Session 1: Introduction to the GLIMR Instrument and Mission

Speaker: Laura Lorenzoni, PhD, *Program Scientist, Ocean Biology and Biogeochemistry Program, NASA Headquarters*

Laura Lorenzoni is a Program Scientist for the Ocean Biology and Biogeochemistry Program (OBB) in the NASA Headquarters Science Mission Directorate. The OBB program focuses on describing, understanding, and predicting biological and biogeochemical conditions, interactions and changes in the upper ocean, as determined by observation of aquatic optical properties using remote sensing and in situ data. Laura completed her undergraduate in Biology at the Universidad Simon Bolivar (Venezuela), and subsequently earned both her Master's and PhD degrees in Marine Science at the University of South Florida. Her research interests include land-ocean interactions, and the influence of rivers on transport and distribution of dissolved and particulate organic matter in the coastal ocean. For over a decade, she worked with the CARIACO Ocean Time-Series project, and has been an advocate of time-series (in situ ship-based and autonomous, as well as satellite remote sensing) as tools to understand natural and anthropogenic changes in the ocean.

Speaker: Scott Joel, *Program Scientist, Ocean Biology and Biogeochemistry Program, NASA Headquarters*

Joel Scott is a Program Scientist at NASA Headquarters in Washington, DC supporting the Ocean Biology and Biogeochemistry program within the Earth Science Division of the Science Mission Directorate. Joel has formal training in radiative transfer theory and in satellite remote sensing of the earth, ocean, and atmosphere. He has extensive experience in earth system research, data science, and program building and management. Joel has focused his career on using earth observations to study aquatic ecosystems, the carbon cycle, and the elements that support life on our home planet. Joel firmly believes that NASA's advanced earth observations, leveraged for societal benefit, will enable us to thrive under a changing climate.

Speaker: Joe Salisbury, PhD, *GLIMR Principal Investigator, Research Professor, Ocean Process Analysis Lab, University of New Hampshire*

Joe Salisbury is a Research Professor at the University of New Hampshire and the Principal Investigator of the NASA-UNH mission GLIMR, (Geostationary Littoral Imaging and Monitoring Radiometer). His research interests focus on the biogeochemistry and ecology of coastal regions, particularly those influenced by riverine processes. He is presently working on two strands of research. The first seeks to characterize distributions of carbon dioxide, air-sea carbon exchange, productivity, and acid stress in freshwater-influenced coastal regions. The second strand involves the use of data from a variety of space-borne sensors to characterize net community productivity and carbon exchanges in coastal waters. For these projects he uses a variety of remotely sensed data including ocean color, sea surface temperature and microwave radiometry. His UNH Coastal Carbon Group maintains several autonomous data collecting assets in the Gulf of Maine and stays active in cruise campaigns throughout the western Atlantic.

Speaker: Antonio Mannino, PhD, *GLIMR Deputy Principal Investigator*, *NASA Goddard Space Flight Center*

Antonio Mannino (Ph.D.), research oceanographer of the Ocean Ecology Laboratory at NASA Goddard Space Flight Center since 2002, is currently deputy project scientist for Oceans on NASA's PACE mission and serves as deputy principal investigator on the NASA GLIMR mission. Mannino served as a member of the International Ocean Color Coordinating Working Group (IOCCG) on geostationary ocean color requirements and currently contributing to the IOCCG field measurement protocols. As a sea-going oceanographer, Mannino has served as chief scientist and technical officer on multiple oceanographic cruises working in all major oceans with the exception of the Indian Ocean. Mannino has published several articles on coastal ocean biogeochemistry of dissolved and particulate organic matter and ocean color satellite algorithms. His current research applies field observations, satellite data, and 3D coupled models to study carbon cycle processes and phytoplankton community composition from rivers to oceans.

Speaker: Ryan Vandermeulen, PhD, *Senior Scientist, NASA Goddard Space Flight Center*

Ryan Vandermeulen is a lead research scientist based at the Ocean Ecology Laboratory at NASA Goddard Space Flight Center, and a member of the GLIMR Project Science team. His expertise resides in advancing the development, evaluation, and implementation of biophysical algorithms, with a specific focus on informing new ways of resolving oceanic biogeochemistry and rate processes based on in situ optical variability, as well as hyperspectral and geostationary radiometric satellite data. For the GLIMR project, Ryan is responsible for biophysical algorithm development, data product validation, assessment of instrument performance modeling and verification of product uncertainties, as well as the formulation of strategic tools to advance instrument scheduling and Concept of Operations. Beyond his technical roles, Ryan also strives to promote and develop materials that ignite the interest of a broader public audience in the science of our natural world.

Speaker: Maria Tzortziou, PhD, *GLIMR Mission Applied Science Lead, PACE Deputy Program Applications Lead, NASA Goddard Space Flight Center; Professor, Earth and Atmospheric Sciences, Center for Discovery and Innovation, The City University of New York*

Maria Tzortziou is Professor of Earth and Environmental Sciences and Director of the [Bio-Optics Laboratory](#) at the Center for Discovery and Innovation of The City College of The City University of New York. She is also affiliated with Columbia University Lamont-Doherty Earth Observatory and NASA Goddard Space Flight Center, where she serves as the Deputy Program Applications Lead for the [PACE Mission](#). Her research integrates multidisciplinary datasets, satellite observations, and ecosystem models to provide mechanistic insights into the impacts of human and environmental pressures on biogeochemical cycles and ecological processes along the continuum of wetland, estuarine, and open ocean ecosystems. Tzortziou has served on the Science Steering Committee for the Ocean Carbon Biogeochemistry (OCB) Program and on the Science Leadership Board of the North American Carbon Program (NACP), and she has contributed to several policy-relevant and science planning publications, including the "Second State of the Carbon Cycle Report" (SOCCR2) and "Earth's Living Ocean: The 2017-2027 Advanced Science Plan for NASA's Ocean Biology and Biogeochemistry Research". Tzortziou serves as the Deputy Program Applications Lead for NASA's PACE (Plankton, Aerosol, Cloud, ocean Ecosystem) mission and was member of the 2014-2017 NASA PACE Science Team. She is Science Team Member and the Applied Science Lead for [GLIMR](#) (Geostationary Littoral Imaging and Monitoring Radiometer).

Session 2: GLIMR Applied Science Foci Areas and Synergies with other missions

Speaker: Vanessa Escobar, PhD, *Senior Scientist/Policy Advisor for NOAA NESDIS User Engagement, National Oceanic & Atmospheric Administration (NOAA).*

Vanessa M. Escobar is Senior Scientist/Policy Advisor for NOAA NESDIS User Engagement. She has more than 17 years' experience in user engagement science, communicating across scientific and political boundaries in decision support frameworks. Ms. Escobar has developed and lead several user engagement efforts for academia, commercial, DoD and Federal agencies. Her work includes the development and implementation of NASA's Early Adopter Program, NASA Earth Science Division Directive on Project Applications Program and is part of the NESDIS User Engagement Council for developing enterprise user engagement strategies across NOAA.

Speaker: Kevin Ruddick, PhD, *Remote Sensing Team leader, Royal Belgian Institute of Natural Sciences (RBINS)*

Kevin Ruddick is remote sensing team leader at the Royal Belgian Institute of Natural Sciences (RBINS). His educational background was in maths, fluid dynamics and physical oceanography. His research has focused on the processing and exploitation of optical remote sensing data for coastal and inland waters, including: atmospheric correction; algorithms for retrieval of suspended particulate matter, chlorophyl a and phytoplankton species; validation of satellite-derived data, including abovewater measurement of water reflectance; mass data processing and liaison with data users such as coastal water quality managers and marine scientists. Of relevance to GLIMR is the early work on the geostationary MSG/SEVIRI sensor, including atmospheric correction and suspended particulate matter retrieval, and development of the WATERHYPERNET network for automated multi-site measurement of hyperspectral water reflectance for validation purposes. Research papers can be found at: https://odnature.naturalsciences.be/remsem/team#ruddick

Speaker: Blake Schaeffer, PhD, *Environmental Protection Agency (EPA), Office of Research and Development*

Blake Schaeffer earned his PhD in Marine, Earth and Atmospheric Science from North Carolina State University studying harmful algal bloom ecology. Blake is currently with the U.S. Environmental Protection Agency in Research Triangle Park, North Carolina. His research focus is on the applied use of satellite and sensor remote sensing technology to monitor water quality in coasts, estuaries, lakes, and reservoirs. Satellite technology and methods to derive water quality products have primarily focused on oceanic waters and are significantly improving in coastal, estuarine, and in-land waters. His research niche is the development of applications using satellite technologies and optical instruments to meet end-user needs for water quality monitoring and assessment. Generally, interests include the use of field-based optical instruments and satellite remote sensing data to study ecosystem exposures, dynamics and responses.

Session 3: GLIMR Applications and Products

Speaker: Chuanmin Hu, PhD, *Professor, University of South Florida*

Chuanmin Hu is Professor of Oceanography at the College of Marine Science, University of South Florida, Florida, USA. He obtained a B.S degree from the University of Science and Technology of China, and a PhD degree from the University of Miami (USA). He specializes in using laboratory, field, and remote sensing techniques to study algal blooms (harmful and non-harmful, macroalgae and microalgae), oil spills, coastal and inland water quality, and global changes. He directs the USF Optical Oceanography Lab to establish a Virtual Buoy System (VBS) to monitor coastal and estuarine water quality, an Integrated Redtide Information System (IRIS) to provide near real-time information on harmful algal blooms, and a *Sargassum* Watch System (SaWS) to combine remote sensing and numerical modeling to track macroalgae. He has been a science team member of several NASA and NOAA satellite missions including MODIS, VIIRS, PACE, and GLIMR. He is an elected fellow of the American Association for the Advancement of Science (AAAS) and an elected member of the Academy of Science Engineering and Medicine of Florida (ASEMFL).

Speaker: Shelly Tomlinson, PhD, *GLIMR NOAA NOS Liaison, NOAA National Ocean Service National Centers for Coastal Ocean Science*

Shelly Tomlinson is the Coastwatch East Coast Node manager, providing useful satellite products to a wide range of users on the East Coast. She works in the Stressors and Impacts Division (SDI) within National Centers for Coastal Ocean Science (NCCOS), in the National Ocean Service (NOS). Ms. Tomlinson's current research focuses on the application of satellite derived ocean color sensors to detect, monitor, and forecast the occurrence of harmful algal blooms. This work has supported the development and transition of several HAB forecast systems within NOAA. Prior to working for NCCOS, Tomlinson spent 4 years at NESDIS' National Oceanographic Data Center where she archived and managed ECOHAB data. Since 2002, Tomlinson has worked as an Oceanographer in what is now the Harmful Algal Bloom Forecasting Branch of SDI. Her first position at NCCOS had her develop the training manual and materials for the successful transition of the Florida HAB forecast system to operations. Since then, she has been involved in algorithm development for other HAB species around the country, including satellite imagery for freshwater cyanobacteria blooms as part of the CyAN project. Shelly has been a member of the NOAA Dive Program since 2014. Ms. Tomlinson received her B.S. in Marine Science Biology from Southampton College of Long Island University and an M.S. in Oceanography from Old Dominion University.

Moderator: Stephanie Schollaert Uz, PhD, *Applied Sciences Manager- Earth Science Division*, *NASA Goddard Space Flight Center*

Stephanie Schollaert Uz is the Applied Sciences Manager at NASA Goddard Space Flight Center where she leads activities to advance the practical application of NASA data and science, connecting researchers across the Earth Sciences Division with end users, developing external partnerships, and fostering innovative uses of Earth observations for societal benefit. She leads a team that convenes working groups with scientists and stakeholders around Food Security, Air Quality & Health, Climate & Environmental Health, Disasters, Mission Applications, and the Chesapeake Bay. Her research focuses on the response of marine and aquatic ecosystems to physical forcing through the use of satellite data, in situ measurements, model output and statistical reconstructions. She is the Principal Investigator on research projects exploring ways to apply remote

sensing to identify water quality issues for aquaculture in the Chesapeake Bay. These and many other Applied Sciences activities inform NASA's upcoming missions, i.e. PACE, scheduled to launch in 2024 and a Surface Biology and Geology mission after that. She has a Ph.D. in Atmospheric and Oceanic Sciences from the University of Maryland, an M.S. in Physical Oceanography from the Graduate School of Oceanography at the University of Rhode Island and B.S. in Oceanography from the U.S. Naval Academy.

Panelist: Cara Wilson, *PhD, Environmental Research Division Southwest Fisheries Science Center, NOAA.*

Cara Wilson is the Principal Investigator of the West Coast Node of CoastWatch and of PolarWatch. She works at the Environmental Research Division of the Southwest Fisheries Science Center in Monterey California. She was instrumental in developing the CoastWatch Satellite Course back in 2006 and has been helping to teach it ever since. Her research interests involve understanding the dynamics associated with the anomalous summertime chlorophyll blooms that develop in the North Pacific.

Panelist: Steve Ackleson, PhD, *Section Head, Oceanographer at Naval Research Laboratory*

Steven G. Ackleson is Section Head within the Remote Sensing Division at the Naval Research Laboratory in Washington, D.C. He maintains an active research program focused on problems concerning ecology and biodiversity in shallow coastal systems, land-sea interactions, and marine particle dynamics. Dr. Ackleson has experience in oceanographic research, education, program management, and science administration and is author of numerous scientific papers addressing a diverse set of oceanographic issues including biogeochemical processes, sediment transport, and ocean optics. His research has included pioneering applications of flow cytometry to the study of marine particle dynamics, remote sensing of shallow coastal environments, and developing autonomous coastal surveying methods. He has served on several editorial boards, chaired a variety of international oceanographic conferences, and is a Fellow of The Oceanography Society.

Moderator: Steve Lohrenz, PhD, *Professor, SMAST / Estuarine & Ocean Sciences, UMass Dartmouth*

Steven E. Lohrenz is a Professor in the School for Marine Science and Technology (SMAST) at the University of Massachusetts Dartmouth. He served as Dean of the school from 2011 – 2020, during which time he coordinated the UMass Intercampus Marine Science graduate degree program with more than 70 students and a research enterprise generating over $5M a year in grants and contracts. Prior to becoming Dean of SMAST, Steve was the Chair of The University of Southern Mississippi (USM) Department of Marine Science, located at the NASA John C. Stennis Space Center. He received a B.A. in biology and chemistry from the University of Oregon (1978) and a Ph.D. in biological oceanography (1985) from the Massachusetts Institute of Technology-Woods Hole Oceanographic Institution Joint Program. He has served on numerous scientific advisory groups including the NASA Geostationary Coastal and Air Pollution Events (GEO-CAPE) Satellite Mission Science Working Group (2011-2018), NASA Carbon Monitoring System Science Team (2012-2018), and the Massachusetts Ocean Science Advisory Council (2011-present). He has previously managed major projects funded by NASA and other federal agencies (NOAA, NSF, ONR). These include a (~$1.5M) NASA Interdisciplinary Studies in Earth Science project funded in 2010 and a series of NASA Carbon Monitoring System projects initially funded in 2012 involving multiple collaborating institutions and resulting in more than 40 publications. His research extends across various themes including climate change impacts on land-ocean interactions,

phytoplankton ecology and physiology, and biogeochemical cycling of carbon and other elements in ocean systems. His current work also includes applications of optics and remote sensing in the study of biological and biogeochemical patterns and processes in aquatic environments and linkages to terrestrial systems. He has authored or co-authored more than 100 papers in refereed literature and participated in more than 50 research cruises.

Panelist: Joaquim Goes, PhD, *Research Professor, Lamont Doherty Earth Observatory at Columbia University*

Joaquim I. Goes is a Lamont Research Professor at Lamont Doherty Earth Observatory at Columbia University in the Palisades and his research focuses on understanding how ocean ecosystems and plankton are responding to climate change. He is a Biological Oceanographer, with considerable experience in the use of satellite data for his work in riverine, coastal and open ocean ecosystems. He has considerable experience in organizing, planning and executing and has led several field programs in support of NASA funded studies and is a member of the GEOCAPE and the ARCTIC COLORS Science Plan writing teams. Data collected during previous cruises have been used for several publications and have also been deposited in NASAs SEABASS, AERONET and in BCO-DMO.

Panelist: Dr.Jong-Kuk Choi, PhD, *Principal research scientist in Korea Ocean Satellite Center (KOSC), Korea Institute of Ocean Science & Technology (KIOST).*

Dr. Jong-Kuk Choi got his Ph.D. in remote sensing and geographic information system from Yonsei University (Department of Earth System Sciences). He is currently a principal research scientist in Korea Ocean Satellite Center (KOSC), Korea Institute of Ocean Science & Technology (KIOST). His research interest is the optical remote sensing in the coastal waters, especially the applications of GOCI/GOCI-II to monitoring the marine environment including suspended sediment concentration, low salinity waters, HABs, etc. He is also in charge of GOCI/GOCI-II PAR (photosynthetically available radiation) development.

Panelist: Melanie Abecassis, PhD, *NOAA CoastWatch Program*
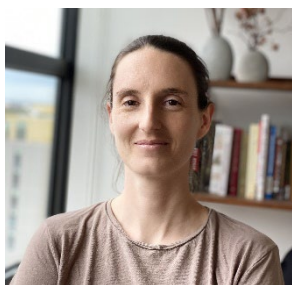
Melanie Abecassis is a Marine Ecologist with a PhD from the University of Toulouse, France. Melanie's research interests include animal habitat modeling and understanding endangered species bycatch. In her former role with CoastWatch, she managed the OceanWatch website and data platforms (https://oceanwatch.pifsc.noaa.gov/) to make ocean satellite data available to a wide range of users and now focuses on developing and conducting training workshops to teach users how to use satellite data in their research projects.

Panelist: Andrea Vander Woude, PhD, *NOAA Great Lakes CoastWatch Node Manager*

Andrea Vander Woude, PhD, is a Satellite Oceanographer and the Great Lakes CoastWatch Node Manager. She has been using remote sensing for over 20 years and specifically hyperspectral imagery to understand ecological and physical processes in the Great Lakes and the coastal and Southern Ocean.