

DR AGUS SANTOSO

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Research profile: <https://research.unsw.edu.au/people/dr-agus-santoso>

Santoso is a Senior Research Associate at the University of New South Wales (UNSW), an Associate Investigator at the ARC Centre of Excellence for Climate System Science, and an Adjunct Science Leader at the CSIRO. To date he has 36 scientific papers published in leading international journals, including 2 in *Nature* and 5 in *Nature Climate Change*.

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

EMPLOYMENT HISTORY

Senior Research Associate, Climate Change Research Centre, UNSW (January 2011 – present)

Associate Investigator, ARC Centre of Excellence for Climate System Science, UNSW (January 2013 – present)

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

Post Doctoral Research Fellow, Climate Change Research Centre, UNSW (January 2006 – December 2011); ARC Centre of Excellence for Mathematics and Statistics of Complex Systems (2009-2010)

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

Earlier: Computer systems officer, Mathematics/Computing demonstrator and consultant, UNSW-AusAid appointed and private tutor (graduate, undergraduate, high school mathematics)

PROFESSIONAL ACTIVITIES AND SERVICE

Member of CLIVAR Pacific Panel (January 2015 – present)

Organiser, ENSO Workshop Australia 2015: ‘ENSO Extremes and Diversity: Dynamics, Teleconnection and Impacts’, UNSW, Sydney 4-6 Feb.
<https://www.climatescience.org.au/content/806-enso-workshop-australia-2015>

Session co-chair, ocean session at AOGS 2015 (Singapore), 2 sessions at AMOS 2015 (Brisbane).

Coordinator of national marine science sub-theme white paper: ‘Dealing with Climate Change: Tropical Oceanography Research in Australia’, (<http://frdc.com.au/environment/NMSC-WHITE/Pages/Climate.aspx>).

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).

Associate editor, *Journal of Climate*

Guest editor, ENSO Special Issue in *Atmosphere*

Reviewer for: Journal articles [Advances in Atmospheric Sciences, J. Applied Meteorology and Climatology, Asia-Pacific Journal of Atmospheric Sciences, J. Atmospheric and Oceanic Technology, Australian Meteorological and Oceanographic Journal, BAMS, J. Climate, Climate Dynamics, Climatic Change, Climate of the Past, Deep-Sea Research Part I, Environmental Research Letters, EOS, Geophysical Research Letters, J. Geophysical Research (Atmospheres), J. Geophysical Research (Oceans), Global and Planetary Change, Nature Climate Change, Nature Communications, J. Oceanography, Scientific Reports, Theoretical and Applied Climatology, Weather and Forecasting], book chapter [Climate Alert], and research funding proposals [ARC, NSF, NOAA CVP]

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

Thesis examiner, PhD and honours.

Team member, ENSO animation using ocean model,
<https://www.youtube.com/watch?v=gaFjIZxM7S4&feature=youtu.be>

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

PERSONNEL SUPERVISION

Dr Jules Kajtar (UNSW Postdoc, September 2012-2016), **Dr Francia Avila** (UNSW Postdoc, 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 and several graduate students based at UNSW, CSIRO, and overseas.

PUBLICATIONS

Journal articles:

1. Kajtar, J. B., A. Santoso, S. McGregor, and M. H. England, 2017: Model under-representation of decadal Pacific trade wind trends and its link to tropical Atlantic bias, *Climate Dynamics*, accepted.
2. 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*, in press.
3. 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.

4. 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.
5. 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.
6. 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.
7. 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.
8. 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.
9. Ng, B., W. Cai, K. Walsh, and A. Santoso, 2015: Nonlinear processes associated with extreme Indian Ocean Dipole events. ***Scientific Reports***, 5, 116971.
10. 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.
11. 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.
12. Kajtar, J. B., A. Santoso, M. H. England, W. Cai, 2015: Indo-Pacific climate interactions in the absence of an Indonesian Throughflow. ***J. Climate***, 28, 5017-5029.
13. Aiken, C., A. Santoso, S. McGregor, M. H. England, 2014: Optimal forcing of ENSO either side of the 1970's climate shift and its implications for predictability. ***Climate Dynamics***, 45, 47-65.
14. 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.
15. Kim, S.-T., W. Cai, F.-F. Jin, A. Santoso, L. Wu, E. Guilyardi, S.-I. An, 2014: Robust time-varying response of El Nino-La Nina ocean temperatures to greenhouse warming. ***Nature Climate Change***, 4, 786-790.
16. Borlace, S., A. Santoso, W. Cai, M. Collins, 2014: Extreme swings of the South Pacific Convergence Zone and the different types of El Nino events. ***Geophysical Research Letters***, 41, 4695-4703.
17. 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.
18. 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 Nino events due to greenhouse warming. ***Nature Climate Change***, 4, 111-116.
19. 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.

20. 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.
21. Van Sebillie, 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.
22. 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 Nino propagation asymmetry and future projections. *Nature*, 504, 126-130.
23. 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.
24. 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 Letters*, 40, 1-6, doi:10.1002/grl.50264.
25. 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.
26. 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.
27. 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.
28. Pui, A., S. Westra, A. Sharma, and A. Santoso, 2012: Impact of the El Nino 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.
29. 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.
30. 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.
31. 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.
32. 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.
33. Santoso, A., and M. H. England, 2008: Antarctic Bottom Water variability in a coupled climate model. *Journal of Physical Oceanography*, 38, 1870 – 1893.
34. 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.
35. England, M. H., C. C. Ummenhofer, and A. Santoso, 2006: Interannual rainfall extremes over southwest Australia linked to Indian Ocean climate variability. *Journal of Climate*, 19, 1948 – 1969.

36. 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., et al. 2014: ‘Dealing with Climate Change: Tropical Oceanography Research in Australia’, **white paper** (<http://frdc.com.au/environment/NMSC-WHITE/Pages/Climate.aspx>).
2. 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-nino-to-la-nina-46135>).
3. 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-nino-41616>).
4. 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>).
5. 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>).
6. 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>).
7. 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.
8. Santoso A., 2005: Evolution of climate anomalies and variability of Southern Ocean water masses on interannual to centennial time scales. ***UNSW PhD Thesis***, 326pp.
9. Santoso A., 2000: Circulation in Jervis Bay driven by atmospheric cooling. ***UNSW Honours Thesis***, 91pp.

SELECTED MEDIA COVERAGE

(Click on title to follow link)

1. Can La Nina save the world from record hot temperatures? CNN. August 18, 2016
2. El Nino is dead but La Nina is coming: Are we ready? CNN. June 15, 2016
3. Australia calls end to El Nino. Financial Times. May 24, 2016
4. La Nina to give some relief from warming after hottest April yet. New Scientist. May 17, 2016
5. El Nino: Feeling the heat. Financial Times. April 18, 2016
6. El Nino may be weakening but it is still clobbering crops. Wall Street Journal. March 14, 2016
7. Scientists are freaking out about February's record warmth - ignore the incredibly strong El Niño. The Daily Caller. March 14 2016
8. El Nino: 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

9. Weather experts warn a powerful El Nino drought and bushfire effect could be catastrophic for Australia. Daily Telegraph. August 27, 2015
10. Return set for El Nino conditions. The Daily Advertiser. May 10, 2015
11. Grim forecast as El Nino returns. Channel 7 news. May 8, 2015
12. Major El Nino imminent, to lift global temperatures; report. Xinhua News. May 8, 2015
13. World headed for an El Nino 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
14. We're on 'El Nino alert' but it's still wetter than normal. The Australian. May 5
15. Drought in store as El Nino's western cousin to grow stronger. Ecos. June 16, 2014
16. Climate change: Australia advised to brace for more devastating Indian Ocean weather events. International Business Times. June 16, 2014
17. Our oceans under siege. Between the lines - Channel News Asia. June 13, 2014
18. Global warming to triple frequency of droughts, floods along Indian Ocean. Mashable. June 12, 2014
19. Climate change to almost triple risk of extreme Indian Ocean events. Canberra Times. June 11, 2014
20. Dreaded El Nino looms in the Pacific. Sydney Morning Herald. May 6, 2014
21. Could 2014 be hottest on record? El Nino phenomenon could spew out massive amounts of heat this year. Daily Mail - UK. February 11, 2014
22. Extreme El Nino events expected to double as Earth warms. Business Standard - Washington. January 20, 2014
23. Climate Scientists predict doubling of El Nino events. The Examiner. January 19, 2014
24. Global warming doubles risk of extreme El Ninos, Exeter researchers warn. Express and Echo - UK. January 19, 2014.
25. Get used to heatwaves: Extreme El Nino events to double. Phys.org. January 19, 2014
26. Climate change to make 'Super El Nino' events twice as likely. ABC Environment. December 11, 2013.
27. Study: super El Niño will be twice as frequent. Eco News. November 20, 2013.
28. Extreme El Nino cause found. Science Alert. November 19, 2013.
29. Climate Scientists Identify Cause of Super El Niño Events. Scinews. November 19, 2013.
30. Global warming doubles odds of abnormal El Nino. Australasian Science. November 19, 2013.
31. Australia to Face Extreme El Nino Weather; Ranks Low in Climate Change Performance Index. International Business Times. November 19, 2013.
32. Australia to face stronger El Nino weather patterns from global warming. Sydney Morning Herald. November 18, 2013.
33. Cause of El Nino abnormality found. Phys Org. November 18, 2013.
34. Reverse El Ninos to increase in frequency. Climate Spectator. November 18, 2013.

SELECTED CONFERENCE / SEMINAR PRESENTATIONS

1. **Santoso A.**, Understanding ENSO extremes through the strong 2015/16 El Niño. AMOS/MSNZ Conference, Canberra, Australia, 7-10 February 2017.

2. **Santoso A.**, Understanding extreme El Niño: the curious case of the 2015/16 event. CLIVAR Open Science Conference, Qingdao, China, 18-25 September 2016.
3. **Santoso A.**, El Nino in the Asia Pacific Rim. Aerial Firefighting Asia Pacific, Adelaide, Australia, 5-6 September 2016. **(invited)**
4. **Santoso A.**, El Nino and Global Warming as it impacts on agriculture like palm oil. 8th ASIA Sustainable Oil Palm Summit, Yogyakarta, Indonesia, 4-5 August 2016. **(invited)**
5. **Santoso A.**, El Nino: 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)**
6. **Santoso A.**, W. Cai: ENSO extremes: Present state of understanding and gaps. 10th Session of the CLIVAR Pacific Panel, 2015, Santiago, Chile. **(invited)**
7. **Santoso, A.**, W. Cai, Increased frequency of ENSO extremes under greenhouse warming. EGU General Assembly 2015, Vienna, Austria. **(invited)**
8. **Santoso A.**, M. England, J. Kajtar, W. Cai: Indonesian Throughflow variability in CMIP5 models. EGU General Assembly 2015, Vienna, Austria.
9. Andrews, T., A. Pui, **A. Santoso**: Recent Developments in Predicting El Nino 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)**
10. **Santoso A.**: El Nino in a warming climate. **Insurance Australia Group**, Sydney, May 14, 2014. **(invited 30-minute seminar)**
11. **Santoso, A.**, S. McGregor, F.-F. Jin, W. Cai, England, M. H.: More frequent emergence of El Nino propagation asymmetry due to greenhouse warming. Ocean Sciences 2014, Honolulu, Hawaii.
12. Boucharel, J., A. Timmermann, F.-F. Jin, M. England, **A. Santoso**: A variance heat budget of ENSO. Ocean Sciences 2014, Honolulu, Hawaii.
13. Kim, S., W. Cai, F.-F. Jin, **A. Santoso**: El Nino response to greenhouse warming due to time-varying Indo-Pacific differential warming. Ocean Sciences 2014, Honolulu, Hawaii.
14. **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)**.
15. **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.
16. Taschetto, A. S., A. Sen Gupta, N. C. Jourdain, **A. Santoso**, C. C. Ummenhofer, and M. H. England, 2013: Assessing two types of ENSO in CMIP5 models. AMOS National Conference 2013.
17. Hutchinson, D. K., M. H. England, **A. Santoso**, and A. M. Hogg, 2013: Interhemispheric asymmetry in transient global warming: influence of the Antarctic circumpolar current. AMOS National Conference 2013.
18. **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)**

19. Borlace, S., W. Cai, and **A. Santoso**, 2013: A stability analysis of ENSO over multi-decadal time-scales in a 1000-yr coupled general circulation model. Third CLIVAR Workshop on the Evaluation of ENSO Processes in Climate Models, Hobart, January 2013.
20. **Santoso, A.**, 2012: Mechanism for asymmetry in zonal phase propagation of ENSO SST anomalies. CoE meeting on ENSO-dynamics, 22 August 2012, Monash Uni.
21. **Santoso A.**, 2012: Factors influencing the dynamics of the El Nino Southern Oscillation. IPSL, Paris, 24 May 2012.
22. **Santoso A.**, 2012: Factors influencing the dynamics of the El Nino Southern Oscillation. CSIRO Priestley Lecture and ENSO Workshop, Apr. 4, 2012, Melbourne, Australia (**invited**).
23. **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.
24. England, M. H., W. P. Sijp, **A. Santoso**, and D. Hutchinson, 2012: The role of Southern Ocean gateways in controlling global climate. AMOS 18th National Conference: Connections in the Climate System, Jan. 31 - Feb 3, 2012, Sydney, Australia.
25. Pui, A., S. Westra, A. Sharma, and **A. Santoso**, 2012: Impact of the El Nino Southern Oscillation, Indian Ocean Dipole, and Southern Annular Mode on daily to sub-daily rainfall characteristics in East Australia. AMOS 18th National Conference: Connections in the Climate System, Jan. 31 - Feb 3, 2012, Sydney, Australia.
26. **Santoso, A.**, 2010: The role of the Indonesian Throughflow on ENSO dynamics. Apr. 28, Climate Change Research Centre Seminar Series, UNSW, Australia.
27. England, M. H., **A. Santoso**, S. J. Phipps, and C. C. Ummenhofer, 2010: Role of the Indonesian Throughflow in controlling regional mean climate and rainfall variability. 17th National Australian Meteorological and Oceanographic Society Conference, Jan. 27 – 29, Canberra, Australia.
28. Sen Gupta, A., **A. Santoso**, A. Taschetto, C. Ummenhofer, and M. H. England, 2008: Fidelity in the present-day simulation and projected changes to the Southern Hemisphere extratropical ocean and sea-ice system in the AR4 coupled climate models. Effects of Climate Change on the Worlds Oceans Symposium, May 19 – 23, Gijon, Spain.
29. **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.
30. **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.
31. Gonzalez, M. S., **A. Santoso**, A. Sen Gupta, and M. H. England, 2008: Antarctic Bottom Water variability in the IPCC AR4 climate models. 15th National Australian Meteorological and Oceanographic Society Conference, Jan. 29 – Feb. 1, Geelong, Victoria, Australia.
32. England, M. H., C. Ummenhofer, and **A. Santoso**, 2007: Indian Ocean variability linked to interannual rainfall extremes over southwest Western Australia. 14th National Australian Meteorological and Oceanographic Society Conference, Feb. 5 – 7, Adelaide, Australia.
33. **Santoso, A.**, 2006: Antarctic Bottom Water variability in a coupled climate model. Climate and Environmental Dynamics Laboratory Seminar Series, Nov. 1, UNSW.
34. **Santoso, A.**, 2006: Variability of Southern Ocean water masses in a climate model. Climate and Environmental Dynamics Laboratory Seminar Series, Aug. 14, UNSW.

35. **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.
36. **Santoso, A.,** 2004: Variability of Circumpolar Deep Water in a coupled climate model. School of Mathematics Seminar Series, May 12, UNSW.
37. **Santoso, A.,** 2003: Antarctic Intermediate Water variability in a coupled climate model. School of Mathematics Seminar Series, Jun. 18, UNSW.

SCHOLARSHIPS / AWARDS / GRANTS

UNSW-Indonesia Collaborative Research Fund (Santoso et al.) 2017
 Australian Research Council Discovery Project (England et al.) 2015-2017
 CSIRO Research Contracts 2012-2014
 NCI National Facility supercomputing time grant 2008-present (Santoso + England et al.)
 Australian Museum Land & Water Eureka Prize for Water Research and Innovation 2008 (Winner, England et al.)
 Australian Museum Land & Water Eureka Prize for Water Research and Innovation 2007 (Finalist, England et al.)
 Australian Museum Land & Water Eureka Prize for Water Research and Innovation 2006 (Finalist, England et al.)
 Keith Runcorn Travel Award EGU General Assembly Vienna 2008
 ARCNESS travel support for CSIRO visits 2008, 2009
 ARCNESS travel support to attend 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

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)

RECENT OUTREACH

General Insurance Seminar 'Insuring Tomorrow', Sydney, 17-18 November 2014

Co-presenter on 'Recent Developments in Predicting El Nino and the Implications for Insurers' (<http://www.actuaries.asn.au/microsites/general-insurance-seminar-2014/program/concurrent-sessions>)

Insurance Australia Group, Sydney, May 14, 2014

Delivered a 30-minute presentation titled: 'El Nino 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 the School of Mathematics, UNSW, in promoting mathematics and physical oceanography to students of various ages.