

The 12th International Workshop on Modeling the Ocean

Program/Agenda

University of Michigan, Ann Arbor, Michigan, USA

Michigan Union, 530 S. State Street, June 28 (Tuesday) to July 1 (Friday), 2002

All agenda times in Eastern Daylight Time (EDT), UTC/GMT-04:00

(Germany: +6 hrs; China and Hong Kong: +12 hrs, Japan and Korea: +13 hrs; Australia: +14 hrs; + means the time passed, i.e., ahead of US EDT)

V—Virtual; I—In-person

Sessions:

- 1 **Modeling Waves, Currents, Ice and Their Interactions in Coastal and Shelf Seas** (Day 1)
- 2 **Circulation and Dynamics Modeling** (Day 1 and 2)
- 3 **Great Lakes System Modeling and Forecasting** (Day 1)
- 4 **Outstanding Young Scientist Awards (OYSA) Presentations** (Day 2)
- 5 **Data Assimilation and Ocean Forecast Systems** (Day 2)
- 6 **Multi-Scale Ocean & Atmospheric Processes** (Day 3)
- 7 **Modeling and Prediction of Extreme Marine Events** (Day 3)
- 8 **Coupled Physical-Biological Ocean Models** (Day 4)
- 9 **Simulation of Internal Waves, Tides, Turbulence and Mixing** (Day 4)
- 10 **Numerical Techniques and Approaches in Ocean Modeling** (Day 4)

June 28, 2022 (Tuesday, Day 1)

Time	Activity/Presentation	Speaker
08:00-09:00	Registration & Continental Breakfast [Add location]	
09:00-09:20	Opening Ceremony [Add room name] Deborah Lee (NOAA GLERL Director), I; Greg Dick (UoM CIGLR Director), V	Co-Chairs: Dmitry Beletsky/ Jia Wang
	Session 1: Modeling Waves, Currents, Ice and their Interactions in Coastal and Shelf Seas [Add room name]	Co-Chairs: Ricardo de Camargo/ David Cannon
09:20-09:40	Keynote: Development and applications of a coupled modelling system for the northwest Atlantic Ocean	Jinyu Sheng, I
09:40-09:55 (+13 hrs)	Improvement of the Ocean Mixed Layer Model via Large Eddy Simulation and Inverse Estimation	Yeonju Choi, OYSA, Kor, I
09:55-10:10 (+13 hrs)	July 2020 heavy rainfall in Japan: A numerical experiment using real-time river discharge	Yu-Lin K. Chang, V
10:10-10:25 (+14)	Modelling study on the sediment dynamics, the formation of the flood tide delta near Cullendulla Beach and the impact of human activities in the Batemans Bay, Australia	Gang Yang, Aus, OYSA, V
10:25-10:40 (+13)	Simulating surface waves in large lakes with one-way coupled hydrodynamic-wave models	Ayumi Fujisuki- Manome, V
10:40-11:10	Group Photo & Coffee/Tea Break	
11:10-11:30	Keynote: The effects of wave-current interactions on coastal circulation modelling	Xiao Hua Wang, I
11:30-11:45 (+12)	The impact of recent sea ice decline on the Beaufort Gyre from a high-resolution simulation	Xuezhi Bai, V
11:45-12:00 (+13)	Mechanism of ice-band pattern formation caused by resonant interaction between sea ice and internal waves in a continuously stratified ocean	Ryu Saiki, V
12:00-12:15	Numerical Investigation of Wind Influences on Stratification and Mixing in Mobile Bay, Alabama	Zhilong Liu, USA, OYSA, V
12:15-12:30	Direct numerical simulation of nonbreaking surface-wave-induced mixing: intensity and mechanism of the mixing	Haruka Imamura, (OYSA), JPN, I
12:30-13:30	Lunch Break (on your own)	

June 28, 2022 (Tuesday, Day 1)

	Session 2: Circulation and Dynamics Modeling [Add room name]	Co-Chairs: Xiao Hua Wang/ Jia Wang
13:30-13:45	Keynote: Interconnections between sea level, hurricanes, and the Gulf Stream: analysis of century-long global sea level and regional models	Tal Ezer, I
13:45-14:00 (+13)	Impacts of bottom topography on the formation of the North Pacific subtropical-subarctic frontal zone	Humio Mitsudera, V
14:00-14:15 (+13)	Water mass transformation and overturning circulation	Hajoon Song, (OYSA), Kor, V
14:15-14:30 (+12)	Understanding and reconstructing the coastal sea level variations along the western boundary of the North Pacific	Fanghua Xu, V
14:30-14:45 (+12)	Decrease of Annually Accumulated Tropical Cyclone-Induced Sea Surface Cooling and Upper Ocean Mixing in Recent Decades	Xueyang Zhang, (OYSA) PRC, V
14:45-15:00	Towards the Affinity of Oceanic, Tropospheric, and Tropical Cyclone Turbulence	Boris Galperin, V
15:00-15:30	Coffee/Tea Break	
	Session 3: Great Lakes System Modeling and Forecasting [Add room name]	Co-Chairs: Jinyu Sheng / Dan Titze
15:30-15:50	Keynote: Toward a Better Predictive Understanding of the Great Lakes	Pengfei Xue, I
15:50-16:05	Upwellings, thermal structure and circulation in Lake Erie	Dmitry Beletsky, I
16:05-16:20	Improving Flood Forecast Guidance for Ports in the Great Lakes Using a Linked Hydrologic-Hydrodynamic Framework	Lindsay Fitzpatrick, I
16:20-16:35	Radar altimeter-based lake-wide water level and wind speed monitoring over the Laurentian Great Lakes, 1992-2022	Yuanyuan Jia, V
16:35-16:50	Overview of the changes to the Canadian Water Cycle Prediction System v3.1.0	Frederic Dupont, V
16:50-17:05	Accelerated Coastal Erosion in Southern Lake Michigan under Wave Climate Change	Longhuan Zhu, V
17:30-19:00	Reception	

June 29, 2022 (Wednesday, Day 2)

Time	Activity/Presentation	Speaker
08:00-09:00	Registration & Continental Breakfast [Add location]	
	Session 4: Outstanding Young Scientist Awards (OYSA) Presentations [Add room name]	Co-Chairs: Huijie Xue/ Yutaka Yoshigawa
09:00-09:15 (+6)	Relative dispersion of drifters in the North Sea from observations and fully coupled circulation and wave models	Luciana Villa Castrillon, GER, V
09:15-09:30 (+6)	Extreme wave and wind characteristics of the Black Sea	Marcel Ricker, GER, V
09:30-09:45 (+12)	Heterogeneous submesoscale plume front dynamics in an estuary-shelf system	Dou Li, HK, V
09:45-10:00 (+12)	The Effects of Ocean Surface Waves on Global Intraseasonal Prediction: Case Studies with a Coupled CFSv2.0-WW3 System	Ruzi Shi, PRC, V
10:00-10:15 (+12)	A multi-layer linear Rossby wave dispersion relation for vertical tilt of mesoscale eddies	Hong Li, PRC, V
10:15-10:30 (+12)	Ocean Modeling with Adaptive REsolution (OMARE) – A new multi-scale modeling framework based on NEMO	Yan Zhang, PRC, V
10:30-11:00	Coffee/Tea Break	
	Session 4: Outstanding Young Scientist Awards (OYSA) Presentations	Co-Chairs: Philip Chu/ Bryan Mroczka
11:00-11:15 (+13)	Cross-shelf overturning in geostrophic-stress-dominant coastal fronts	Nan Yuan, JPN, V
11:15-11:30 (+13)	Estimation of freshwater discharge from the Gulf of Alaska (GOA) drainage basins	Peng Xin, JPN, V
11:30-11:45 (+12)	Dynamics regimes of geostrophic cross-isobath transport over the variable topography in the Northern South China Sea	Chi Wing Hui, HK, V
11:45-12:00 (+12)	Responses of coastal upwelling to tidally-induced bottom friction dynamics and plume-modulated geostrophy: a process-oriented modeling study	Weicong Cheng, HK, V
12:00-12:15 (+6)	On the impact of Bathymetric Changes in the German Bight on Coastal Dynamics	Benjamin Jacob,

		(OYSA), GER, V
12:15-12:30	Vorticity balance of island induced submesoscale eddies and related instability analysis	Changhoon, Ko, Kor, I
12:30-13:30	Lunch	
	Session 5: Data Assimilation and Ocean Forecast Systems [Add room name]	Co-Chairs: Fei Chai/ He Wang
13:30-13:50	Keynote: Developments of Global ESTOFS: NOAA's Integrated Multi-Scale Multi-Process Operational Water Level Model	Joannes Westerink, I
13:50-14:05 (+12)	Simultaneous phase-resolved ocean wave forecast and current estimation through data assimilation	Guangyao Wang, V
14:05-14:20 (+12)	An updated real-time forecasting system for marine environments in the North Indian Ocean	Yineng Li, V
14:20-14:35	Development of GLERL-CIGLR Arctic Sea-route Nowcast/Forecast System (GCAS)	Jia Wang, I
14:35-14:50	Evaluating the Impacts of Rapidly Updating Lake Surface Conditions on the Lake-Effect Snow Forecasting Capabilities of NOAA's Unified Forecast System (UFS)	Bryan Mroczka, I
14:50-15:20	Coffee/Tea Break	
	Session 2: Circulation and Dynamics Modeling	Co-Chairs: Dmitry Beletsky/ Lindsay Fitzpatrick
15:20-15:40	Diagnostic evaluation of effects of vertical mixing on meridional overturning circulation	Yutaka Yoshikawa, I
15:40-15:55 (+12 hrs)	The negative feedback of melt water to ice melting and oceanic heat flux in the Coupled Arctic Sea Ice-Ocean System	Haohao Zhang (OYSA), PRC, V
15:55-16:10	Coupling Global Ocean Circulation and Barotropic, Global, Tidal and Storm Surge Model	Coleman Blakely, (OYSA), USA, I
16:10-16:25	Numerical modelling of extreme wave events in the Southwestern South Atlantic	Carolina Gramscianinov, I

16:25-16:40	Development of HAB Forecast System for Albemarle-Pamlico Sound by Integrating Satellite Imagery with a Lagrangian Particle Tracking Model	Katherine Boot, (OYSA) USA, I
16:40-16:55	Implementation of Local Ensemble Transform Kalman Filter (LETKF) to Improve Hydrodynamic Modeling for Lake Erie Surface Temperature Short-term Forecast	Ara Hakim, (OYSA) , USA, I
17:00-17:30	<p align="center">International Steering Committee Business Meeting and LOC (virtual and in person) on Selection of Outstanding Young Scientist Award Recipients</p> <p align="center">Dinner on your own</p>	

June 30, 2022 (Thursday, Day 3)

08:00-09:00	Registration/Sign In & Continental Breakfast [Add location]	
	Session 6: Multi-Scale Ocean & Atmospheric Processes [Add room name]	Co-Chairs: Tal Ezer/ Ayumi Manome
09:00-09:20	Keynote: Cross-scale hydrologic-hydrodynamic processes using a community 3D unstructured-grid model	Joseph Y. Zhang, I
09:20-09:35	Impact of ENSO on the entrance of the Indonesian Throughflow: The oceanic wave propagation	Huijie Xue, I
09:35-09:50 (+6)	Wind Waves Contribution to Sea-level Variability in the Land-Ocean Continuum	Joanna Staneva, V
09:50-10:05 (+12)	Ocean Salinity Modes in the Tropical Pacific Ocean from the Perspectives of Global Water Cycle Framework	Ling Du, V
10:05-10:20 (+1)	Numerical study of tidal amplification in the Sable Gully of the Scotian Shelf	Shengmu Yang, V

10:20-10:50	Coffee/Tea Break	
	Session 7: Modeling and Prediction of Extreme Marine Events [Add room name]	Co-Chairs: Joseph Y. Zhang / Carolina Gramcianinov
10:50-11:10	Evaluation of trends in intensity and speed of extratropical cyclones associated to extreme wave events in the Atlantic Ocean	Ricardo de Camargo, I
11:10-11:25 (+13)	Marine Heatwaves and Cold Spells in the Northwestern Pacific Ocean from an Ocean Reanalysis	Toru Miyama, V
11:25-11:40 (+6)	The Impact of marine heatwaves on the occurrence and persistence of thermal stratification in shallow seas: A case study for the southern North Sea	Wei Chen, V
11:40-11:55	Development of a Flood Forecasting System for Lake Champlain	Dan Titze, I
11:55-12:10	Comparative assessment of the GIS-based bathtub, empirical wave run-up and hydrodynamic modeling for coastal flood predictions for the Great Lakes	Yi Hong, I
12:10-13:30	Lunch Break (on your own)	

13:30-16:45	Self Tour of University of Michigan Campus & Downtown Ann Arbor	
16:45-22:45	Detroit River Excursion Tour*: Take bus at 16:45 at the front door of the Michigan Union (*tickets required, not included in registration)	

July 1, 2022 (Friday, Day 4)

08:00-09:00	Registration/Sign In & Continental Breakfast [Add location]	
	Session 8: Coupled Physical-Biological Ocean Models [Add room name]	Co-Chairs: Pengfei Xue/ Yeonju Choi
09:00-09:15	BGC-Argo Observations and Physical-Biogeochemical Modeling in Western Pacific Ocean	Fei Chai, I
09:15-09:30	Effects of Climate Change on the Lake Michigan Ecosystem: An Application of a Linked End-to-End Earth System Model Framework	Ed Rutherford, I
09:30-09:45	Examining Hydrodynamics and Dissolved Oxygen Concentration over the Scotian Shelf using a coupled circulation-oxygen model	Jinyu Sheng, I
09:45-10:00 (+6)	Response of the Elbe estuary system to human invention and future climate forcing	Johannes Pein, V
10:00-10:15 (+13)	Possible Influence of Typhoons, Volcano, and Ocean Productivity on Early Larval Survival and Annual Cohort Recruitment of the Japanese eel	Yu-Lin Eda Chang, V
10:15-10:30	Coffee/Tea Break	
	Session 9: Simulation of Internal Waves, Tides, Turbulence and Mixing	Co-Chairs: Oliver Fringer / Coleman Blakely
10:30-10:45	Modelling changes in Great Lakes thermal structure related to ongoing climate warming	David Cannon, I
10:45-11:00 (+12)	Quantifying transient inhomogeneous mixing induced by breaking internal waves	Yukun Qian, V
	Session 10: Numerical Techniques and Approaches in Ocean Modeling [Add room name]	Co-Chairs: Johannes Westerink / Haruka Imamura
11:00-11:15	A vertically-adaptive coordinate for nonhydrostatic ocean modeling	Oliver Fringer, I
11:15-11:30	Predicting Lake Erie Wave Heights using XGBoost and LSTM	Philip Chu, I
11:30-11:45	An application of sub-grid scale topography in a global ocean model	He Wang, I
11:45-12:00	On several theoretical issues guiding ocean modeling	Jia Wang, I

12:00-12:15	Award to OYSA Winners [Add room name]	Dima Beletsky/ Jia Wang
12:15-13:00	Special Volume in Ocean Dynamics 13th IWMO 2023, Germany Closing Remarks	Tal Ezer Joanna Staneva, V Huikie Xue/ Yutaka Yoshikawa