University's Pro-Vice Chancellor Dr. Biswajit Mishra stressed the vital role of youth and community participation in protecting marine life and advancing the Swachh Bharat Mission.

The clean-up concluded with a collective pledge to reduce plastic waste and promote eco-friendly practices for the benefit of future generations. This initiative further strengthens INCOIS's commitment to working with local communities and academic institutions toward a cleaner, healthier marine environment.

## ପରିବେଶ ମୂଲ୍ୟାୟନ ଓ ଗବେଷଣା ପ୍ରୟୋଗଶାଳା



କଟକ, ୧୪।୧।(ନି.ପ୍ର): ସେଣ୍ଟ୍ରିଆନ୍ ଦଶ ବିଦ୍ୟାଳୟ ସଭା ଗୃହରେ ଜାତୀୟ ସମୁଦ୍ର ସୁରକ୍ଷା କେନ୍ଦ୍ରର ସମାକ୍ଷୀ ବୈଠକ ଅନୁଷ୍ଠିତ ହୋଇଯାଇଛି । ବୈଠକରେ ଦେଶର ବିଭିନ୍ନ ସ୍ଥାନରେ ଚାଲିଥିବା ପ୍ରୟୋଗିତ ଗବେଷଣା

ପ୍ରକଳ୍ପର ସମୀକ୍ଷା ହେଉଥିଲା । ୨୬ ଜଣ ବରିଷ୍ଠ ଗବେଷକ, ୧୦ ଜଣ ବରିଷ୍ଠ ବୈଜ୍ଞାନିକ ଯୋଗଦେଇ ପୃଥିବୀ, ସମୁଦ୍ର ଓ ଜଳବାୟୁ ବିଜ୍ଞାନ କ୍ଷେତ୍ରରେ ଚାଲିଥିବା ଗବେଷଣା, ଭବିଷ୍ୟତ ମାର୍ଗ ଦର୍ଶନ ଓ ସମ୍ପାଦନା

ସମ୍ପର୍କରେ ବିସ୍ତୃତ ଆଲୋଚନା କରିଥିଲେ । ଏହି ଅବସରରେ କେନ୍ଦ୍ର ନିର୍ଦ୍ଦେଶକ ଡ.ଟିଏମ୍ ବାଳକୃଷ୍ଣନ୍ ବିଶ୍ୱ ବିଦ୍ୟାଳୟ ପରିସରରେ ଏକ ପରିବେଶ ମୂଲ୍ୟାୟନ ଓ ଗବେଷଣା ପ୍ରୟୋଗଶାଳାକୁ ଉଦ୍ଘାଟନ କରିଥିଲେ । ବିଶ୍ୱ ବିଦ୍ୟାଳୟର କୁଳପତି ଡ.ସୁପ୍ରିୟା ପଟ୍ଟନାୟକ, ଡ.ଜି.ଏସଏନ ରାଜୁ ଯୋଗଦେଇ ଶିକ୍ଷା ଓ ଗବେଷଣା ପକ୍ଷଟିକୁ ସମ୍ବର୍ଦ୍ଧ କରିବା ଉପରେ ଗୁରୁତ୍ୱାରୋପ କରିଥିଲେ । ଅନ୍ୟତମ ଅତିଥି ଭାବେ ଡ.କମଳ କୁମାର ବାରିକ ଓ ଡ.ପ୍ରତାପ କୁମାର ଛୋଟରାୟ ପ୍ରମୁଖ ଯୋଗ ଦେଇଥିଲେ ।

INCOISmoes  
12 January · 6

We are delighted to share that **Balakrishnan Nair**, Director, **Indian National Center for Ocean Information Services**, inaugurated the Environmental Assessment and Research Laboratory (EARL) at Centurion University of Technology and Management (CUTM), Bhubaneswar.

The newly established, state-of-the-art laboratory is equipped with cutting-edge facilities for analyzing ocean biogeochemical, optical, and environmental parameters. EARL has been set up with the support of an INCOIS-funded sub-project, marking a significant step toward strengthening environmental and ocean research.

The Vice-Chancellor of CUTM expressed heartfelt gratitude to INCOIS for its continuous support and encouragement.



## Laboratory and Equipment's



*Atomic Absorption Spectrophotometer*



*UV Spectrophotometer*



*Flame Photometer*



*pH Meter*



*Conductivity & TDS Meter*



*Turbidity Meter*



*Hyperspectral Radiometer (supported by INCOIS)*



*CTD Profiler (supported by INCOIS)*



*Analytical Balance*



*Noise Meter /  
Sound Level Meter*



*Respirable Dust Sampler*



*Fine Particulate Sampler*



*Electronic Total Station (ETS)*



*Differential Global Positioning System (DGPS)*

### **Expected Output**

1. External Funded Projects
2. Consultancy
3. Publications
4. Patents