



BIODATA OF DR. SHAILESH NAYAK

1. **Name and Designation:** SHAILESH NAYAK
Secretary, Ministry of Earth Sciences
Chairman, Earth Commission
2. **Date of birth:** 21 August, 1953
3. **Department/Organisation:** Secretary to the Government of India
Ministry of Earth Sciences (MoES)

Address: Ministry of Earth Sciences, 'Prithvi' Bhavan,
Lodhi Road, New Delhi - 110 003

Phone: +91 11 24629771, 24629772 (O)
+91 11 24104166 (R)
Fax: +91 11 24629777
E-mail: secretary@moes.gov.in

4. Biographical Information:

i) Academic Qualification:

S. No	Degree	Subjects	Class/Marks %	Year	University	Additional particulars/ Rank
1	Ph. D.*	Geology	-	1980	M. S. University of Baroda, Vadodara	-
2	M. Sc.	Geology	First with Distinction, 70 %	1975	M. S. University of Baroda, Vadodara	First
3	B. Sc.	Geology, Physics, Chemistry	First, 62.7 %	1973	M. S. University of Baroda, Vadodara	-

*Geology of the bauxite deposits of Kutch and Valsad districts (Gujarat State) with special reference to their mode of occurrence, genesis and economic utility.

ii) Positions Held

Year	Institute	Position Held
August, 2008	Ministry of Earth Sciences (MoES)	Secretary, MoES Chairman, Earth Commission
May 2006	Indian National Centre for Ocean Information Centre (INCOIS), MoES	Director
July, 2003	Space Applications Centre (ISRO)	Scientist 'G' (promoted to Scientist 'H' from Jan, 2007)
Feb. 2001	Space Applications Centre (ISRO)	Group Director, Marine & Water Resources
Jul. 1998	Space Applications Centre (ISRO)	Scientist 'SG'
Jun 1998	Space Applications Centre (ISRO)	Head, Marine & Water Resources
Jan. 1993	Space Applications Centre (ISRO)	Scientist 'SF'
Jan. 1989	Space Applications Centre (ISRO)	Scientist 'SE'
Jan. 1985	Space Applications Centre (ISRO)	Scientist 'SD'
Apr. 1981	Space Applications Centre (ISRO)	Scientist 'SC'
Jan. 1978	Space Applications Centre (ISRO)	Scientific Asst. 'C'
Mar. 1977	Gujarat Engineering Research Institute	Senior Scientific Asst.

iii) Honours/Awards

1. Honorary Doctor of Science by Andhra University, 2011
2. Special Mention E-Govt. Projects: INCOIS' Tsunami Warning System. PC Quest. Cyber Media (india) Ltd., Gurgaon.
3. Web Ratna 09 Platinum Award of Excellence in E-Governance Initiatives "Tsunami Early Warning System Project" under the category "Innovative Use of Technology". Dept. of IT and Communications, Government of India April 19, 2010. (Team award)
4. Impact of Climate Change on Coastal Zone. Millennium Lecture, Indian Society of Geomatics. Ahmedabad, February, 4, 2010.
5. H. Sidique Memorial Lecture and Gold Medal of Indian Geophysical Union. "Ocean and Society". Wadia Institute of Himalayan Geology, Dehradun. October 5, 2009.
6. Foundation Day Lecture, Birbal Sahni Institute of Paleobotany. 'Towards Climate Information and Services', Lucknow, September 10, 2009.
7. 26th Convocation Address, Gandhigram University, Gandhigram, on 'Earth Science and Rural Development', July 18, 2009.
8. Pisharoty Memorial Lecture The Planet Earth: Finite Resources and Civilizations Indian Society of Remote Sensing, April 24, 2009, Ahmedabad.
9. 12th Foundation Lecture of IGC on Tsunami warning System for the Indian Ocean. 16th Convention of the Indian Geological Congress, National Geophysical Research Institute, Hyderabad, February 2, 2009.
10. Dr. S.P. Chatterjee Memorial Lecture on 'Remote Sensing and GIS for Coastal Zone Management', instituted by Indian National Cartographic Association (INCA), November 22, 2007, Visakhapatnam.
11. National Mineral Award-2005, (Applied Geology) Ministry of Mines, Govt. of India

12. Indian National Remote Sensing Award for the Year 1994, Indian Society of Remote Sensing, Dehradun.
13. Hari-Om Ashram Prerit Inter-University Smarak Trust Prize for the Year 1981-82 for Geology (Kutch bauxites: evidence from exotic gibbsitised fossils of syn-sedimentary deposition near Naredi, Western India. *Sedimentary Geology*, 24: 117-124. 1981.)
14. Special Achievement in GIS (SAG) Award -2008, E.S.R.I., San Diego, USA (for Tsunami Warning Centre)
15. Skotch Challenger Award for Security and Disaster Management, Jan. 2009 (for setting up Tsunami Warning Centre) by Skotch, New Delhi.
16. Geospatial Solution of the Year for Tsunami Warning System, 2008 (awarded to INCOIS Team) by Geospatial Today Magazine, Hyderabad.
17. Hari-Om Ashram Prerit Inter-University Smarak Trust Prize for the Year 1981-82 for Geology
18. Dinesh Chokshi Memorial prize for securing highest marks in M. Sc. (Geology) in 1975.
19. Irrigation R & D Award for Meritorious Technical Paper on Emerging behaviour of the Narmada estuary presented at the 56th Annual R & D Session of CBIP for the Year 1991.

iv) Subject: Earth Science

Specialization: Oceanography/Remote Sensing

Area(s) of Research: Coastal and Ocean processes, air-sea interaction, coastal hazards, coastal geomorphology, geological/geomorphic processes.

v) Membership of Academic/Professional Bodies:

- Fellow, Geological Society of India, Bangalore
- Fellow, Meteorological Society of India.
- Life Member, Indian Society of Remote Sensing, Dehradun
- Life Member, Indian Society of Geomatics, Ahmedabad
- Life Member, Institution of Geoscientists (India), Hyderabad
- Life Member, Mangrove Society of India, Goa
- Life Member, Astronautical Society of India, Bangalore
- Life Member, Meteorological Society of India, New Delhi

5. Intellectual property, technological innovations, new products etc.

Conceptualized, installed and operationalized the Tsunami Early Warning system for India

Algorithms and software for retrieving bio-geo-chemical parameters from ocean colour sensors has been provided to many institutions in the country.

Satellite based technique for identifying potential fishing grounds has been operationally being utilized by the Indian National Centre for Ocean Information Services (INCOIS) for providing forecast to fishermen for the entire Indian coast.

GIS-based model for selecting suitable sites for brackish water aquaculture

6. Major R & D projects/programmes implemented/being Implemented

Conceptualised, executed and guided and provided leadership to following national level projects by involving many national and state level institutions in the field of coastal and marine environment.

As the Secretary, MoES, Dr. Shailesh Nayak has initiated several new programmes/centres/activities relating to Global change and use of geosciences for overall societal benefits. To name a few, earthquake precursors, ocean biogeochemistry, ecosystem health and modeling, ocean multi-hazard warning system, ocean, atmosphere, marine resources and Antarctica data base organization and management, web and location-based services, etc. A Centre for Climate Change Research has been established in Pune. A National Centre for Seismology is being set up. The setting up of a Coastal Research Centre has been initiated. A Training School for Climate and Earth System is being set up in Pune. He has initiated discussions and the preparation of a **National Vision document** on the role Earth Sciences should play in national issues.

As Project Director, Early Warning System for Tsunami and Storm Surge, May 2006, planned and implemented an Early Warning System involving network of seismic stations, tidal stations, bottom pressure recorders, and real time analysis of data, modelling of travel time, propagation of tsunami wave and inundation and generation of high resolution bathymetry and coastal topography data. The work involved direction, guidance, coordination of three departments/ministries and fourteen national institutions involving more than 300 scientists to design, develop and making such system operational in record time of 10 months at a cost of Rs.125 crores. Two major R & D projects, on the tectonic modelling of the Andaman Trench and History of Tsunami have been conceptualised and being implemented through NGRI, PRL, NCAOR, IITs and academic institutions. The capability of India was effectively represented in international fora. One of the major achievements was that the project was executed without any increase in the cost of the project.

Project Director, Argo Project, organized activities related to deployment of ARGO floats in the Indian Ocean, reception and processing data in near real time, quality checks, generation of products and applications. Various applications of Argo data are being developed.

As Director, INCOIS, provided direction and guidance for the societal services in the field of Potential Fishing Zone and Ocean State Forecast Advisories. The success of PFZ advisories is around 74 per cent and led to savings in time and fuel. Due to innovative methods, the user base in fishermen was increased to 27 per cent. The OSF is being widely used by shipping, Coast Guards and the Indian Navy.

A project on 'Chlorophyll Monitoring of the Indian Ocean' was conceptualised and being implemented using MODIS/OCM data. The project is envisaged to help to monitor ecosystem health and will provide input for ecosystem modelling.

As Director of INCOIS, various steps were taken to increase activities in operational oceanography.

Principal Investigator, Jan. 2004 - April 2006, Coastal Studies (inventory, zonation of coral reefs and mangroves, coastal geomorphology, sea level rise, shoreline change, coastal zone information system), and Snow and Glacier Studies (snow monitoring, glacier inventory and retreat, mass balance, information system) Funded by the Ministry of Environment and Forests, Govt. of India (Rs. 30 crores).

Focal Point, Meteorology and Oceanography Programme (funded by ISRO), and Satellite Coastal and Oceanographic Research. Funded by the Dept. of Ocean Development, GOI. 2003 to April 2006, Biological and Geological Oceanography component and Development of Cal Val site in the Lakshadweep Sea (Rs. 5 crores)

Deputy Project Director, Satellite Coastal and Oceanographic Research. Funded by the Dept. of Ocean Development, GOI. Indian Remote Sensing Satellite (IRS) – P4 OCM Utilisation, ISRO. 1998-2003. Development of algorithms for retrieving bio-geo-chemical parameters from Ocean Colour Monitor (OCM), its validation and operationalization, development of methodology for application of OCM data for fisheries and coastal processes (Rs. 7 Crores).

Focal Point. Development Plans of Kachchh District. Preparation of land and water resources development plans. 2001-2004 (Rs. 2.25 crores).

Deputy Project Director, Integrated Coastal and Marine Area Management Project, Funded by the Dept. of Ocean Development. GOI. 1998-2003. Development of methodology for geomorphological zonation of mangroves and coral reefs using Indian Remote Sensing data (Rs. 1 Crore).

Principal Investigator, Coastal Zone Development. Joint project SPARRSO, Bangladesh and ISRO. Funded BY UN-ESCAP. 1997-2000. Transfer of technology to SPARRSO for coastal studies and specifically selection of brackish water aquaculture sites.

Principal Investigator, IRS P3 Validation Experiment – Ocean. Joint Project DLR, Germany and ISRO. 1995-98. Development of algorithms for retrieving bio-geo-chemical parameters and standardising validation procedures using MOS-B data Rs. 30 Lakhs).

Project Leader; Land Use Mapping of Coastal Regulation Zone, Funded by the Ministry of Environment and Forests, GOI. 1993-1997. Developed techniques to delineate high tide line and low tide line using satellite data and generated database for the entire country's coastline on 1:25,000 scale and GIS based model for classifying coastal zone for managing coastal zone (Rs. 30 Lakhs).

Principal Investigator, Coastal Studies, Funded by the Dept. of Ocean development, GOI. 1990-1995. Developed methodology for identifying coral reef features and generated data base on coral reef, mangroves and areas under erosion and deposition on 1:50,000 scale for the entire country's coastline Rs. 50 Lakhs).

Project Leader, Coastal Land Use Mapping for Brackish Water Aquaculture Site Selection, Remote Sensing Application Mission, Funded By the Ministry of Agriculture, GOI. 1990-94. Generated data base on coastal land use on 1:50,000 scale and developed a model to integrate satellite-based information with *in situ* information on ecology, infrastructure, etc. to select sites for brackish water aquaculture (Rs. 30 Lakhs).

Project Leader, Coastal Environment, Remote Sensing Applications Mission (RSAM), Funded by the Ministry of Environment and Forests, Govt. of India (GOI). 1988-92. Generated database on coastal wetland/landform and shoreline change on 1:250,000 scale for the entire country's coastline Rs. 18 Lakhs).

Principal Investigator, Monitoring of Coastal Environment, Indian Remote Sensing Utilization Programme (IRS-UP), ISRO. 1984-1990. Developed methodology and classification system for identifying coastal wetland and landform and shoreline change. Prepared a detailed manual for the same (Rs. 32 Lakhs).

Principal Investigator, Coastal Morphology: A Case Study in the Gulf of Khambhat. End-to-End Experiment, National Natural Resources Management System, Indian Space Research Organisation (ISRO). 1983.

7. List of ten important publications and/or patents: including (a) name of author(s), (b) year, (c) title, name of journal, (d) volume and pages.

- i) **Nayak, S.** 2009. Application of Remote Sensing and GIS for Coastal Zone Management. In Manual of Geographic Information Systems (ed. M. Madden), The American Society for Photogrammetry and Remote Sensing, Bethesda, MD. pp. 1075-1094.
- ii) **Nayak, S.** and Srinivasa Kumar, T. 2008. The First Tsunami Early Warning Centre in the Indian Ocean. In 'Risc Wise', Tudor Rose, UK. pp.175-177.
- iii) Vinaychandran, P. N., Chauhan, P., Mohan, M. and **Nayak, S.** 2004. Biological response of sea around Sri Lanka to summer monsoon. Geophysical Research Letters, 31:L01302. 200
- iv) Chauhan, P., Mohan, M. and **Nayak, S.** 2003. Comparative analysis of ocean colour measurements of IRS P4 OCM and SeaWiFs in the Arabian Sea. IEEE Transactions of Geoscience and Remote Sensing, 41 (4): 922-926.
- v) Prasad, J.S., Rajawat, A.S., Pradhan, Y., Chauhan, O.S., **Nayak, S.** 2002. Retrieval of sea surface velocities using sequential Ocean Colour Monitor (OCM) data. Proceedings of the Indian Academy of Sciences, Earth and Planetary Sciences, 111 (3), pp. 189-195.
- vi) Chauhan, P., Mohan, M., Sarangi, R.K., Kumari, B., **Nayak, S.**, Matondkar, S.G.P. 2002. Surface chlorophyll a estimation in the Arabian Sea using IRS-P4 Ocean Colour Monitor (OCM) satellite data. International Journal of Remote Sensing, 23 (8), pp. 1663-1676.
- vii) Solanki, H.U., Dwivedi, R.M., **Nayak, S.** 2001. Synergistic analysis of SeaWifs chlorophyll concentration and NOAA-AVHRR SST features for exploring marine living resources. International Journal of Remote Sensing, 22 (18), pp. 3877-3882.
- viii) **Nayak, S.**, Sarangi, R.K., Rajawat, A.S. 2001. Application of IRS-P4 OCM data to study the impact of cyclone on coastal environment of Orissa. Current Science, 80 (9), pp. 1208-1213.
- ix) **Nayak, S.**, Chauhan, P., Chauhan, H.B., Bahuguna, A., Narendra Nath, A. 1996. IRS-1C applications for coastal zone management. (1996) Current Science, 70 (7), pp. 614-618.
- x) **Nayak, S.**, Sahai, B. 1985. Coastal morphology: a case study of the Gulf of Khambhat (Cambay). International Journal of Remote Sensing, 6 (3-4), pp. 559-567.

8. Academic and Research Activities:

A. National

- i) Chair, Research Council, National Institute of Oceanography. Goa (2008 onwards)
- ii) Chair, Research Council, Centre for Earth Science Studies, Thiruvananthapuram (2007-10)
- iii) President, Indian Society of Remote Sensing (2008-2010)
- iv) Chairman, Research Council, Centre for Earth Sciences, Thiruvananthapuram
- v) Member, Scientific Advisory Committee to the Prime Minister
- vi) Member, Scientific Advisory Committee to the Cabinet
- vii) Member, OGC Global advisory Council, USA
- viii) Member, Search-cum-Selection Committee, CSIR

- ix) Member, Programme Advisory Committee on Natural Resources Management and Climate Change, MSSRF, Chennai
- x) Member, National Bio-resource Board, Delhi.
- xi) Visitor's Nominee, Selection Committee for Selection of Professors/Associate Professors/Asst/ Professors, IIT-Bombay.
- xii) Member, Editorial Advisory Board, GIS Development
- xiii) Member, Governing Council, Indian Institute of Science, Education & Research, Pune (2008 onwards)
- xiv) Member, Advisory Committee, Centre for Mathematical Modelling and Computer Simulation, Bangalore (2007 - 2008)
- xv) Member of Editorial Board, Indian Journal of Marine Science, National Institute of Scientific Communications (2001-2004), Delhi and Geospatial Today, Hyderabad.
- xvi) Member, National Coastal Zone Authority, MOEF.
- xvii) Member, Scientific Research Advisory Board, Hansen Environmental Research Centre-India, Kochi (2007 onwards)
- xviii) Member, Scientific Advisory Committee, Institute of Seismological Research, Gandhinagar (2007 onwards)
- xix) Member, Expert Committee of NRDMS Programme, DST, New Delhi (2007 onwards)
- xx) Member, Committee to update and develop Curricula in RS, GIS, GPS and allied subjects, DOS, Bangalore.
- xxi) Member, Research Advisory Committee, Wadia Institute of Himalayan Geology, Dehradun (2003-06)
- xxii) Member, Coastal Protection and Development Advisory Committee (CPDAC), Ministry of Water Resources, GOI. 1999-2008.
- xxiii) Member, Programme Advisory Committee, Earth Sciences (PAC-ES) – Dept. of Science and Technology, GOI (2004-07, 1998-2001)
- xxiv) Member, Gujarat Coastal Zone Authority Gandhinagar.
- xxv) Member, Expert Group on SAR Interferometer, Department of Science & Technology, GOI. 2002-2006.
- xxvi) Member, Sub-Group I on Cyclone Early Warning System, NDMA

9. International Academic and Research Activities:

- i) Chairman, Indian Ocean – Global Ocean Observing System (IO-GOOS), 2006 onwards.
- ii) Chair, Executive Board, Regional Integrated Multi-Hazard Early Warning System (RIMES) for Africa and Asia
- iii) Represented India at Intergovernmental Global Ocean Observing System (I-GOOS), 2006-2008

- iv) Vice Chair, Intergovernmental Coordinating Group on Indian Ocean Tsunami Warning System (ISG-IOTWS), 2006 onwards
- v) President, International Society of Photogrammetry and Remote Sensing (ISPRS), Technical Commission IV on 'Geo-databases and Digital Mapping' (2004-2008).

As President, ISPRS TC IV on Geo-databases and Digital Mapping, organised an International Symposium on "Geo-spatial data for Sustainable Development", September 27-30, 2006, Goa.

Organised an International Symposium on "Application of RS & GIS for Monitoring and Prediction of Disasters", September 25-26, 2006, Goa.

Organised ISRO/IEEE/ISPRS/OGC Workshop on "The User and GEOSS Architecture VI, Applications in Public Health for the Indian Ocean Region", September 26, 2006.

Organised two tutorials on :

- a) Urban Planning and Infrastructure Development
- b) Extraction of geo-spatial information from high-spatial resolution optical satellite sensors

- vi) Executive Committee Member, Partnership for Observation of Global Ocean (POGO), 2006-07
- vii) Represented ISRO at the International Ocean Colour Co-ordinating Group (IOCCG). 2001-2004.
- viii) Member, Integrated Global Ocean Observing System (IGOS) – Coastal Theme. 2003-2006.
- ix) Secretary, International Society of Photogrammetry and Remote Sensing (ISPRS), Technical Commission VII on Resource and Environmental Monitoring and Chairman, ISPRS WG VII/3 on 'Integrated Monitoring System for Resource Management' (2000-2004).
- x) Co-ordinated various activities of ISPRS Technical Commission I on 'Sensors, Platforms and Imagery.' (1996-2000).

Organised an International training program on "Remote Sensing of Ocean Colour: Techniques & Applications", sponsored by IOCCG, POGO and ISRO during February 12-23, 2001 at SAC. Nine participants from abroad and eleven participants from India attended the training program.
- xi) Faculty Member in a Training Course on "Ocean Colour", Asian Institute of Technology, Organised by NASDA, Bangkok, Thailand, December, 2000.
- xii) Faculty member in a training course on "Remote Sensing and GIS for Coastal Applications", organized by SEAMEO BIOTROP at Bogor, Indonesia during October 20-29, 2001. Delivered lectures and conducted tutorials on Ocean Colour.
- xiii) A Pre-conference Training Module on Ocean Colour was organised during PORSEC 2000 during Nov. 30-Dec.2, 2000 at Goa. An interactive CD-ROM was developed.
- xiv) Organized a Tutorial on 'Integrated Coastal Zone Management', Pre-symposium Tutorial, ISPRS TC VII Symp. December 2, 2002.

10. Significant Foreign Assignments

Period of Visit	Institute/Country Visited	Purpose of Visit
Nov 1-3, 2011	Paris	Delegation led by Hon'ble Minister of HRD for 36 th General Conference of UNESCO
Oct 3-7, 2011	Taipei	Asian Remote Sensing Conference
July 12-15, 2011	Jakarta, Indonesia	Head of Delegation – Implementation of MoES-BKMG MoU
June 23-29, 2011	Paris	Participate in the Executive Council of IOC at UNESCO Headquarters
May 2-6, 2011	Melbourne, Australia	Participate in the ICG / IOTWS meetings
Apr 5-7, 2011	Paris	Meeting of the Belmont Forum
Feb 24-26, 2011	Bangkok	Participate in the Council Meeting of the Regional Integrated Multi-hazard Early Warning System (RIMES)
Jun 24-25, 2010	USA	Participate in the meeting of the US-Indo Joint Commission for S&T Cooperation led by Hon'ble Minister for Earth Sciences
Jun 10-11, 2010	Paris	Participate in the 43 rd Session of the Executive Council of IOC at UNESCO Headquarters
Jun 5-8, 2010	Norway	Delegation led by Hon'ble Minister of Earth Sciences to visit Indian station ' <i>Himadri</i> ' in Arctic (Norway)
Apr 13-1, 2010	Indonesia	Tsunami Regional Group Meeting in Banda Aceh, Indonesia
Nov. 28 – Dec 4, 2009	Matri Station, Antarctica	Review scientific activities of the Winter team and assess logistic and infrastructure requirement of the station
Oct 11-14, 2009	Paris	Ocean Round Table Conference, UNESCO
Sep 21-25, 2009	Venice, Lido Italy	Invited Talk at the Ocean Observations Conference 2009 and discussion of ocean observation program for the Indian Ocean
Sep 1-5, 2009	Geneva, Switzerland	Head of the Indian Delegation to the WMO World Climate Conference
Jun 17-21, 2009	Paris, UNESCO	Head of the Indian Delegation, IOC Assembly session
May 11-15, 2009	Manado, Indonesia	Head of the Indian Delegation, World Ocean Conference, Manado
Feb. 23-27, 2009	Perth and Melbourne Australia	Participate in GSSC XII Session at Perth; ICG/IOTWS WG V meeting and Steering Committee Meeting at Melbourne
Feb. 4-8, 2009	France	Visit to Meteo France and Meteo France International Steering Committee meeting
Nov 12-15, 2008	Bali, Indonesia	Participate in ICG/IOTWS WG V Meeting and Conf. on
Jul 3-14, 2008	Beijing, China	Participation in ISPRS Congress
Jun. 21-28, 2008	UNESCO, Paris	Participation in 40 th IOC Executive Council Meeting
Apr, 7-10, 2008	Kuala Lumpur, Malaysia	Participation in ICG/IOTWS - V
Feb. 19-20, 2008	UNESCO, Paris	Participation in IOC WG on 'Future of IOC'

Nov.29-Dec. 4, 2007	Phuket, Thailand	Organised Vth IO-GOOS Meeting, High Level Indian Ocean Panel review and Dis. With ADPC
Nov. 13-14, 2007	Kuala Lumpur, Malaysia	Invited Talk and Demonstration at ISPRS-OGC-IEEE-GEOSS Workshop on 'Earth Observation to Benefit Tsunami'
Sep. 21-24, 2007	Beijing, China	Participation in the Joint Meeting of the Inter. Soc. Of Photogrammetry and Remote Sensing Council and Commission Presidents
Jun13-28, 2007	UNESCO, Paris	Participation in the IOC EC and General Assembly Represented India in I_GOOS Meeting
Feb. 26-Mar. 2, 2007	Washington, Houston, Los Angeles, USA	Member of Indian Delegation to participate in JWG meeting on "Civil Space Cooperation " during Feb 27-28, 2007 as a representative of MoES. Also visited FSFC, Houston and JPL, Los Angeles during March 1-2, 2007
Jan. 16-18, 2007.	Qingdao, China	INCOIS representative to POGO-8 Meeting. Delivered invited talk on Fisheries and ocean observations. Chaired a session on POGO Business.
Nov. 14-17, 2006	Cape Town, S. Africa	Representing India and IO-GOOS at the 3 rd Forum of GOOS Regional Alliance Meeting
Oct. 10-12, 2006	Zanzibar, Yanzania	INCOIS representative to 4 th IO-GOOS Meeting
Jul 31- Aug 2, 2006	Bali, Indonesia	National representative to the 3 rd ICG-ITWS Meeting
Jun 2006	UNESCO, Paris	Participation in 39th IOC Executive Council Meeting
Sep 29-Oct. 1, 2005	ITC, Enschede, The Netherlands	Participation in the Joint Meeting of the Inter. Soc. Of Photogrammetry and Remote Sensing Council and Commission Presidents
Nov 22-26, 2004	Chiang Mai, Thailand	Participation in the Joint Meeting of the Inter. Soc. Of Photogrammetry and Remote Sensing Council and Commission Presidents
Jul 13-24, 2004	Istanbul, Turkey	Invited Talk, Chairing Sessions at the Inter. Soc. Of Photogrammetry and Remote Sensing Congress
Apr 26-29, 2004	Colombo, Sri Lanka	Invited Talk at the Indian Ocean - Global Ocean Observing System Workshop and 2 nd Annual Meeting
Feb. 24-26, 2003	Florence, Italy	Participated in the meeting of the International Ocean Colour Coordinating Group
Nov. 4-10, 2002	Mauritius	Invited talk at the First Conference on Indian Ocean – Global Ocean Observing System
Jan. 10-12, 2002	Villefranche, France	Participated in the meeting of the International Ocean Colour Coordinating Group
Oct. 20-29, 2001	SEAMEO IOTROP, Bogor, Indonesia	Faculty at the Training Course on 'Remote Sensing and GIS for Coastal Applications
Dec. 9-16, 2000	Asian Institute of Remote Sensing, Thailand	Faculty at the Training Course on Ocean Colour
Sep. 7-10, 1997	Rio de Janeiro, Brazil	Participation in the Joint Meeting of the Inter. Soc. Of Photogrammetry and Remote Sensing Council and Commission Presidents
Sep. 28-Oct. 6 1995	Oslo, Norway	Invited Talk at UN/IAF Workshop and participation in IAF Congress
1986	Bangladesh Space Research and Remote Sensing Organisation Dhaka Bangladesh	Participation in Regional Seminar on the Application of Remote Sensing Techniques to Coastal Zone Management and Environmental Monitoring

11. Interaction with Academic Institutions

- Paper Setter and Examiner, M. Tech. Remote Sensing, Indian Scholl of Mines, 2002.
- Member, Doctoral Committee, Anna University, Chennai
- Advisor, Designing syllabus for Geospatial Information Technology in Planning at PG level, Centre for Environmental Planning & Technology, Ahmedabad, 2002.
- Paper setter and Examiner, Pre-Ph. D., Jawaharlal Technological University, Hyderabad, 2002.
- Paper setter and Examiner for M. Sc. Environmental Science, Maharshi Dayanand Sarswati Vishwa Vidyalaya, Ajmer, 2002.
- Examiner, M. Sc. Geology, Vikram University, Ujjain, 2001.
- Examiner, Ph. D. Geology, Vikram University, Ujjain, 2000.
- Member, Board of Studies, Geology, Vikram University, Ujjain., M. S. University of Baroda.
- Examiner, M. Sc. Remote Sensing, Cochin University, 1999.
- Examiner, Ph. D. Geomorphology, Osmania University, 1998.
- Examiner, M. Sc. Remote Sensing, Berhampur University, Berhampur, 1998.
- Examiner, Ph. D. Marine Science, Berhampur University, Berhampur, 1997.
- Guide, PG Student, Coastal environment, Centre for Environmental Planning and Environment, Ahmedabad.
- Guide, M. Tech. Student, Salinity ingress along coast. L. D. Collage of Engineering, Ahmedabad.
- Examiner, M. Sc. Applied Geology, M. S. University of Baroda, Vadodara, 1989, 1990, 1991.
- Examiner, B. Sc. Geology, M. S. University of Baroda, Vadodara, 1986, 1987, 1988.

12. Recognised Ph. D. Guide

University	Subject
Berhampur University, Berhampur	Marine Science
Gujarat University, Ahmedabad	Geology-Remote Sensing
Vikram University, Ujjain	Geology
University of Pune, Pune	Geology
University of Rajasthan, Jaipur	Geology
Mangalore University, Mangalagangothri	Marine Geology & GeoinforMatics
Nima University, Ahmedabad	Geology, Earth Science

13. Number of Ph. D.s Completed

Name	Topic	Year of Award	University
Ramanuj Banerjee	Seismic Hazard Zonation Of Kachchh Area Using Remote Sensing	2009	Pune University
R. K. Sarangi	Impact of surface feature changes on phytoplankton variability in seas off southern part of the Indian peninsula: a remote sensing approach	2008	Berhampur University
A. S. Rajawat	Reconstruction, evolution and significance of paleo-drainage network in Western Rajasthan: an investigation based on multi-sensor satellite data and GIS.	2006	Vikram Uni, Ujjain
Devendra Kumar	Application of satellite-derived terrain parameters for the geomorphic and structural studies in the Jharia coal field, Jharkhand.	2006	Rajasthan University, Jaipur
Yashwant	Circulation and dispersal pattern in the Bay of	2005	Berhampur

Pradhan	Bengal – a study based on satellite derived ocean colour applications		Uni. Berhampur
B. Deshmukh	Geomorphological study of coral reefs in a part of Gulf of Kachchh using remote sensing data	2004	Vikram Uni, Ujjain

14. Invited Talks

A. International Conferences

Keynote address – 12th Asian Conference of Remote Sensing, Taipei

Managing Earth System Geospatially. Todarmal Lecture Series, XXX INCA International Congress, Dehradun. November 10, 2010

Focusing National Agenda for Stewardship of Oceans. Distinguished Lecture, Ocean Science Section, 7th Meeting of the Asia Oceania Geosciences Society, Hyderabad, India. July 7, 2010.

Earth Science and Climate Resilience: Available Methods and Data. International Workshop on Sustainable and Climate Resilience Urban Development, Integrated Research and Action for Development, New Delhi. September 9, 2010.

Remote Sensing Applications to Fisheries: Indian Initiatives to the Improvement of the Socio-economics of Fishing Communities. Inter. Symposium on Remote Sensing and Fisheries, SAFARI/GEOSS, Kochi. Feb. 15, 2010.

Antarctic Governance and Treaty Regime. Key Note Address. 7th International Conference on Legal Regime of Sea, Antarctica, Air and Space, The Indian Society of International Law. New Delhi. 16 January, 2010.

Ocean Observations to Services.
iGEON, The Geosciences, Network Cyber Infrastructure Workshop, University of Hyderabad, August 3, 2007, Hyderabad.

Ocean Data and Information Management Open Standards and interoperability.
Standards and Interoperability Map World Forum on January 25, 2007, Hyderabad, India.

Fisheries and Ocean Observations,
POGO-8 Meeting, Qingdao, China on January 18, 2007.

Early Warning System for Tsunami and Strom Surges
Application of Remote Sensing and GIS for Monitoring and Prediction of Disasters' during September 25-26, 2006.

Application of Remote Sensing for Implementation of Coastal Zone Regulations: A Case Study of India.
7th GSDI Conference, Bangalore. Feb. 2-7, 2004.

OCEANSAT II.
2nd IO-GOOS Meeting, Colombo, Sri Lanka, April 26-29, 2004.

Ocean Biology and Coastal Processes.
India-US Conference on Space Science, Applications and Commerce, Bangalore, India. June 21-25, 2004

Role of Remote Sensing in Integrated Coastal Zone Management,
Theme Session 18 on *Integrated Coastal Zone Management*, July 21, 2004. ISPRS, July, Istanbul.

Remote Sensing Applications in Fisheries.
Fish for All Summit., M. S. Swaminathan Foundation, World Fish Centre and Govt. of West Bengal, December 18, 2003.

Prospects of Remote Sensing for Monitoring Coastal and Marine Biodiversity.
Workshop on Coastal and Marine Biodiversity of the Indian Ocean. Census of Marine Life, Intergovernmental Oceanographic Commission, Partnership for the Observation of the Global Oceans, Goa, December 13, 2003.

Use of satellite data in coastal mapping.
XXII INCA International Congress on Convergence of Imagery, Information and Maps. October 30, 2002. Ahmedabad.

Monitoring of coastal regions using IRS-P3 MOS-B data.
ISRO-DLR Inter. Workshop on Environment and Remote Sensing, NRSA. Hyderabad. October 29, 1999.

B. National Conferences

Green Conclave 2011; New Delhi; October 14, 2011

National workshop on Climate Change: Polar Climate, Oceans and Monsoon;
National Centre for Antarctic & Ocean Research, Goa; September 20, 2011

National GIS workshop; India International Centre, New Delhi; September 14, 2011

Earth Sciences: New Initiatives and Future Plans. Interactive Session on 'Earth Sciences: Recent Initiatives and Future Plans. Bharat Chamber of Commerce, Kolkata. August 30, 2011.

Geospatial World, Hyderabad, January, 18, 2011

Inaugural Lecture. Indian Marine Living Resources Program. Kochi. December 2, 2010.

Earth System Science: Challenges Ahead. Indian Institute of Remote Sensing, Dehradun. November 10, 2010.

Climate Change: Issues and Consequences. Inaugural Address, M. S. University of Baroda, Vadodara. October 22, 2010.

Energy from Ocean, Energy Conclave. IIT, Gandhinagar, October 9, 2010.

Societal benefits of Earth System Science. Foundation Day Lecture, NGRI, Hyderabad. September 26, 2010.

Managing Earth Systems Geospatially. Guest Lecture. Defining Geospatial Vision for India. Map India 2010. Gurgaon, India. January 19, 2010.

Earth System Science: A Perspective. Weather, Climate and Environment, Science and Technology Challenges of 21st Century – National Perspective, 97th Science Congress, Kerala University, Thiruvananthapuram. January 5, 2010.

Earth System Science Programme. Science Programme for the Country, Science and Technology Challenges of 21st Century – National Perspective, 97th Science Congress, Kerala University, Thiruvananthapuram. January 3, 2010.

Indian Initiatives for Tsunami Warning System'
Workshop on International Science Years, INSA, New Delhi, October 3, 2007.
"Early Warning System for Tsunami

Impact of Technology on Short-term Fishery Forecast.
Annual Technical Convention on Interactive ECTs- A Focus on Rural India. The Institution of Electronics & Telecommunication Engineers, Sep. 29, 2007, Hyderabad.

Images to Ocean Information and Services,
Key Note Address at Sierra Geospatial Conference, July 13, 2007. Hyderabad.

National Seminar on Technology Based Solutions to Disaster Management. A National Security Perspective, University of Madras on 16, February 2007 at Chennai.

"Early Warning System for Tsunami"
Lecture at ISRS Chennai Chapter, Satyabhama University, Chennai on 16 February, 2007.

Impact of Episodic events & climate change on Coastal & Marine ecosystems.
Theme Session : International Year of Planet Earth; Indian Initiatives, 94th Indian Science Congress, January 03-07, 2007 at Chidambaram. January 6, 2007.

The Early Warning System for tsunami & storm surge of India. *Environmental Sciences Sectional Committee meeting, 94th Indian Science Congress, January 03-07, 2007 at Chidambaram. January 4, 2007.*

Potential Fishing Zone (PFZ) and Ocean State Forecast (OSF) advisories.
Workshop on "Space Technology Utilisation for Fisheries" Govt. of Kerala, December 09, 2006, Thiruvananthapuram.

Key-note address on Preparedness for Ocean Hazards"
National Workshop on "Disaster Preparedness Press Institute of India & Helpage ",
November 21, 2006, Delhi.

Monitoring Coastal and Marine Bio-Diversity using Remote Sensing"
National Symposium on "Marine Biodiversity Conservation and Community" GEER
Foundation, Gandhi Nagar, June 15, 2006.

Monitoring Coastal and Marine Bio-Diversity using Remote Sensing"
National Symposium on "Marine Biodiversity Conservation and Community" GEER
Foundation, Gandhi Nagar, June 15, 2006.

Planning and Management of the Indian Coast: an integrated approach
Brain Storming Session on The Coastal Zone: Planning & Management, Andhra University,
Visakhapatnam, May 22, 2006.

Application of remote sensing and GIS for coastal zone management.
ISG National Conference on Geomatics 2006, January 6, 2006.

Role of remote sensing and GIS in coastal zone management.
Panel Discussion on 'Coastal Zone Management', *93rd Indian Science Congress,*
Hyderabad. January 4, 2006.

Coastal geomorphology and habitat of the Gulf of Khambhat: Possible impact of the Kalpsar
project
Seminar on Kalpsar Dam Project, CFDA, Ahmedabad, June 25, 2005

Inventory of Coastal Wetlands- A Space Technology Perspective

ISRS Hyderabad Chapter, Hyderabad on May 19, 2005.

Preliminary Investigations for Coastal, Marine and Glacial Environments using RESOURCESAT-1 Data,
National Workshop on Remote Sensing with Resourcesat-1 (IRS-P6), October 19-20, 2004, NRSA, Hyderabad.

Advancements and Applications of Space Technology in National Development.
Inaugural Address at the One day *Awareness Workshop on Remote Sensing and GIS applications in Civil Engineering.* Manipal Institute of Technology and Indian Society of Geomatics – Mangalore Chapter, Manipal, Sep. 25, 2004.

Role of Remote Sensing for Implementation of Coastal Zone Regulations.
National Workshop on Coastal Regulation Zone , MOEF, Chennai. June 18-19, 2004.

Space Technology for Water Cycle.
Water Resources and Information Age. World Meteorological Day. Centre for Environmental Planning and Technology, India Meteorology Society – Ahmedabad Chapter, Ahmedabad. March 23, 2004.

Remote Sensing Applications for Fisheries.
XVIII Gujarat Science Congress on 'Linkage of Science, Technology and Industries, Saurashtra University, Rajkot. March 13, 2004.

Remote sensing in underwater archaeology.
National Workshop on Marine Archaeology in the Gulf off Cambay. July 1, 2002.

Input for NSDI Quality Standards.
2nd National Spatial Data Infrastructure, July 30, ISRO & DST, Ooty.

Geomatics for Earthquake mitigation.
Conference on IT enabled Spatial Data Services. September 20, ISG, Tiruchirapalli.

Space Technology for Water: Vital To Humanity.
World Space Week, October 8, 2002, AMA, Space Applications Centre Ahmedabad.

Space Technology for Water
Atyabhateeya-2002, National Seminar on "benefits of Space programme to Mankind. October 13, 2002. Swadeshi Science Movement, Thiruvananthapuram.

Monitoring of oil spill through remote sensing technology.
Oil Spill Combat and Emergency Response Plan for the Indian Coast, SPILLCOMB-2002. October 18, 2002. Gujarat Maritime Board and Dept. of Environment & Forests, Govt. of Gujarat. Ahmedabad.

Bhuj Earthquake
At the Arvind Mills, Ahmedabad on February 2, 2001.

Coastal Zone Studies
Workshop on Biodiversity Characterization in Andaman and Nicobar Islands, Port Blair, September 3, 2001.

Engineering geology and Mineral exploration.
Workshop on Commercial Applications of Remote Sensing and GIS (CARG-99).
ISRS and SAC, Ahmedabad. February 16, 1999.

Remote sensing application for coastal/oceanographic studies.

National Symp. On Remote Sensing for Natural Resources with special emphasis on Watershed Management, March 22-24, 2000. ISRS and ORSAC, Bhubaneshwar.

IRS P4 OCM Preliminary Results.
ISAC, Bangalore. May 26, 2000.

Remote Sensing for National Development.
Bharat Petroleum Corp. Ltd. Mumbai. November 17, 2000.

Remote Sensing Applications to Coastal geomorphology.
PAC-Es, DST, Nagpur, April 8, 2000.

Environmental and coastal habitat inventory in the Gulf of Kachchh using remote sensing techniques.

Workshop on ICMAM Plan for Gulf of Kachchh, DOD, Guj. F & ED, SAC, September 27, 1999.

Remote Sensing applications to coastal zones of India.
Expert Meeting on Land use/cover Change Data Development in the Coastal regions of India.
Goa, April 7-9, 1999.

C. Training Courses / Academic Institutions

Inaugural Address on "Geodatabases – Trends and Challenges"
Training Programme on "Web-based open Source GIS", GIS Development, Hyderabad, October 29, 2007.

Application of Remote Sensing and GIS in Coastal Zone Management
3rd Course on Application of Geo-informatics in Disaster Management, GSI Training Institute, May 4, 2007, Hyderabad.

Geospatial technologies for National Development.
Inaugural Address. Short-term Training program in Geospatial Technologies. NRDMS, DST, Govt. of India and J. N. Technological University, Hyderabad. February, 12, 2007.

Spatial Technologies for Marine Resources Management.
International Training Programme for Asia Pacific Countries on GIS Applications in Rural Development, NIRD, Hyderabad, October 06, 2006.

Application of RS and GIS in Coastal Zone Management.
Geological Survey of India Training Institute, Hyderabad, August 9, 2006.

Quantitative Geomorphology: Role of RS.
Short course on "Recognition of Landforms from Topographical Maps", Hyderabad University on August 20, 2006.

Remote Sensing Applications in India
Training program on 'Coastal Oceanography: Remote Sensing and GIS Applications', Andhra University, Visakhapatnam. February 11, 2006.

Water Resources
ISRO Induction Training Programme (IITP-10), Space Applications Centre, Ahmedabad. February 2, 2006.

Space technology for water cycle
ISRO Induction Training Program (IITP-08), SAC, Ahmedabad, July 21, 2005

Remote Sensing Applications in India

Course on 'Snow Cover Evaluation using Satellite Data and GIS Techniques'. SASE, Chandigarh on May 30, 2005.

Remote sensing for monitoring of water quality.

Application of GIS, RS and GPS in civil engineering. L. D. College of Engineering. Ahmedabad. November 13, 2003.

Remote Sensing – Fundamentals and remote sensing.

Kendriya Vidyalaya, Thiruvananthapuram, Oct. 31, 2003.

Fundamental and Applications of remote sensing,

Gujarat Jal Sewa Nigam Training Institute, Gandhinagar. Oct. 6, 2003.

Space Technology for Coastal Zone Management,

CEPT, Ahmedabad. October 1, 2004.

Satellite Oceanography.

National Institute of Ocean Technology, Chennai. July 21, 2003.

Coastal geomorphology

Training Course on Role of GIS and Remote Sensing, March 6 2002., CWPRS, Pune

Disaster Mitigation: Role of Remote Sensing.

International Short Course on Emerging Trends in Satellite Meteorological Applications with special reference to Microwave Remote Sensing. May 6-13, 2002. CSSTE-AP, SAC, Ahmedabad.

Coastal hazard assessment.

Geoinformatics for Environmental Assessment and Disaster Management, July 9, Indian Institute of Remote Sensing, Dehradun.

Marine, coastal and water resources.

First ISRO-wide Induction Training, August 6, SAC, Ahmedabad.

Integrated Coastal Zone Management.

At the International Training Course on "Remote Sensing of Ocean Colour: Techniques & Applications", sponsored by IOCCG, POGO and ISRO during February 12-23, 2001 at SAC.

Remote Sensing for the National Development.

At the Gujarat University, Ahmedabad, April 8, 2001.

Remote sensing applications in coastal zone management

At Department of Geo-engineering, Andhra University, Visakhapatnam on September 11, 2001.

Coastal Zone Management - Role of Remote Sensing

At the Training course on "Remote Sensing and GIS for Coastal Applications", organized by SEAMEO BIOTROP at Bogor, Indonesia, October 23, 2001.

Ocean Colour Applications.

At the Training course on "Remote Sensing and GIS for Coastal Applications", organized by SEAMEO BIOTROP at Bogor, Indonesia, October 23, 2001.

Image Interpretation.

Training Course on Application of Remote Sensing in Snow, Ice and Glacier Studies, SASE. Manali, May 1-12, 2000.

IRS P4 Data Applications in Resource Management.

Training Course on Application of Remote Sensing in Snow, Ice and Glacier Studies, SASE. Manali, May 1-12, 2000.

Remote Sensing Applications: an overview.
Tamil Nadu University participants at SAC, October 31, 2000.

Coastal Zone Management.
Refresher Course on Applied geology, M. S. University of Baroda, Dec. 20, 2000.

Remote Sensing of Coastal processes.
Refresher Course on Applied geology, M. S. University of Baroda, Dec. 20, 2000.

Remote Sensing Fundamentals.
Training Program for the Forest Officials on Applications of Remote Sensing Technology in Forest Areas.
GEER Foundation, Gandhinagar, January 28, 1999.

Role of Remote Sensing in Integrated Coastal Zone Management.
Training Program for the Forest Officials on Applications of Remote Sensing Technology in Forest Areas., GEER Foundation, Gandhinagar, January 28, 1999.

Coastal hazard assessment.
Geoinformatics for Environmental Assessment and Disaster Management, July 9, 1999.
Indian Institute of Remote Sensing, Dehradun.

Chair in International Conferences

Oceans and Monsoons, International Conference on 'Celebrating the Monsoon' IISC, July 26, 2007, Bangalore.

POGO Business, 8th POGO Meeting, Qingtao, China, January 19, 2007.

"Implementation Strategy for Coastal Module of GOOS." 3rd Regional GOOS Forum, Cape Town, South Africa, November 14-17, 2006.

Remote Sensing, 4th Annual Meeting of IO-GOOS, Zanzibar, October 10-12, 2006.

Early Warning System for various marine hazards – Present Status" at the International Conference on Marine hazards and opportunities", July 3, FICCI, Chennai.

Silver Jubilee Symposium on Antarctica Expedition, May 25-26, 2006.

Chaired following sessions in the International Society of Photogrammetry and Remote Sensing (ISPRS) XXth Congress held at Istanbul, Turkey.

- i) TS VII/3: Integrated Monitoring System for Resource Management, July 19, 2004.
- ii) PS VII/3: Integrated Monitoring System for Resource Management, July 19, 2004.
- iii) SS 1 International Committee on Remote Sensing of Environment (ICORSE) – Earth Observation Systems for Sustainable Development, July 20, 2004.
- iv) SS 12 IEEE – GRSS – Geo-scientific Information from Remote Sensing, July 20, 2004.
- v) SS 2 ICORSE – Remote Sensing of Ocean Colour, July 21, 2004.
- vi) ThS 18: Integrated Coastal Zone Management, July 21, 2004.

15. Participation in Seminars:

Chief Guest, International Seminar on Remote Sensing and Fisheries, SAFARI, CIFT, Kochi, Feb. 15, 2010.

Coastal Processes, Resources and Management. Inaugural Lecture. National Conference on Coastal Processes, Resources and Management. Centre for Earth Science Studies, Thiruvananthapuram, February, 5, 2010.

Climate Change and Coastal ecosystems. Guest of Honour, Annual Convention of the Geomatics Society of India, February 4, 2010.

Chair, Plenary Session Climate Change and Coastal ecosystems, February, 4, 2010.
Chief Secretaries Conference, Feb. 1, 2010.

International Symposium on Resource and Environmental Monitoring, ISPRS, Hyderabad, December 3-6, 2002.

Integrated Coastal Zone Management & Ocean Colour

16. Important Meetings

H. E. Mohamed Waheed, Vice President, Republic of Maldives, Feb. 20, 2010 along with Hon'ble Minister for Earth Sciences