



Dr. Avinash Kumar

Curriculum Vitae

National Centre for Polar and Ocean Research
Ministry of Earth Sciences, Govt. of India
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Present Position

July 2021 - **Scientist E and Scientist-in-charge (SIC)**, *International Cooperation and Scientific Social Responsibility, National Centre for Polar and Ocean Research (NCPOR), Ministry of Earth Sciences, Govt. of India, Vasco-da-Gama, Goa, India, www.ncpor.res.in.*

Past Position

July 2017 – **Scientist D**, *National Centre for Polar and Ocean Research (NCPOR), Vasco-da-Gama, Goa, India.*
June 2021
April 2013 – **Scientist C**, *National Centre for Polar and Ocean Research (NCPOR), Vasco-da-Gama, Goa, India.*
June 2017
September 2010 – April 2013 **Research Scientist B**, *National Centre for Polar and Ocean Research (NCPOR), Vasco-da-Gama, Goa, India.*

Education

2006–2012 **Doctor of Philosophy (Ph.D.)**, *in Marine Geology, Department of Marine Geology, Mangalore University Mangalagangothri - 574 199 Karnataka, India.*
2003–2005 **Master of Science (M.Sc.)**, *in Marine Geology, Cochin University of Science and Technology, Kochi, India.*
1999–2002 **Bachelor of Science (B.Sc.)**, *in Geology, Physics and Chemistry, Patna University, Bihar, India.*

Masters and pre-Ph.D. Projects

- Title : Distribution of Coastal Cliffs of Kerala, India: Their Mechanisms of Failure and Related Human Engineering Response.

- Title :Impact Assessment and Generation of Coastal Information System between Ullal and Kundapur, Karnataka.

Doctoral Thesis

Title *Morphodynamics of River, Estuary and Coastal Regions of Southern Karnataka, India: Remote Sensing and GIS Approaches*

Supervisor Professor K. S. Jayappa, Department of Marine Geology, Mangalore University Mangalagangothri - 574 199 Karnataka, India

Technical Skills (Computer)

Operating Systems: Windows, Linux and Working experience on High Performance Computing Clusters (HPC)

Languages: Python, and Linux shell script

Image processing and plotting: ERDAS Imagine, ENVI, ArcGIS, Climate Data Operator (CDO), PyFerret, MATLAB, SigmaPlot, OriginPro, ODV, Grads and NCL

Satellite Data: Good experience in GeoTiff, hdf and netcdf file format data handling

Other packages: L^AT_EX, Office (Microsoft and open)

Graphics and Designing packages: Adobe Photoshop, Adobe Illustrator, Adobe InDesign, CorelDraw, Google SketchUp

Research Experience

- Research on role of polar and ocean with respect to global climate change and studied multi- and intra-decadal variabilities of Antarctic and Arctic sea-ice and the interaction between ocean-atmosphere in a coupled mechanism.
- Study of decadal Climate variability (viz., ENSO, SAM, PDO, AO, AMO etc.) and their predictability in different models in CMIP5 (Coupled Model Inter-comparison Project Phase 5).
- Prediction modelling of Antarctic ice shelves using satellite remote sensing and numerical model.
- Worked on morphology of submarine channel-levee systems and sedimentary sources and Glacial-interglacial productivity in the Indian EEZ and Central Indian Ridge were studied.
- Worked on (i) coastal and fluvial processes and hydrodynamic modelling; (ii) generation of a coastal dynamic model for past and future shoreline prediction to improve the coastal zone management system; (iii) development of algorithm for the retrieval of suspended sediment concentration using IRS-P4 Ocean Colour Monitor data; and (iv) impact assessment of sea level rise and anthropogenic activities, on estuarine and coastal morphology.

Fellowships and Awards

- July 2021 Received the **Certificate of Merit Award by the Ministry of Earth Sciences (MoES)** on the occasion of the MoES Foundation Day on 27th July 2021. Research interests on the role of polar and ocean with respect to global climate change related studies.
- December 2020 Awarded the prestigious National Award "**ATAL VAGYAANIKA SHIKHAR SAMMAN-2020**" in the 7th Atal Award Ceremony on 24th December 2020 organized at Vigyan Bhawan, New Delhi. Received this prestigious award in the category of excellence in Science & Technology.
- April 2020 – Awarded for **Korean Polar Research Institute (KOPRI) Asian Polar Science Fellowship Program 2020 under the category of Established polar scientists** on his proposed research on “Mechanism of Changes in the Arctic Sea-ice and its Possible Connections with the Lower Latitudes Weather Patterns”.
- March 2021
- December 2019 Received **Best Paper Award** in ORAL presentation entitled "**Role of Ocean-Atmosphere Coupled Mechanism in unprecedented Decline of Arctic Sea-ice**" during the **International Symposium on 'Advances in Coastal Research with Special Reference to Indo Pacific-2019' (AdCoRe IP-2019)** during 17-19 December 2019 at National Centre for Coastal Research (NCCR), Chennai.
- April 5, 2019 Received Certificate in **Recognition and Appreciation of Outstanding Contribution for Scientifically Designing the Logo for the National Centre for Polar and Ocean Research (NCPOR)**, Goa, the award received on the NCPOR Foundation Day of April 5, 2019.
- May 2017 – Received financial grant from PICES/ICES to participate in **3rd Early Career Scientist Conference (ECS3) on Climate, Oceans and Society: Challenges and Opportunities** held in Busan, South Korea, hosted by the Korea Institute of Ocean Science and Technology (KIOST)
- June 2017
- September 2016 Received **First Prize** in ORAL Scientific presentation titled “**Role of Global Warming on Polar Sea Ice Variability**” competition held on the occasion of Hindi Saptah 2016 at NCPOR, Goa.
- September 2015 Received **Second Prize** in ORAL Scientific presentation titled “**Role of physical forces in the sea-ice variability in Antarctica**” competition held on the occasion of Hindi Saptah 2015 at NCPOR, Goa.
- April 26, 2010 – April 28, 2010 Foreign Travel Grant received from Department of Science and Technology (DST), New Delhi, India, to attend the First International Applied Geological Congress (IAGC) in Mashhad, IRAN
- October 2008 – September 2010 Senior Research Fellowship award (2008) from Council for Scientific and Industrial Research (CSIR), New Delhi, India, for proposed research work on Coastal Geomorphology and Oceanography of Southern Karnataka - A Study Based on Remote Sensing and GIS
- August 2005 – January 2008 Junior Research Fellowship award (2005) from Department of Science and Technology (DST), New Delhi, India, for the project on Impact Assessment and Generation of Coastal Information System between Ullal and Kundapur, Karnataka

Sponsored Scientific Project

2019 – 2021 Co- Investigator project entitled “Predictive Tool for Arctic Coastal Hydrodynamics and Sediment Transport” funded to Mohammad Saud Afzal (PI), Department of Civil Engineering, IIT Kharagpur by Ministry of Earth Sciences (MoES), under the of NCPOR//PACER Outreach Programme (POP) Initiative (File No:NCPOR/MoES/AS-Polar Research Proposals/2019, Project Cost: INR 47,73,600 Lakhs.)

Research Students

Students for Ph.D.

March 2019 to Till now Ms. Juhi Yadav, UGC- Senior Research Fellow, working on “Response of Ocean-climate Forcings on Sea-ice Dynamics” at National Centre for Polar and Ocean Research, Goa, India. <http://ncaor.gov.in/profiles/details/291>

July 2021 to Till now Ms. Swathi M, CSIR- Junior Research Fellow, working on “Sea ice variability over Antarctica and their response to large scale climate indices. ” at National Centre for Polar and Ocean Research, Goa, India.

Students for Dissertation

- Ms. Saniya Fazal carried out the project on “Investigation on Abrupt Decline in Winter Arctic Sea-ice Cover using Climatic Modeling and Reanalysis data” for the degree of M.Sc. in Remote Sensing and Geoinformatics from Maharshi Dayananda Saraswati University, Rajasthan, India during March 2019 to August 2019.
- Mr. Tanojit Paul carried out the project on “Multi-scale Variability of Sea Ice Retreat and Advance in the Barrent-Kara Sea” for the degree of Master of Science in Geology, Manipal Institute of Technology, Karnataka, India during May 2019 to July 2019.
- Ms. Steffie Tom carried out the project on “Study of Climate Variability in Antarctica” for the degree of Master of Engineering in Industrial automation & RF Master in Science in Geoinformatics and Remote sensing, Goa College of Engineering - Farmagudi, of Goa University during July 2017 to June 2018.
- Ms. Sushree Sangita Parida carried out her the dissertation on “Sea Ice Extent Variability and Trends of Arctic Region: Understanding the Correlation with Climatological Variables “for the degree of M. Sc. Remote Sensing and GIS, Kumaun University, Almora, Uttarakhand, during January 2018 to June 2018.
- MS. Ankita Banerjee carried out her the Summer internship on "Sea Ice Variability and Dynamics Studies of Antarctica using Advanced Remote Sensing Techniques" for the degree of M.Sc. in Geoinformatics, Birla Institute of Technology (Mesra), Ranchi during May 2018 to July 2018.
- Ms. Ribjyoti Gogoi carried out her dissertation on “Understanding the Antarctic Sea Ice Variability and Changes under Warming Atmospheric and Oceanic Conditions” for the degree of Master in Science in Geoinformatics and Remote sensing, Amity University, Noida, India during January 28, 2017 to May 26, 2017.
- Ms. Aritrika carried out her dissertation on “Changes in Coastline Morphology of Ross Island and McMurdo Ice Shelf, East Antarctica: A Study Based on Remote Sensing and Statistical Methods” for the degree of Master of Sciences in Applied Geology and

Geoinformatics, School of Earth Sciences, Department of Geology, Central University of Karnataka during Jan to May 2017.

- Ms. Aakriti Srivastava carried out her dissertation on Morphological Changes in Amery Ice Shelf, Eastern Antarctica: Insights from Remote Sensing and Statistical based Approach for the award of Degree of Master of Technology (M.Tech.) in Remote Sensing & Geographic Information Systems, affiliated from Barkatullah University, Bhopal during August 01, 2016 to January 04, 2017.
- Mr. Kiran B.S. carried out his dissertation on Coastal processes and Mangrove Distribution in the Pichavaram Region, Southeast Coast of India: Insights from Remote sensing and GIS for the award of Degree of Master of Science (M.Sc.) in Marine Geology, affiliated from Mangalore University, Mangalore during January, 2015 to May, 2015.
- Mr. S. Shivakumar carried out his dissertation on “Role of Coastal Processes on Estuarine and Shoreline Morphodynamics along Southern Coastal Karnataka, India: Insights from Remote sensing, GIS and Statistical methods” for the award of Degree of Master of Technology (M.Tech) in Geo-Technology & Geo-informatics, Bharathidasan University, Tiruchirappalli, during January, 2014 to June 2014.
- Mr. Akhil Babu carried out his Dissertation on Arctic sea-ice trends and variabilities in the last three decades for the award of Degree of Master of Technology (M.Tech.) in Geographic Information System, NIIT University, Rajasthan, during December, 2013 to June 2014.
- Mrs. Sunisha S. carried out her dissertation on Sea Ice Trend Variability Analysis and Modeling of Sea Ice Motion using Remote Sensing & GIS for the award of Degree of Master of Technology (M.Tech.) in Computer and Information Science, Sarabhai Institute of Science & Technology, Trivandrum, affiliated from Cochin University of Science & Technology, Kerala during August, 2013 to March, 2014.
- Ms. S. Janani, B.Tech. in Geoinformatics and Geotechnology, Centre for Remote Sensing, Bharathidasan University for one and a half months summer training on “Antarctic Sea Ice extent Studies using GIS techniques” during June to July, 2013.

Expedition

- December 19, 2015 to April 1, 2016 Participated in the 35th Indian Scientific Expedition to Antarctica for in-situ oceanographic and aerial photographic data between Bharati and Maitri. In this expedition Aerial/field reconnaissance study was carried out to understand the ice shelf morphology and changes along the coastal regions East Antarctica
- November 5, 2012 to January 17, 2013 As a **Chief Scientist** onboard ORV Sagar Kanya SK-301 Cruise on Hydrothermal Studies: Exploration of Seafloor Massive Sulfide Hydrothermal Deposits along the Central Indian Ridge
- January 2 to January 31, 2012 As a **Deputy Chief Scientist** of cruise No. SK-292 onboard ORV SagarKanya for 29-days. I have significantly contributed in the multi-beam bathymetry data acquisition and processing activities as well as gravity core collection along Laccadive region of Arabian Sea

- March 5, 2011 to April 3, 2011 ORV Sagar Kanya (SK-282) cruise for bathymetry survey using multi-beam echo sounder, side-scan SONAR as well as gravity core collection along off Andaman region of Bay of Bengal
- April 17, 2009 to May 1, 2009 ORV Sagar Kanya (SK-258) cruise to study the role of Trichodesmium blooms in modulating the nitrogen biogeochemistry in the Arabian Sea during the inter-monsoon period

Conference & Seminar Organized

- August 01-10, 2022 Working as a Member of SCAR 2022 Coordination Committee to organise **10th SCAR Open Science Conference (SCAR 2022)** to be held in Virtual mode organised by MoES-NCPOR, Goa.
- August 12-14, 2021 As a Co-convenor, organised **Seventh National Conference of the Ocean Society of India (OSICON-21)** at National Centre for Polar and Ocean Research, Goa India
- August 20-22, 2019 As a Convenor organised “**National Conference on Polar Sciences (NCPS-2019)**” for the university professors, scientists and “**Young Polar Scientist Meet (YPSM)**” for young research scholars at National Centre for Polar and Ocean Research, Goa, India
- November 19-20, 2018 Associated with arrangement and coordination on **Indo-European polar science collaboration H2020 call on Arctic: Indo-European meeting** held at ESSO-NCPOR to explore and share their experiences and upcoming opportunities
- October 28 to November 2, 2018 Associated as an organising committee member and conducted the **Winter School on “The Arctic Ocean: atmosphere, ice and ocean interactions – implications for future climate and human activities”** held at ESSO-NCPOR
- May 16-17, 2017 Convened a Conference on “**National Conference on Polar Sciences (NCPS-2017)**” for the university professors, scientists and research scholars at National Centre for Polar and Ocean Research, Goa India

Editor in Journal Special Issue

- Avinash Kumar, Managing Editor (2021) in a special issue title “**Polar Studies - Window to the Changing Earth**” in **Polar Science Elsevier journal**, Volume 30, December 2021. The special issue is edited by Guest Editors: Avinash Kumar, NCPOR India; John Turner, BAS, UK; K.P Krishnan, NCPOR; Naresh Chandra Pant, Delhi University, India; Rahul Mohan, NCPOR; Satoshi Imura, National Institute of Polar Research (NIPR), Japan; Seong-Joong Kim, Korea Polar Research Institute (KOPRI), South Korea. <https://www.sciencedirect.com/journal/polar-science/vol/30/suppl/C>

Editor in Journal

- Avinash Kumar, Member of Editorial Board in **American Journal of Environmental Science and Engineering** <https://www.sciencepublishinggroup.com/journal/>

[index?journalid=529](#)

Publications

Google Scholar Profile: https://scholar.google.co.in/citations?user=J7G_7WcAAAAJ&hl=en

ORCID (Open Researcher and Contributor ID): [0000-0002-6511-8435](#)

Publication Statistics

Citation indices	(as on September, 2022)
Citations	808 (as per Google Scholar)
h-index	16 (as per Google Scholar)
i10-index	19 (as per Google Scholar)

Peer-reviewed Journals

1. Juhi Yadav **Avinash Kumar**, Aakriti Srivastava, Rahul Mohan, (2022). Sea ice Variability and Trends in the Indian Ocean Sector of Antarctica: Interaction with ENSO and SAM *Environmental Research* Volume 212, Part D: 113481 <https://doi.org/10.1016/j.envres.2022.113481> (Impact Factor: 8.431)
2. **Avinash Kumar**, Imura S, Kim S J, Krishnan K P, Mohan R, Pant N C and Turner J (2021). Polar Studies - Window to the changing Earth *Polar Science* Volume 30: 100767 <https://doi.org/10.1016/j.polar.2021.100767> (Impact Factor: 2.35)
3. Ravindran, S, V. Pant, A. K. Mitra and **Avinash Kumar** (2021). Spatio-temporal variability of sea-ice and ocean parameters over the Arctic Ocean in response to a warming climate, *Polar Science* Volume 30: 100721 <https://doi.org/10.1016/j.polar.2021.100721> (Impact Factor: 2.35)
4. Shetye S S, Mohan R, Patil S and **Avinash Kumar** (2021). Diatom distribution in the Enderby Basin, East Antarctica, *Polar Science* Volume 30: 100748 <https://doi.org/10.1016/j.polar.2021.100721> (Impact Factor: 2.35)
5. Islam M A, Lubbad R, Amiri S A G, Isaev V, Shevchuk Y, Uvarova A V, Afzal M S and **Avinash Kumar** (2021). Modelling the seasonal variations of soil temperatures in the Arctic coasts, *Polar Science* 30 100732 <https://doi.org/10.1016/j.polar.2021.100732> (Impact Factor: 2.35)
6. Lathika, N., Rahaman, W., Tarique, M., Gandhi, N., **Avinash Kumar** and Thamban, M., (2021). Deep water circulation in the Arabian Sea during the last glacial cycle: Implications for paleo-redox condition, carbon sink and atmospheric CO2 variability, *Quaternary Science Reviews*, Volume 257: 106853. <https://doi.org/10.1016/j.quascirev.2021.106853> (Impact Factor: 4.456)
7. **Avinash Kumar**, Juhi Yadav, and Rahul Mohan (2021). Seasonal sea-ice variability and its trend in the Weddell Sea sector of West Antarctica, *Environmental Research Letters* Volume 16, Issue 2 <https://doi.org/10.1088/1748-9326/abdc88>(Impact Factor: 6.947)
8. **Avinash Kumar**, Juhi Yadav, and Rahul Mohan (2021). Spatio-temporal change

and variability of Barents-Kara sea ice, in the Arctic: Ocean and atmospheric implications, *Science of The Total Environment*, Elsevier Publications, Volume 753: Page 1-11 <https://doi.org/10.1016/j.scitotenv.2020.142046> (Impact Factor: 10.75)

9. **Avinash Kumar**, Juhi Yadav, and Rahul Mohan (2020). Global warming leading to alarming recession of Arctic sea-ice cover: Insights from Remote Sensing observations and model reanalysis, *Heliyon*, Elsevier Publications, Volume 6: e04355 <https://doi.org/10.1016/j.heliyon.2020.e04355> (Impact Factor: 3.776)
10. **Avinash Kumar**, Aakriti Srivastava, Juhi Yadav, and Rahul Mohan (2020). Spatio-temporal changes and prediction of Amery ice shelf, East Antarctica: A remote sensing and statistics-based approach, *Journal of Environmental Management*, Elsevier Publications, Volume 267, Pages 1-25 <https://doi.org/10.1016/j.jenvman.2020.110648> (Impact Factor: 8.91)
11. Juhi Yadav, **Avinash Kumar**, and Rahul Mohan (2020). Dramatic decline of arctic sea-ice linked to global warming *Natural Hazard*, Springer Publications, Pages, 8-11 <https://doi.org/10.1007/s11069-020-04064-y> (Impact Factor: 3.158)
12. Mohan, R., Roy, S.K., Meloth, T., Anilkumar, N., Krishnan, K.P., Sabu, P., **Avinash Kumar**, B S, M., Patil, S.M., Venkatachalam, S., Pant, N.C., (2020). Recent Indian contributions from the polar realm, *Proc. Indian Natl. Sci. Acad.* Volume 86, Issue 1, Pages 569–583. <https://doi.org/10.16943/ptinsa/2020/49806>
13. Swati N, **Avinash Kumar**, and Rahul Mohan (2019) Towards Polar Research: Enthusing India's young minds, *Geography and You*, 19(16):44-48.
14. Jena B, **Avinash Kumar**, Ravichandran M and Stefan Kern (2018) Mechanism of sea-ice expansion in the Indian Ocean sector of Antarctica: Insights from satellite observation and model reanalysis, *PLOS ONE*, 13(10) <https://doi.org/10.1371/journal.pone.0203222> (Impact Factor: 3.752)
15. Singh S.M, **Avinash Kumar**, Sharma P., Mulik R.U., Upadhyay A.K., Ravindra R. (2017) Elemental variations in glacier cryoconites of Indian Himalaya and Spitsbergen, Arctic, *Geoscience Frontiers*, Volume 8, Issue 6, Pages 1339-1347 (Impact Factor: 7.483)
16. **Avinash Kumar**, Kurian P.J., Warriar A.K., Shankar R., Vineesh T.C. and Ravindra R. (2016) Sedimentary sources and processes in the eastern Arabian Sea: Insights from environmental magnetism, geochemistry and clay mineralogy, *Geoscience Frontiers*, Volume 7, Issue 2, Pages 253–264 (Impact Factor: 7.483)
17. Jena B., Kurian P.J., and **Avinash Kumar** (2016) Morphology of submarine channel-levee systems in the eastern Bay of Bengal near Andaman region, *Journal of Coastal Conservation* Volume 20, Issue 3, Pages 211–220 (Impact Factor: 2.098)
18. **Avinash Kumar**, Manjunatha B.R. and Kurian P.J. (2015) Glacial-interglacial productivity contrasts along the eastern Arabian Sea: Dominance of convective mixing over upwelling, *Geoscience Frontiers* Volume 6, Issue 6, Pages 913 –925 (Impact Factor: 7.483)
19. Manjunatha B.R., Balakrishna K., Krishnakumar K.N., Manjunatha H.V., **Avinash Kumar**, Mulemane A.C. and Krishna K.M. (2015) Increasing trend of rainfall over Agumbe, Western Ghats, India in the scenario of global warming, *The Open Oceanography* Volume 8, 39–44

20. **Avinash Kumar**, Deepika, B. and Jayappa, K.S. (2014) Basin geomorphology and drainage morphometry parameters used as indicators for Groundwater prospect: Insight from Geographical Information System (GIS) technique, *Journal of Earth Science* Volume 25, Issue 6, pp 1018–1032 (Impact Factor: 2.433)
21. Deepika, B., **Avinash Kumar**, K.S. Jayappa (2014) Impact of estuarine processes and hydro-meteorological forcing on landform changes: a remote sensing, GIS and statistical approach, *Arabian Journal Geosciences, Springer Publications* Volume 8, Issue 2, pp 711–726 (Impact Factor: 1.827)
22. B. Jena, Sahu, S., **Avinash Kumar** and Swain, D. (2013) Observation of oligotrophic gyre variability in the south Indian Ocean: Environmental forcing and biological response, *Deep Sea Research-I, Elsevier Publications* Volume 80. pp 1–10 (Impact Factor: 3.11)
23. **Avinash Kumar**, Jayappa, K.S. and Deepika, B. (2013) Evolution of spit morphology: a case study using a remote sensing and statistical based approach *Journal of Coastal Conservation, Springer Publications* Volume 17, Issue 3, pp 327–337 (Impact Factor: 2.098)
24. Deepika, B., **Avinash Kumar** and Jayappa, K.S. (2013) Integration of hydrological factors and demarcation of groundwater prospect zones: insights from remote sensing and GIS techniques, *Environmental Earth Sciences, Springer Publications* Volume 70, Issue 3, pp 1319–1338 (Impact Factor: 3.119)
25. Deepika, B., **Avinash Kumar** and Jayappa, K.S. (2013) Shoreline change rate estimation and its forecast: remote sensing, geographical information system and statistics-based approach, *International Journal of Environmental Science and Technology, Springer Publications* Volume 11, Issue 2, pp 395–416 (Impact Factor: 3.519)
26. **Avinash Kumar**, Jena, B., Vinaya, M.S., Jayappa, K.S. Narayana A.C. and GanagadhraBhat, H. (2012) Regionally tuned algorithm to study the seasonal variation of suspended sediment concentration using IRS-P4 Ocean Color Monitor data, *The Egyptian Journal of Remote Sensing and Space Sciences, Elsevier Publications* Volume 15, pp. 67–81 (Impact Factor: 6.939)
27. Jena, B., Swain, D. and **Avinash Kumar** (2012) Investigation of the biophysical processes over the oligotrophic waters of South Indian Ocean subtropical gyre, triggered by cyclone Edzani, *International Journal of Applied Earth Observation and Geoinformation, Elsevier Publications* Volume 18, pp. 49–56 (Impact Factor: 7.672)
28. **Avinash Kumar**, Jayappa, K.S. and Vethamony, P. (2012) Evolution of Swarna Estuary and Its Impact on Braided Islands and Estuarine Banks, Southwest Coast of India, *Environmental Earth Sciences, Springer Publications* Volume 65, pp.835–848 (Impact Factor: 3.119)
29. **Avinash Kumar**, Jayappa, K.S. and Deepika, B. (2011) Prioritisation of Sub-basins Based on Geomorphology and Morphometric Analysis Using Remote Sensing and Geographic Information System (GIS) Techniques, *Geocarto International, Taylor and Francis Publications* Volume 26, pp. 569–592 (Impact Factor: 3.45)
30. **Avinash Kumar**, Narayana, A.C. and Jayappa, K.S. (2010) Shoreline Change Analysis and Spit Morphology of the Southern Karnataka Coast, India: A Remote Sensing and Statistics Based Approach, *Geomorphology, Elsevier Publications* Volume 120, p. 133–152 (Impact Factor: 4.406)
31. **Avinash Kumar**, K.S. Jayappa and Deepika B. (2010) Application of Remote Sensing

and GIS in Change Detection of the Netravati and Gurpur River Channels, Karnataka, India, *Geocarto International, Taylor and Francis Publications* Volume 25, p. 397–425 (Impact Factor: 3.45)

32. **Avinash Kumar** and Jayappa, K.S.(2009) Long and Short-term Shoreline Changes along Mangalore Coast, India, *International Journal of Environmental Research* Volume 3, No. 2, p. 177–188 (Impact Factor:2.03)
33. **Avinash Kumar**, Seralathan, P. and Jayappa, K.S. (2009) Distribution of Coastal Cliffs of Kerala, India: Their Mechanisms of Failure and Related Human Engineering Response, *Environmental Geology, Springer Publications* Volume 58, p. 815–832 (Impact Factor:1.7)
34. **Avinash Kumar** (2008) Photographs showing unique coastal landforms under Coastal Photograph Section, *Journal of Coastal Research* 24(5):1217–1228 (Impact Factor:1)
35. **Avinash Kumar** (2008) Hyperspectral Remote Sensing, *Current Science* Volume 94, No.9, p.1115–1116 (Impact Factor:1.12)
36. **Avinash Kumar** (2007) Risk Assessment of Multi Hazards along Indian Coasts, *Current Science* Volume 97, 897p, p.1115–1116 (Impact Factor: 1.12)
37. Jayappa, K.S., **Avinash Kumar** and Vijaya Kumar, G.T. (2006) Littoral Sediment Transport and Textural Characteristics of Beach Sediments along Dakshina Kannada District, Karnataka, *Journal of Indian Association of Sedimentologists* Volume 25, pp. 29–35 (Impact Factor:0.8)

Chapters in Books :

1. Swathi M., Juhi Yadav, **Avinash Kumar** and Mohan R (2022). Antarctic Sea ice Variability and Trends Over the Last Four Decades. *Chapter 11 in a Book titled “Advances in Remote Sensing Technology and The Three Poles” (ISBN: 9781119787723)* Published by Wiley (in press)
2. **Avinash Kumar** , Yadav J, Srivastava R and Mohan R (2021). Arctic sea ice variability and trends in the last four decades: role of ocean-atmospheric forcing *Understanding Present and Past Arctic Environments* ed N Khare (Amsterdam, Netherlands: Elsevier Inc.) pp 301–24 <https://doi.org/10.1016/B978-0-12-822869-2.00010-4>
3. **Avinash Kumar** and Jayappa K.S. (2009). Coastal Erosion in Dakshina Kannada and Udupi Districts, Karnataka – Implications on Effective Coastal Zone Management, a chapter in book titled *Geohazards: Causes, Consequences and Containment*, New India Publishers, New Delhi, p201-218.
4. Jayappa, K.S. Vijaya Kumar, G.T and **Avinash Kumar** (2009). Evolution of Coastal Landforms, Southern Karnataka: A Remote Sensing Approach. A chapter in book titled *Coastal Environments – Problems and Perspective*, IK International Publishing House Pvt. Ltd., New Delhi, p.79-95.

Chapters in Proceeding Volumes :

1. **Avinash Kumar**, K. S. Jayappa, B. Deepika and A. C. Dinesh (2010). Hydrological-drainage analysis for evaluation of groundwater potential in a watershed basin of southern Karnataka, India: A remote sensing and GIS approach, 2010, Proc. the First International Applied Geological Congress (IAGC), April 26-28, 2010, Department of Geology, Islamic Azad University – Mashhad Branch, Mashhad, IRAN, Vol. 1. pp. 607-612.

2. K. S. Jayappa, **Avinash Kumar** and Deepika B (2010). “Evolution of Spits and Estuarine mouths, Southern Karnataka: A Remote Sensing Approach”, Proc. Nat. Conf. Coastal Processes, Resources and Management, 5-7 February 2010, CESS, Thiruvananthapuram, p. 275-279.
3. Jayappa, K.S., **Avinash Kumar** and Deepika, B. (2008) “Revolution of Technology in Earth Sciences Studies” In: Swadeshi Vijnana Andolana, Karnataka publication, pp.139-143. (In regional language of Kannada).
4. **Avinash Kumar** and Jayappa, K. S. (2007). “Applications of Remote Sensing and GIS for Coastal and Ocean Environmental Impact Assessment – A Few Case Studies”, Proc. Nat. Conf. Harbour and Ocean Engineering, 12-14 December 2007, NITK, Surathkal, p. 432-440.
5. Jayappa, K. S. and **Avinash Kumar** (2007). “Environmental Issues Pertaining to Coastal Zone Management of Southern Karnataka Coast”, Proc. Nat. Conf. Harbour and Ocean Engineering, 12-14 December 2007, NITK, Surathkal, p. 754-760.

Reviewers of the Journals

- Arabian Journal of Geosciences (Springer)
- Environmental Earth Science (Springer)
- Environmental Research Letters (IOP)
- Geocarto International (Taylor & Francis)
- Geomorphology (Elsevier)
- ISPRS Journal of Photogrammetry and Remote Sensing (Elsevier)
- Journal of Coastal Research (JSTOR)
- Journal of Environmental Management (Elsevier)
- Journal of Integrative Agriculture (Elsevier)
- Journal of Geophysical Research (AGU)
- Journal of the Indian Society of Remote Sensing (Springer)
- Nature Communication (Springer Nature’s)
- Nature Communications earth & environment (Springer Nature’s)
- Regional Studies in Marine Science (Elsevier)
- Remote Sensing Applications: Society and Environment (Elsevier)
- Science of the Total Environment (Elsevier)
- The Egyptian Journal of Remote Sensing and Space Sciences (Elsevier)

Scientific Reports

- As a Chairman and member of the Editorial Committee of “NCPOR Annual Report 2013-14; 2014-15; 2015-16; 2016-2017; 2017-2018; and 2018-2019”, the reports were compiled, edited, and cover page and text setting layout designed for final printing.
- Associated with compiling the Scientific Report of 29th Indian Antarctic Expedition at present in press and proof reading.
- Worked during preparation of Bid Proposal for XXXVII SCAR Delegates Meeting and Open Science Conference SCAR 2022

Delivered Invited Talks and Lectures

- Delivered an invited talk on “India’s initiatives on Polar Research: Sea-ice in Changing Climate”, at **Zoological Survey of India, Port Blair** on 24th Feb 2022 as a part of Vigyan Sarvatra Pujyate aligned with AmritMahotsav
- Delivered an invited talk entitled ‘Sea ice in the warming world’ to the students and general public at **Goa University** on 27th Feb 2022 as a part of weeklong celebration of Vigyan Sarvatra Pujate organized by Goa University.
- Presented on "Sea-ice variability and its trend in the eastern sectors of Antarctica: Role of ocean-atmospheric forcing" in the **Asian Forum for Polar Sciences (AFoPS) Science Symposium 2021** 'Scientific projects for future collaborations' held on 3rd March 2021 through virtual platform.
- Delivered an online invited talk 'Advancements in Polar Research: Role of Global Warming in Climate Change through Space' organised by **Rotary Club** Panaji meeting on 22nd July 2020.
- Presented on the title “**Outreach Activities at NCPOR and Future Plans**” in the meeting on Augment and strengthen the outreach activities of MoES and its aided Institutes on 13th February 2020 at MoES, New Delhi.
- Delivered an **Invited Popular Science Lecture** entitled ‘Impact of Global Climate Change on Polar Regions’ during Science Film Festival of India (SciFFI) 2020 from 17 January, 2020 at ESG Complex, Panaji, Goa.
- Attended **Asian Forum for Polar Sciences (AFoPS) Annual General Meeting 2019** held at NIPR, Tachikawa, Tokyo-Japan from 30th October to 1st November 2019. Presented the NCPOR work on “India’s initiatives on Arctic research: A case study on the accelerated decline in the Arctic Sea-ice cover”
- Delivered an **Invited Talk** on titled. An Accelerated decline in the Arctic sea ice cover: A record minimum in Summer 2018" in the 5th Conference on “Science and Geopolitics of Himalaya, Arctic & Antarctic (SaGHAA 5) held from 26-27 February, 2019 in New Delhi, India.
- Delivered a **Lecture** on “Advancement of Polar Remote Sensing and Applications” for the M.Sc. students from Department of Physical Oceanography, Kerala University of Fisheries and Ocean Studies (KUFOS), and M.Sc. students from Department of Geo-informatics, BITS, Mesra Ranchi on 22.02.2019.
- Delivered a **Lecture** on “Application of remote sensing with special reference to Polar Regions” to about 75 students of M.Sc. / M.A. III semester including faculty members from the Department of Geography, Banaras Hindu University visited NCPOR on 10.01.2019.
- Delivered an **Invited Popular Science Lecture** entitled ‘Sea Ice interaction in Global Climate change’ during Science Film Festival of India (SciFFI) 2019 from 16-19 January, 2019 at ESG Complex, Panaji, Goa
- Delivered an **Invited Lecture** on "Global Warming and Climate Change: Achievement in Polar research in India” at Department of Geology, Patna Science College, Patna University, Patna on 17th July 2018.
- As a **Chief Guest and Resource Person Delivered Plenary Lecture** on "Geomorphology and Sea Ice Dynamics of Polar Regions using Remote sensing, GIS and

field-based Observations” for the two-day national workshop on “Applications of Remote Sensing & GIS in Civil Engineering” during May 3-4, 2018 at AJ Institute of Engineering & Technology (AJIET), Mangalore, Karnataka.

- Delivered an **Invited Popular Science Lecture** on "Virtual tour to an Ice Continent: Understanding the Global warming and climate Change through Space" at the Goa Science Centre and Planetarium, Panjim sponsored by the Department of Science, Technology & Environment, Govt. of Goa on February 25, 2017.
- Delivered a **Lecture** on “Understanding the Earth Surface Processes through Space” during the celebration of First Decade Function and Foundation Day of Ministry of Earth Sciences on July 28, 2016 at NCAOR, Goa.
- Delivered an **Invited Talk** Dynamic Coastal processes and affecting mangrove shorelines of Sundarban and Pichavaram on 4th Meeting of the National Working Group (NWG) of IGCP project-588 on ‘Preparing for Coastal Change’ held on April 23, 2014 at GSI, Mangalore.
- Delivered an **Invited Lecture** on “Promoting Good Governance – Positive Contribution of Vigilance.” In the occasion of Vigilance Awareness Week, at NCAOR on 31st October, 2013.

NCPOR International Cooperation and Outreach Work

- As a Scientist-in-charge of the group coordinating all the outreach activities of different research programmes of NCPOR
- Coordinated in Science Fiesta 2019 from February 26–28, 2019 at Goa Science Centre and Planetarium, Panaji to set-up the NCPOR activities stall and inter-school Quiz Competitions.
- Coordinated the Antarctica Day 2018 celebration programme (Flash Presentation Competition for young researchers) on December 3, 2018 at NCPOR.
- Participated in the Young Scientist Conclave in IISF- 2018 and exhibited the NCPOR Scientific activities to the public at Lucknow from October 5 to 8, 2018.
- Organised ‘One day Seminar’ under the aegis of Indian International Science Festival (IISF) on September 7, 2018 at the Auditorium Hall, NCAOR as a part of an outreach programme under the aegis of IISF-2018. Highlights: a) Essay Competition for Schools and College students; b) Live interaction with scientists at Himadari, Svalbard; c) Interactive session with NCPOR scientists.
- Organized three days workshop on "The Art and Craft of Science Media Outreach" conducted by Mr. Peter Spinks, an acclaimed communicator and broadcaster from Australia from April 12-15, 2018.
- Associated with arrangement and coordination of preparatory level activity for 36th IGC 2020, A two days Regional Brainstorming Session (BSS) entitled "36th IGC: A Unique Opportunity for advancement in Geo-sciences" was conducted at NCPOR, Goa during August 17-18, 2017.

Training Programs Attended

- Two-weeks special course on “Microwave Remote Sensing Applications” held during 17th to 30th September 2014 at NRSC Hyderabad, India.
- Five-days training-workshop on "Application of statistical tools in polar and ocean sciences" held during 8-12 December 2014 at NCAOR, GOA, India.
- On-site training on the “Ground Penetrating Radar (GPR) data acquisition and processing” arranged by Cryosphere group NCAOR and held during December 15-20, 2014, at Kullu/Manali, Uttarakhand, India.
- Two Weeks Special Course under RISAT-UP Programme of ISRO titled “Principles and Applications of Radar Remote Sensing with Emphasis on RISAT-1 Data Utilization” during September 02-13, 2013 at IIRS, Dehradun, India.
- Five-days Caris HIPS & SIPS Multi-beam data processing training programme at NCAOR (2011) and learned many techniques to evaluate and process the various bathymetric data acquired by different acquisition system.
- Thirteen-days NNRMS-ISRO sponsored National Training Programme on Hyperspectral Remote Sensing and Object-Oriented Image Analysis organized by Department of Earth Science, Annamalai University from 17-29 December, 2008.
- Two-weeks training programme on Coastal Oceanography: Remote Sensing & GIS Applications organized by Center for Studies on Bay of Bengal, Andhra University, Visakhapatnam from 29th January – 10th February 2007.
- Ten-weeks course on Application of Remote Sensing and GIS for Mineral Exploration (GSI-ISRO collaborative programme under NNRMS) conducted by the Geological Survey of India Training Institute, Hyderabad from 18th January to 29th March 2006.

Presentations at National & International Conferences/ Symposiums/ Seminars

1. **Avinash Kumar**, Juhi Yadav and Rahul Mohan (2020) “Accelerated decline of the Arctic sea-ice associated to the global climate change" during the International Virtual Conference on Earth’s Changing Climate: Past, Present & Future during October 15-17, 2020 organized by Society of Earth Scientists.
2. **Avinash Kumar**, Juhi Yadav and Rahul Mohan (2019) “Role of Ocean-Atmosphere Coupled Mechanism in unprecedented Decline of Arctic Sea-ice" during the International Symposium on 'Advances in Coastal Research with Special Reference to Indo Pacific-2019' (AdCoRe IP-2019) during December 17-19 2019 at National Centre for Coastal Research (NCCR), Chennai.
3. **Avinash Kumar**, Aakriti Srivastava, Juhi Yadav, Rahul Mohan (2019) “Recent morphodynamical changes and forecast of Amery ice shelf, Eastern Antarctica” in the 6th Biennial Conference OSICON-19 during 12-14th December 2019 at CMLRE, Kochi.
4. **Avinash Kumar**, Babula Jena, Rahul Mohan, M Ravichandran (2018). "Morphodynamical Changes and Predictions of Amery Ice Shelf, Eastern Antarctica" in the POLAR-2018 Open Science Conference at SCAR/IASC Open Science Conference was held from 19th-23rd June 2018 in Davos, Switzerland.
5. **Avinash Kumar** and Aakriti S. (2017). “Coastline change rate estimation and forecast of Amery ice shelf, Eastern Antarctica: A remote sensing and statistics-based approach”.

In PICES/ICES 3rd Early Career Scientist Conference (ECS3) on Climate, Oceans and Society: Challenges and Opportunities conference was held from 30 May – 2 June 2017 in Busan, South Korea.

6. **Avinash Kumar**, Waliur Rahaman and Alvarinho J. Luis (2017). Recent Antarctic sea ice variability and trends: Nonlinear response to the ocean climate forcings. In PICES/ICES 3rd Early Career Scientist Conference (ECS3) on Climate, Oceans and Society: Challenges and Opportunities conference was held from 30 May – 2 June 2017 in Busan, South Korea.
7. **Avinash Kumar** and A. J. Luis (2015). Antarctic sea ice variability and trends in the context to physical forcing” by for the session “New Frontiers in Remote Sensing in Antarctic Earth Sciences: Cross-disciplinary advances” in the XII International Symposium on Antarctic Earth Sciences (ISAES 2015) held at Goa during 13-17th July 2015.
8. Deepika B., **Avinash Kumar**, and Jayappa, K.S. (2011). Shoreline change rate estimation and prediction of future position of Udupi coast, Karnataka using GIS technique and statistical method. 24th Indian Institute of Geomorphologists and National Conference on Coastal Dynamics and Geomorphology, 19-22 October 2011, Department of Geology, Anna University, Chennai, p.34.
9. **Avinash Kumar**, Jayappa K. S., Deepika B. and Dinesh A. C. (2010) “Hydrological-drainage analysis for evaluation of groundwater potential in a watershed basin of southern Karnataka, India: A remote sensing and GIS approach” The First International Applied Geological Congress (IAGC), April 26-28, 2010, Department of Geology, Islamic Azad University – Mashhad Branch, Mashhad, IRAN, Volume 1 . pp. 607-612.
10. Jayappa K. S., **Avinash Kumar** and Deepika B. (2010). “Evolution of Spits and Estuarine mouths, Southern Karnataka: A Remote Sensing Approach”, Nat. Conf. Coastal Processes, Resources and Management, 5-7 February 2010, CESS, Thiruvananthapuram, pp. 275-279.
11. **Avinash Kumar**, Jayappa K. S. and Deepika B. (2009) “Coastal Morphodynamics and Evolution of the Swarna Estuary, Southwest Coast of India: A Geomatics Approach” National Conference on Geospatial Technologies, Geomatrix '09, Abstract Volume , IIT, Bombay, Mumbai, pp. 50-51.
12. Jayappa, K. S. and **Avinash Kumar** (2009) “A Study on Coastal/Estuarine Morphodynamics and Flood prediction model of the Swarna Estuary, Southwest Coast of India, National Workshop on Present and Future Trends in Marine Geology and Geophysics, Abstract Volume , Ocean and Atmospheric Science and Technology Cell, Mangalore University, pp. 33-34
13. **Avinash Kumar** and Jayappa, K. S. (2008) “Applications of Space-Borne Data in Generation of Costal Zone Information – A Case Study from Southern Karnataka” in National Symposium on Advances in recent Remote Sensing Technology and Application with Special Emphasis on Microwave Remote Sensing organized by Indian Society of Remote Sensing, Dehradun during December 18-20, 2008 at Ahmedabad. Abstract Volume pp 41-42.
14. Jayappa, K. S., **Avinash Kumar** and Deepika. B. (2008). Evolution and major issues of Kudrus in Netravati-Gurpur Estuaries, Karnataka, National Seminar on Konkan Coast DEED (Dynamics, Evolution, Ecosystem and Development), Abstract Volume,

Department of Geology, G. S. Science college, Belgaum, 16p.

15. Jayappa, K. S., **Avinash Kumar** and Deepika B. (2008) “Revolution of Technology in Earth Sciences Studies” 4th Kannada VijnanaSammelana, Abstract Volume , Vishveshvaraya Technological University, Belgaum.
16. **Avinash Kumar** and Jayappa, K. S. (2008). Evolution of Dakshina Kannada coast, Karnataka, west coast of India – A case study using Remote Sensing and GIS techniques, National Seminar on Hyperspectral Remote Sensing and Spectral Signature Database Management System, Abstract Volume, Department of Earth Sciences, Annamalai University, pp 29-30
17. **Avinash Kumar** and Jayappa, K. S. (2007). Applications of Remote Sensing and GIS for coastal and ocean environmental impact assessment – A few case studies, Fourth National Conference on Harbour and Ocean Engineering, Abstract Volume, NITK, Surathkal, 126p.
18. Jayappa, K. S. and **Avinash Kumar** (2007). Environmental issues pertaining to coastal zone management of southern Karnataka coast, Fourth National Conference on Harbour and Ocean Engineering, Abstract Volume, NITK, Surathkal, 177p.
19. Jayappa, K. S., **Avinash Kumar** and Vinod Kumar (2007). Potential of Placer Deposits along Mangalore Coast, International Seminar on Crustal Evolution, Sedimentary Process and Metellogeny, Abstract Volume, SDM college of Engineering & Technology, Dharwad, pp. 94-95.
20. **Avinash Kumar** (2007). A case studies on Coastal Erosion along Mangalore Coast, International Workshop on Risk Assessment of Multi Hazards along Indian Coasts, Indian Institute of Remote Sensing (IIRS), Dehradun.
21. **Avinash Kumar** and Jayappa, K. S. (2007) Recession of Permeable and Impermeable Coastal Cliffs in Kerala, International Seminar onGeo-environment: Challenges Ahead, Abstract Volume , Postgraduate Department of Geology, University of Jammu, Jammu, 15p.
22. **Avinash Kumar** and Jayappa, K. S. (2007) Recent Developments in Remote Sensing and GIS Applications for Coastal Environmental Studies and Resource Assessment, National Seminar on Recent Developments and opportunities in exploration Geology and Geoinformatics, Abstract Volume , Department of Geology, Periyar University, Salem, 53p.
23. Jayappa, K. S. and **Avinash Kumar** (2006). Littoral Sediment Transport and Sedimentlogy of Beaches along Dakshina Kannada District, 23rd Annual Convention of IAS and National Seminar on Economic Significance of Sedimentary Basins of India, Abstract Volume, Anna University Chennai, pp. 139-140.
24. Seralathan, P and **Avinash Kumar** (2005). Morphology and erosion of cliffs at selected coastal areas of Kerala. International Conference on Coastal Hazards, Abstract Volume, SASTRA Deemed University, Thanjavur.

Participation in National & International Training/Workshop Program

1. Three-days workshop on R-software for Statistical Computing held during June 29 to July 01 2010 at the Department of Post Graduate Studies and Research in Statistics,

Mangalore University, Mangalagangothri.

2. Six-days National workshop on Proxies for Climate Change Studies organized by Department of Marine Sciences, Goa University, Goa during 8th- 13th March 2010.
3. One-day Regional Workshop on “Coastal Erosion, Siltation in Navigation Channels – Remedial Measures and Management” was organized by Department of Marine Geology, Mangalore University held on 26th March 2008.
4. One-day National Workshop on “Hyperspectral Remote Sensing Applications and Image Analysis” was organized by Department of Earth Sciences, Annamalai University held on 13th Feb 2008.
5. An International Workshop on “Risk Assessment of Multi Hazards along Indian Coasts” was organized at the Indian Institute of Remote Sensing (IIRS), Dehradun in collaboration with Asian Institute of Technology (AIT), Bangkok, Thailand and ITC, the Netherlands from 9-12 July 2007.
6. DST/NRDMS Sponsored Two-day Workshop on Soft Computing Techniques for Spatial Data Analysis conducted by Department of Computer and Information Science, University of Hyderabad in Nov 16-17, 2006.
7. A workshop on Natural Disaster Management – The Policy framework Organized by Kerala Sastra Sahitya Parishath and Cochin University of Science and Technology, February 26, 2005.

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