

**2017 Winter School  
in Marine Environmental Prediction  
Rimouski, Québec, Canada**

**Invited Instructors**



**Susan Allen** is a physical oceanographer who uses various model types to understand predict coastal oceanographic processes and biogeochemical-physical interactions. She is a professor in the Department of Earth and Ocean Atmospheric Sciences as well as Associate Dean (Faculty) of Science at the University of British Columbia. She has written over 50 journal articles and is a recipient of both the Applied Oceanography Award and President's Prize of the Canadian Meteorological and Oceanographic Society.



**K. Andrea Scott** received the B.A.Sc. and Ph.D degrees from the University of Waterloo, Waterloo, ON, Canada, and the M.A.Sc. degree from McMaster University, Hamilton, ON, Canada, in Mechanical Engineering. After completing her doctorate, she worked as a Postdoctoral Researcher in the Data Assimilation and Satellite Meteorology Research Section of Environment Canada. At Environment Canada, she was part of a team working on the development of a sea-ice data assimilation system. In 2012, she began a faculty position at the University of Waterloo in the Department of Systems Design Engineering, specializing in sea-ice remote sensing and data assimilation.



**Patrick Grenier** obtained a Ph.D. in Environmental Sciences from Université du Québec à Montréal in 2010, with a thesis on aerosol-cloud interactions in the Arctic. After postdoctoral research on the climatic impacts of aviation at Université Catholique de Louvain (Belgium), Patrick joined Ouranos in 2011. Ouranos is a research consortium based in Montreal and dedicated to regional climatology and adaptation to climate change. His work is mainly twofold: to provide climate scenarios and services to users from a variety of fields (e.g.: agriculture, ecology, public health, etc.), and to conduct research aiming to improve climate scenario construction methods (or so-called post-processing).



**Daniel Bourgault** conducts research on the oceanography of subarctic coastal environments, mainly in the estuary and gulf of the St. Lawrence River as well as the Saguenay Fjord. He is interested in fundamental questions such as the nature of ocean turbulence, the distribution of dissolved oxygen and sediment transport. He is also motivated by applications of this work related to important socio-economic issues concerning the risks and impacts of oil exploration and production in the Gulf of St. Lawrence.



**Peter Sutherland** studies air-sea interactions, with a focus on the effects of surface waves and upper-ocean turbulence. He is currently working on projects studying both wave breaking and the interactions between waves and sea ice. He is involved in calibration and validation activities for satellite remote sensing of these processes, and is coordinating one of the scientific axes of the Polar Pod expedition. Peter's career has included the conception and use of various novel measurements techniques and he has conducted several major field experiments aboard a variety of vessels and platforms. Peter holds a Ph.D. in oceanography from Scripps Institution of Oceanography and he is currently a research scientist at l'Institut Français de Recherche pour l'Exploitation de la Mer (IFREMER, France).



**Dany Dumont** is a physical oceanographer at Institut des sciences de la mer de Rimouski (ISMER). His research focuses on sea ice numerical modeling and sea ice dynamics, including landfast ice formation and break-up, wave-interactions and marginal ice zone dynamics. He has studied the phenomenon of ice arching in restricted channels and developed the first coupled wave-ice interaction model that is now being incorporated in operational forecasting systems. He has participated in a number of ship-based scientific expeditions in the Arctic and in the Gulf of St. Lawrence. He has also developed methods to study sea ice dynamics in coastal environments, including the use of ice canoes, photogrammetric observatories and moorings enabling time-resolved observations of ice and wave-related processes.



**Cédric Chavanne** is a physical oceanographer whose research interests focus on mesoscale (tens to hundreds of kilometers) and submesoscale (hundreds of meters to tens of kilometers) oceanic motions. He uses observations and theoretical models to investigate the ocean dynamics at these scales and their effects on biological processes. One of his observational tools are high-frequency radars, which hourly map ocean surface currents with a resolution of a few kilometers over areas of thousands of square kilometers. He received his PhD from the University of Hawaii in the USA in 2007 where he studied the impact of mesoscale currents on the propagation of internal tides generated at the Kauai ridge. He then held a post-doctoral position at the University of East Anglia in the UK where he investigated the dynamics of the slope front in the southeastern Weddell Sea in Antarctica. Since 2011 he is Professor in physical oceanography at UQAR-ISMER.



**James Caveen** For more years than I care to admit I have been working as a scientific programmer in the fields of meteorology and oceanography. After over ten years at Environment Canada where I was employed at RPN, CMC and the Quebec Region Weather Office, I eventually drifted toward UQAR and oceanography in 2001. Since then, I have been investing my time in scientific programming, database management, system administration and a touch of user support.



**Doug Latornell** is a professional engineer with post-graduate degrees in experimental and computational fluid mechanics and modeling and control of robotic manipulators. He works with the Mesoscale Ocean and Atmosphere Dynamics (MOAD) group at the University of British Columbia as a Research Software Engineer and as a freelance software developer. With the MOAD group he has developed a collection of software automation tools to help researchers run the NEMO ocean model easily and reproducibly on platforms ranging from laptops and local workstations to cloud and HPC clusters. He has also developed a software automation framework for running the NEMO model as a research operational system - daily model runs with the most up-to-date available surface forcing and open boundary conditions from real-time data sources and other operational model product web services such as Environment Canada, Mercator Ocean, and Live Ocean. High resolution ocean models on both the Pacific (Salish Sea) and Atlantic (Gulf of Maine and Scotian Shelf) coasts are presently using that framework to produce daily nowcast/forecast runs. Doug is a Software Carpentry instructor and is the maintainer of the SWC Version Control with Mercurial lesson.



**Jean-François Lemieux** is a research scientist working for Environment and Climate Change Canada. His work includes the development of numerical algorithms, physical parameterizations and verification methods for sea ice modeling. He is one of the leading developers of the McGill sea ice model and also contributes to the development of the CICE sea ice model. Jean-François is strongly involved in the development and implementation of ice-ocean prediction systems. He has authored more than 20 peer-reviewed publications in scientific journals.



**Louis-Philippe Nadeau** is a physical oceanographer with expertise in theoretical and numerical modeling of mesoscale processes. He received his PhD at McGill and completed two post-docs at NYU and MIT before joining ISMER in 2015. His research topics cover: i) the meridional overturning circulation, ii) ocean-climate interactions, iii) ocean jets and eddies (mesoscale processes), iv) the dynamics of wind-driven channel flows with topography. In addition to his work in physical oceanography, he participated in the development of numerical models ranging from simple quasigeostrophic to more detailed Boussinesq frameworks.