

Pacific Region Panel

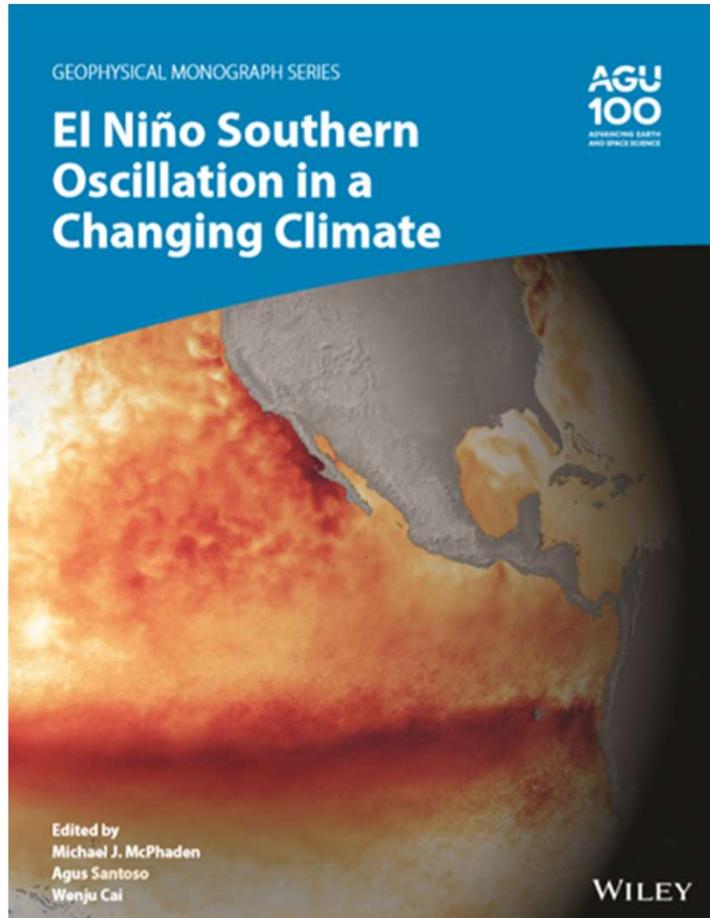
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and
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- Activities and Accomplishments during the past year
- Activities planned for 2021 and beyond

Activities: AGU Monograph/AGU Fall Meeting

EL Nino Southern Oscillation in a Changing Climate



Editors:

Michael McPhaden, Agus Santoso, Wenju Cai

Book was published in November 2020

Comprehensive review of all different aspects of ENSO (98 Authors)

10 PRP members were involved with the preparation of the different chapters of the book

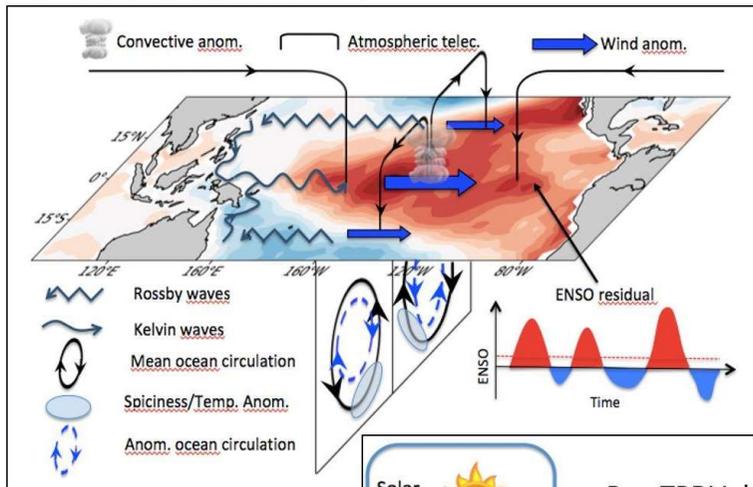
PRP members were involved in the organization/chairing of the AGU session “El Nino Southern Oscillation in a Changing Climate” which attracted a large community of ENSO researchers.

PRP members also organized a second AGU session on “Tropical Pacific Decadal Variability”

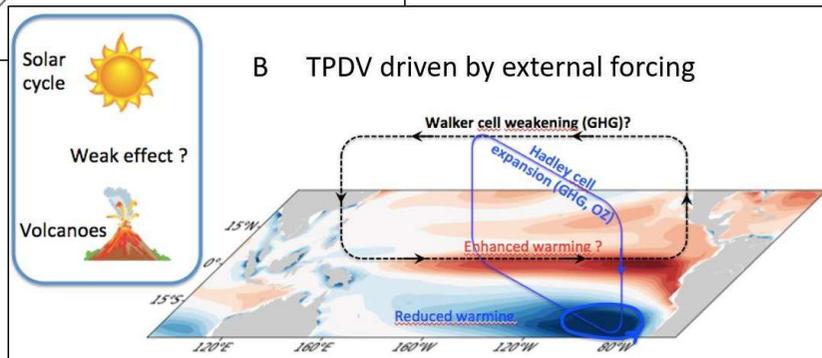
Science paper on Tropical Pacific Decadal Variability

Figure 4

A Internal drivers of TPDV



The paper provides a synthesis of our state-of-knowledge on Tropical Pacific variability at decadal and longer timescales, including natural and externally forced variations, to assess the degree of decadal predictability. Authorship includes several panel members as well as other international experts.



Reviews were received in November 2020, almost one year after submission
Revisions almost complete

3/9/21

Involvement with Observational Program

- North Pacific Ocean Circulation Experiment (NPOCE) made substantial progress in monitoring the Low Latitude Western Boundary Currents (LLWBCs), by conducting 7 cruises. Several papers were published including a review paper involving present (Fan Wang, Sophie Cravatte) and past (Janet Sprintall) PRP members.
- Enhancing the Chilean Climate Ocean Observing System (ECCOOS). PRP sponsored a proposal submitted to the Chilean government for two additional moorings along the coast of Chile. Proposal was not funded, but it may be resubmitted. Raised awareness on the need of coordinating observations along the eastern Pacific boundary.
- Feedback to TPOS 2020 Third Report (PRP meeting to discuss the report with S. Cravatte, part of TPOS2020 SSG). The PRP suggested better explanations to justify some the array choices, as well as governance and implementation plans. We also discussed aspects that TPOS 2020 was unable to address: 1) Coordination among countries for the monitoring of the LLWBCs, both Northern and Southern; 2) Coordination among countries to monitor the Eastern Boundary Upwelling systems

ENSO Metrics

The PRP has hosted the activities of the ENSO metrics group over the last two years. This project has been coordinating an international group of ENSO experts to develop a community metrics and diagnostics package to automatically evaluate, compare, and explore the ENSO performance, teleconnections, and processes in climate simulations. Now operational at PCMDI.

Recently published paper:

Planton, Y., E. Guilyardi, **A. T. Wittenberg**, J. Lee, P. J. Gleckler, T. Bayr, **S. McGregor**, **M. J. McPhaden**, **S. Power**, R. Roehrig, **J. Vialard**, and A. Voltaire: Evaluating climate models with the CLIVAR 2020 ENSO metrics package. *Bull. Amer. Meteorol. Soc.*, in press. doi:10.1175/BAMS-D-19-0337.1

Interactions with PICES

The PICES-CLIVAR working group on “Climate and Ecosystem Predictability” (including S. Minobe, R. Rykaczewski, and A. Capotondi from CLIVAR) has been extended for one year. Important to discuss possibilities for continuing interactions with PICES.

ENSO Conceptual Models working group (Started in Spring 2020)

Goals:

- Assess fundamental properties of ENSO that a conceptual model should reproduce
- Examine how ENSO conceptual models can help to understand ENSO in CGCMs
- Examine what can be learnt from these models about predictability & influences of mean state changes (e.g. response to global warming)?

Membership

PRP: J. Vialard (Lead), A. Capotondi, J.-S. Kug, J.-J. Luo, S. McGregor, M. McPhaden, S. Stevenson, A. Wittenberg

Other experts: S.-I. An , D. Dommenges , A. Fedorov, F.-F. Jin, M. Stuecker, E. Tziperman, C. Wang

Early Career Scientists

Tropical Pacific Decadal Variability: Oceanic Processes and Inter-basin interactions

Motivated by the knowledge gaps identified in previous TPDV paper

Goals:

- Review key aspects of the tropical-subtropical Pacific overturning circulation (STCs, LLWBCs) that may play a key role in TPDV, and assess their representation in ocean and climate models
- Clarify the location and nature of the surface wind forcing of these circulations
- Assess the role of interactions with Indian and Atlantic basins via oceanic and atmospheric pathways

Deliverables: Review paper on all aspects of this problem from observational (including paleo) and modelling perspectives, coordinated research on assessing model performance (OMIP simulations, CMIP6 climate models)

Membership

PRP: A. Capotondi, S. Cravatte, Y. Imada, K. Karnauskas, Y. Kosaka, J.-J. Luo, S. McGregor, M. McPhaden, S. Stevenson, A. Taschetto, F. Wang, X. Zhang

Other potential members: A. Balmaseda, J. Emile-Geay, R. Farneti, N. Holbrook, F. Kucharski, A. Santoso, J. Sprintall, C. Ummenhofer, B. Qiu

6 Early Career Scientists

Activities will be carried out virtually, with monthly conference calls

This WG will allow for interactions with Indian and Atlantic panels, and the Tropical Basins Interaction FG

Activities for 2021 and beyond

- Working Group on ENSO Conceptual Models to promote ENSO research, assessment of ENSO in climate models, and understanding of its future changes
- Working Group on TPDV to promote research and understanding of oceanic processes in the Tropical Pacific in relation to extra-tropical Pacific, Western Boundary Currents, and other basins. It will provide input to decadal prediction efforts.
- Continue interactions with PICES through the joint Working Group on “Climate and Ecosystem Predictability” during 2021, and work toward the establishment of a continued relationship past 2021.
- The PRP recognizes the importance of sustained observational programs along the basin boundaries, and is interested in helping promoting such programs.
- The PRP will also continue its interaction with the North Pacific Ocean Circulation Experiment (NPOCE).