

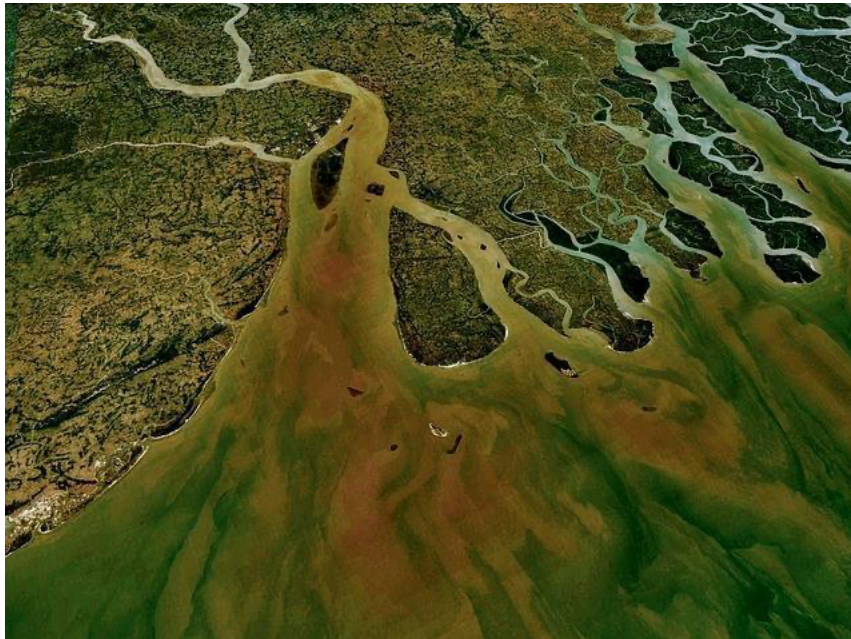


# The future of observing and modeling estuaries and river plumes

Scoping Hybrid Workshop

Location: **CMCC Foundation, Lecce, Italy**

Dates: **November 26<sup>th</sup>-27<sup>th</sup> 2024**



In this workshop, FOCCUS project partners and external international experts meet for two days to discuss state of the art, approaches, advances and challenges related to the monitoring and modelling of estuarine dynamics and Land-Ocean continuum interfaces, linking marine waters with land surface and groundwaters.





## Agenda

**DAY 1 – Tuesday 26<sup>th</sup> November 2024 [9:00-17:30]**

[Zoom Link](#)

Time	Activity
8:30-9:00	<b>Registration, badges pick up</b>
9:00-10:30	<b>Introductory Talks</b>
9:00-9:30	<b>Giovanni Coppini</b> - CMCC Foundation (online) <i>Welcome and CMCC introduction</i> <i>The Coast Predict frame and the experience of the DCC for Coastal Resilience</i>
9:30-10:00	<b>Joanna Staneva</b> - HEREON, FOCCUS Coordinator <i>Overview on the FOCCUS Project</i>
10:00-10:30	<b>Giorgia Verri</b> - CMCC Foundation <i>Observing and modeling estuaries and river plumes: Insights from previous projects and perspectives within the FOCCUS Project</i>
10:30-10:50	<b>Coffee break</b>
10:50-14:50	<b>Theme 1: Estuary and shelf monitoring techniques</b>
10:50-11:20	<i>Keynote-</i> <b>Guillaume Charria</b> - Ifremer (online) <i>From buoys to autonomous platforms: How to design future shelf sea inter-connected in situ observing systems?</i>
11:20-12:50	<b>1.1 Novel in situ monitoring</b>
11:20-11:40	<b>Bradley Allen Weymer</b> - Shanghai Jiao Tong University (online) <i>Overcoming Challenges in field observations of coastal groundwater systems along densely populated coasts</i>
11:40-12:00	<b>Viviana Piermattei</b> - CMCC Foundation <i>New cost-effective sea level sensor in support of sea level monitoring and early warning systems in estuarine and coastal areas</i>

12:00-12:20	<b>Damian L. Arévalo-Martínez</b> – Helmholtz Centre for Ocean Research Kiel (GEOMAR) (online) <i>Monitoring of greenhouse gases across the land-ocean continuum</i>
12:20-12:50	<b>Q/A- Discussion Theme 1.1</b>
12:50-13:50	<b>Lunch break</b>
13:50-14:50	<b>1.2 Novel EO satellite monitoring</b>
13:50-14:10	<b>Sonia Silvestri</b> – University of Bologna (UNIBO) (online) <i>High resolution optical remote sensing of river mouths and estuaries</i>
14:10-14:30	<b>Federico Falcini</b> – Italian National Research Council (CNR) <i>Assessment of EO data in plume and transitional area</i>
14:30-14:50	<b>Q/A- Discussion Theme 1.2</b>
14:50-17:00	<b>Theme 2: Estuarine and Shelf sea modeling</b>
14:50-15:20	<i>Keynote-</i> <b>Hans Burchard</b> -Leibniz Institute for Baltic Sea Research (online) <i>Methods and perspectives in coastal and estuarine modeling</i>
15:20-16:40	<b>2.1 Thermo-hydrodynamics modeling</b>
15:20-15:40	<b>Knut Klingbeil</b> - Leibniz Institute for Baltic Sea Research <i>Linking small-scale salinity mixing and large-scale estuarine circulation</i>
15:40-16:00	<b>Vera Fofonova</b> - The Alfred Wegener Institute (AWI) <i>Plume spreading test case to evaluate numerical schemes in coastal ocean models</i>
16:00-16:20	<b>Johannes Pein</b> - HEREON (online) <i>Response of the industrialised Elbe estuary to projected mean sea level rise and internal variability</i>
16:20-16:40	<b>Ramsey Harcourt</b> – University of Washington (UW) (online) <i>Taming turbulence closure in tidally driven simulations of coastal oceans and estuaries</i>
16:40-17:00	<b>Coffee break</b>
17:00-17:30	<b>Q/A- Discussion Theme 2.1</b>
20:00	<b>Social Dinner</b>

## DAY 2- Wednesday 27<sup>th</sup> November 2024 [9:00-17:00]

[Zoom Link](#)

Time	Activity
9:00-10:30	<b>2.2 Data driven modeling: ML and DL techniques to solve the estuarine dynamics</b>
9:00-9:20	<b>David F. Muñoz</b> - Virginia Tech (online) <i>Predicting the Evolution of Coastal Water Levels with Deep Learning and Transfer Learning Techniques</i>
9:20-9:40	<b>Leonardo Saccotelli</b> - CMCC Foundation <i>Enhancing estuary salinity prediction: a Machine Learning and Deep Learning based approach</i>
9:40-10:00	<b>Bing Yuan</b> - HEREON (online) <i>Downscaling sea surface height and currents in coastal regions using convolutional neural network</i>
10:00-10:30	<b>Coffee break</b>
10:30-11:30	<b>2.3 Nutrients and sediments modeling</b>
10:30-10:50	<b>Yoeri Dijkstra</b> - Delft University of Technology (online) <i>Estuarine sediments dynamics modelling on seasonal-decadal timescales in changing estuaries. Idealised model approaches for complex processes</i>
10:50-11:10	<b>Ymkje Huismans</b> -Deltares (online) <i>Modelling the long term morphodynamics of estuaries and tidal basins</i>
11:10-11:30	<b>Olga Vigiak</b> - CMCC Foundation <i>The land-to-sea modelling framework of the EC Joint Research Centre: State-of-the-art and opportunities within the FOCCUS project</i>
11:30-12:00	<b>Q/A- Discussion Theme 2.2, 2.3</b>
12:00-15:30	<b>Theme 3. Modeling processes at land-sea interface for different time and space applications</b>
12:00-12:30	<i>Keynote-</i> <b>Nils Moosdorf</b> - Leibniz Centre for Tropical Marine Research (ZMT) (online) <i>Connectivity of groundwater and coastal waters</i>

12:30-13:30	<b>Lunch break</b>
13:30-15:20	<b>3.1 Linked /coupled/ seamless modeling of groundwater and marine waters</b>
13:30-13:50	<b>Albert Folch/ Manuel Espino</b> - Universitat Politècnica de Catalunya (UPC) (online) <i>Coupling groundwater and ocean models in coastal regions</i>
13:50-15:20	<b>3.2 Linked /coupled/ seamless modeling of land surface and marine waters</b>
13:50-14:10	<b>Pedro Almeida</b> - +ATLANTIC (online) <i>Multi-stressors in estuarine environments: using Earth Observations and modelling solutions to support decision-making in Tagus Estuary, Portugal</i>
14:10-14:30	<b>Thao Thi Nguyen</b> - HEREON (online) <i>Seamless integration of the land-ocean continuum: the complex interplay of hydrology forcing, wave-induced processes and estuarine influences. A case study in the coastal German Bight</i>
14:30-14:50	<b>Xiaochen Zhao</b> - Louisiana State University (online) <i>Investigating hurricane-induced salt variation across the land-estuary-ocean continuum using a dynamically coupled hydrological-ocean model</i>
14:50-15:20	<b>Q/A- Discussion Theme 3</b>
Extra slot	<b>2.2 Nutrients and sediments modeling</b>
15:20-15:40	<b>Dongxiao Yin</b> - Woods Hole Oceanographic Institution (WHOI) (online) <i>Soil Erosion and Sediment Transport Model for WRF-Hydro</i>
15:40-16:10	<b>Coffee break</b>
16:10-16:30	<b>Closing Talk- Andrea Staccione</b> – CMCC Foundation (online) <i>Adapting to climate change in the Po River Basin (Italy): nature-based solutions, ecosystem services and initiatives from the CLIMAX PO Life project</i>
16:30-17:00	<b>Wrap up and closure</b>