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Research Interests

- Marine remote-sensing (specific interests in marine optics and unified, error-quantified ocean colour products).
- Data analyses and marine environmental process studies (coupled seasonal and climate-scale bio-geophysical processes occurring in the oceans, including shelf seas and coastal regions).

Experience

- Development of new algorithms and error quantified bio-optical data sets (using a novel IOP model) from Earth Observation (EO) satellites; ocean colour product qualification and blending; management of [CASIX-UoP](#) and [GlobCOLOUR](#) *in situ* bio-optical database system.
- Exploitation of satellite remote sensing data to understand the circulation and seasonal variability of surface currents in the Bay of Bengal.
- More than five years of experience in soft-coding and processing large datasets (familiar with different data type manipulation – Generic, HDF, netCDF) from satellite observations and *in situ* measurements.
- Analysis, interpretation and visualisation of field and remote sensing data and their applications in understanding regional oceanographic processes.
- Evaluation of bio-optical models (empirical) and derived bio-geophysical data products for IRS-P4 OCM sensor.
- Participation in seven cruises during the IRS-P4 OCM validation campaign; Development of conversion software for *in situ* data calibration and analysis.
- **OS, Programming languages, DB and Web scripting**
UNIX, Linux, Windows/DOS; IDL, C, UNIX shell script; PostgreSQL, MS-Access; HTML, ASP, VB and Jscript
- **Software and Instrumentation**
 - Image processing packages: ERDAS/Imagine, ENVI, PCIWorks, SeaDAS, etc.
 - Statistical software packages: SigmaPlot, SPSS, Grapher, Excel
 - GIS and Mapping tools: Surfer, Arc Info, Generic Mapping Tool, Ocean Data View
 - Optical (spectro-) radiometers, CTD, Fluorometer

Employment Record

- Current employment:
Employer: Post-doctoral Research Fellow (January 2006 till date)
[University of Plymouth](#), Plymouth, Devon, PL4 8AA, United Kingdom
- Current Responsibility: Sensor characterisation and design justification plan for ESA-GlobCOLOUR project. Assessment of various schemes to produce climate quality merged global ocean colour science datasets.
- Previous employment (2):
Employer: CASIX-Research Assistant (January 2004 to December 2005)
[University of Plymouth](#), Plymouth, Devon, PL4 8AA, United Kingdom
- Previous Responsibility (2): Model parameterisation, error quantification and improved spatial CASIX-EO data products (ocean colour) generation for assimilation into a 3D ecosystem model; NERC-CASIX/UoP bio-optical database (for *in situ* & EO) creation and maintenance (www.research.plymouth.ac.uk/casix/database); validation of COASTCHART products.
- Previous employment (1):
Employer: Junior Research Fellow (November 1999 to December 2003)
Space Applications Centre, [ISRO](#), Ahmedabad 380 015, INDIA
- Previous Responsibility (1): Principal *in situ* measurements and database management for satellite ocean colour system (supporting ISRO CAL-VAL program), algorithm development and model evaluation for IRS-P4 Ocean Colour Monitor (OCM); Satellite image

processing, analysis and interpretation for near-shore process studies;
Applications of both *in situ* and remotely sensed data to understand physical and biological aspects of coastal and marine environment.

Education/Academic background

2006 Aug: General Teaching Associates, University of Plymouth, UK

2004 Apr: Spring School in Quantitative Earth Observation and Data Assimilation, Oxford University, UK

2000-04: Ph.D. (Marine Science) Thesis titled "Circulation and dispersal patterns in the Bay of Bengal – a study based on satellite remote sensing data" from the Dept. of Marine Sciences, Berhampur University (India), in association with the Space Applications Centre (ISRO), India.

1996-98: M.Sc. (Oceanography) from Berhampur University, Orissa, India; (73.10%) [Major: *Physical Oceanography*; Electives: *Mar. Meteorology, Mar. Chemistry, Mar. Geology, Mar. Biology, Mathematics & statistics*]

1993-96: B.Sc. (Physics) from Utkal University, Orissa, India; first class in Physics honours (67.70%) with distinction [Major: *Physics*; Electives: *Mathematics, Chemistry, Electronics*]

1991-93: Higher Secondary from College of Basic Sciences & Humanities, OUAT, Orissa, India, with first division [Subjects: *Physics, Chemistry, Mathematics, Biology, English, Oriya*]

Awards/Scholarships

2006 (Sep): International Networking of Young Scientists (British Council)

2006: ESA-GlobCOLOUR Post-doctoral Research Fellowship

2004-2005: NERC-CASIX Research Assistantship.

1999-2003: ISRO-DoD (Govt. of India) Junior Research Fellowship.

1998: Top rank in MSc Oceanography.

1991-1993: National Scholarship as meritorious student in 1991 high school examination.

Symposia/Workshops/Schools

- CASIX Annual Science Meeting 2005, NOC-Southampton, Sep 20-21, 2005.
- [NERC EO Conference 2005](#), University of Portsmouth, UK, Sep 6-9, 2005.
- [AMT Data workshop](#), Plymouth Marine Laboratory, Plymouth, UK, Jul 20, 2005.
- [RSPSoc Conference - Sensing and Mapping the Marine Environment 2](#), Institute of Physics, London, UK, Apr 5, 2005.
- [NERC Earth Observation Conference 2004](#), University of Plymouth, Plymouth, UK, Jun 30-Jul01, 2004.
- [Oxford-RAL Spring School](#) in Quantitative Earth Observation and Data Assimilation, Oxford University, Oxford, UK, Mar 22-Apr 02, 2004.
- [IOGOOS-1](#), First conference of the Indian Ocean Global Ocean Observing System, Grand' Baie, Mauritius, Nov 4-9, 2002.
- [ISRS 2001](#), National symposium on Advances in Remote Sensing Technology with special emphasis on High Resolution Imagery, SAC, Ahmedabad, India, Dec 11-13, 2001.
- [IOCCG 2001](#), International Training Course on Remote Sensing of Ocean Colour: Techniques & Applications, SAC, Ahmedabad, India, Feb 12-23, 2001.
- [PORSEC 2000](#), 5th Pacific Ocean Remote Sensing Conference, NIO, Goa, India, Dec 5-8, 2000.

Membership

- The Remote Sensing and Photogrammetry Society ([RSPSoc](#))
- Geomatics Research Group ([IMS](#)), University of Plymouth
- Life Member, Indian Society of Remote Sensing ([ISRS](#))

Other activities

Journal reviewer for [Remote Sensing of Environment, Elsevier](#). (2005)

Geomatics Research Group meeting coordinator (2006).

Publications, Lecture Notes, Scientific Reports & Presentations

- 16 Tilstone GH, Shutler JD, **Pradhan Y**, Shanmugasundaram J, Groom S & Nayak S (2006) Comparison of chlorophyll-a estimates from SeaWiFS and MODIS in the Ganges-Brahmaputra delta during pre- & post- SW monsoon, (*in revision*)
- 15 McQuatters-Gollop A, Raitsos DE, Edwards M, **Pradhan Y**, Mee LD, Lavender SJ & Attrill MJ (2006) A long-term chlorophyll dataset reveals a regime shift in North Sea phytoplankton biomass unconnected to trends in nutrients, *Limnol Oceanogr*, (*accepted*)
- 14 Chauhan OS, Menezes AAA, Jayakumar S, **Pradhan Y**, Rajawat AS, Nayak SR, Bandekar G, Almeida C, Ramanamurthy MV & Subramanian BR (2006) Influence of macrotidal environment on the source 1 to sink pathways of suspended flux in Gulf of Kachchh, India- evidences from Ocean Colour Monitor (IRS P-4), *Int. J. Remote Sens.* (*accepted*)
- 13 **Pradhan Y**, Lavender SJ, Hardman-Mountford N & Aiken J (2006) Seasonal and inter-annual variability of chlorophyll-a concentration in the Mauritanian upwelling; observation of an anomalous event during 1998-99, *Deep-Sea Res Pt II*, 53, 1548-1559, doi: 10.1016/j.dsr2.2006.05.016
- 12 Raitsos DE, Lavender SJ, **Pradhan Y**, Tyrrell T, Reid PC & Edwards M (2006) Coccolithophore blooms size variation in response to the regional environment of the subarctic North Atlantic, *Limnol Oceanogr*, 51 (5), 2122-2130.
- 11 Solanki HU, **Pradhan Y**, Dwivedi RM & Nayak S (2005) Application of QuikSCAT SeaWinds data to improve remotely sensed Potential Fishing Zones (PFZs) forecast methodology: Preliminary validation results, *Indian J. Mar. Sci.*, 34 (4), 441-448.
- 10 Chauhan OS, Rajawat AS, **Pradhan Y**, Suneethi J & Nayak SR (2005) Weekly observations on dispersal and sink pathways of the terrigenous flux of the Ganga – Brahmaputra in the Bay of Bengal during NE monsoon, *Deep-Sea Res Pt II*, 52 (14-15), 2018-2030, doi: 10.1016/j.dsr2.2005.05.012.
- 9 **Pradhan Y**, Thomaskutty AV, Rajawat AS & Nayak S (2005) Improved regional algorithm to retrieve total suspended particulate matter using IRS-P4 OCM data, *J. Opt. A: Pure Appl. Opt.*, 7, 343-349, doi: 10.1088/1464-4258/7/7/012.
- 8 **Pradhan Y**, Mohan M, Sengupta D & Nayak S (2005) Radiant heating rates and surface biology during the Arabian Sea Monsoon Experiment, *J. Geophys. Eng.*, 2, 16-22, doi: 10.1088/1742-2132/2/1/003.
- 7 **Pradhan Y** (2004) Circulation and dispersal patterns in the Bay of Bengal – a study based on satellite remote sensing data, *PhD Thesis*, Space Applications Centre & Berhampur University, India, 225pp.
- 6 **Pradhan Y**, Pradhan B, Nayak SR & Mohanty PK (2004) Synergistic use of multi-satellite data in understanding ocean surface circulation in the Bay of Bengal, *Proc. International Symposium and Exhibition on Geoinformation 2004* (ISG 2004), 21-23 September 2004, PWTC, Kuala Lumpur.
- 5 **Pradhan Y**, Rajawat AS & Nayak SR (2004) Application of IRS-P4 OCM data to study the impact of tidal propagation on sediment dynamics in the Gulf of Kachchh, *Indian J. Mar. Sci.*, 33 (2), 129-137.
- 4 Prasad JS, Rajawat AS, **Pradhan Y**, Chauhan OS, & Nayak S (2002) Retrieval of Sea surface velocities using sequential Ocean Colour Monitor (OCM) data, *Proc. Indian Acad. Sci. (Earth Planet. Sci.)*, 111 (3), 189-195.
- 3 **Pradhan Y**, Rajawat AS, Thomaskutty AV, Gupta M, Nagur CRC & Nayak SR (2002) An improved regional algorithm to retrieve total suspended particulate matter using IRS-P4 OCM data, *Proc. IAPRS & SYS on Resource and Environmental monitoring*, 34 (7), 1432-1436.
- 2 Rajawat AS, **Pradhan Y** & Nayak SR (2002) Coastal processes along the Indian coast – Case studies based on synergistic use of IRS-P4 OCM and IRS-1C/1D data, *Proc. IAPRS & SYS on Resource and Environmental monitoring*, 34 (7), 1437-1442. → Rajawat et al (2005), ---, *Indian J. Mar Sci.*, 34(4), 459-472
- 1 Anuradha T, Suneethi J, Dash SK, **Pradhan Y**, Prasad JS, Rajawat AS, Nayak SR, & Chauhan OS (2000) Sediment dispersal during NE monsoon over northern Bay of Bengal: Preliminary Results using IRS-P4 OCM data, *Proc. PORSEC 2000*, 2, 813-815.

Lecture notes, Extended abstracts:

- 3 Lavender SJ, **Pradhan Y**, Pinkerton M, Moore G, & Aiken J (2006) Inter-comparison of Ocean Colour Inherent Optical Property Models and Bio-optical Algorithms: Implications for Marine Ecosystem Modelling, Ocean Optics XVIII 2006, Montréal, Quebec, Canada.
- 2 Rajawat AS, **Pradhan Y** & Nayak SR (2001) Ocean Colour Data: A tool to study Coastal Processes, Joint ISRO-IOCCG-POGO International Training Course on Remote Sensing of Ocean Colour: Techniques & Applications, Space Applications Centre, Ahmedabad, India.
- 1 Rajawat AS, **Pradhan Y** & Nayak SR (2000) Sediment Dynamics – Use of Ocean Colour Data, Pre-Conference Training during PORSEC 2000, Goa, India, pp. 29-42.

Reports:

- 4 **Pradhan Y** & Lavender SJ (2004) CASIX EO data report [v1.2].
- 3 **Pradhan Y**, Sahay A & Agrawal N (2002) IOGOOS Cruise [SK 183] Report, IRS-P4/SAC/RESA/ MWRG/ SN/19/2002, pp. 51.
- 2 **Pradhan Y**, Thomaskutty AV & Sahay A (2002) Cruise Summary Report [ST 151]: *In situ* observations for validation of satellite derived geophysical products in Case-2 waters, IRS-P4/SAC/RESA/MWRG/MSCED/TR/ 16/2002, pp. 21.
- 1 SAC team (2001) Cruise Report [SK 171]: Highlights of quick-look analysis for OCM-MOS-SeaWiFS inter-

comparison, validation, technique development for oceanic parameter retrieval and modelling of primary productivity, IRS-P4/SAC/RESA/MWRG/MSCED/15/2001, pp. 31.

Oral/Poster presentations (including co-authorship):

- 11 Lavender SJ, Pinkerton M, **Pradhan Y** & Aiken J; Inter-comparison of Ocean Colour Inherent Optical Property Models and Bio-optical Algorithms: Implications for Marine Ecosystem Modelling, NERC-EO Conference, The Edinburgh Earth Observatory, UK, 21-22 Jun 2006 [O]
- 10 Sengupta D, Bhat GS, Satheesh SK & **Pradhan Y**, Radiation; Aerosols and SST – Estimates from ARMEX observations, National workshop on **Arabian sea Monsoon Experiment (ARMEX) – Data Analysis and Modelling**, 19-21 April 2006. Cardium, NIO, India [O + Book of Abstracts]
- 9 Sengupta D, Parampil SR, Bhat GS, Murty VSN, RamesBabu V & **Pradhan Y**; Solar penetration, advection and SST evolution – ARMEX observations, National workshop on **Arabian sea Monsoon Experiment (ARMEX) – Data Analysis and Modelling**, 19-21 April 2006. Cardium, NIO, India [O + Book of Abstracts]
- 8 Raitsos DE, Lavender SJ, **Pradhan Y**, Tyrell T, Edwards M & Reid PC; [Coccolithophore Bloom Size Variation in Response to the Regional Environment of the Subarctic North Atlantic](#), Ocean Sciences Meeting 2006, Honolulu, Hawaii, 20-24 Feb 2006. [O + Eos Trans. AGU, 87(36)]
- 7 **Pradhan Y** & Lavender SJ; CASIX-UoP database, CASIX Annual Science Meeting, National Oceanographic Centre, Southampton, UK, 20-21 Sep 2005. [P]
- 6 **Pradhan Y**, Lavender SJ, Aiken J, Hardman-Mountford N & Moore GF; [Assessment of a novel IOP model for ocean surface chlorophyll mapping](#), NERC-EO Conference 2005, Portsmouth University, UK, 06-09 Sep 2005. [O]
- 5 **Pradhan Y**, Lavender SJ, Hardman-Mountford N & Aiken J; Seasonal and inter-annual variability of chlorophyll-a concentration along the north-AMT, AMT Data Workshop, Plymouth Marine Laboratory, 20 Jul 2005. [O]
- 4 Raitsos DE, Lavender SJ, Edwards M, Reid PC & **Pradhan Y**; [Development of a Prototype System for deriving maps of phytoplankton taxa: Spatial distribution of diatoms and dinoflagellates since 1950 in the North Atlantic](#), ASLO Summer meeting 2005, Santiago de Compostela, Spain, 19-24 Jun 2005. [P]
- 3 Lavender S, Aiken J, **Pradhan Y**, Hardman-Mountford N & Moore G; [Production and merging of ocean colour products: use of semi-analytical model and error products](#), NASA Ocean Color Research Team Meeting 2005, Portland, Oregon, USA, 12-14 Apr 2004. [O & P]
- 2 **Pradhan Y** & Lavender SJ; [Seasonal variability of surface chlorophyll concentrations in the NW African upwelling region](#), RSPSoc conference – Sensing and Mapping the Marine Environment 2, Institute of Physics, London, UK, 05 Apr 2005. [O]
- 1 **Pradhan et al.**; [Preliminary Results of Bio-Optical Measurements during ARMEX-II](#) (and) Sengupta et al.; [Solar penetration in warm pool thermodynamics](#), ARMEX workshop, Chennai, India, 22 Dec 2003. [O]

IT Skills

- GlobCOLOUR and CASIX-UoP *in situ* online database – curator and manager.
- LA_Depth v1.2 – GUI based application (for Windows) to apparent optical depth (D90) at 490nm and 555nm from satellite ocean colour (K490) data.
- CASIX EO data processor.
- Coding and distribution of various EO data manipulation software within the Geomatics research group.

Reference

Available upon request