DR AGUS SANTOSO

Email: agus.santoso@clivar.org
Citizenship: Indonesia; *permanent residency*: Australia

Researcher profile:
https://scholar.google.com.au/citations?user=12P_998AAAAJ&hl=en
https://www.scopus.com/authid/detail.uri?authorId=36841957400
https://www.researchgate.net/profile/Agus-Santoso

APPOINTMENTS/EMPLOYMENT HISTORY

Director (December 2023 – present), International CLIVAR Project Office, World Climate Research Programme, Ocean University of China (Qingdao)

Guest Professor (November 2023 – present), Ocean University of China, Qingdao

Adjunct Fellow (December 2023 – present), Climate Change Research Centre, UNSW, Sydney

Visiting Scientist (September 2022 – 2024), CSIRO Oceans and Atmosphere, Melbourne

Associate Investigator (August 2017 – 2024), ARC Centre of Excellence for Climate Extremes, Sydney

Senior Research Associate (January 2011 – July 2023), Climate Change Research Centre, UNSW, Sydney

Project co-leader (July 2017 – June 2022), Centre for Southern Hemisphere Oceans Research (CSHOR), CSIRO, Hobart

Adjunct Science Leader (September 2014 – July 2022), Commonwealth Scientific and Industrial Research Organisation (CSIRO)

Associate Investigator (January 2013 – July 2017), ARC Centre of Excellence for Climate System Science, Sydney

Post-doctoral Research Fellow, Climate Change Research Centre, UNSW (January 2006 – December 2010); ARC Centre of Excellence for Mathematics and Statistics of Complex Systems, UNSW (2009-2010)

Academic teaching, School of Mathematics and Statistics, UNSW, 2003, 2006, 2007 (MATH3261 'Atmosphere-Ocean Dynamics', MSCI3001 'Physical Oceanography')

TERTIARY EDUCATION

PhD (Applied Mathematics /Physical Oceanography), School of Mathematics and Statistics, UNSW, 2000 – 2005

Bachelor of Advanced Science (Honours) (Applied Mathematics), School of Mathematics and Statistics, UNSW, 1996 – 1999

PROFESSIONAL ACTIVITIES AND SERVICE

Member of CLIVAR Pacific Panel (January 2015 – December 2017), CLIVAR Tropical Pacific decadal variability working group (January 2020 – present)

Scientific Event Organiser,

- ENSO Workshop Australia 2015: 'ENSO Extremes and Diversity: Dynamics, Teleconnection and Impacts', UNSW, Sydney 4-6 February 2015.
- ENSO Dynamics Workshop, UNSW, Sydney 20-21 November 2017.
- CSHOR ENSO Science Symposium, CSIRO, Hobart 29-31 January 2019, inc. book project meeting (1-2 Feb 2019)
- ENSO Impact on South America Workshop, UNSW, Sydney 25-27 June 2019
- Workshop on "Interaction among the tropical basins: observations and simulation", Seoul, South Korea, 22-23 June 2024
- CLIVAR/FIO Summer School on Biogeochemical Processes in Earth System Models, Qingdao, China, 15-20 July 2024
- CLIVAR Seminar: Promoting Research in Variability, Predictability and Change of Ocean and Climate, Ocean University of China, 26 October 2024
- Pan-CLIVAR Meeting 2025, Bali, Indonesia, 22-23, 25-26 September 2025
- CLIVAR Symposium: Bridging Science and Society in Southeast Asia and Beyond, Bali, Indonesia, 24-25 September 2025
- Side Event: Enhancing International Ocean-Climate Research Collaboration in a Changing Climate, Pan-CLIVAR Bali, Indonesia, 25 September 2025

Scientific committee, Chief Editor, International Conference on Maritime Sciences and Advanced Technology (MSAT). https://msat.fitb.itb.ac.id/4th-msat-2023/

Session chair/co-chair, ocean session at AOGS 2015 (Singapore), 2 sessions at AMOS 2015 (Brisbane), MSAT 2017 (Bali), AMOS 2018 (Sydney), 2 sessions at AMOS 2019 (Darwin), 2 sessions at AMOS 2020 (Fremantle), AGU Fall Meeting 2020 (virtual), 2 sessions at AMOS 2021 (virtual), 2 sessions at ICSHMO 2022 (virtual), 2 sessions at AMOS 2022

Coordinator of national marine science sub-theme white paper: 'Dealing with Climate Change: Tropical Oceanography Research in Australia', (*https://www.marinescience.net.au/wp-content/uploads/2018/09/Climate-change-Tropical-Oceanography.pdf*).

Visiting scientist, CSIRO Marine and Atmospheric Research, Melbourne (February 2008, February 2009, February 2010, February 2011, April 2012, November 2012, host: Dr. Wenju Cai); Institut Pierre Simon Laplace (IPSL, Paris, 21-25 May 2012, host: Dr. Eric Guilyardi); Bandung Institute of Technology (Indonesia, 10-14 April 2017, host: Dr Ivonne Radjawane).

Guest lecturer for Marine Science class (Oct 2014, UNSW). Air-sea interactions master and undergraduate classes (April 2017, Bandung Institute of Technology, Indonesia). Air-sea interaction course (SB6127), 'Understanding El Niño Southern Oscillation', Bandung Institute of Technology, Indonesia (9 November 2020, virtual). 'ENSO in a Changing Climate', 3rd Summer School on Theory, Mechanisms and Hierarchical Modeling of Climate Dynamics: Tropical Oceans, ENSO and their teleconnections (18-29 July 2022, An ICTP Hybrid Meeting, Trieste Italy), ENSO and IOD lecture for Australian National University master/honours course "Intro to Natural Hazards" (23 May 2023, virtual). 'Characteristics of ENSO Extremes and the Strong 2015/2016 El Nino', International Summer School Program on Climate Change and Related Risks (4 July 2025, Fudan University, China).

Editor (January 2021 – present), *Journal of Climate*

Associate editor *Frontiers in Climate (Predictions and Projections)* (March 2021 – present)**,** *Journal of Climate* (August 2016 – December 2020).

Book editor, *El Niño Southern Oscillation in a Changing Climate.* Michael J. McPhaden, Agus Santoso, Wenju Cai (Eds.), 21 chapters, 528 pages, AGU Monograph, ISBN: 978-1-119-54812-6.

Editorial board member, Journal of *Science & Technology Indonesia*

Editor, *PeerJ*

Guest editor, ENSO Special Issue in *Atmosphere*

Reviewer for: Journal articles [Advances in Atmospheric Sciences, J. Advances in Modeling Earth Systems, J. Applied Meteorology and Climatology, Asia-Pacific Journal of Atmospheric Sciences, J. Atmospheric and Oceanic Technology, Atmospheric Science Letters, Australian Meteorological and Oceanographic Journal, BAMS, J. Climate, Climate Dynamics, Climatic Change, Climate of the Past, Communications Earth &Environment, Current Climate Change Reports, Deep-Sea Research Part I, Deep-Sea Research Part II, Dynamics of Atmospheres and Oceans, Ecological Economics, Environmental Research Letters, EOS, Frontiers in Climate, Geophysical Research Letters, Int. J. Climatology, J. Geophysical Research (Atmospheres), J. Geophysical Research (Oceans), Global and Planetary Change, Nature, Nature Climate Change, Nature Communications, NPJ, J. Oceanography, Ocean Science, J. Phys. Oceanography, PLOS One, Scientific Reports, Theoretical and Applied Climatology, Weather and Forecasting], book chapter [Climate Alert], and research funding proposals [ARC, NSF, NOAA CVP, DFG], book proposals [AGU Monograph]

Member of Australian Meteorological Society, American Meteorological Society, American Geophysical Union, European Geosciences Union, Asia Oceania Geosciences Society

Thesis examiner, PhD and honours

Team member, ENSO animation using ocean model, https://www.youtube.com/watch?v=gaFjlZxM7S4&feature=youtu.be

Guest analyst, Climate Feedback (http://climatefeedback.org/community/)

Contributor, Australia's Future Climate and Hazards Report, Australian Climate Service

PERSONNEL SUPERVISION

Dr Jules Kajtar (UNSW Research Associate/Postdoc, September 2012-2016), **Dr Francia Avila** (UNSW Research Associate, August-November 2012), **Dr Simon Borlace** (UNSW/CSIRO Postdoc, December 2013-December 2014), **Dr Guojian Wang** (CSIRO Postdoc, July 2014 – 2016). Santoso has also played an active role in mentoring other postdocs, several graduate and undergraduate students based at UNSW, CSIRO, and overseas (e.g., Xiamen University, University of Exeter, Institut Teknologi Bandung).

PUBLICATIONS

Journal articles:

1. Taschetto, A., S. McGregor, D. Dommenget, Z. Gillet, N. Nicholls, S. Sharmila, P. van Rensch, et al., 2025: Climate impacts of El Niño–Southern Oscillation on Australia. ***Nat. Rev. Earth Environ.****, in press.*
2. Cai, W., C. Reason, E. Mohino, B. Rodríguez-Fonseca, J. Malherbe, A. Santoso, X. Li, H. Chikoore, H. Nnamchi, et al., 2025: Climate impacts of the El Niño–Southern Oscillation in Africa. ***Nat. Rev. Earth Environ.***, 6, 503–520, doi:10.1038/s43017-025-00705-7.
3. Xin, S., L. Dong, L. Wu, F. Song, A. Santoso, X. Zheng, B. Gan, S. Liu, 2025: Emergence of positive IOD-like warming pattern driven by greenhouse gases and anthropogenic aerosols

during the recent four decades. ***Climate Dynamics**,* 63*,* 219, doi:10.1007/s00382-025-07710-y.

4. Kajakokulan, P., A. Santoso, S. Zhao, 2025: Asymmetric response of Sri Lanka Northeast Monsoon rainfall to El Niño/La Niña. ***Climate Dynamics**,* 63, 101, doi:10.1007/s00382-025-07590-2.
5. Wang, G., A. Santoso, 2024: Multi-year La Niña frequency tied to southward tropical Pacific wind shift. ***npj Climate and Atmospheric Science***, 7, 226, doi:10.1038/s41612-024-00772-5.
6. Qiu, W., M. Collins, A. A. Scaife, A. Santoso, 2024: Tropical Pacific trends explain the discrepancy between observed and modelled rainfall change over the Americas. ***npj Climate and Atmospheric Science***, 7, 201, doi:10.1038/s41612-024-00750-x.
7. Wang, G., W. Cai, A. Santoso, K. Yang, 2024: Southern Ocean heat buffer constrained by present-day ENSO teleconnection. ***npj Climate and Atmospheric Science***, 7, 181, doi: 10.1038/s41612-024-00731-0.
8. Wang, G., W. Cai, A. Santoso, N. Abram, B. Ng, K. Yang, T. Geng, et al., 2024: The Indian Ocean Dipole in a warming world. ***Nature Reviews Earth & Environment***, 5, 588-604, doi: 10.1038/s43017-024-00573-7.
9. Wang, G., W. Cai, A. Santoso, 2024: Variability of the Indian Ocean Dipole post-2100 reverses to a reduction despite persistent global warming. ***Nature Communications***, 15, doi:10.1038/s41467-024-49401-y.
10. Kim, S.-K., H.-J. Park, S.-I. An, C. Liu, W. Cai, A. Santoso, J.-S. Kug, 2024: Decreased Indian Ocean Dipole variability under prolonged greenhouse warming. ***Nature Communications***, 15, doi:10.1038/s41467-024-47276-7.
11. McKenna, S., A. Santoso, A., Sen Gupta, A. S. Taschetto, 2024: Understanding biases in Indian Ocean Seasonal SST in CMIP6 models. ***J. Geophysical Research: Oceans***, 129, e2023JC0290330, doi:10.1029/2023JC020330.
12. Orihuela-Pinto, B., A. Santoso, M. H. England, A. Taschetto, 2023: Coupled feedbacks from the tropical Pacific to the Atlantic meridional overturning circulation. ***Geophysical Research Letters***. doi:10.1029/2023GL103250.
13. Capotondi, A., S. McGregor, M. McPhaden, S. Cravatte, N. Holbrook, Y. Imada, S. Sanchez, J. Sprintall, M. Stuecker, C. Ummenhofer, M. Zeller, R. Farneti, G. Graffino, S. Hu, K. Karnauskas, Y. Kosaka, F. Kucharski, M. Mayer, B. Qiu, A. Santoso, A. Taschetto, F. Wang, X. Zhang, R. Holmes, J.-J. Luo, N. Maher, C. Martinez-Villalobos, R. Naha, S. Stevenson, A. Sullivan, P. van Rensch, T. Xu, G. Meehl, N. Schneider, 2023: Mechanisms of Tropical Pacific Decadal Variability. ***Nature Reviews Earth & Environment***, 4, 754–769. doi: 10.1038/s43017-023-00486-x.
14. Chung, C., G. Boschat, A. Taschetto, S. Narsey, S. McGregor, A. Santoso, F. Delage, 2023: Evaluation of seasonal teleconnections to remote drivers of Australian rainfall in CMIP5 and CMIP6 models. ***J. Southern Hemisphere Earth Systems Science***. doi:10.1071/ES23002.
15. Gillett, Z. E., A. S. Taschetto, C. M. Holgate, A. Santoso, 2023: Linking ENSO to synoptic weather systems in eastern Australia. ***Geophysical Research Letters***, 50, e2023GL104814. doi:10.1029/2023GL104814.
16. An, S.-I., H.-J. Park, S.-K. Kim, W. Cai, A. Santoso, D. Kim, J.-S. Kug, 2023: Main drivers of Indian Ocean Dipole asymmetry revealed by a simple IOD model. ***npj Clim. Atmos. Sci.*** 6, 93. doi:10.1038/s41612-023-00422-2.

17. Cai, W., B. Ng, T. Geng, F. Jia, L. Wu, G. Wang, Y. Liu, B. Gan, K. Yang, A. Santoso, X. in, Z. Li, Y. Liu, Y. Yang, F.-F. Jin, M. Collins, M. McPhaden, 2023: Anthropogenic impacts on twentieth-century ENSO variability changes. ***Nature Reviews Earth & Environment***. doi: 10.1038/s43017-023-00427-8.

18. Cai, W., L. Gao, Y. Luo, X. Li, X. Zheng, X. Zhang, X. Cheng, F. Jia, A. Purich, A. Santoso, Y. Du, D. M. Holland, J.-R. Shi, B. Xiang, S.-P. Xie, 2023: Southern Ocean warming and its climatic impacts. ***Science Bulletin*****,** doi:10.1016/j.scib.2023.03.049

19. Cai, W., F. Jia, S. Li, A. Purich, G. Wang, L. Wu, B. Gan, A. Santoso, T. Geng, B. Ng, Y. Yang, D. Ferreira, G. A. Meehl, M. J. McPhaden, 2023: Antarctic shelf ocean warming and sea ice melt affected by projected El Niño changes, ***Nature Climate Change***, doi:10.1038/s41558-023-01610-x

20. Geng, T., W. Cai, L. Wu, A. Santoso, G. Wang, Z. Jing, B. Gan, Y. Yang, S. Li, S. Wang, Z. Chen, M. McPhaden, 2022: Emergence of changing Central-Pacific and Eastern-Pacific El Niño-Southern Oscillation in a warming climate*,* ***Nature Communications***, doi: 10.1038/s41467-022-33930-5

21. Wang, G., W. Cai, A. Santoso, L. Wu, J. C. Fyfe, S.-W. Yeh, B. Ng, K. Yang, M. J. McPhaden, 2022: Future Southern Ocean warming linked to projected ENSO variability. ***Nature Climate Change****,* doi:10.1038/s41558-022-01398-2

22. Pontes, G., A. Taschetto, A. Sen Gupta, A. Santoso, I. Wainer, A. Haywood, W.-L. Chan, A. Abe-Ouchi, C. Stepanek, G. Lohmann, S. Hunter, J. Tindall, M. Chandler, L. Sohl, W. Peltier, D. Chandan, Y. Kamae, K. Nisancioglu, Z. Zhang, C. Contoux, N. Tan, Q. Zhang, B. Otto-Bliesner, E. Brady, R. Feng, A. von der Heydt, M. Baatsen, A. Oldeman, 2022: Mid-Pliocene El Niño/Southern Oscillation suppressed by Pacific Inter-Tropical Convergence Zone shift. ***Nature Geoscience***, doi:10.1038/s41561-022-00999-y

23. Jeong, Y.-C., S.-W. Yeh, Y.-K. Lim, A. Santoso, G. Wang, 2022: Indian Ocean warming as key driver of long-term positive trend of Arctic Oscillation. ***NPJ Climate and Atmospheric Science***, 5, doi: 10.1038/s41612-022-00279-x.

24. Mao, Y., Y. Zou, L. M. Alves, E. E. N. Macau, A. S. Taschetto, A. Santoso, J. Kurths, 2022: Phase Coherence Between Surrounding Oceans Enhances Precipitation Shortages in Northeast Brazil. ***Geophysical Research Letters***, 49, doi:10.1029/2021GL097647

25. Santoso, A., M. H. England, J. B. Kajtar, W. Cai, 2022: Indonesian Throughflow variability and linkage to ENSO and IOD in an ensemble of CMIP5 models. ***Journal of Climate***, 35, 3161-3178. doi:10.1175/jcli-d-21-0485.1

26. Holgate, C., J. P. Evans, A. S. Taschetto, A. Sen Gupta, A. Santoso, 2022: The impact of interacting climate modes on east Australian precipitation moisture sources. ***Journal of Climate***, 35, 3147-3159. doi:10.1175/jcli-d-21-0750.1

27. Cai, W., Ng B., G. Wang, A. Santoso, L. Wu, K. Yang, 2022: Increased ENSO sea surface temperature variability under four IPCC emission scenarios. ***Nature Climate Change***, 12, 228-231. doi:10.1038/s41558-022-01282-z

28. Orihuela-Pinto, B., A. Santoso, M. H. England, A. S. Taschetto, 2022: Reduced ENSO variability due to a collapsed Atlantic Meridional Overturning Circulation. ***Journal of Climate***, 35, 5307-5320. doi:10.1175/jcli-d-21-0293.1

29. Bi, D., G. Wang, W. Cai, A. Santoso, A. Sullivan, B. Ng, F. Jia, 2022: Improved simulation of ENSO variability through feedback from the equatorial Atlantic in a pacemaker experiment. ***Geophysical Research Lett.***, 49, e2021GL096887. doi:10.1029/2021GL096887

30. Cai, W., A. Santoso, M. Collins, B, Dewitte, C. Karamperidou, J. S. Kug, M. Lengaigne, M. J. McPhaden, M. F. Stuecker, A. S. Taschetto, A. Timmermann, L. Wu, S. W. Yeh, G. Wang, B. Ng, F. Jia, Y. Yang, J. Ying, X.-T. Zheng, T. Bayr, J. R. Brown, A. Capotondi, K. M. Cobb, B. Gan, T. Geng, Y. G. Ham, F. F. Jin, H. S. Jo, X. Li, X. Lin, S. McGregor, J. H. Park, K. Stein, K. Yang, L. Zhang, W. Zhong, 2021: Changing El Niño–Southern Oscillation in a warming climate, ***Nature Reviews Earth and Environment***, doi:10.1038/s43017-021-00199-z.

31. Kajtar, J. B., A. Santoso, M. Collins, A. S. Taschetto, M. H. England, L. M. Frankcombe, 2021: CMIP5 intermodel relationships in the baseline Southern Ocean climate system and with future projections, ***Earth's Future***, doi:10.1029/2020ef001873.

32. Wang, G., W. Cai, A. Santoso, 2021: Simulated thermocline tilt over the tropical Indian Ocean and its influence on future sea surface temperature variability, ***Geophysical Research Letters***, 48, doi: 10.1029/2020gl091902.

33. Cai, W., K. Yang, L. Wu, G. Huang, A. Santoso, B. Ng, G. Wang, T. Yamagata, 2020: Opposite response of strong and moderate positive Indian Ocean Dipole to global warming. ***Nature Climate Change***, doi: 10.1038/s41558-020-00943-1.

34. Cai, W., B. Ng, T. Geng, L. Wu, A. Santoso, M. J. McPhaden, 2020: Butterfly effect and a self-modulating El Niño response to global warming. ***Nature***, 585, 68-73, doi: 10.1038/s41586-020-2641-x.

35. Dhame, S., A. Taschetto, A. Santoso, K. Meissner, 2020: Indian Ocean warming modulates global atmospheric circulation trends. ***Climate Dynamics***, doi: 10.1007/s00382-020-05369-1.

36. Wang, G., W. Cai, K. Yang, A. Santoso, T. Yamagata, 2020: A unique feature of the 2019 extreme positive Indian Ocean Dipole event. ***Geophysical Research Letters***, 47, e2020GL088615, doi: 10.1029/2020GL088615.

37. McKenna, S., A. Santoso, A. Sen Gupta, A. Taschetto, W. Cai, 2020: Indian Ocean Dipole in CMIP5 and CMIP6: Characteristics, biases, and links to ENSO. ***Scientific Reports***, 10, 11500, doi: 10.1038/s41598-020-68268-9.

38. Cai, W., M. J. McPhaden, A. M. Grimm, Regina R. Rodrigues, A. S. Taschetto, R. D. Garreaud, B. Dewitte, G. Poveda, Y.-G. Ham, A. Santoso, B. Ng, W. Anderson, G. Wang, T. Geng, H.-S. Jo, J. A. Marengo, L. M. Alves, M. Osman, S. Li, L. Wu, C. Karamperidou, K. Takahashi, C. Vera, 2020: Climate impacts of the El Niño-Southern Oscillation on South America. ***Nature Reviews Earth & Environment***, 1, 215-231, doi: 10.1038/s43017-020-0040-3.

39. Wang, G., W. Cai, and A. Santoso, 2020: Stronger increase in the frequency of extreme convective El Niño than extreme warm El Niño under greenhouse warming. ***Journal of Climate***, 33, 675-690, doi: 10.1175/JCLI-D-19-0376.1.

40. Bordbar, M. H., M. H. England, A. Sen Gupta, A. Santoso, A. S. Taschetto, T. Martin, W. Park and M. Latif, 2019: Uncertainty in near-term global surface warming linked to tropical Pacific climate variability. ***Nature Communications***, 10:1990, doi: 10.1038/s41467-019-09761-2.

41. Makarim, S., J. Sprintall, Z. Liu, W. Yu, A. Santoso, X.-H. Yan, R. D. Susanto, 2019: Previously unidentified Indonesian Throughflow pathways and freshening in the Indian Ocean during recent decades. ***Scientific Reports***, 9:7364, doi: 10.1038/s41598-019-43841-z.

42. Cai, W., L. Wu, et al., 2019: Pantropical Climate Interactions. ***Science***, 363, doi: 10.1126/science.aav4236.

43. Santoso, A., H. Hendon, A. Watkins, S. Power, D. Dommenget, M. England, L. Frankcombe, N. Holbrook, R. Holmes, P. Hope, E.-P. Lim, J.-J. Luo, S. McGregor, S. Neske, H. Nguyen, A. Pepler, H. Rashid, A. Sen Gupta, A. S. Taschetto, G. Wang, E. Abellan, A. Sullivan, M. Huguenin, F. Gamble, F. Delage, 2019: Dynamics and predictability of the El Niño-Southern Oscillation: An Australian perspective on progress and challenges. ***Bulletin of the American Meteorological Society***, 100, 403-420, doi:10.1175/BAMS-D-18-0057.1.

44. Holmes, R. M., S. McGregor, A. Santoso, and M. H. England, 2019: Contribution of Tropical Instability Waves to ENSO Irregularity. ***Climate Dynamics***, 52, 1837-1855, doi:10.1007/s00382-018-4217-0.

45. Cai, W., G. Wang, B. Dewitte, L. Wu, A. Santoso, K. Takahashi, Y. Yang, A. Carréric, M. J. Mcphaden, 2018: Increased variability of eastern Pacific El Niño under greenhouse warming. ***Nature***, 564, 201-206.

46. Timmermann et al., 2018: El Niño-Southern Oscillation complexity. ***Nature***, 559, 535-545.

47. Cai, W., G. Wang, B. Gan, L. Wu, A. Santoso, X. Lin, Z. Chen, F. Jia, and T. Yamagata, 2018: Stabilised frequency of extreme positive Indian Ocean Dipole under 1.5 °C warming. ***Nature Communications***, doi:10.1038/s41467-018-03789-6.

48. Kajtar, J. B., A. Santoso, S. McGregor, and M. H. England, 2018: Model under-representation of decadal Pacific trade wind trends and its link to tropical Atlantic bias, ***Climate Dynamics***, 50, 1471-1484.

49. Abellán, E., S. McGregor, M. England, A. Santoso, 2018: Distinctive role of ocean advection anomalies in the development of the extreme 2015-16 El Niño. ***Climate Dynamics***, 51, 2191-2208.

50. Herold, N., and A. Santoso, 2018: Indian Ocean warming during peak El Niño cools surrounding land masses. ***Climate Dynamics***, *51, 2097-2112*.

51. Santoso, A., M. J. McPhaden, and W. Cai, 2017: The defining characteristics of ENSO extremes and the strong 2015/16 El Niño. ***Reviews of Geophysics***, doi:10.1002/2017RG000560.

52. Cai, W., G. Wang, A. Santoso, X. Lin, and L. Wu, 2017: Definition of extreme El Niño and its impact on projected increase in extreme El Niño frequency. ***Geophysical Research Letters***, 44, doi:10.1002/2017GL075635.

53. Wang, G., W. Cai, B. Gan, L. Wu, A. Santoso, X. Lin, Z. Chen, and M. McPhaden, 2017: Continued increase of extreme El Niño frequency long after 1.5°C warming stabilization. ***Nature Climate Change***, 7, 568-572.

54. England, M. H., D. K. Hutchinson, A. Santoso, and W. P. Sijp, 2017: Ice-atmosphere feedbacks dominate the response of the climate system to Drake Passage closure. ***Journal of Climate***, 30, 5775-5790.

55. Chung, C. T. Y., S. B. Power, A. Santoso, Wang. G., 2017: Multi-year variability in the Tasman sea and impacts on Southern Hemisphere climate in CMIP5 models. ***Journal of Climate***, 30, 4413-4427.

56. Wang, G., W. Cai, A. Santoso, 2017: Assessing the Impact of Model Biases on the Projected Increase in Frequency of Extreme Positive Indian Ocean Dipole Events. ***Journal of Climate***, 30, 2757-2767.

57. Kajtar, J., A. Santoso, M. England, W. Cai, 2017: Tropical climate variability: Interactions across the Pacific, Indian, and Atlantic Oceans. ***Climate Dynamics***, 48, 2173-2190.

58. Sen Gupta, A., S. McGregor, E. van Sebille, A. Ganachaud, J. Brown, and A. Santoso, 2016: Future changes to the Indonesian Throughflow and Pacific circulation: the differing role of wind and deep circulation changes. ***Geophysical Research Letters***, 43, 1669-1678.

59. Cai, W., A. Santoso, G. Wang, S.-W. Yeh, S.-I. An, et al. 2015: ENSO and greenhouse warming. ***Nature Climate Change***, 5, 132-137.

60. Santoso, A., W. Cai, M. Collins, M. McPhaden, F.-F. Jin, E. Guilyardi, G. Vecchi, D. Dommenget, G. Wang, 2015: ENSO Extremes and Diversity: Dynamics, Teleconnections, and Impacts. ***Bulletin of the American Meteorological Society***, 96, 1969-1972.

61. Ng, B., W. Cai, K. Walsh, and A. Santoso, 2015: Nonlinear processes associated with extreme Indian Ocean Dipole events. ***Scientific Reports***, 5, 116971.

62. Boucharel, J., A. Timmermann, A. Santoso, M. H. England, F.-F. Jin, and M. Balmaseda, 2015: A mixed layer variance heat budget for ENSO. ***Geophysical Research Letters***, 42, 3529-3537.

63. Cai, W., G. J. Wang, A. Santoso, et al., 2015: Increased frequency of extreme La Niña events under greenhouse warming. ***Nature Climate Change***, 5, 132-137.

64. Kajtar, J. B., A. Santoso, M. H. England, W. Cai, 2015: Indo-Pacific climate interactions in the absence of an Indonesian Throughflow. ***Journal of Climate***, 28, 5017-5029.

65. Aiken, C, A. Santoso, S. McGregor, M. H. England, 2015: Optimal forcing of ENSO either side of the 1970's climate shift and its implications for predictability. ***Climate Dynamics***, 45, 47-65.

66. McGregor, S., P. Spence, F. U. Schwarzkopf, M. H. England, A. Santoso, W. Kessler, A. Timmermann, C. Boening, 2014: ENSO driven interhemispheric Pacific mass transports. ***J. Geophysical Research (Oceans)***, 119, 6221-6237.

67. Kim, S.-T., W. Cai, F.-F. Jin, A. Santoso, L. Wu, E. Guilyardi, S.-I. An, 2014: Robust time-varying response of El Niño-La Niña ocean temperatures to greenhouse warming. ***Nature Climate Change***, 4, 786-790.

68. Borlace, S., A. Santoso, W. Cai, M. Collins, 2014: Extreme swings of the South Pacific Convergence Zone and the different types of El Niño events. ***Geophysical Research Letters***, 41, 4695-4703.

69. Cai, W., A. Santoso, G. Wang, E. Weller, L. Wu, A. Karumuri, Y. Masumoto, T. Yamagata, 2014: Increased frequency of extreme Indian Ocean Dipole events due to greenhouse warming. ***Nature***, 510, 254-258.

70. Cai, W., S. Borlace, M. Lengaigne, P. van Rensch, M. Collins, G. Vecchi, A. Timmermann, A. Santoso, M. McPhaden, L. Wu, M. H. England, G. Wang, E. Guilyardi, and F.-F. Jin, 2014: Increasing frequency of extreme El Niño events due to greenhouse warming. ***Nature Climate Change***, 4, 111-116.

71. England, M. H., S. McGregor, P. Spence, G. A. Meehl, A. Timmermann, W. Cai, A. Sen Gupta, M. McPhaden, A. Purich, and A. Santoso, 2014: Recently intensified Pacific Ocean wind-driven circulation and the ongoing warming hiatus. ***Nature Climate Change***, 4, 222-227.

72. Taschetto, A. S., A. Sen Gupta, N. Jourdain, A. Santoso, C. C. Ummenhofer, and M. H. England, 2014: Cold tongue and warm pool ENSO events in CMIP5: mean state and future projections. ***Journal of Climate***, 27, 2861-2885.

73. Van Sebille, E., J. Sprintall, F. Schwarzkopf, A. Sen Gupta, A. Santoso, M. H. England, C. Boning, A. Biastoch, 2014: Pacific-to-Indian Ocean connectivity: Tasman leakage,

Indonesian Throughflow and the role of ENSO. ***Journal of Geophysical Research (Oceans)***, 119, 1365-1382.

74. Santoso, A., S. McGregor, F.-F. Jin, W. Cai, M. H. England, S.-I. An, M. McPhaden, E. Guilyardi, 2013: Late 20th century emergence of El Niño propagation asymmetry and future projections. ***Nature***, 504, 126-130.
75. Borlace, S., W. Cai, A. Santoso, 2013: Multi-decadal ENSO amplitude variability in a 1000-year simulation of a coupled global climate model, and implication for observed ENSO variability. ***Journal of Climate***, 26, 9399-9407.
76. Aiken, C. M., A. Santoso, S. McGregor, and M. H. England, 2013: The 1970's shift in ENSO dynamics: A linear inverse model perspective. ***Geophysical Research Lett*****ers**, 40, 1-6, doi:10.1002/grl.50264.
77. McGregor, S., N. Ramesh, P. Spence, M. H. England, M. J. McPhaden, and A. Santoso, 2013: Meridional movement of wind anomalies during ENSO events and their role in event termination. ***Geophysical Research Letters***, 40, 1-6, doi:10.1002/grl.50136.
78. Hutchinson, D., M. England, A. Santoso, and A. Hogg, 2013: Interhemispheric asymmetry in transient global warming: The role of the Drake Passage. ***Geophysical Research Letters***, 40, 1-7, doi:10.1002/grl.50341.
79. Santoso A., M. H. England, and W. Cai, 2012: Impact of Indo-Pacific feedback interactions on ENSO dynamics diagnosed using ensemble climate simulations. ***Journal of Climate***, 25, 7743-7763.
80. Pui, A., S. Westra, A. Sharma, and A. Santoso, 2012: Impact of the El Niño Southern Oscillation, Indian Ocean Dipole, and Southern Annular Mode on daily to sub-daily rainfall characteristics in East Australia. ***Monthly Weather Review***, 140, 1665-1682.
81. Santoso, A., W. Cai, M. H. England, and S. J. Phipps, 2011: The role of the Indonesian Throughflow on ENSO dynamics in a coupled climate model. ***Journal of Climate***, 24, 585-601.
82. Santoso, A., A. Sen Gupta, and M. H. England, 2010: Genesis of Indian Ocean mixed layer temperature anomalies: A heat budget analysis. ***Journal of Climate***, 23, 5375 – 5403.
83. Hill, K.J., A. Santoso, and M. H. England, 2009: Interannual Tasmanian rainfall variability associated with large-scale climate modes. ***Journal of Climate***, 22, 4383 – 4397.
84. Sen Gupta, A., A. Santoso, A. S. Taschetto, C. C. Ummenhofer, J. Trevena, and M. H. England, 2009: Projected changes to the Southern Hemisphere ocean and sea-ice in the IPCC AR4 climate models. ***Journal of Climate***, 22, 3047 – 3078.
85. Santoso, A., and M. H. England, 2008: Antarctic Bottom Water variability in a coupled climate model. ***Journal of Physical Oceanography***, 38, 1870 – 1893.
86. Santoso, A., M. H. England, and A. C. Hirst, 2006: Circumpolar Deep Water circulation and variability in a coupled climate model. ***Journal of Physical Oceanography,*** 36, 1523 –1552.
87. England, M. H., C. C. Ummenhoffer, and A. Santoso, 2006: Interannual rainfall extremes over southwest Australia linked to Indian Ocean climate variability. ***Journal of Climate,*** 19, 1948 – 1969.
88. Santoso, A., and M. H. England, 2004: Antarctic Intermediate Water circulation and variability in a coupled climate model. ***Journal of Physical Oceanography***, 34, 2160 –2179.

Other:

1. Santoso, A., W. Cai, G. Wang, A. Sen Gupta, R. Rodrigues, A. Taschetto, 2025: Role of the Oceans in Southern Hemisphere Climate. In ***Meteorology of the Southern Hemisphere Monograph***. Cambridge University Press. *In press*.
2. Zhang, X., A. Santoso, T. Mochizuki, S. Chakravorty, Z. Freitag, 2023: Editorial: Early career scientists' contribution to tropical Pacific Ocean dynamics and its interaction on mid-latitude weather and climate: Features, mechanisms, and prediction. ***Frontiers in Earth Science***, 11, doi:10.3389/feart.2023.1297027.
3. Cai, W., A. Santoso, 2023: New study helps solve a 30-year-old puzzle: how is climate change affecting El Niño and La Niña? ***The Conversation***, *Opinion Article (https://theconversation.com/new-study-helps-solve-a-30-year-old-puzzle-how-is-climate-change-affecting-el-nino-and-la-nina-205128)*
4. Santoso, A., A. S. Taschetto, S. McGregor, M. K. Roxy, C. Chung, B. Wu, F. P. Delage, 2023: Editorial: Dynamics and impacts of tropical climate variability: Understanding trends and future projections. ***Frontiers in Climate***, 5, http://dx.doi.org/10.3389/fclim.2023.1148145
5. Holgate, C., A. Santoso, A. Sen Gupta, 2022: The east coast rain seems endless. Where on Earth is all the water coming from? ***The Conversation****, Opinion Article (https://theconversation.com/the-east-coast-rain-seems-endless-where-on-earth-is-all-the-water-coming-from-178316)*
6. Taschetto, A., and A. Santoso, 2021: Back so soon, La Niña? Here's why we're copping two soggy summers in a row. ***The Conversation****, Opinion Article (https://theconversation.com/back-so-soon-la-nina-heres-why-were-copping-two-soggy-summers-in-a-row-173684)*
7. Cai, W., A. Santoso, G. Wang, L. Wu, M. Collins, M. Lengaigne, S. Power, and A. Timmermann (2020). ENSO Response to Greenhouse Forcing. In *El Niño Southern Oscillation in a Changing Climate*. McPhaden, M., A. Santoso, W. Cai (Eds.), ***Monograph of the American Geophysical Union***, doi:10.1002/9781119548164.ch13.
8. McPhaden, M., A. Santoso, and W. Cai (2020). Introduction to El Niño Southern Oscillation in a Changing Climate. In *El Niño Southern Oscillation in a Changing Climate*. McPhaden, M., A. Santoso, W. Cai (Eds.), ***Monograph of the American Geophysical Union***, doi:10.1002/9781119548164.ch1.
9. Karamperidou, C., M. F. Stuecker, A. Timmermann, K.-S. Yun, S.-S. Lee, F.-F. Jin, A. Santoso, M. J. McPhaden, and W. Cai (2020). ENSO in a Changing Climate: Challenges, Paleo-Perspectives, and Outlook. In *El Niño Southern Oscillation in a Changing Climate*. McPhaden, M., A. Santoso, W. Cai (Eds.), ***Monograph of the American Geophysical Union***, doi:10.1002/9781119548164.ch21.
10. Santoso, Agus & National Center for Atmospheric Research Staff (Eds), 2020. "The **Climate Data Guide**: Asymmetry and Diversity in the pattern, amplitude and duration of El Niño and La Niña." *https://climatedataguide.ucar.edu/climate-data/asymmetry-and-diversity-pattern-amplitude-and-duration-el-ni%C3%B1o-and-la-ni%C3%B1a.*
11. McPhaden, M. J., A. Santoso, and W. Cai, 2019: Understanding ENSO in a changing climate, ***Eos***, 100, https://doi.org/10.1029/2019EO124159.
12. Santoso, A, 2018: Learning from an extreme El Niño, ***Eos***, 99, doi:10.1029/2018EO089619.
13. Cai, W., A. Santoso, and G. Wang, 2015: 2015-2016 is shaping up to deliver a rollercoaster from strong El Niño to La Niña. ***The Conversation****, Opinion Article*

(https://theconversation.com/2015-2016-is-shaping-up-to-deliver-a-rollercoaster-from-strong-el-Niño-to-la-Niña-46135).

14. Santoso, A., A. Taschetto, M. H. England, and S. McGregor, 2015: The rise and rise of the 2015 El Niño. ***The Conversation****, Opinion Article (https://theconversation.com/the-rise-and-rise-of-the-2015-el-Niño-41616).*
15. Santoso, A., et al. 2014: 'Dealing with Climate Change: Tropical Oceanography Research in Australia', **white paper** (*https://www.marinescience.net.au/wp-content/uploads/2018/09/Climate-change-Tropical-Oceanography.pdf*).
16. Santoso A., 2014: Don't dismiss a 2014 'super' El Niño just yet. ***The Conversation****, Opinion Article (https://theconversation.com/dont-dismiss-a-2014-super-el-ni-o-just-yet-30720).*
17. Santoso, A., and W. Cai, 2014: Drought in store as El Niño's western cousin to grow stronger. ***The Conversation****, Opinion Article (https://theconversation.com/drought-in-store-as-el-ni-os-western-cousin-to-grow-stronger-27826).*
18. Santoso, A., and S. McGregor, 2014: Are we heading for a worrying Super El Niño? **The Conversation**, *Opinion Article* (*https://theconversation.com/are-we-heading-for-a-worrying-super-el-ni-o-26090*).
19. England, M. H., C.C. Ummenhofer, and A. Santoso, 2006: Indian Ocean variability linked to interannual rainfall extremes over southwest Western Australia. ***CLIVAR Exchanges***, 11(4), p. 28.
20. Santoso A., 2005: Evolution of climate anomalies and variability of Southern Ocean water masses on interannual to centennial time scales. ***UNSW PhD Thesis***, 326pp.
21. Santoso A., 2000: Circulation in Jervis Bay driven by atmospheric cooling. ***UNSW Honours Thesis****,* 91pp.

SELECTED CONFERENCE / SEMINAR PRESENTATIONS

1. Santoso, A., 2025: CLIVAR: Advancing Climate-Ocean Science and International Collaborations. International Conference on the Cooperation and Integration of Future Industry, Education, Research and Application, Qingdao, China, 17 November 2025 (**invited**)
2. Santoso, A., 2025: Indo-Pacific Climate Variability and Change. The 21st Indonesian Oceanologist Association (ISOI) Conference, Semarang, Indonesia, 8-9 October 2025 **(keynote)**
3. Santoso, A., 2025: Indian Ocean Variability and Impacts in a Warming Climate. International Workshop on Climate Change and Ecological-Environmental Responses in the Indian Ocean, Guangzhou, China, 29-30 September 2025 (**invited**)
4. Santoso, A., 2025: ENSO and Its Impact Under Greenhouse Warming. Wyrtki Symposium, Hawaii, 12-14 Mar 2025 **(keynote)**
5. Santoso, A., 2025: Climate Variability: Past, Current, Future. ICOPE 2025 "Oil palm agro-ecological transformation: towards climate- and nature-positive agriculture", Bali, 12-14 Feb 2025. (https://icope-series.com/icope-2025/) **(keynote)**
6. Santoso, A., 2024: ENSO and IOD in Warming Climate. International Conference on Sustainable Coral Reefs, Manado, Indonesia, 13-15 Dec 2024 (**invited**)
7. Santoso, A., W. Cai, G. Wang, 2024: Antarctic Shelf Ocean Warming and Sea Ice Melt Affected by Projected El Nino'. 3rd International Symposium on Polar Ocean and Global Change, Qingdao, China, 23 Oct 2024 **(keynote)**

8. Santoso, A., W. Cai, G. Wang, 2024: ENSO and Climate Change. International Conference on the Cooperation and Integration of Future Industry, Education, Research and Application of the Ocean Industry, Qingdao, China, 24 Oct 2024 (**invited**)
9. Santoso, A., 2023: Progress in understanding Tropical Pacific climate variability. The 3rd International Conference on Radioscience, Equatorial Atmospheric Science, and Environment (INCREASE), BRIN, Indonesia, 21-22 Nov 2023 (**invited**).
10. Santoso, A., 2023: Future Projections of Indo-Pacific Climate Giants: ENSO and IOD, 2nd International Seminar on Earth Sciences and Technology (ISEST), Bandung, 7-8 March 2023 (**keynote**).
11. Cai, W., B. Ng, G. Wang, A. Santoso, 2022: Increased ENSO sea surface temperature variability under four IPCC emission scenarios. AMOS Annual Conference 27 Nov-1 Dec 2022, Adelaide.
12. Wang, G., W. Cai, A. Santoso, 2022: Future Southern Ocean warming linked to projected ENSO variability. AMOS Annual Conference, 27 Nov-1 Dec 2022, Adelaide.
13. Santoso, A., 2022: Indonesian Throughflow variability and linkage to ENSO and IOD in climate models. 4th Open Science Symposium on Western Pacific Ocean Circulation and Climate. 26 October 2022 (**invited**).
14. Santoso, A., 2022: The rise of the 3 headed dog. Swiss Re Climate TEDs. 28 September 2022, virtual (**invited**).
15. Santoso, A., 2022: ENSO, IOD, and Indonesian Throughflow in CMIP models. 3rd NPOCE webinar on Roles of Western Pacific Ocean Circulation Variability in Warm Pool, 30 August 2022 (**invited**).
16. Santoso, A., 2022: ENSO in a Changing Climate, 3rd Summer School on Theory, Mechanisms and Hierarchical Modeling of Climate Dynamics: Tropical Oceans, ENSO and their teleconnections, 18-29 July 2022, ICTP Hybrid Meeting, Trieste Italy (**invited**).
17. Santoso, A., 2022: 2020-2022 La Niña and ENSO Future Projections. NESP Webinar: *There and back again: the impacts of back-to-back El Niño and La Niña over the last 15 years*, 18 June 2022 (**invited**).
18. Santoso. A., 2022: ENSO, IOD, and the Indonesian Throughflow: interactions and future projections. NOAA/AOML seminar series, 21 April 2022 (**invited**).
19. Santoso, A., W. Cai, M. England, 2022: Contrasting the response of tropical Pacific climate to multi-decadal variability sourced in the North Atlantic and Southern Ocean. ICSHMO, 9-17 February 2022.
20. Santoso, A., M. England, J. Kajtar, W. Cai, 2022: Indonesian Throughflow variability and linkage to ENSO and IOD in an ensemble of CMIP5 models. ICSHMO, 9-17 February 2022, Ocean Sciences Meeting 2022, 24 February-4 March 2022.
21. Santoso, A., 2021: El Niño Southern Oscillation in a warming climate. *Leibniz-Institut für Ostseeforschung Warnemünde (IOW) Physical Oceanography Seminar*, 21 December 2021 (**invited**).
22. Santoso, A., 2021: ENSO and IOD in climate models and implications for future projections. *3rd International Conference on Maritime Sciences and Advanced Technology (MSAT)*, 5-6 August 2021 (**invited**).
23. Santoso, A., 2021: The impact of ENSO, IOD, and their link on the Indonesian Throughflow in an ensemble of CMIP5 models. *WCRP-CLIVAR Workshop on Climate Interactions among the Tropical Basins*, 24-26 February 2021 (**invited**).
24. Santoso, A., A. Gallant, P. Hope, 2021: Climate variability and change – past, present, and future. ESCC Hub Climate Matters Webinar, 16 February 2021.
25. Santoso, A., W. Cai, G. Wang, 2020: Governing Processes of Extreme El Niño and Implications for Future Projections. 100th American Meteorological Society Annual Meeting, 12-16 January 2020, Boston, USA.

26. Santoso, A., M. H. Bordbar, M. England, A. Sen Gupta, A. Taschetto, T. Martin, W. Park, M. Latif, 2020: Uncertainty in Near-term Global Surface Warming Linked to Tropical Pacific Climate Variability. 100th American Meteorological Society Annual Meeting, 12-16 January 2020, Boston, USA.
27. Santoso, A., W. Cai, G. Wang, L. Wu, 2019: Understanding Extreme ENSO Processes and Implications for Future Projections. *The Oceans and Climate: Variations from Small to Global Scales, 10th International Workshop on Tropical Marine Environmental Changes*, 24-25 November 2019, Guangzhou, China (**invited**).
28. Santoso, A., and A. Pui, 2019: A fiercer bite: How will the '3 headed dog' evolve with climate change - Outlook on financial risks. *Swiss Re seminar*, 29 October 2019, Swiss Re Sydney office, Australia (**invited**).
29. Santoso, A., 2019: El Niño Southern Oscillation under greenhouse warming, *Sydney DCO Workshop: Carbon Down Under*, 24-26 July 2019, Sydney University, Australia (**invited**).
30. Santoso, A., M. McPhaden, W. Cai, 2018: Observed characteristics and dynamics of ENSO Extremes, *AGU Fall Meeting*, 9-13 December 2018, Washington D. C., USA.
31. Santoso, A., 2018: El Niño Southern Oscillation: Extremes, teleconnection, and impact. *South China Sea Two-Island Monsoon Experiment (SCSTIMX)*, 25-26 June 2018, National Taiwan University, Taipei (**invited**).
32. Santoso A., 2018: Response of tropical Pacific climate variability to multi-decadal high latitude forcing. *AMOS-ISCHMO*, 5-9 February 2018, UNSW, Sydney, Australia.
33. Santoso A., The Indonesian seas and Indo-Pacific climate variability, *International Symposium on Banda Sea Ecosystem*, 23 October 2017, Center for Deep-Sea Research, Indonesian Institute of Sciences, Jakarta, Indonesia. (**invited**)
34. Santoso A., Response of tropical Pacific variability to periodic multidecadal forcing, *ENSO Complexity Workshop*, 16-20 October 2017, IBS Center for Climate Physics, Busan, South Korea.
35. Santoso A., Indo-Pacific climate variability and cross-basin interactions, *Climate Variability and Air-Sea Interaction Workshop*, 12-13 October 2017, National Taiwan University, Taipei, Taiwan. (**invited**)
36. Santoso A., M. McPhaden, W. Cai, Characteristics of ENSO extremes and the strong 2015/16 El Niño. AOGS 14th Annual Meeting, 6-11 August 2017, Singapore
37. Santoso A., Indo-Pacific climate variability and its response to greenhouse warming", to the 1st International MSAT Conference "Ocean Science and Technology Toward a Global Maritime Axis", Bali, Indonesia on 3–5 August 2017. (**invited**)
38. Santoso A., Understanding ENSO extremes through the strong 2015/16 El Niño. AMOS/MSNZ Conference, Canberra, Australia, 7-10 February 2017.
39. Santoso A., Understanding extreme El Niño: the curious case of the 2015/16 event. CLIVAR Open Science Conference, Qingdao, China, 18-25 September 2016.
40. Santoso A., El Niño in the Asia Pacific Rim. Aerial Firefighting Asia Pacific, Adelaide, Australia, 5-6 September 2016. (**invited**)
41. Santoso A., El Niño and Global Warming as it impacts on agriculture like palm oil. 8th ASIA Sustainable Oil Palm Summit, Yogyakarta, Indonesia, 4-5 August 2016. (**invited**)
42. Santoso A., El Niño: dynamics, impacts, and future projections. ICOPE 2016 "Sustainable Palm Oil and Climate Change: The Way Forward Through Mitigation and Adaptation", Bali, 16-18 March 2016. (http://www.icope-series.com/news_detail/16) **(invited** keynote**)**
43. Santoso A., W. Cai: ENSO extremes: Present state of understanding and gaps. 10th Session of the CLIVAR Pacific Panel, 2015, Santiago, Chile. **(invited)**
44. Santoso, A., W. Cai, Increased frequency of ENSO extremes under greenhouse warming. EGU General Assembly 2015, Vienna, Austria. **(invited)**

45. Santoso A., M. England, J. Kajtar, W. Cai: Indonesian Throughflow variability in CMIP5 models. EGU General Assembly 2015, Vienna, Austria.
46. Santoso A.: El Niño in a warming climate. *Insurance Australia Group***,** Sydney, May 14, 2014. (**invited** 30-minute seminar)
47. Santoso, A., S. McGregor, F.-F. Jin, W. Cai, England, M. H.: More frequent emergence of El Niño propagation asymmetry due to greenhouse warming. Ocean Sciences 2014, Honolulu, Hawaii.
48. Santoso, A., S. McGregor, F.-F. Jin, W. Cai, M. H. England, S.-I. An, M. McPhaden, E. Guilyardi, 2013: Cause for opposite propagation direction between El Niño and La Niña temperature anomalies. EGU General Assembly 2013, Vienna, Austria **(invited)**.
49. Santoso, A., M. H. England, and W. Cai, 2013: Impact of Indo-Pacific Feedback Interactions on ENSO Dynamics Diagnosed Using Ensemble Climate Simulations. EGU General Assembly 2013, Vienna, Austria.
50. Santoso, A., 2013: Mechanism for El Niño and La Niña asymmetry in propagation of equatorial sea surface temperature anomalies. Third CLIVAR Workshop on the Evaluation of ENSO Processes in Climate Models, Hobart, January 2013. **(invited)**
51. Santoso A., 2012: Factors influencing the dynamics of the El Niño Southern Oscillation. CSIRO Priestley Lecture and ENSO Workshop, Apr. 4, 2012, Melbourne, Australia **(invited)**.
52. Santoso, A., M. H. England, and W. Cai, 2012: Impact of Indo-Pacific feedback interactions on ENSO dynamics diagnosed using ensemble climate simulations. AMOS 18th National Conference: Connections in the Climate System, Jan. 32 - Feb 3, 2012, Sydney, Australia.
53. Santoso, A., 2010**:** The role of the Indonesian Throughflow on ENSO dynamics. Apr. 28, Climate Change Research Centre Seminar Series, UNSW, Australia.
54. Santoso, A. and M. H. England, 2008: Natural variability of Antarctic Bottom Water in a coupled climate model. EGU General Assembly, Apr. 13 – 18,Vienna, Austria.
55. Santoso, A., A. Sen Gupta, and M. H. England, 2008: Heat budget of the Indian Ocean mixed layer. 15th National Australian Meteorological and Oceanographic Society Conference, Jan. 29 – Feb. 1, Geelong, Victoria, Australia.
56. Santoso, A., M. H. England, A. C. Hirst, and S. P. O'Farrell, 2005: Natural variability of the Southern Ocean water masses on decadal and centennial time scales. Dynamic Planet 2005: monitoring and understanding a dynamic planet with geodetic and oceanographic tools, Aug. 22 – 26, Cairns, Australia.

SELECTED MEDIA COVERAGE

1. South Asia monsoon: climate change's dangerous impact on lifeline rains. Phys.org. 26 September 2025.
2. How likely is another La Nina for Australia in 2024? The Guardian. 31 January 2024.
3. Heat, rain baffle El Nino predictions in Australia. China Daily. 15 January 2024.
4. Extreme weather warning prompts concern for Aussie kids: 'We need to be prepared'. Yahoo News. 18 May 2023.
5. Black summer bushfires may have caused rare 'triple dip' La Niña, study suggests. The Guardian. 11 May 2023.
6. Record ocean temperatures trigger concern as El Nino looms. The Straits Times. 8 May 2023.
7. Climate models warn of possible 'super El Niño' before end of year. The Guardian. 12 April 2023.

8. Australian states among world's most at risk from climate change, extreme weather. Renew Economy. 21 February 2023.
9. Bushfires may follow floods as climate chaos grips Australia. Bloomberg. 20 January 2023.
10. Australia could swing from three years of La Niña to hot and dry El Niño in 2023. The Guardian. 4 January 2023.
11. Drier weather on the cards in latest BOM update as Indian Ocean Dipole switches to neutral. ABC News. 6 December 2022.
12. Global heating to drive stronger La Niña and El Niño events by 2030, researchers say. The Guardian. 17 November 2022.
13. Why is so much of Australia flooding right now? The Guardian. 16 November 2022.
14. East coast floods yet again confront Australia with need for disaster preparedness. Cosmos. 14 October 2022.
15. The Bureau of Meteorology has announced when La Nina is set to end – and it's sooner than you think. 7 News. 12 October 2022.
16. What does a triple La Niña mean for Australia? Cosmos Magazine. 30 September 2022.
17. Bureau of Meteorology declares third La Niña is officially under way for Australia. The Guardian. 13 September 2022.
18. BOM issues a La Niña alert. Country News. 18 August, 2022.
19. From floods to bushfire risk: What a third straight La Niña event would mean for Australia. SBS News. 17 August, 2022.
20. La Niña sea temperatures driving floods in Australia and drought in the United States and Africa. ABC News. August 16, 2022.
21. Are Earth's major climate cycles changing? And if so, what will that mean for local weather? Cosmos Magazine. July 15, 2022.
22. Sydney smashes July rainfall record dating back to 1858, and on track to break annual record. ABC News. July 15, 2022.
23. More extreme El Nino, La Nina events could drive global warming, study finds. The Straits Times. July 11, 2022.
24. How many times do we have to go through this?' How an atmospheric river hit Sydney. Sydney Morning Herald. July 7, 2022.
25. I thought La Nina was over? Your questions answered about New South Wales is flooding again. ABC News. July 6, 2022.
26. Australia flood, boosted by climate change, making history in Sydney. Washington Post. 5 July, 2022.
27. Why is it still raining (and when will it stop)? Australian Financial Review. 5 July, 2022.
28. Rain, floods and the threat of a soggy summer. ABC News Podcast. 5 July, 2022.
29. More research needed on Australia climate change – scientist. Reuters. 5 July, 2022.
30. Climate link to Sydney floods points to growing disaster risks. The Straits Times. 4 July, 2022.
31. What's causing these floods. The Daily Aus. 4 July, 2022.
32. Parts of NSW could be in for fifth flood. Australian Associated Press. The Canberra Times, etc. 4 July, 2022.
33. Live interview with Studio 10 and ABC Adelaide radio. 22 June, 2022.

34. ‘Triple La Niña’: Australia may face another summer of flooding rains, US expert warns. The Guardian. 10 June, 2022.
35. Threat of third straight La Nina summer threatens to flood Brisbane. Daily Telegraph. May 13, 2022.
36. ABC Weekend Breakfast (live TV interview) April, 9 2022, 7.53am.
37. Wet autumn outlook for parts of eastern Australia as the BOM predicts above average rainfall. ABC News. April 1, 2022
38. BOM indicates drenching La Nina is set to hang around until late autumn. ABC News. March 17, 2022
39. What is the meaning of La Niña and how will the weather event affect Australia’s summer? The Guardian. November 23, 2021
40. BoM expected to declare La Niña as summer’s first tropical cyclone forms. The Guardian. November 23, 2021
41. IPCC report may have underplayed risk of freak El Nino and La Nina events. Sydney Morning Herald. August 23, 2021.
42. The beasts to our east: What are El Ninos and La Ninas? Sydney Morning Herald. December 29, 2020
43. La Nina event tipped to be declared, points to stormy, wet times ahead. Sydney Morning Herald. September 28, 2020
44. Q&A: Are the 2019-20 locust swarms linked to climate change? CarbonBrief. March 10, 2020
45. Channel News Asia ‘Asia Tonight’ with Dawn Tan and Glenda Chong. (live TV interview) January 2, 2020
46. 'Monster' El Niño a chance later this year, pointing to extended dry times. Sydney Morning Herald. March 15, 2019
47. ABC News Afternoon with Kirsten Aiken Series 2018, Episode 225 (live TV interview)
48. Can La Niña save the world from record hot temperatures? CNN. August 18, 2016
49. El Niño is dead but La Niña is coming: Are we ready? CNN. June 15, 2016
50. Australia calls end to El Niño. Financial Times. May 24, 2016
51. La Niña to give some relief from warming after hottest April yet. New Scientist. May 17, 2016
52. El Niño: Feeling the heat. Financial Times. April 18, 2016
53. El Niño may be weakening but it is still clobbering crops. Wall Street Journal. March 14, 2016
54. Scientists are freaking out about February's record warmth - ignore the incredibly strong El Niño. The Daily Caller. March 14 2016
55. El Niño: The weather of 2015 captured in one image. Sydney Morning Herald, The Age, Canberra Times, Brisbane Times, St George and Sutherland Shire Leader. January 1, 2016
56. Weather experts warn a powerful El Niño drought and bushfire effect could be catastrophic for Australia. Daily Telegraph. August 27, 2015
57. Return set for El Niño conditions. The Daily Advertiser. May 10, 2015
58. Grim forecast as El Niño returns. Channel 7 news. May 8, 2015
59. Major El Niño imminent, to lift global temperatures: report. Xinhua News. May 8, 2015

60. World headed for an El Niño and it could be a big one, scientists say. Sydney Morning Herald, The Age,Canberra Times, Brisbane Times, Newcastle Herald, Border Mail, St George and Sutherland Shire Leader, Batemans Bay Post, The Land. May 8, 2015
61. Climate change: Australia advised to brace for more devastating Indian Ocean weather events. International Business Times. June 16, 2014
62. Our oceans under siege. Between the lines - Channel News Asia. June 13, 2014
63. Global warming to triple frequency of droughts, floods along Indian Ocean. Mashable. June 12, 2014
64. Climate change to almost triple risk of extreme Indian Ocean events. Canberra Times. June 11, 2014
65. Dreaded El Niño looms in the Pacific. Sydney Morning Herald. May 6, 2014
66. Could 2014 be hottest on record? El Niño phenomenon could spew out massive amounts of heat this year. Daily Mail - UK. February 11, 2014
67. Extreme El Niño events expected to double as Earth warms. Business Standard - Washington. January 20, 2014
68. Climate Scientists predict doubling of El Niño events. The Examiner. January 19, 2014
69. Get used to heatwaves: Extreme El Niño events to double. Phys.org. January 19, 2014
70. Climate change to make 'Super El Niño' events twice as likely. ABC Environment. December 11, 2013.
71. Extreme El Niño cause found. Science Alert. November 19, 2013.
72. Global warming doubles odds of abnormal El Niño. Australasian Science. November 19, 2013.
73. Australia to Face Extreme El Niño Weather; Ranks Low in Climate Change Performance Index. International Business Times. November 19, 2013.
74. Australia to face stronger El Niño weather patterns from global warming. *Sydney Morning Herald*. November 18, 2013.
75. Cause of El Niño abnormality found. *Phys Org*. November 18, 2013.

SCHOLARSHIPS / AWARDS / GRANTS

Clarivate Highly Cited Researchers 2025
American Meteorological Society Editor's Award 2020 for reviews in Journal of Climate: "*For consistently high-quality reviews on various topics in tropical climate dynamics.*"
National Environmental Science Program (NESP) project fund 2022-2023
UNSW-Indonesia Collaborative Research Fund 2017
Australian Research Council Discovery Project 2015-2017
CSIRO Research Contracts 2012-2021
NCI National Facility supercomputing time grant 2008-present
Australian Museum Land & Water Eureka Prize for Water Research and Innovation 2008 (Winner)
Australian Museum Land & Water Eureka Prize for Water Research and Innovation 2007 (Finalist)
Australian Museum Land & Water Eureka Prize for Water Research and Innovation 2006 (Finalist)
Keith Runcorn Travel Award EGU General Assembly Vienna 2008
ARCNESS travel support for CSIRO visits 2008, 2009, EGU General Assembly 2008

British Council International Networking for Young Scientists workshop ('Abrupt Climate Change') Travel Grant 2006

Dynamic Planet 2005 Conference Travel Grant

University of New South Wales Climate Research Scholarship 2004 – 2005

PROFESSIONAL TRAINING

Learn to Lead: Leading with Heart (*UNSW*, Aug. 23 – Sep 3, 2021)
Machine Learning, Deep Learning, and Parallel Computing with Matlab (*NCI*, Jul. 19-21, 2021)
Best Practice Project Management Execution for Researchers (*UNSW*, Jul. 23- Aug. 13, 2019)
Project Management Fundamental (*UNSW*, May 18-19, 2015)
International ENSO Workshop (*Greenhouse 2009*, *Perth*, Mar. 26 – 29, 2009) – participation sponsored by CSIRO
Ocean Model Fundamentals Course (*UTAS, Tasmania,* Nov. 12 – 16, 2007)
Workshop on Bayesian Statistical Methodology (*UTS, Sydney,* Jul. 17 – 18, 2007)
OpenMP/MPI Basics Course (*Australian Technology Park, Sydney,* Jun. 20 – 21, 2007)
CSIRO Mk3L Climate Model Workshop (*UNSW,* May 25 – 26, 2006)
British Council International Networking for Young Scientists Workshop (*Bureau of Meteorology Melbourne, ANU, UNSW,* Feb. 19 – Mar. 1, 2006)
Modelling the Southern Ocean Workshop (*CSIRO Hobart,* Nov. 9 – 10, 2005)

SELECTED OUTREACH

Global Ocean Development Forum, Qingdao, China, 7-9 September 2025
Invited guest for opening ceremony

46th Session of the WCRP Joint Scientific Committee, Paris, France, 12-16 May 2025
Invited attendee supporting CLIVAR scientific steering group

China-Japan-Korea Ocean and Earth System Science Symposium, Yantai, China, 6-8 November 2024
Invited guest to deliver congratulatory speech and participate in OceanObs'29 and CSK-2 sessions

9th China-Sri Lanka Joint Workshop on Climate Change and Sustainable Marine Development, Colombo, Sri Lanka, 2-3 July 2024
Panellist speaking on ENSO and IOD changes

WCRP Open Science Conference, Kigali, Rwanda, 23-27 October 2023
Invited attendee for CLIVAR scientific steering group meetings

Ocean to Climate Seamless Forecasting System, First Assembly, Qingdao, China, 27-28 September 2023
Invited to give a speech as incoming director of the International CLIVAR Project Office

Global Ocean Summit, Qingdao, China 25-26 September 2023
Invited to give a speech as incoming director of the International CLIVAR Project Office

Swiss Re Climate TEDs, virtual 28 September 2022
Presented a webinar titled 'The rise of the 3 headed dog'

Swiss Re seminar, Sydney, 29 October 2019
Co-presenter on 'A fiercer bite: How will the '3 headed dog' evolve with climate change - Outlook on financial risks'

Aerial Firefighting Asia Pacific, Adelaide, 5-6 September 2016
Presented a keynote on 'El Niño in the Asia Pacific Rim'

8th ASIA Sustainable Oil Palm Summit, Yogyakarta, Indonesia, 4-5 August 2016
Presented 30-minute presentation: 'El Niño and Global Warming as it impacts on agriculture like palm oil'

ICOPE 2016 "Sustainable Palm Oil and Climate Change: The Way Forward Through Mitigation and Adaptation", Bali, 16-18 March 2016
Presented 30-minute presentation: El Niño: dynamics, impacts, and future projections.

General Insurance Seminar 'Insuring Tomorrow', Sydney, 17-18 November 2014
Andrews, T., A. Pui, A. Santoso: Recent Developments in Predicting El Niño and the Implications for Insurers. *General Insurance Seminar 'Insuring Tomorrow'*, Sydney, 17-18 November 2014 (http://www.actuaries.asn.au/microsites/general-insurance-seminar-2014/program/concurrent-sessions) (**invited** co-presenter)

Insurance Australia Group, Sydney, May 14, 2014
Delivered a 30-minute presentation titled: 'El Niño in a warming climate'

ARC Centre of Excellence Winter School, UNSW, June 17-21, 2013
Delivered a 30-minute lecture titled: 'Representation of modes of variability in climate models: a focus on ENSO.'

Pal College, Cabramatta, July 26, 2008
Judge for high school students debate ('Future energy generation of Australia')

Dynamic Planet 2005 Conference, Cairns, August 22 – 26, 2005
Organising committee member

Science and Technology Expo, Australian Technology Park, May 1999, May 2000
Represented UNSW School of Mathematics in promoting mathematics and physical oceanography to students of various ages.