## Class 4 verification of the Canadian operational ice-ocean prediction systems

Ice-ocean analysis and forecasting systems have been developed and operationally implemented under the Canadian Operational Network of Coupled Environmental Prediction Systems (CONCEPTS), an inter-departmental initiative notably involving Environment and Climate Change Canada (ECCC) and Fisheries and Oceans Canada (DFO). The DFO Service Desk for Operational Oceanography (SeDOO) is supporting real-time monitoring and analysis of the operational ice-ocean prediction systems that run at the ECCC Canadian Centre for Meteorological and Environmental Prediction (CCMEP), mainly via the calculation of the Class 4 metrics defined by GODAE OceanView (GOV) for Sea Surface Temperature (SST), Sea Level Anomaly (SLA), temperature and salinity profiles and sea ice concentration. The analysis and forecasts of the Global Ice-Ocean Prediction System (GIOPS) are near real-time evaluated against observations and compared with other global models that participate in the Ocean Predict international benchmarking. Statistics of the difference between the observations and the "model equivalents" are calculated into various sub-areas allowing to better assess the quality of the GIOPS forecast and its skills in key regions of interest for Canada. This is useful to guide and enhance operational model uses in those areas, and, in addition, to point out the importance of "regional" observations used for both assimilation and verification. The Class 4 metrics are also used during the development phase in order to demonstrate the positive (or at least neutral) impact of system innovations and thus validate it before its implementation in operation. This presentation will focus on those various aspects of the Class 4 verification of the GIOPS systems.

*Yvonnick Le Clainche (DFO- SeDOO)1, Greg Smith (ECCC)2, Fraser Davidson (ECCC)2, Frederic Dupont (ECCC)2, Jinshan Xu (DFO)3, Yimin Liu (ECCC)2, 1 Service Desk for Operational Oceanography, Fisheries and Oceans Canada, Dorval, QC, Canada 2 Canadian Centre for Meteorological and Environmental Prediction, Environment and Climate Change Canada, Dorval, QC, Canada 3 Bedford Institute of Oceanography, Fisheries and Oceans Canada, Dartmouth, NS, Canada*