Vishnu Perumthuruthil Suseelan

psvishnu2014@gmail.com
+917907982398
Vegamot 1G, 7049 Trondheim, Norway

EDUCATION

University of Victoria, *Canada* 2018–2024

PhD in Geography

Thesis title: Characterizing phytoplankton community composition in the open and coastal waters of the subarctic northeast Pacific

Advisor: Dr. Maycira Costa

Mahatma Gandhi University *Mannanam, Kottayam* 2011–2013

Master of Science: Major in Environmental Science and Disaster Management

Thesis title: Climatology of extreme weather events and their causes over India

Kuriakose Elias College *Mannanam, Kottayam* 2008–2011

Bachelor of Science: Major in Physics

POSITIONS HELD

Graduate Student Researcher, University of Victoria, *Victoria* 2018–present

Investigating spatial-temporal patterns in phytoplankton community composition in the open and coastal waters of subarctic northeast Pacific using a combination of in situ HPLC phytoplankton pigments and remote sensing.

Senior Research Fellow, Department of Marine Biology, Microbiology and Biochemistry *Cochin, Kerala* *February 2016 – April* 2018

Characterize the seasonal and spatial variability in the absorption components and its relationship with physical and biogeochemical variables along the coastal waters off Cochin and explore the source characterization of CDOM. Investigated the seasonal and spatial variability in phytoplankton absorption coefficient and specific absorption coefficient and its relation with Chlorophyll-a concentration. In addition, we study the seasonal variability in the relative contribution of bio-optical components. This resulted in one international publication in the International Journal of Earth Observation and Geo-information.

Junior Research Fellow, Department of Marine Biology, Microbiology and Biochemistry *Cochin, Kerala* *February 2014 – February* 2016

Advised by Dr. Mohamed Hatha. Monthly field-level investigation was conducted along the coastal waters of the Southeast Arabian Sea to collect water samples to determine bio-optical components. Analyzed discrete water samples to determine chlorophyll-a concentration, dissolved oxygen (DO), absorption by colored dissolved organic matter (CDOM), particulate matter, and total suspended matter

(TSM) concentration. Prepared and ran nitrate, phosphate, and silicate analyses on seawater for research projects. Operated Satlantic Radiometer profiles onboard to study the underwater light field. Responsible for maintenance and cleaning of the analytical instrument and Satlantic Radiometer profiler.

AWARDS AND FELLOWSHIPS

Travel Award Recipient, International Ocean Color Science Meeting	2023
Travel Award Recipient, Third International Operational Satellite Oceanography Symposium	2023
Travel Award Recipient, PICES-2022 Annual Meeting	2022
MEOPAR internship/visiting scholar award Recipient	2020
University of Victoria Graduate Award Recipient	2018-2020
Graduate Fellowship Recipient from the MEOPAR and Canadian space agency funded Research Project	2018-2023
Fellowship Recipient Indian Space Research Organization (ISRO)	2014-2018
Travel Award Recipient, International Ocean Color Coordination Group (IOCS)	2017

GRANTS AWARDED

Use of ocean color to characterize waters along the migration route of Juvenile Salmon in British Columbia and Southeast Alaska 2018-2022
Funding agencies: Canadian Space Agency (CSA), MEOPAR/ONC, Hakai and Pacific Salmon Foundation (PSF)
Awarded to the University of Victoria. Principal investigator Dr. Maycira Costa.
Total award: $665,600.

Modeling biogeochemical cycles in the coastal oceans 2014-2018
Funding agency: Indian Space Research Organization (ISRO)
Awarded to the Dept of Marine Biology, Microbiology, and Biochemistry
Principal investigator: Dr Mohamed Hatha
Total award: $66,638

PUBLICATIONS

In preparation and soon to be submitted

Perumthuruthil Suseelan Vishnu, Justin Del Bel Belluz, Hongyan Xi, Midhun Shah Hussain, Astrid Bracher, Maycira Costa. Highly resolved surface phytoplankton community composition on the West Coast of Canada derived from hyperspectral radiometry. *In prep for submission to Remote Sensing of Environment.*

Under review

Perumthuruthil Suseelan Vishnu, Justin Del Bel Belluz, Hongyan Xi, Brian Hunt, Anna

Vazhova, Midhun Shah Hussain, M. Angelica Pena, Astrid Bracher, Maycira Costa. Assessing the Spatial-temporal Variability of Phytoplankton Community Composition and their Response to Environmental Drivers in the subarctic northeast Pacific: A Satellite and In situ Based Approach. *Under review in JGR:Ocean.*

Marta Konik, M. Angelica Peña, Toru Hirawake, Brian P.V. Hunt, **Perumthuruthil Suseelan Vishnu**, Lisa Eisner, Astrid Bracher, Hongyan Xi, Maycira Costa. Bioregionalization of the subarctic Pacific based on phytoplankton phenology and composition. *Under review in Progress in Oceanography*.

Peer reviewed

Perumthuruthil Suseelan Vishnu., and Maycira Costa (2023). Evaluation of the Performance of Sentinel 3A OLCI Products in the Subarctic Northeast Pacific. Remote Sensing.15:3244;1-22 https://doi.org/10.3390/rs15133244.

Perumthuruthil Suseelan Vishnu, Hongyan Xi, Justin Del Bel Belluz, Midhun Shah Hussain, Astrid Bracher and Maycira Costa (2022). Seasonal dynamics of major phytoplankton functional types in the coastal waters of the west coast of Canada derived from OLCI Sentinel 3A. Frontiers in Marine Sciences. 9:1018510. https://doi.org/10.3389/fmars.2022.1018510.

Shaju S.S, Sreekutty C. Prasad, **Vishnu P.S**., Amir Kumar Samal, Nandini Menon, Nashad M, K.A Mathew, A.K Abdul Nazar and Grinson George (2019). Effect of Mariculture on bio-optical properties and water quality of Gulf of Mannar and Palk Bay. Regional Studies in Marine Science. 29 https://doi.org/10.1016/j.rsma.2019.100618

P.S. Vishnu, S.S. Shaju, S.P. Tiwari, Nandini Menon, M. Nashad, C. Ajith Joseph, Mini Raman, Mohamed Hatha, M.P. Prabhakaran, A. Mohandas (2018)**.** Seasonal Variability in Bio-optical Properties along the Coastal Waters off Cochin. International Journal of Applied Earth Observation and Geoinformation. 66. 184-195 https://doi.org/10.1016/j.jag.2017.12.002.

Soumya Krishnankutty, Ajith Joseph, C., Vincent, P.D., Jabir, T., **Vishnu, P.S**., Saramma, A.V. and A.A. Mohamed Hatha (2017). Hydrography, Seasonal Diversity, Distribution and Abundance of Phytoplankton in Coastal Waters off Cochin - Southeastern Arabian Sea. 48 (03). 319-326.

Non-peer reviewed

Suseelan, V.P., Costa, Maycira (2021). Dynamics of Phytoplankton Biomass in the Gulf of Alaska Derived from Sentinel 3 OLCI Imagery. North Pacific Anadromous Fish Commission. Technical Report 18. Virtual Conference on the Winter Ecology of Pacific Salmon and Results from the 2019 and 2020 Gulf of Alaska Expedition. https://npafc.org/wp-content/uploads/technical-reports/Tech-Report-18-DOI/Technical-Report-18.pdf

PRESENTATIONS

Vishnu Perumthuruthil Suseelan, Justin Del Belluz, Hongyan Xi, Midhun Sha Hussain, Astrid Bracher, Maycira Costa. "Spatial-temporal dynamics of phytoplankton functional types on the West Coast of Canada derived from hyperspectral remote sensing Reflectance". Deliver a poster presentation at the 2023 International Ocean Color Science Meeting held at Florida, United States, between 14-11-2023 to 17-11-2023.

Vishnu P Suseelan, Hongyan Xi, Justin Del Belluz, Midhun Sha Hussain, Astrid Bracher, Maycira Costa. "Assessing the Dynamics of Phytoplankton Community Composition on the West Coast of Canada Using HPLC-Pigment based method and Sentinel 3 OLCI ". Delivered a poster presentation at the third International Operational Satellite Oceanographic Symposium at Pusan, South Korea, between 12-06-2023 to 15-06-2023.

Maycira Costa, Nasiha Hussain, Ziwei Wang, Fernanda Giannini, **Vishnu P S**, Christian Marchese. 2022. "Sentinel 3a: high resolution ferry-based in-situ reflectance validation data, bioregionalization, and PFT of the British Columbia coastal waters". Delivered oral presentation at the 7th Sentinel-3 Validation Team Meeting held between 18-20 October 2022 in Frascati, Rome, Italy.

Maycira Costa, Nasiha Hussain, Ziwei Wang, Fernanda Giannini, **Vishnu P S**, Christian Marchese. **2022**. "Ferry-based autonomous above-water reflectance: from system installation and data quality to satellite validation, PFTs, and bioregionalization". Delivered oral presentation at the Future of Above Water Radiometry-2 held between 12-13 October at Belgium.

Vishnu P S, Hongyan Xi, Justin Del Belluz, Midhun Sha Hussain, Astrid Bracher, Maycira Costa. "Seasonal Dynamics of the Major Phytoplankton Groups in the West Coast of Canada Retrieved from CHEMTAX, OLCI Sentinel 3A, and Hyperspectral Reflectance". Delivered an oral talk at the 2022 Ocean Optics held between 01-10-2022 to 08-10-2022 in Vietnam.

Bracher, Astrid; Oelker, Julia; Alvarado, Leonardo; Losa, Svetlana; Xi, Hongyan; Soppa, Mariana; Brito, Ana; Brotas, Vanda; Costa, Maycira; Favareto, Luciane; Gomes, Mara; **Suseelan, Vishnu P**. Richter, Andreas. "Diffuse Attenuation Of Underwater UV And Short Blue Light Obtained From TROPOMI's High Spectral Resolution". Presented a poster at to 12th EARSeL Workshop on Imaging Spectroscopy, 2 Jun 2022 - 24 Jun 2022, Potsdam, Germany.

Bracher, Astrid; Oelker, Julia; Alvarado, Leonardo; Losa, Svetlana; Xi, Hongyan; Soppa, Mariana; Brito, Ana; Brotas, Vanda; Costa, Maycira; Favareto, Luciane; Gomes, Mara; **Suseelan, Vishnu P**; Richter, Andreas. "TROPOMI's high spectrally resolved satellite data to fill gaps in ocean color observations". Delivered Oral talk at the 5th Oceans from space symposium.

Bracher, A. , Xi, H. , Oelker, J. , Losa, S. N. , Alvarado, L. , Soppa, M. A. , Brito, A. , Brotas, V. , Costa, M. , Favareto, L. , Gomes, M. , Nerger, L. , **Suseelan, V. P**. , Richter, A. , Voelker, C. and Alvarez, E. (2022): Toward the Synergistic Use of Ocean Colour products to Improve the Description of Phytoplankton Productivity within the Global Ocean , Ocean Carbon from Space Workshop. 2nd Workshop in the CLEO (Colourand Light in the ocean from Earth Observation, ESA virtual online event, 14

February 2022 - 18 February 2022.

Astrid Bracher, Julia Oelker, Svetlana Losa, Leonardo Alvarado, Ana Brito, Vanda Brotas, Maycira Costa, Luciane Favareto, Mara Gomes, **Vishnu Perumthuruthil Suseelan**, Andreas Richter, Hongyan Xi. "Novel ocean color information from Sentinel-5P's high spectral resolution". Oral presentation in the ESA Living Planet Symposium 2022, 23 May 2022 - 27 May 2022, Bonn, Germany.

Vishnu P S, Hongyan Xi, Justin Del Belluz, Midhun Sha Hussain, Astrid Bracher, Maycira Costa. "In-situ and Satellite-based determination of phytoplankton community composition in the Strait of Georgia**"**. Delivered pre-recorded oral presentation at the 2022 MEOPAR Annual Science meeting.

Vishnu P S, Hongyan Xi, Justin Del Belluz, Midhun Sha Hussain, Astrid Bracher, Maycira Costa. "Deriving Phytoplankton Community Composition in the Salish Sea using CHEMTAX and OLCI Sentinel 3 data"**.** Delivered Oral presentation at 2022 Salish Sea Ecosystem Conference.

Vishnu P S, Hongyan Xi, Justin Del Belluz, Midhun Sha Hussain, Astrid Bracher, Maycira Costa. "Retrieval of dominant phytoplankton groups in the west coast of Canada using OLCI Sentinel 3 data". Delivered Oral presentation at 2022 Ocean Science Meeting.

Vishnu P S, Hongyan Xi, Justin Del Belluz, Midhun Sha Hussain, Astrid Bracher, Maycira Costa. "Phytoplankton community composition in the Gulf of Alaska determined using CHEMTAX and OLCI Sentinel 3 satellite data". Delivered oral talk at the 2021-PICES virtual meeting.

Vishnu P S, Hongyan Xi, Justin Del Belluz, Midhun Sha Hussain, Astrid Bracher, Maycira Costa. "Phytoplankton Dynamics from the 2019 and 2020 Gulf of Alaska Expedition". Delivered a virtual presentation at the conference on the winter ecology of pacific salmon on 20 April 2021.

Vishnu P S, Hongyan Xi, Justin Del Belluz, Astrid Bracher, Maycira Costa. "Retrieving Phytoplankton Groups and accessory Pigments in the Strait of Georgia Using Empirical Orthogonal Functional Analysis of Hyperspectral Remote Sensing Reflectance. Delivered a virtual presentation at the third national NetCOLOR meeting on 10 March 2021.

Maycira Costa, Ziwei Wang, Fernanda Giannini, **Vishnu P S. 2020**. "Sentinel 3a and 3b performance in the northeast Pacific Ocean: Gulf of Alaska and coastal British Columbia". Oral presentation at the **6th S3VT meeting was held virtually from 15-17 December 2020.**

Vishnu P S, Maycira Costa., Fernanda Giannini. 2019. "Winter Dynamics of Phytoplankton Biomass in the Gulf of Alaska Derived from Sentinel 3 Imagery". Delivered a talk PICES-2019 annual meeting held between October 16-27, 2019, at the Victoria Conference Centre, Victoria, BC, Canada.

P.S. Vishnu, S.P. Tiwari, S.S. Shaju, Mohamed Hatha, Nandini Menon, A. Mohandas**.** "Evaluation of Empirical and Semi-Analytical Downwelling Diffuse Attenuation Coefficient Models along the Coastal Waters off Cochin". Presented a poster at the second International Symposium 'SAFARI 2' on **Remote Sensing for Ecosystems Analysis and Fisheries** held between January 15-17 2018 at Central Marine Fisheries Research Institute (CMFRI), Kerala, India.

Vishnu P S., Shaju S S., Nashad M., Ajith Joseph C., Mini Raman., Nandini Menon., Mohamed Hatha., Mohandas A. Seasonal variability in Bio-optical properties along the Coastal Waters off Cochin. Presented a poster at the "International Ocean Color Science (IOCS) 2017, Meeting" in Lisbon, Portugal, from 15-18th May 2017.

Vishnu P S., Shaju S S., Nashad M., Nandini Menon., Mohamed Hatha., Ajith Joseph c., Mini Raman. Study of light absorption coefficient of phytoplankton and other optically active components in the coastal waters off Cochin. Presented a poster at the International conference "Towards a sustainable Blue Economy" in Kochi from 4-6 February 2016.

Chithra Chandran., Nashad M., **Vishnu P S**., Nandini Menon. Bloom of Fragilariopsis sp. in the coastal waters off Cochin, Kerala, South west coast of India – Presented a poster at the World Ocean Science Congress, Kochi from 5-8th February 2015.

TEACHING EXPERIENCE

Teaching Assistant, *dept of Geography, Uvic* Fall 2018

GEOG 228: Introduction to Remote Sensing, Helped to teach an undergraduate-level course in remote sensing. Led weekly laboratory sections in image analysis and processing using ENVI Software for undergraduate students. Held weekly office hours and review sessions and answered student questions.

FIELD EXPERIENCE

Queen of Alberni: one day, fieldwork to the Strait of Georgia (SoG) from the summer of 2018 to 2019. Total 28 days.
Fishing Boat: one day, fieldwork to the northern SoG from the summer of 2018 to 2019. Total 5 days.
Professor Kagnovsky: one month expedition to the Gulf of Alaska from February to March 2019.
Fishing Boat: one day, fieldwork to the southeastern Arabian Sea from 2015 to 2016. Total 14 days.
Fishing Boat: one day, fieldwork on the Gujarat coast in the northern Arabian Sea in 2016.

ACADEMIC SERVICE

Peer reviewer: *Estuarine coastal and shelf science, Marine Environmental Research* 2021-present

SKILLS

Computation and software: Microsoft Office (Word, Excel, Powerpoint), Linux, R language, ArcGIS, Origin, Grapher, SeaDAS, SNAP, Mendeley, Zotero.

Lab techniques: Collection and preparation of water samples for HPLC pigments, fluorometry, CDOM absorption, dissolved oxygen, phytoplankton absorption, non-algal particulate absorption, dissolved organic carbon, and inorganic nutrient analyses; spectrophotometry (filter pad and whole water samples); chlorophyll fluorometry;

dissolved oxygen (Winkler method), analytical nutrient analysis on spectrophotometer; deployment, and data analysis for optical instrumentation including AC-S, BB-9, HyperSAS, HyperPro in profiling.

Soft Skill: Excellent communication skills, project management abilities, organizational and problem-solving abilities, and cross-functional collaboration skills.

Hard Skills: Technical and scientific writing, data analysis and visualization, multispectral and hyperspectral data processing, supervised and unsupervised machine learning algorithms.

Membership: The Oceanography Society.

Languages: English (fluent).