



OceanPredict

Advancing the science of ocean prediction

OPST-12

Science Team Meeting

15 Apr 2026 – 17 Apr 2026, Montreal, Canada

Coastal Ocean and Shelf Seas Task Team (COSS-TT)

Chairs: Alexander Kurapov and Joanna Staneva)

Main activities:

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COSS-TT in-person meeting, 17-20 June 2026

Topical issue at Ocean Dynamics

OSM2026, February, Glasgow, UK COSS-TT –FOCCUS Special Session

EGU2026, May, 2026 , Vienna COSS-TT –FOCCUS Session

COSS-TT-COASTPREDICT Assembly, Merida

Science webinars

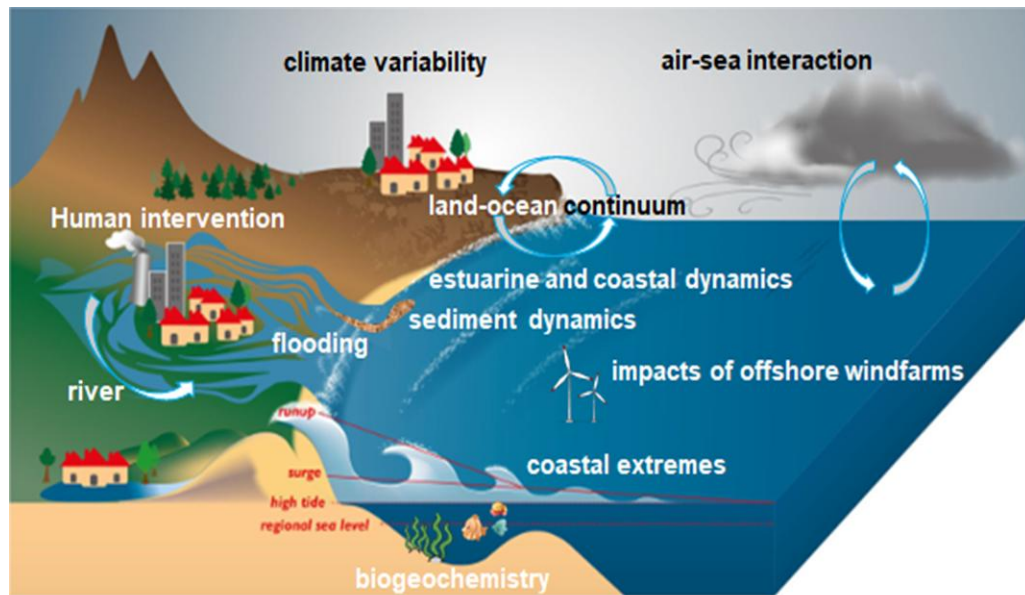
Contribution to the UN Ocean Decade activities

Contribution with CoastPredict to Ocean Literacy

Plans for UNOC-2027

Why Coastal Prediction is Challenging

- Strong nonlinearity & multi-scale dynamics
- Sparse and heterogeneous observations
- Uncertainty in forcing and boundary conditions
- Need for improved, integrated prediction systems



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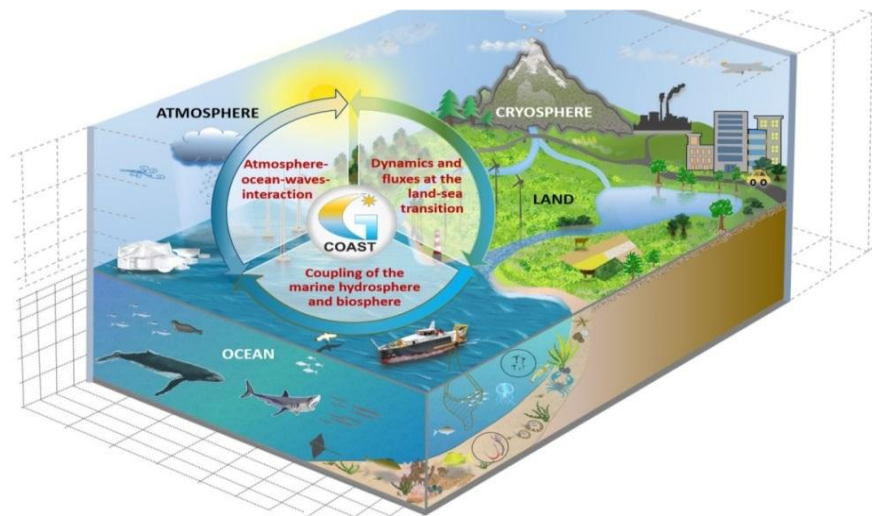
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COSS-TT Mission

The main goal and central mission of the COSS-TT is to work within OceanPredict Programme towards the provision of a sound scientific and expert basis for sustainable multidisciplinary downscaling and forecasting activities in the world's regional and coastal oceans.

COSS-TT fosters international coordination to advance science and expertise in coastal ocean prediction and forecasting



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Coastal Ocean Modeling Seminars:

<https://coastaloceanmodels.noaa.gov/seminar/>, regular time: Tue 13:00 US East

Run since Dec 2019 (220 seminars)

39 seminars in 2025 (30%: speakers from outside US, incl. EU, UK, Israel, Brazil, Mexico, Bahamas...)

50-100 attendees in each seminar

Topics include: ocean modeling (from storm surge to shelf, regional, global), process studies, remote sensing, in-situ observations, numerics, DA, AI, etc.

Upcoming Seminars

23 September, 2025, 1pm US EST

The CEFI Ocean Modeling and Prediction System

Andrew Ross (Andrew Ross (Geophysical Fluid Dynamics Laboratory, Princeton, NJ))

30 September, 2025, 1pm US EST

Atmospheric tides and air-sea interactions in the tropics

Jack Reeves Eyre (NOAA/NOS/OCS/CSDL/CMMB)

7 October, 2025, 1pm US EST

Tsunami early warning system by acoustic-gravity wave detection: an insight on the 2025 Kamchatka tsunami

Ali Abdolali (USACE Engineer Research and Development Center, Coastal and Hydraulics Laboratory, Vicksburg, MS, USA & Earth System Science Interdisciplinary Center (ESSIC), College Park, MD, USA)

14 October, 2025, 1pm US EST

(tent.) Modelling and Forecasting of Compound Coastal-Fluvial Floods in Urban Built Environment

(tent.) Indiana Olbert (University of Galway, Ireland)

21 October, 2025, 1pm US EST

(tent.) NOAA NOS modeling systems review series: ADCIRC

Joannes Westerink (University of Notre Dame, IN)

COSS-TT in-person meeting, IFREMER, Brest-Plouzané, France, 17-20 June 2026



Many thanks to Dr. Guillaume Charria and IFREMER!

Many thanks to Kirsten and Stéphanie!

<https://oceanpredict.org/docs/Documents/Task%20Teams/COSS-TT/Meetings/June-2025/Report/COSST-TT-Ifremer-report-June2025-final.pdf>

- Science presentations around the COSS-TT themes (39 presentations)
- Posters (20+)
- Discussions
- Breakout sessions
- Coffee breaks, lunches, networking events

15 out of 29 COSS-TT members were present onsite (from Europe, USA, Brazil, China, Hong Kong, S. Korea, Australia),
The rest participated on-line.

COSS-TT Themes

- Observing infrastructure in the coastal seas, its integration with ocean model, prediction and forecast systems
- Ocean modelling at the regional and shelf sea spatial scales and seamless integration with larger-scale estimates
- The land-ocean continuum: integration of models for coastal ocean and estuaries/deltas/wetlands, including effects on urban built environments/coastal cities
- Coastal projections and scenarios, coastal vulnerability, wave and storm surge impacts in the coastal zone
- AI/ML applications in the coastal ocean prediction
- User applications and decision tools in the coastal ocean (including Digital Twins)
- The role of the COSS-TT in the UN Ocean Decade and beyond

Integrated Observations – Modelling Framework

- What observational data are most critical for high-resolution coupled models?
- How can we better align observations and model design?
- What partnerships can support bridging observational gap?

Artificial Intelligence (AI), Data assimilation (DA) and Digital twins

- What hybrid DA/AI or physics-informed approaches are most promising
- What are the main barriers (data, skills, computer resources)?
- How to ensure transparency and uncertainty quantification in AI enhanced systems?

Designing Coastal Services for Societal Transformation

- How can communication with stakeholders and ocean literacy be improved?
- What use cases (e.g., adaptation, coastal risk) should guide service evolution?
- What role can citizen science and participatory approaches play?

Breakout working groups (younger researchers were very enthusiastic about these discussions in smaller groups !!!):

COSS-TT Topical Collection is currently opened In Ocean Dynamics

(editors: De Mey, Kurapov, Staneva Corano, Dabrowski Dabrowski,Chattia)

[Home](#) > Collection

Topical Collection on the Coastal Oceans and Shelf Seas Task Team (COSS-TT) Meeting, Ifremer, Brest-Plouzané, France, 17–20 June 2025



Participating journal: [Ocean Dynamics](#)

Next COSS-TT meeting

*Brazil - 2027 the week after the UNOC,
Anouncement will be sent soon (from 12 of April?)*

- Going forward-

CoastPredict/GlobalCoast and the COSS-TT

- MoU sign-in and participation in CP/GC Pilot Sites
- Science in support of solution-based research
- AI-based forecasting: obs very important (connection to GOOS)
- Expand to Global South
- Education, training, ocean literacy, citizen science



GlobalCoast Network

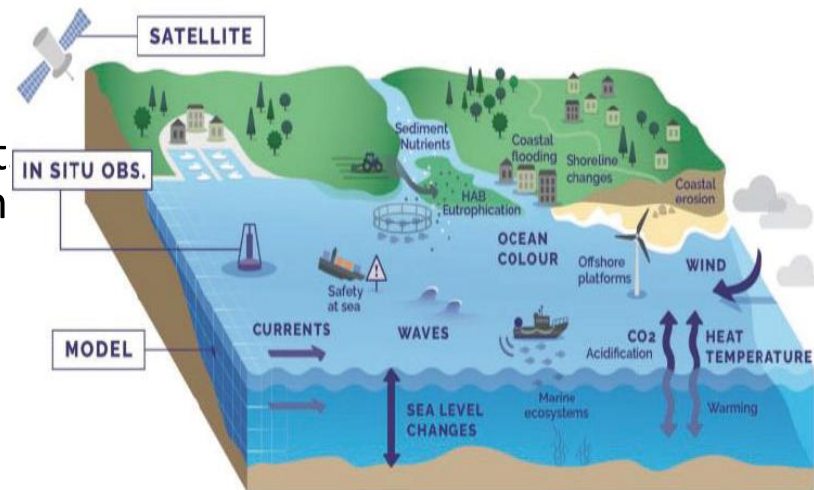
134 Pilot Sites
> 70 countries
> 225 partner institutions



- systematic comparison of solutions and services across remote coastal regions
- synergistic and robust science-based products
- “compare and contrast” to identify global coastal areas where similar (or individualized) solutions can be implemented, tested, and refined

Strategic Focus (2026–2031)

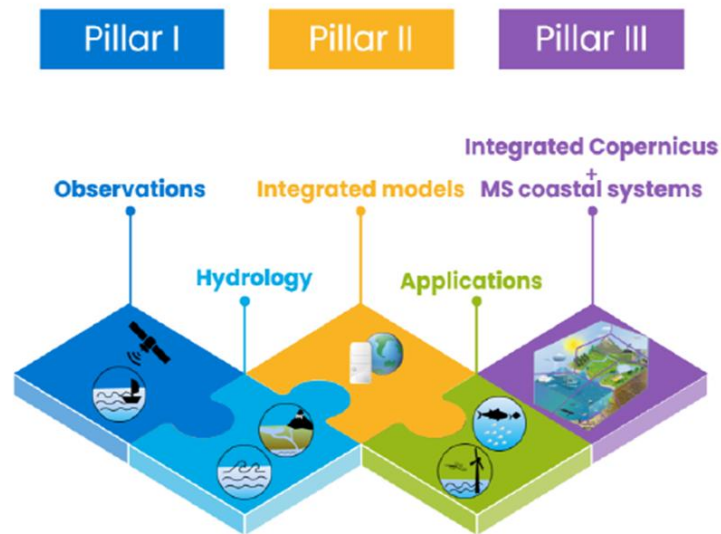
- Transition towards a fully integrated ocean prediction system connecting observations, data assimilation, modelling, and services.
- Move from fragmented component development to system-level integration across the value chain
- Strengthen operational oceanography as a backbone for decision-making and societal applications.
- Accelerate Research-to-Operations (R2O) and expand coastal and regional prediction capabilities.



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End-to-End Value Chain

- Current systems remain fragmented with weak connections between observations, data assimilation modelling, and services.
- Limited feedback from users to system development reduces impact and usability.
- Establish continuous feedback loops and integrate all components using OceanPrediction DCC standards.
- Goal: seamless, interoperable, and user-driven prediction ecosystem.



Source: <https://foccus-project.eu/>



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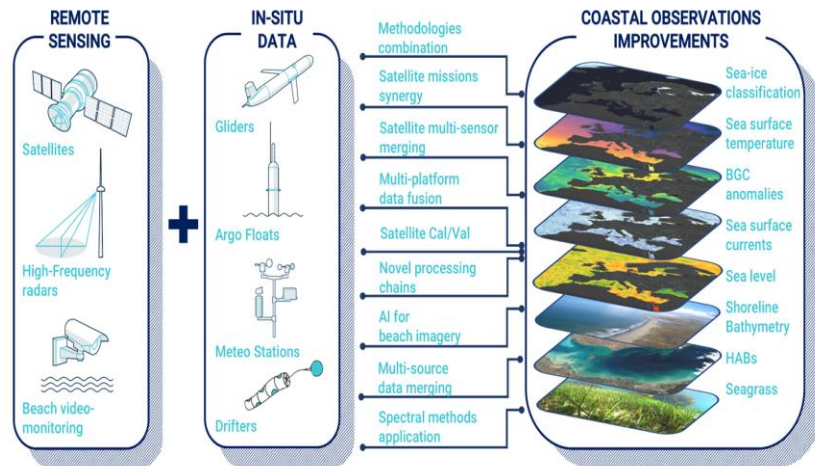
Data Assimilation

- Data assimilation remains a key bottleneck for improving forecast accuracy.
- Limited integration of new observations such as SWOT, HF radar, and current measurements.
- Develop hybrid approaches combining physics-based DA and AI/ML methods.
- Promote shared workflows, ensemble approaches, and capacity building across regions.

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Observations & Data

- Significant gaps in coastal and biogeochemical observations limit prediction capabilities.
- Need better integration of satellite, in situ, and autonomous observing systems.
- Use AI methods for data reconstruction, gap filling, and improved spatial coverage.
- Develop real-time observation impact monitoring frameworks.

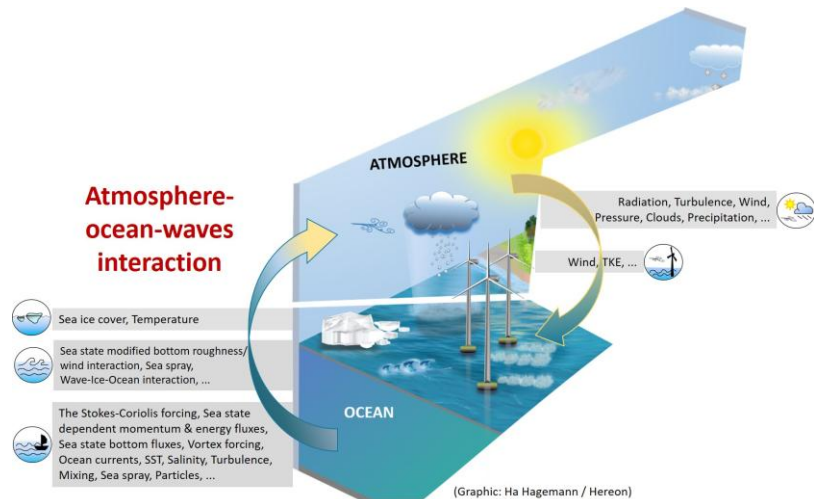


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Modelling & AI

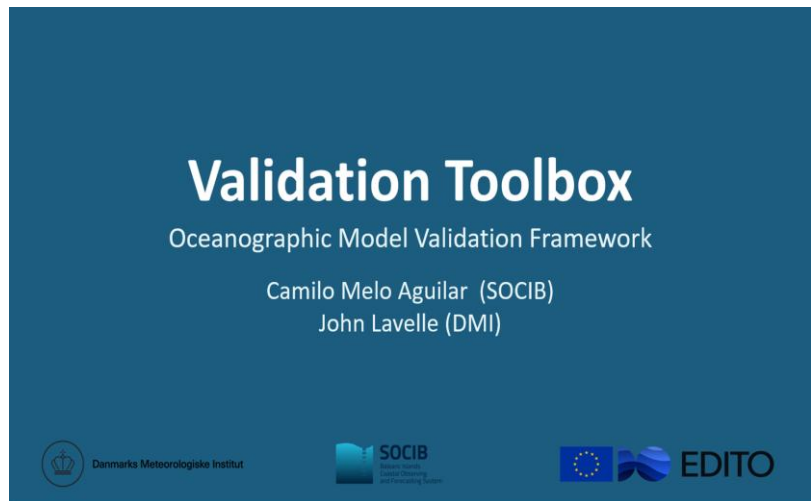
- Improve representation of coastal processes and land–sea interactions.
- Enable seamless coupling from global to coastal scales.
- Integrate AI for downscaling, emulation, and bias correction.
- Prepare models for next-generation GPU and HPC architectures.



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Verification & Benchmarking

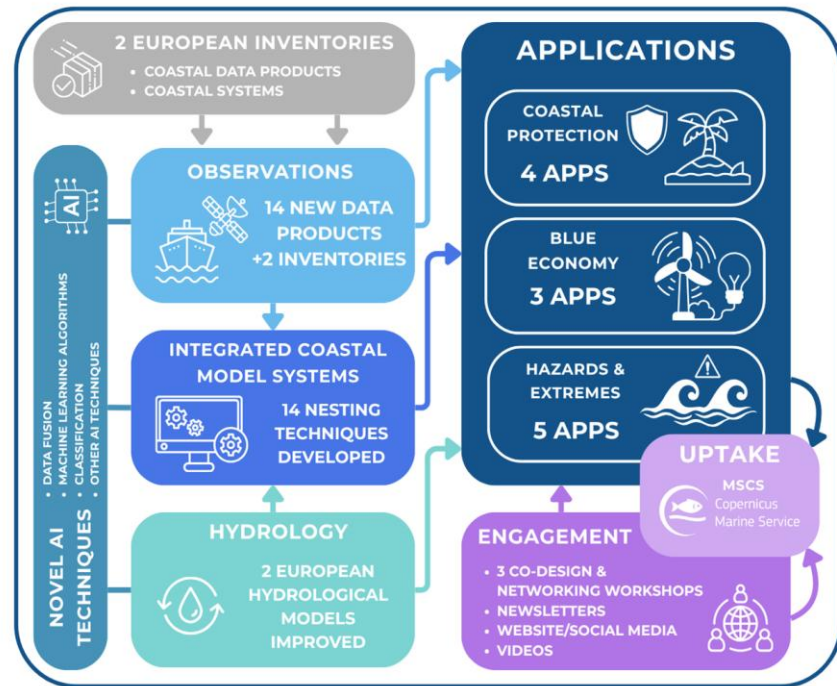
- Lack of standardized verification frameworks across systems.
- Need robust evaluation methods for both physics-based and AI-driven models.
- Develop common metrics, benchmarking protocols, and intercomparison exercises.
- Strengthen trust and transparency in prediction systems.



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Research to Operations

- Slow transition of scientific development into operational systems.
- Introduce Operational Readiness Levels to structure R2O pathways.
- Promote reproducible workflows, share repositories, and collaboration with operational centres.
- Enable scalable deployment of innovations.



Source: <https://foccus-project.eu/>

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Services & Applications

- Weak connection between prediction systems and user needs.
- Develop co-designed services with stakeholders and decision-makers.
- Expand Digital Twin applications and improve uncertainty communication.
- Focus on coastal hazards, energy, ecosystems, and marine operations.

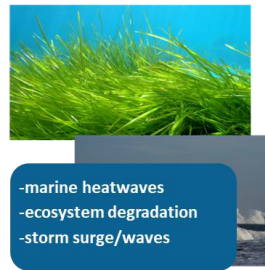
ESC 1 - Applications to better manage and protect the coastal area



ESC 2 - Applications to enhance blue economy



ESC 3 - Application related to natural and anthropogenic hazards and building resilience to climate change

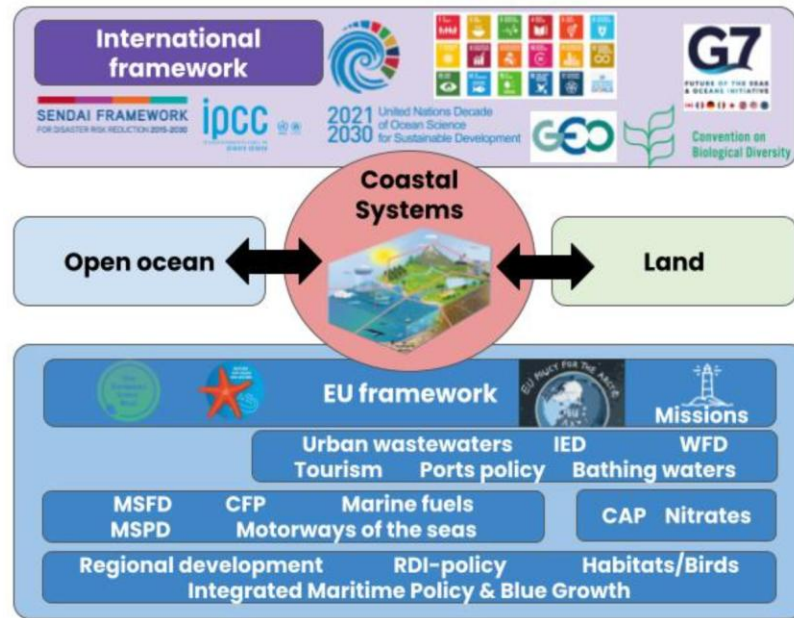


Source: <https://foccus-project.eu/>

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Partnerships & Coordination

- Strengthen collaboration with GOOS, WMO, Copernicus, and Ocean Decade programmes.
- Align standards, methodologies, and infrastructures across communities.
- Expand regional participation and capacity building.
- Enhance coordination across OceanPredict Task Teams.



Source: <https://foccus-project.eu/>

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Outlook

- OceanPredict must evolve into an integrated, interoperable, and user-driven system.
- Connect observations, modelling, AI, and services into a coherent framework.
- Strengthen coastal and regional prediction capabilities.
- Deliver actionable information to support policy, operations, and society.

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