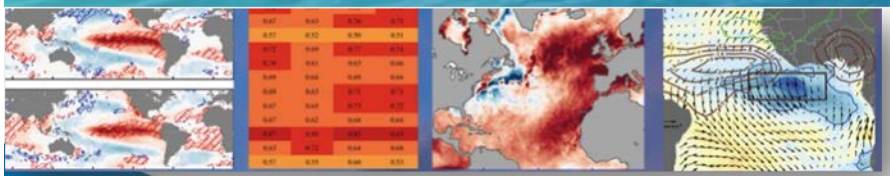
47th Session of the World Climate Research Programme

Joint Scientific Committee

CLIVAR

30TH Anniversary

Climate and Ocean: Variability, Predictability, and Change



Co-chairs

Francois Engelbrecht & Gokhan Danabasoglu

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WCRP World Climate Research Programme

28 April 2026

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WORLD METEOROLOGICAL ORGANIZATION

unesco Intergovernmental Oceanographic Commission

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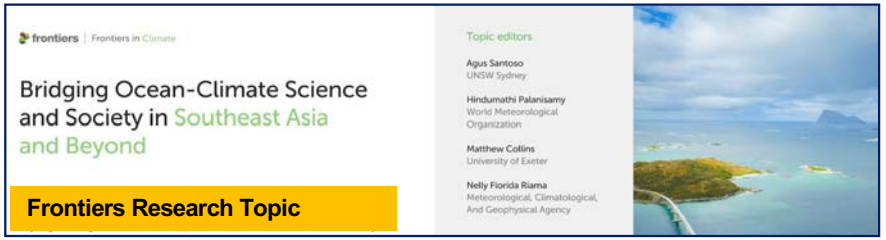
BRIN frontiers IPSL WCRP World Climate Research Programme US CLIVAR

The 2025 Pan-CLIVAR Meeting brought together CLIVAR members from all panels, research foci, and SSG, as well as invited representatives from WCRP core-projects and external partners to:

- **Develop ideas and input for the next CLIVAR science and implementation plans;**
- Foster interactions across panels, WCRP core projects, and partners;
- Evaluate progress, formulate future priorities, and enhance members cohesion; and
- Engage scientists and stakeholders in southeast Asia.

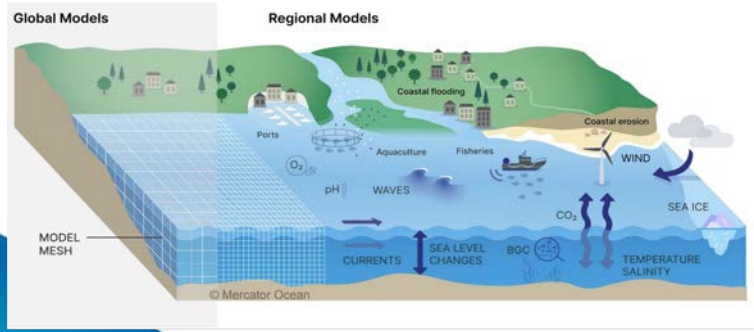


A New Effort

CLIVAR OMDP/RIfS CORDEX Task Team on Regional Ocean Modeling and Climate Projections

Motivation:

- Need to provide refined regional information relevant for societal services and adaptation measures;
- Need for dynamical downscaling approaches as most coupled global climate models will not be able to run with high-resolution ocean models; and
- Lack of international coordination of regional ocean modelling and climate projections.



Objectives:

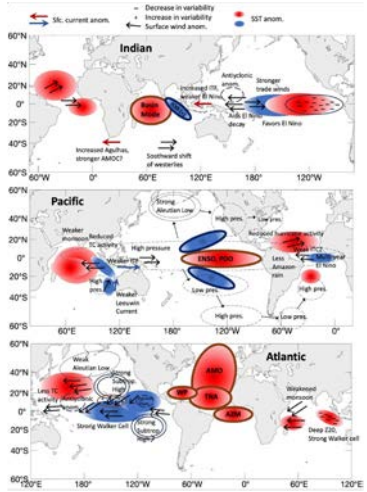
- Develop coordinated simulation protocols and deliver standardized datasets towards coordinated regional ocean-climate projections;
- Explore the potential of data-driven machine-learning approaches to simulate oceanic regions and their future evolution;
- Advance the science of regional ocean climate modelling and projections, through multi-model assessments, identification of biases, and underlying processes;
- Provide a forum for regional ocean modelers and model users to share knowledge and experience;
- Serve climate impact and adaptation needs by engaging with users/stakeholders and providing data and expertise to ocean climate services; and
- Contribute to international and regional expert assessment reports.

Contributions to Observing systems

REVIEW article
Front. Mar. Sci., 07 February 2025
Sec. Ocean Observation
Volume 12 - 2025 | https://doi.org/10.3389/fmars.2025.1539183

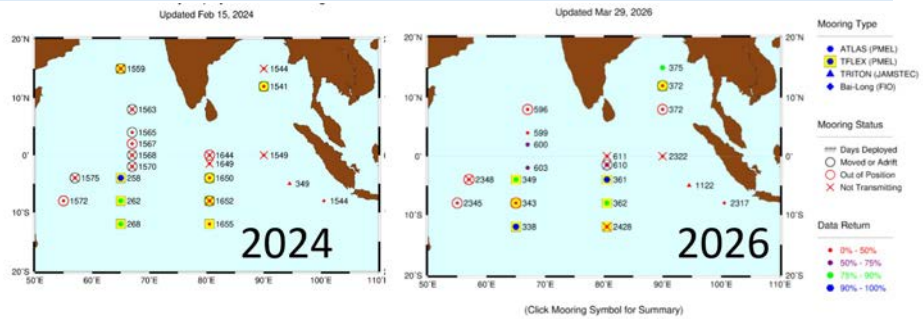
Toward an integrated pantropical ocean observing system

Gregory R. Foltz[1*], Yassir A. Eddebbar[2], Janet Sprintall[2], Antonietta Capotondi[3,4], Sophie Cravatte[5,6], Peter Brandt[7,8], Adrienne J. Sutton[9], Tamaryn Morris[10], Juliet Hermes[10,11], Clive R. McMahon[12], Michael J. McPhaden[9], Lev B. Looney[1,13,14], Franz Philip Tuchen[1,13], Mathew Koll Roxy[15], Fan Wang[16], Fei Chai[17], Regina R. Rodrigues[18], Belen Rodriguez-Fonseca[19,20], Aneesh C. Subramanian[21], Marcus Dengler[7], Cheyenne Stienbarger[22], Kathleen Bailey[23] and Weidong Yu[24]



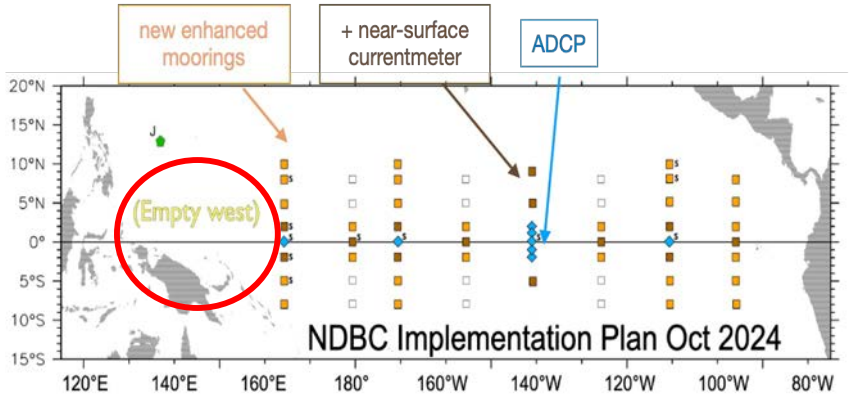
Members of TBI RF, PRP, ARP, MHWs RF, IORP, and other partners

CLIVAR IORP Task Team: Tracking IndOOS-2 Implementation



Southern Ocean and Northern Oceans Panels members: Involved in International Polar Year 5 (IPY5), reviewing SOOS Science plan, UN Ocean Decade: Antarctica Insync & Arctic Ocean 2050

CLIVAR PRP is leading efforts to fill observational gaps in the Western Tropical Pacific, also assessing impacts of gaps



Pacific Region Panel liaise with **TPOS2020** Implementation phase

Global Synthesis and Observations Panel and other panels: Observing System Experiments (OSEs) /Observing System Simulation Experiments (OSSEs) - the SynObs flagship

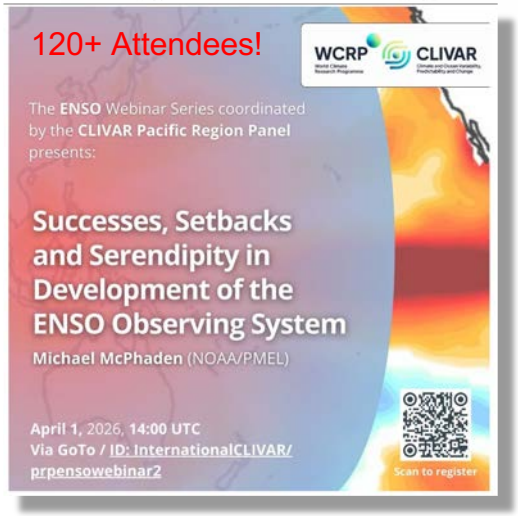
SynObs UN Ocean Decade Project

Ocean Observing Co-Design by The Global Ocean Observing System

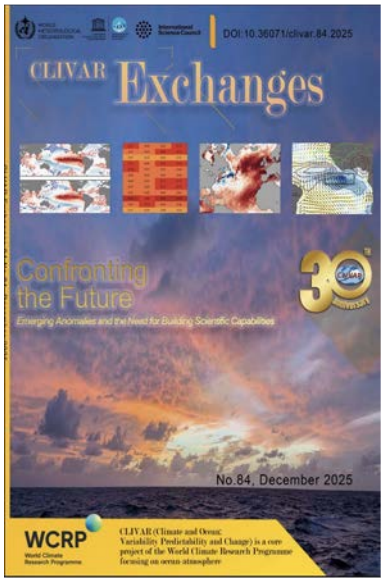
CLIVAR endorsed workshop (Japan, 26-29 August 2026)

The Research Focus on Marine Heatwaves is actively contributing to GOOS Ocean Observing Co-design Marine Heatwaves Exemplar

Capacity Building, Education, and Training



An Early Career Session with mentoring (WCRP, CLIVAR SSG) was held as a Side Event at Pan-CLIVAR 2025



Online university course co-organized by GEWEX-CLIVAR Working group on American Monsoons and Universidade Federal de Itajuba (all materials available online)

Co-organized by NORP, SORP, OMDP, and ARP, the workshop brought together ~80 in person and ~ 50 online participants; ECRs participation >50%

Emerging topics for the new CLIVAR Science Plan

- AI/ML applications and coordination while not losing the traditional process-based focus;
- Strategy for continued observations in the absence of substantial reductions of institutional / government support / funding which cannot wait until the outcomes of OceanObs'29;
- Regime shifts and tipping points;
- Extremes pertaining to CLIVAR;
- Sea level changes;
- Research related to biogeochemistry and carbon which can tie into marine carbon dioxide removal;
- Improving joint use of model and observational products in a coherent and synergistic way;
- Review of past accomplishments and identify gaps; and
- Enhance societally relevant science and applications, including early engagements with stakeholders, policy makers, etc.

Future plans and priorities

New Research Focus
(Second half 2026)

CLIVAR and panel activities **funding alternatives**

Integrated Ocean Carbon Research - Implementation phase

New Science & Implementation Plan (2027/2028)

CLIVAR Open Science Conference (2027/2028)

Ocean Obs'29

Public communication / policy debriefs
ENSO, AMOC, Ocean extremes

WCRP-OUC-CLIVAR Summer School

New Webinar series:
CDP & WMO-CLIVAR-GEWEX Monsoons

Challenges and Opportunities

Accomplishment of activities in the presence of funding challenges

Meaningful engagements in the virtual environment, including with other core projects, efforts, etc.

Starting new efforts without termination of others in a constrained resource environment

CLIVAR relevance to / presence at UN Ocean Decade Activities, including at Ocean Obs'29

Thank You!

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Tropical Basin Interaction RF sunset in 2025 (continuing as a WG of CDP)

TBI RF has 4 Working Groups:

- WG1: Coordinated GCM Experiments
- WG2: Conceptual and Intermediate Complexity Models and Statistical Approaches
- WG3: Observations
- WG4: Paleo Proxies

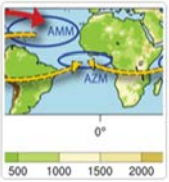
https://doi.org/10.5194/gmd-18-2587-2025

Article | Assets | Peer review | Metrics | Related articles

Model experiment description paper | 12 May 2025

The Tropical Basin Interaction Model Intercomparison Project (TBIMIP)

Ingo Richter, Ping Chang, Ping-Gin Chiu, Gokhan Danabasoglu, Takeshi Doi, Dietmar Dommenget, Guillaume Gastineau, Zoe E. Gillett, Aixue Hu, Takahito Kataoka, Noel S. Keenlyside, Fred Kucharski, Yuko M. Okumura, Wonsun Park, Malte F. Stuecker, Andréa S. Taschetto, Chunzai Wang, Stephen G. Yeager, and Sang-Wook Yeh



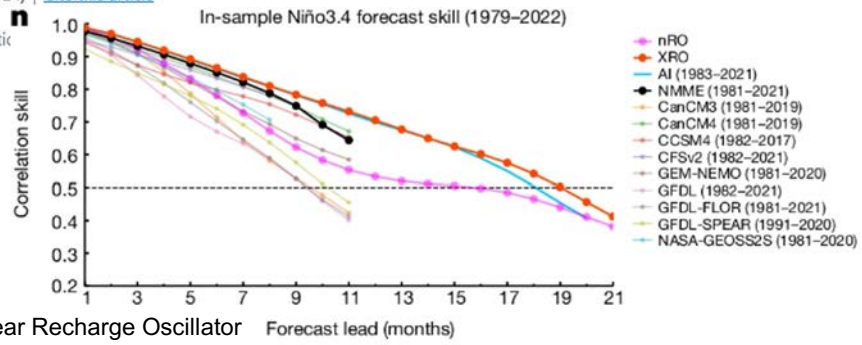
nature

Article | Published: 26 June 2024

Explainable El Niño predictability from climate mode interactions

Sen Zhao, Fei-Fei Jin, Malte F. Stuecker, Philip R. Thompson, Jong-Seong Kug, Michael J. McPhaden, Mark A. Cane, Andrew T. Wittenberg & Wenju Cai

Nature **630**, 891–898 (2024) | Cite this article



Extended nonlinear Recharge Oscillator

REVIEW article

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