

Subeesh M P | Curriculum Vitae

Arctic Group, NCPOR, Headland Sada, Vasco-da-Gama, Goa, India, 403804

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Research scientist in Arctic Oceanography Group, National Center for Polar and Ocean Research (NCPOR), Goa, India. The objective of the research is developing a high-resolution 3D ocean numerical model for Arctic. The ongoing research is study of high frequency currents such as internal tides, near-inertial waves, and coastally trapped waves in Arctic fjord and their role in fjord mixing, using moored ADCP, CTD records and numerical modelling.

Education

Academic Qualifications.....

PhD + <i>Marine Science</i>	Goa University
MSc + <i>Physical Oceanography</i>	CUSAT 2008-2010
BSc + <i>Physics</i>	Calicut University 2005-2008

Professional Experience

Research Scientist +	NCPOR 2016-Present
Research Fellow +	NIO 2013-2016
Project Assistant +	NIO 2010-2013

Projects during the above period.....

- + **Long-term monitoring of Kongsfjorden system of Arctic region for climate change studies(2016-present)**
To understand i) variability in the Arctic/Atlantic climate signals and the hydrography in Kongsfjorden ii) the interaction processes between the Atlantic water brought by West Spitsbergen Current and fresh water (glacial run-off) in Kongsfjorden, iii) impacts of the fresh water discharge from Kongsfjorden on hydrography and circulation outside the fjord, long-term observations of velocity, temperature, salinity and other biological parameters have been started in Kongsfjorden, an Arctic fjord in Svalbard. My role in the project is to analyse mooring observations to understand high and low frequency variability, and set up a high resolution fjord model to explain the processes associated with it.
- + **High Resolution Operational Ocean Forecast and reanalysis System (HOOPS)(2014-2017): 'Tidal currents on the continental shelf and slope off Indian coasts'**

The above project was a part of the High Resolution Operational Ocean Forecast and reanalysis System (HOOFS) program implemented by ESSO-INCOIS, Hyderabad. Our study mainly focused in analysing ADCP (Acoustic Doppler Current Profiler) data and simulating tidal currents in west and east coast of India. Measurement of currents from ADCPs deployed on various locations of continental shelf and slope off the Indian coasts have been used to study the characteristics of tidal currents in the region. Models developed for regions of the eastern Arabian Sea and for the entire Bay of Bengal respectively using Regional Ocean Model System (ROMS) have been used for studying characteristics of tidal currents in the region. These studies include study of propagation of barotropic and internal tides (IT) in the region and identifying generation sites of internal tides. My role in above project was to analyse ADCP data available on the shelf and slope off west coast of India, and set up a regional model for eastern Arabian Sea to simulate barotropic and baroclinic tidal currents.

- + **Masters Project:** *'Assessing the consistency of two global tidal models- FES and OTPS- over the deep and shallow regions of the Arabian sea'*

The project compared two Global Tidal Model, FES (Finite Element Solution) and OTPS (OSU Tidal Prediction Software) output with available tide gauge observations in the Arabian Sea.

- + **Summer Project:** *'Improving the temporal resolution of wind stress for Linear-Continuously-Stratified Ocean model'*

The Linear Continuously Stratified (LCS) ocean model was forced by the climatological winds of Hellerman and Rosenstein (1983). These winds are first linearly interpolated on to the model in 0.5×0.5 grid. In the original code, the forcing was by monthly wind stress. Task was to make the changes in the code to incorporate daily wind and improve the temporal resolution of the model.

Awards/Recognition

- + Awarded research fellowship qualified National Eligibility Test for Lectureship by Council for Scientific and Industrial Research (CSIR) and University Grants Commission (UGC) in Earth, Atmospheric, Ocean and Planetary Sciences, 2011
- + Awarded IASc-INSA-NASI Summer Research Fellowship in 2009

Research Interests

- + (1) Developing high resolution regional ocean model (2) Study of internal waves, particularly internal tides and near-inertial waves (3) Study of ocean mixing

Technical skills

- + **Programming Languages:** Proficient in: FORTRAN, NETCDF-FORTRAN, Python, Matlab, Shell Scripting and Parallel Computing.
Also basic ability with: C, C++.

Oceanographic Expeditions/ Field programs

- + 2011: Survey of physical, chemical and biological parameters in Mandovi-Zuary estuarine system, Goa, conducted by NIO
- + 2014: ADCP mooring cruise, west coast of India, conducted by NIO
- + 2017: IndArc mooring Cruise, Arctic, conducted by NCPOR
- + 2019: IndArc mooring Cruise, Arctic, conducted by NCPOR

Other Expeditions

- + 2018 April: Arctic expedition, conducted by NCPOR
- + 2018 August: Arctic expedition, conducted by NCPOR

Journal Reviewer

- + Journal of Geophysical Research

Peer reviewed publications

- + **Subeesh, M. P.**, Unnikrishnan, A. S., Fernando, V., Agarwadekar, Y., Khalap, S. T., Satelkar, N. P., and Sheno, S. S. C. (2013). Observed tidal currents on the continental shelf off the west coast of India. *Continental Shelf Research*, 69, 123-140.
- + **Subeesh, M. P.**, and A. S. Unnikrishnan. "Observed internal tides and near-inertial waves on the continental shelf and slope off Jaigarh, central west coast of India." *Journal of Marine Systems* 157 (2016): 1-19
- + **Subeesh, M. P.**, Tidal currents on the continental shelf and slope off the west coast of India. PhD Thesis. Goa University
- + D. Sundar, A. S. Unnikrishnan, G. S. Michael, A. Kankonkar, A. G. Nidheesh, **M. P. Subeesh**, (2015). Observed variations in stratification and currents in the Zuari estuary, west coast of India. *Environ Earth Sci*. DOI 10.1007/s12665-015-4702-2
- + Jithin, A. K., Unnikrishnan, A. S., Vijayan, F., **Subeesh, M. P.**, Fernandes, R., Khalap, S., ... and Kankonkar, A. (2017). Observed tidal currents on the continental shelf off the east coast of India. *Continental Shelf Research*.
- + A.K Jithin., **M.P. Subeesh**, P.A. Francis, A.S Unnikrishnan., S.S.V.S Ramakrishna. Intensification of tidally generated internal waves in the north-central Bay of Bengal (2020). *Scientific Report*
- + P. J. Vidya, M. Ravichandran, **M. P. Subeesh**, Sourav Chatterjee, Nuncio Murukesh (2020), Global warming hiatus contributed weakening of the Mascarene High in the Southern Indian Ocean, *Scientific Report*
- + M. Nuncio, Sourav Chatterjee, K. Satheesan and Sheeba Nettukandy Chenoli, **Subeesh M.P** (2020). Temperature and precipitation during winter in NyÅlesund, Svalbard and possible tropical linkages. *Tellus A*
- + Sabu P, Stephy Ann Libera, Racheal Chacko, Anil Kumar N P, **Subeesh M.P**, Antony PT. Winter Water variability in the Indian Ocean sector of Southern Ocean during austral summer. (2020) *Deep Sea Research Part II*. (In press)

Publications under review

- + **Subeesh M. P**, A. S Unnikrishnan, P. A Francis. Generation, propagation, and dissipation of internal tides on the continental shelf and slope off the west coast off India. *Continental Shelf Research* (2020)
- + **Subeesh M. P**, Divya David T, Ravichandran M , Sourav Chatterjee , Nuncio .Mixing of Atlantic Water mass in the Arctic fjord during storm events. *Journal of Geophysical Research* (2020)
- + Sabu P, **Subeesh M.P** ; Jenson V. George,N. Anilkumar, M. Ravichandran. Enhanced subsurface mixing due to near-inertial waves: Observation from Seychelles-Chagos Thermocline Ridge during 2014 summer. *Ocean dynamics* (2020)
- + P. J. Vidya, M. Ravichandran, **M. P. Subeesh**, Sourav Chatterjee, Neethu N, Nuncio Murukesh (2020), Increased cyclone destructive potential in the Southern Indian Ocean during the global warming hiatus, *Environmental Research Letters* (2020)

Conference/Seminars

- + Numerical simulation of tides in the northern Indian ocean. *presented in* Supra Institutional Project Workshop, National Institute of Oceanography, Goa, February 2011.
- + Observed tidal currents on the continental shelf off the west coast of India. *presented in* The Pan Ocean Remote Sensing Conference (PORSEC), Kochi, Kerala, November 2012.
- + Observed tidal currents on the continental shelf off the west coast of India. *presented in* India-EU workshop II on Monsoon and ocean variability, climate change and sea level variations, Kochi, 11-13 Nov. 2013.
- + Variability of internal tides on the continental slope off Jaigarh, west coast of India. *poster presented in*. OSICON 15, 2015, Goa.
- + Observations and modeling of internal tides on the shelf and slope off the west coast of India, *poster presented in*. INCOIS, Hyderabad, 2016.
- + Numerical simulation of tidal currents on the shelf off the west coast of India *presented in* OSICON 17, 2017, Trivandrum.
- + Observations of barotropic tides and internal gravity waves in Kongsfjorden, an Arctic fjord in Svalbard Archipelago *presented in* OSICON 17, 2017, Trivandrum.
- + Numerical modeling of barotropic tides and tidal currents in the Kongsfjorden and Krossfjord, two Arctic fjords in Svalbard Archipelago *poster presented in* NCPS, 2017 Goa.
- + Observed near-inertial wave events in Kongsfjorden an Arctic fjord in svalbard, *poster presented in* Svalbard Science Conference, 2017, Oslo, Norway
- + Numerical modeling of near-inertial waves in Kongsfjorden, an Arctic fjord in Svalbard, *poster presented in* National Oceanographic Workshop 2018, held at INCOIS, Hyderabad
- + High resolution regional ocean modelling: Impact of small scale mixing associated with high-frequency waves, *presented in* IITM Pune

Talks

- + "The Indian observation and modelling program in the Kongsfjorden, Svalbard." International Interdisciplinary PhD and Post-doc winter school November 2018, NCPOR