AOGS
14th Annual Meeting
Asia Oceania Geosciences Society
6-11 Aug 2017, Singapore

Opening & Closing Program

Opening | Closing

Program - Opening
07 August, Monday | Nicoll Room, Level 3 | 15:30 - 18:30

From	
15:30	Arrivals, Coffee/Tea Service
16:00	Opening & Addresses Benjamin Fong CHAO, *AOGS President*
16:15	Axford Lecture 1 **"Competing Influences of Greenhouse Warming and Aerosols on Asian Monsoon Climate Change"** William K. M. LAU, *University of Maryland*
17:00	Axford Lecture 2 **"Long-term Drivers of Aboveground-Belowground Linkages and Ecosystem Functioning"** David WARDLE, *Nanyang Technological University*
17:45	General Assembly Secretary General's Report Treasurer's Report Publication Comittee's Report Award Presentations Ratification - Honorary Members - Honorary Auditor General Election - Introduction and Briefing - Meet the Candidates - Voting Rules & Regulations
18:30	Adjourn to Welcome Reception - *Exhibition Hall at Summit on Level 3*

Program - Closing
11 August, Friday | Nicoll Room, Level 3 | 15:30 - 19:00

From	
15:30	Arrivals, Coffee/Tea Service
16:00	Axford Medal Special Lecture **"Challenges and Perspectives in Regional Climate Modeling"** Dong-Kyou LEE, *Seoul National University*
16:45	AOGS2017 Special Lecture **"Remote Sensing of Aerosols, Air Quality and Assessment of their Global and Regional Impacts"** Jack A. KAYE, *AOGS Honorary Member* *Earth Science Division, NASA Headquarters*
17:30	Award Presentations - Honorary Members - Best Student Posters
17:45	Next Meeting Destination Presentation - AOGS2018 in Hawaii
17:55	Announce General Election Results
18:00	Adjourn to Farewell Reception - *Nicoll Foyer*

Announcements

2017 AOGS General Election
View Results

2017 Best Student Poster Competition
View Results

AOGS2018 Session Proposals
Opens: 01 Sep 2017
Closes: 13 Oct 2017 (Special)
Closes: 20 Oct 2017 (Regular)
Notification - Acceptance/Rejection: 27 Oct 2017

AOGS2018 Abstract Submission
Opens: 10 Nov 2017
Deadline: 19 Jan 2018
View Abstract Submission Instructions

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- Self Check-in
- AOGS Mobile App
- Fees & Registration
- Important Dates
- Attendee Profile
- AOGS Policies/FAQ
- AOGS Funding Support
- Presenter Guides

Society

- Awards
- Committees
- Election
- Election Results

Sessions & Abstracts

- Session Proposal
- Abstract Submission
- Sessions & Conveners

Program

- Opening & Closing
- Activity Locator
- Scientific Program
- Abstracts
- Axford & Distinguished Lectures
- Special Sessions
- Special Lectures
- Public Lectures
- Best Student Poster Competition
- Education Outreach

Exhibition

- Exhibition Information
- Exhibiting Companies
- Innovation Theatre
- Exhibitor Guide

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- Convention Centre
- Visa Application
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- Hotels
- Official Airline Network

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Convention Centre - SUNTEC Singapore

This year, your conference will be held at Suntec Singapore, a world-class venue for meetings, conventions & exhibitions centrally located at the Marina Bay.

Address

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Not sure where to go for a meal? Suntec Singapore is just next door to the second largest shopping mall in Singapore, giving you access to 1000 retail outlets & 300 restaurants & other eating outlets. It is also situated near the Singapore Food Trail, a unique 1960s themed food street attraction under the Singapore Flyer where you can experience the bygone era, where people savoured popular local delights along the road side from the makeshift carts and stalls. You can also take a 5 minute taxi or a 4 stop train ride to Singapore's most popular hawker centre – Old Airport Road Market. When the sun sets, another popular food venue nearby is the Makansutra Gluttons Bay at the Esplanade, where the stalls there were carefully selected by Singapore's top food guru KF Seetoh.

Attractions

Other than the touching the water to absorb the qi at the world's largest fountain – The Foundation of Wealth in Suntec City Mall, there are number of attractions near the Suntec Convention Centre which includes the War Memorial Park, Raffles Hotel, the Esplanade, Singapore Flyer, Merlion Park & Marina Bay Sands, etc. You can read the Top Attractions page & the Top Foods page under About Singapore tab where there is some attractions & walking trails listed near Suntec Singapore.

Announcements

2017 AOGS General Election
View Results

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Scientific Program: Schedule at a Glance

Slot Code	Time	Duration
AM1	8:30AM - 10:30AM	2 hours
AM2	11:00AM - 12:30PM	1.5 hours
Lunch	12:30PM - 2:00PM	1.5 hours
PM1	2:00PM - 3:30PM	1.5 hours
PM2	4:00PM - 6:00PM	2 hours

AS BG HS IG OS PS ST SE SS

PV - Poster Viewing Session
Lect - Section Lecture
BZ Meeting - Section Business Meeting

Double click on the Session Code to view the presentation order within the timeslot.
* Please note that the presentation schedule is tentative as there may be late changes in the program.

Day 1 -- Monday, August 07, 2017																
Room:	**308**	**309**	**310**	**311**	**327**	**328**	**329**	**330**	**331**	**332**	**333**	**334**	**335**	**336**	**Summit**	**Nicoll**
AM1	ST04-13-21	ST14-20-24	PS11	SE05	SE10	OS01	AS19	AS34	AS03	IG10	HS01	HS16-04	AS15			
AM2	ST04-13-21	ST09	PS11	SE27	SE06	OS04	AS19	AS34	AS03	IG03	HS01	HS03	AS11-38			
Lunch																
PM1	ST25	ST09	PS15	SE24	SE19	OS10	AS19	AS34	AS03	IG03	HS07	HS17	AS11-38			
PM2																Opening
EVE															Welcome Reception	
Day 2 -- Tuesday, August 08, 2017																
Room:	**308**	**309**	**310**	**311**	**327**	**328**	**329**	**330**	**331**	**332**	**333**	**334**	**335**	**336**	**Summit**	**Nicoll**
AM1	AS01	AS07	PS05-13	SE12	SE21	OS12	OS14	HS21	Kamide Award Special Lecture	IG28	AS10	AS13	AS11-38			
AM2	AS01	AS14	PS05-13	SE04	SE21	OS17	OS13	HS DL	ST DL	IG25	AS10	AS13	AS11-38			
Lunch								HS Meeting	ST Meeting							
PM1	AS28	AS14	PS05-13	SE04	SE13	OS19	OS13	SS07	SS10	IG15	AS10	AS13	AS35		PV - HS, ST	
PM2	AS28	AS20	PS05-13	SE25	SE13	OS19	OS14	SS08	SS04	IG05	AS10	AS32	AS35			
EVE																
Day 3 -- Wednesday, August 09, 2017																
Room:	**308**	**309**	**310**	**311**	**327**	**328**	**329**	**330**	**331**	**332**	**333**	**334**	**335**	**336**	**Summit**	**Nicoll**
AM1	ST06	ST07	PS07	SE25	SE09	OS18	OS08	HS23	AS10	IG21	IG19	HS06	BG03			
AM2	ST05-15	ST26-27	PS04	SE21	SE22	OS02	OS22	HS23	AS DL	IG11	IG24	HS10	BG DL			
Lunch									AS Meeting				BG Meeting			
PM1	ST05-15	ST26-27	PS04	SE20	SE22	OS02	OS22	HS19	SS06	IG11	IG12	HS10	BG08		PV - AS, BG	
PM2	ST08	ST22	PS07	SE25	SE14	OS02	OS08	HS08	Public Lecture 1	IG26	IG27	HS09	Workshop 1			
EVE																
Day 4 -- Thursday, August 10, 2017																
Room:	**308**	**309**	**310**	**311**	**327**	**328**	**329**	**330**	**331**	**332**	**333**	**334**	**335**	**336**	**Summit**	**Nicoll**
AM1	AS02	AS40	PS09	PS14-16	HS14	ST02	ST18	OS03	SE16	IG01	AS21	AS04	BG01-02	AS24		
AM2	AS02	AS40	PS12-ST23	PS03	HS14	ST02	ST18	OS DL	SE DL	IG01	AS21	AS04	BG06-07	AS24		
Lunch								OS Meeting	SE Meeting							
PM1	AS29	AS40	PS12-ST23	PS03	HS18	ST10-03-17-19	ST12	Public Lecture 2	SS09	IG06	AS21	AS04	BG06-07	AS24	PV - SE, OS	
PM2	AS29	AS27	PS10	PS14-16	HS20	ST10-03-17-19	ST12	SS11	SS02	IG04	AS36	AS41	BG04	AS23		
EVE																
Day 5 -- Friday, August 11, 2017																
Room:	**308**	**309**	**310**	**311**	**327**	**328**	**329**	**330**	**331**	**332**	**333**	**334**	**335**	**336**	**Summit**	**Nicoll**
AM1	AS42	ST16	HS13	SE02	HS11	OS07	OS11	IG04	PS08	AS17	AS36	AS41	AS31			
AM2	AS42	ST16	HS13	SE15	HS11	OS21	OS11	IG DL	PS DL	AS16	AS36	AS18	AS31			
Lunch								IG Meeting	PS Meeting							
PM1	AS06	ST Session Discussion	HS15	SE11	HS12	OS21	OS05		Workshop 2	AS16	AS22	AS18	AS31		PV - PS, IG	
PM2																Closing
EVE																Farewell Reception

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OS08 - Future Coastal Oceans Under Climatic and Anthropogenic Scenarios
OS10 - Ocean Salinity Variability and Its Impact on Weather, Climate and Biogeochemistry
OS11 - Observations and Modeling of Physical, Chemical, and Biological Processes in the Southern Ocean
OS12 - Air-sea Interaction Over the Surrounding Waters of the Maritime Continent
OS13 - Dynamics, change, and regional impacts of Indo-pacific climate variability

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Section: - Select Section - Day: - Select Day -

( ) **Poster Presentations - Browse by Section**

Section: - Select Section -

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All Abstracts of Session OS13

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Oral Presentations

OS13 - Dynamics, change, and regional impacts of Indo-pacific climate variability
Tuesday, August 08, 2017 | 329 | 11:00-12:30

1. **OS13-D2-AM2-329-001** (OS13-A013)

Characteristics of ENSO Extremes and the Strong 2015/16 El Niño

Agus SANTOSO[1,2#+], Michael MCPHADEN[3]
[1] University of New South Wales, Australia, [2] Commonwealth Scientific and Industrial Research Organisation, Australia, [3] National Oceanic and Atmospheric Administration, United States
#Corresponding author: a.santoso@unsw.edu.au +Presenter

2015 was an interesting year for climate scientists, particularly for the El Niño Southern Oscillation (ENSO) research community, as a major El Niño finally materialised after a long pause since the 1997/98 event. It is exciting scientifically since, due to short observational record, our knowledge of an extreme El Niño has been based only on the 1982/83 and 1997/98 events. The genesis of the 2015/16 El Niño was marked by many environmental disasters that would be consistent with what is expected in an extreme El Niño. Considering the dramatic impacts of extreme El Niño, and the risk of a projected increase in frequency of ENSO extremes under greenhouse warming, it is timely to evaluate how the recent event fits into our understanding of ENSO extremes. Here, utilising various observed variables that signify ENSO processes, it is revealed that the 2015/16 event does not fall into the same dynamical type as the 1982/83 and 1997/98 events. However, it could still nonetheless be considered as the first extreme El Niño in the 21st Century. The 2015/16 event was preceded by a weak equatorial Pacific warm anomaly in 2014, and its extremity appears to be partly due to the background long-term warming. In effect, this study provides a list of physically meaningful indices that are straight forward to compute and would be useful for monitoring and identifying extreme El Niño and La Niña events in observations and climate models.

2. **OS13-D2-AM2-329-002** (OS13-A004)

Continued Increase of Extreme El Niño Frequency Long After 1.5˚C Warming Stabilization

Guojian WANG[1,2+], Wenju CAI[2,3#], Bolan GAN[4], Lixin WU[4], Agus SANTOSO[5,6], Michael MCPHADEN[7], Xiaopei LIN[4]
[1] Center for Southern Hemisphere Ocean Research, Commonwealth Scientific and Industrial Research Organisation, Australia, [2] Commonwealth Scientific and Industrial Research Organisation Oceans and Atmosphere, Australia, [3] Ocean University of China and Qingdao National Laboratory for Marine Science and Technology, China, [4] Ocean University of China, China, [5] University of New South Wales, Australia, [6] Commonwealth Scientific and Industrial Research Organisation, Australia, [7] National Oceanic and Atmospheric Administration, United States
#Corresponding author: wenju.Cai@csiro.au +Presenter

The December 2015 global climate change conference in Paris adopted an international accord aimed at slowing the pace of global mean temperature (GMT) to below 2 °C relative to pre-industrial levels, with an aspirational target of 1.5 °C. Little is known about the pathway to meet this aspirational target, and even less so about its implications on impactful climate phenomena including extreme El Niño and extreme La Niña. Such events severely affect weather patterns, agriculture, ecosystems, public health and economies worldwide. Here we show that extreme El Niño frequency increases linearly with the GMT toward a doubling at 1.5 °C warming from the pre-industrial level, and the frequency continues to increase for as long as a century after the GMT has stabilised. We show this by analysing climate models participating in the Climate Model Intercomparison Project's Phase 5 (CMIP5)(Ref. 15) forced under a most likely emission scenario. The prolonged increase in frequency is underpinned by oceanic thermocline deepening that sustains faster warming in the eastern equatorial Pacific. Ultimately, this implies a higher risk of extreme El Niño to future generations after GMT rise has halted. On the other hand, extreme La Niña frequency may not increase under 1.5 or 2 °C warming, as opposed to that under business-as-usual scenario toward 4.5 °C warming.

3. **OS13-D2-AM2-329-003** (OS13-A003)

Risks of Extreme Positive Indian Ocean Dipole Associated with a 1.5°C Warming Target

Wenju CAI[1,2#+], Guojian WANG[2,3], Lixin WU[4], Agus SANTOSO[5,6]
[1] Ocean University of China and Qingdao National Laboratory for Marine Science and Technology, China, [2] Commonwealth Scientific and Industrial Research Organisation Oceans and Atmosphere, Australia, [3] Center for Southern Hemisphere Ocean Research, Commonwealth Scientific and Industrial Research Organisation, Australia, [4] Ocean University of China, China, [5] University of New South Wales, Australia, [6] Commonwealth Scientific and Industrial Research Organisation, Australia
#Corresponding author: wenju.Cai@csiro.au +Presenter

The December 2015 global climate change conference in Paris adopted an aspirational target of 1.5°C relative to pre-industrial levels. Little is known about its implications on impactful climate phenomena including extreme positive Indian Ocean Dipole events. Such events severely affect weather patterns, agriculture, ecosystems, public health and economies in many Indian Ocean-rim countries. The frequency is projected to increase substantially under a business-as-usual scenario underpinned by a faster warming in the west than in the eastern Indian Ocean, making it easier to shift convection to the west. By analysing climate models participating in the Climate Model Intercomparison Project's Phase 5 forced under a most likely emission scenario, here we show that extreme pIOD increases linearly with the GMT toward a doubling at 1.5°C warming. On the other hand, unlike the frequency of extreme El Nino, which is projected to continue to increase for as long as a century after the GMT has stabilised, the frequency of positive Indian Ocean Dipole events stabilises with the global mean temperature, as the thermocline in the eastern Indian Ocean deepens and the relative slow warming in the eastern Indian Ocean stops. In association, frequency of events with an extreme positive Indian Ocean Dipole event followed by an extreme El Nino event, as in 1997/98, decreases.

4. **OS13-D2-AM2-329-004** (OS13-A002)

The Role of Ocean Dynamical Thermostat in Delaying the El Niño-Like Response Over the Equatorial Pacific to Climate Warming

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The role of the ocean dynamics in the response of the equatorial Pacific Ocean to climate warming is investigated using both an atmosphere-ocean coupled climate system and its ocean component. Results show that the initial response (fast pattern) to an uniform heating imposed on to the ocean is a warming centered to the west of the dateline owing to the conventional ocean dynamical thermostat (ODT) mechanism in the eastern equatorial Pacific -- a cooling effect arising from the up-gradient upwelling. In time, the warming pattern gradually propagates eastward, becoming more El Niño-like (slow pattern). The transition from the fast to the slow patterns is likely resulted from i) the gradual warming of the equatorial thermocline temperature, which is associated with the arrival of the relatively warmer extratropical waters advected along the subsurface branch of the subtropical cells (STC) and ii) the reduction of the STC strength itself. A mixed layer heat budget analysis finds that it is the total ocean dynamical effect rather than the conventional ODT that holds the key for understanding the pattern of the SST in the equatorial Pacific and that the surface heat flux works mainly to compensate the ocean dynamics. Further passive tracer experiments with the ocean component of the coupled system verify the role of the ocean dynamical processes in initiating a La Niña-like SST warming and in setting the pace of the transition to an El Niño-like warming and identify an oceanic origin for the slow eastern Pacific warming independent of the weakening trade wind.

5. **OS13-D2-AM2-329-005** (OS13-A006)

La Niña Modoki Enhances Precipitation Over the Maritime Continent

Deni Okta LESTARI[+], Edy SUTRIYONO, Sabaruddin , Iskhaq ISKANDAR[#]
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Possible impacts of the La Niña/El Niño Modoki on the precipitation over the maritime continent were investigated in this study. The analysis used monthly precipitation, sea surface temperature (SST), sea level pressure (SLP), and horizontal wind for a period of January 1948 to December 2013. The results clearly show the change in the distribution of precipitation associated with the La Niña Modoki events. During the dry season from JJA to SON, La Niña Modoki caused an increase of precipitation almost all over the maritime continent, in particular over the Kalimantan, Sulawesi, Papua, and central/northern parts of the Sumatra Islands. The condition continued to the wet season (DJF), although the affected regions were narrower compared to those during the dry season. The enhanced precipitation was related to colder SST anomalies in the central Pacific Ocean and warmer SST anomalies in the maritime continent. The warmer SST anomalies in the maritime triggered low-level wind convergence, increased lower atmospheric water vapour, and enhanced atmospheric convection over the maritime continent that leaded to increase of precipitation. In contrast, El Niño Modoki event caused severe drought in the maritime continent during dry season. The influence of El Niño Modoki gradually was weaker during the wet season.

6. **OS13-D2-AM2-329-006** (OS13-A010)

Inter-Member Variability of the Summer Northwest Pacific Subtropical Anticyclone in the Ensemble Forecast

Jing MA[1#+], Shang-Ping XIE[2], Haiming XU[1]
[1] Nanjing University of Information Science & Technology, China, [2] University of California San Diego, United States
#Corresponding author: majingmarulai@163.com +Presenter

The accurate prediction of the East Asian summer monsoon (EASM) remains a major challenge for the climate research community. The Northwest Pacific (NWP) subtropical anticyclone (NWPSA) is the dominant feature of the EASM low-level circulation variability. This study identifies two coupled modes between inter-member anomalies of the NWPSA and sea surface temperature (SST). The first mode features SST anomalies over the tropical Pacific. This "tropical Pacific" mode has little impact on East Asian climate. The second mode features a strong coupling between SST in the North Indian Ocean (NIO)-NWP and NWPSA, with large impacts on East Asia. This resembles the "Indo-western Pacific Ocean Capacitor (IPOC)" mode of interannual variability.

Major differences exist in temporal evolution of the inter-member SST spread between the equatorial Pacific and NIO. In the equatorial Pacific, the inter-member SST spread grows gradually with lead

time, while the spreads of SST and low-level zonal wind grow rapidly from May to June in the NIO. The rapid growth over the NIO is due to positive feedback arising from the coupling between inter-member anomalies of SST and winds. In post-El Niño summer, the inter-member spread in equatorial Pacific SST forecast represents the variations in the timing of the El Niño phase transition. The late decay of El Niño relates to SST cooling and an anomalous cyclonic circulation over the SCS but with little impact on East Asia climate. Thus, a better representation of the "IPOC" mode of regional ocean-atmosphere interaction over the NIO-NWP holds the key to improving the reliability of seasonal forecast of East Asian climate.

OS13 - Dynamics, change, and regional impacts of Indo-pacific climate variability
Tuesday, August 08, 2017 | 329 | 14:00-15:30

1. **OS13-D2-PM1-329-007** (OS13-A018)

A Western-Pole Controlled Indian Ocean Dipole Event in 2015 Modulated by Long-Term Variability

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The canonical Indian Ocean Dipole (IOD) event is usually associated with strong sea surface temperature (SST) cooling of eastern pole in the southeastern tropical Indian Ocean (SETIO) and warming of western pole in the western tropical Indian Ocean (WTIO). However, positive IOD in 2015 is western-pole controlled event, with little SST change off Sumatra-Java. The coastal upwelling in the SETIO was suppressed in 2015, causing the weakened SST cooling in the region. Empirical mode decompositions of SETIO and WTIO SST index show that the decadal variability and long-term trend modulate the strength of IOD. That implies that the background state in the Indian Ocean is unfavorable for the eastern-pole controlled IOD in 2015. It also can be observed by the low-frequency oscillation of sea surface height, sea level pressure and surface wind, all of them following the Bjerknes feedback. In short, anomalous strong SST warming in the WTIO and unfavorable ocean state in the SETIO induced by long-term variability along the equator are the reasons for the western-pole controlled IOD in 2015.

2. **OS13-D2-PM1-329-008** (OS13-A015)

Variability of Sea Level Anomalies in Western Pacific During La Nina Events with Negative Indian Ocean Dipole

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Temporal evolution and spatial characteristics of the sea level anomalies (SLAs) and circulation in the western Pacific during La Nina events with negative Indian Ocean Dipole (IOD) have been investigated using observations and reanalysis dataset for the period 1950-2012. The composite map of SLAs in the western Pacific during various stages of La Nina with and without negative IOD has large differences in its temporal and spatial evolutions. The positive SLAs in the western Pacific are much weakened and the North Equatorial Current bifurcation latitude migrates northward during La Nina events with negative IOD. The west wind anomalies in the equatorial western Pacific caused by negative IOD seems to be responsible for the anomaly weak SLAs in the western Pacific and northerly bifurcations of North Equatorial Current during La Nina events with negative IOD. Based on observations and reanalysis dataset during the period 1950-2012, the temporal evolution and spatial characteristics of the sea level anomalies (SLAs) and ocean circulation in western Pacific for La Nina years in company with negative Indian Ocean Dipole (IOD) events have been investigated. The composites of SLAs' evolution in western Pacific delineate significant differences between La Nina events occurring with and without negative IOD events. The positive SLAs in the western Pacific are much weakened and the North Equatorial Current bifurcation latitude migrates northward during La Nina events with negative IOD. In fact, diagnostic results highlight the influence of negative IOD to such weakened SLAs and northern-shifting North Equatorial Current bifurcation. The west wind anomalies caused by negative IOD offset the effect of easterlies from the eastern Pacific, which leads to the breakdown of the pronounced positive SLAs in western Pacific and the northerly bifurcations of North Equatorial Current during La Nina events with negative IOD.

4. **OS13-D2-PM1-329-010** (OS13-A008)

Upper Ocean Response to Tropical Cyclone Phailin (2013) Over the Freshwater Plume in the Northern Bay of Bengal

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The study of ocean processes forced by the passage of a tropical cyclone (TC) is critical for understanding air-sea interactions that can lead to the intensification of TCs and therefore, for improving models used for its prediction. In this study, a category-5 tropical cyclone, Phailin that crossed over the freshwater plume in northern Bay of Bengal (BOB) during 08-14 October, 2013 is chosen to explore the impact of salinity stratification on the sea surface temperature (SST) during the TC passage. A drastic increase (> 1 PSU) in sea surface salinity (SSS) is revealed in almost the whole plume after the passage of Phailin due to very strong mixing of the shallow mixed layer induced by the TC. The pre-existing strong BL with a thickness of 20-50 m and temperature inversions with a amplitude of 0.6-0.8 ºC is noticed in the plume along the path of the Phailin cyclone, destruction of which apparently decreases SST cooling in the plume and favored Phailin's development. Such a barrier layer could reduce the entrainment cooling by about 1ºC/d during the TC passage, according to a diagnostic mixed layer model. As there is a permanent existence of BL and an abundance of intense TCs in the northern BOB, these results highlight the importance of a systematic and in-depth investigation of the interaction between TCs and salinity-induced BL in the freshwater plume.

5. **OS13-D2-PM1-329-011** (OS13-A007)

Evaluation of Sea Surface Temperature Diurnal Variation Models Against MTSAT-1R Data in the Tropical Warm Pool

Haifeng ZHANG[1#+], Helen BEGGS[2], Hua WANG[1], Jose RODRIGUEZ[3], Livia THORPE[4], Michael BRUNKE[5], Leon MAJEWSKI[2], Andrew KISS[1]
[1] University of New South Wales, Australia, [2] Australian Bureau of Meteorology, Australia, [3] Met Office Hadley Centre, United Kingdom, [4] UK Met Office, United Kingdom, [5] University of Arizona, United States
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Proper inclusion of sea surface temperature (SST) diurnal variation (DV) effects in air-sea coupled models, numerical weather prediction models, and climate models is expected to enhance the model accuracy. High quality DV parameterizations, either empirical or physical, can usefully represent DV effects provided the necessary meteorological conditions (wind speed, solar shortwave insolation, etc.) are known. In this study, we evaluate SST DV produced from four DV models, including one empirical DV parameterization (*Gentemann et al.,* 2003, CG03 hereafter), two physical DV models (*Zeng and Beljaars*, 2005, ZB05 hereafter; *Takaya et al.,* 2010, ZB+T hereafter), and one air-sea coupled model (Met Office Unified Model Global Coupled model; *Williams et al.,* 2015) which implements the ZB05 warm layer scheme. The reference SST DV data are the Australian Bureau of Meteorology reprocessed version 3 Multi-functional Transport Satellite-1R (MTSAT-1R) SST data. The study domain is the Tropical Warm Pool (90ºE-170ºE, 25ºS-15ºN) for the period 1 January to 30 April 2010. Preliminary results show that all models capture the general DV cycle well. ZB05 better estimates high DV events (~3 K), but tends to overestimate low-mid DV events (< 2 K). This overestimation of low-mid DV is largely corrected in the ZB+T model, whereas large DV is underestimated. CG03 agrees with MTSAT-1R DV cycle patterns well in terms of maximum DV amplitude distribution but estimates no DV > 3 K. This study can potentially offer some assistance in DV model selection and some guidance for DV model improvement.

References:

1) Gentemann et al. (2003), Geophys. Res. Lett., 30 (3), 1140, doi:10.1029/2002GL016291.

2) Takaya et al. (2010), J. Geophys. Res., 115, C06009, doi:10.1029/2009JC005985.

3) Williams et al. (2015), Geosci. Model Dev., 88, 1509-1524, doi: 10.5194/gmd-88-1509-2015.

4) Zeng and Beljaars (2005), Geophys. Res. Lett., 32, L14605, doi:10.1029/2005GL023030.

Poster Presentations

OS13-D4-PM1-P-012 (OS13-A009)

Annual and Interannual Thermal Variability and Volume Transports in the Northwest Pacific Ocean and the Tropical Indo-Pacific Ocean

MyeongHee HAN#+, Sung-Hyun NAM, Yang Ki CHO
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Based on the budget analysis with the HYbrid Coordinate Ocean Model (HYCOM) data, the relationships among the North Equatorial Current (NEC), Kuroshio (KU), Mindanao Current (MC), Sea Surface Height (SSH), and vertical Volume Transport (VT) at the bottom of the upper layer (0~500 m) in an area east of the Philippine islands, west of 130°E, and between 8°N and 18°N (hereafter KMN), and its annual and interannual variability are investigated. Annual climatologies indicate that the SSH reaches its maximum in July (7.1 cm higher than the mean) and its minimum in January (5.8 cm lower than the mean). Annual climatological NEC VT reaches its maximum in June (63.7 Sv westward) with a ratio of VTs among the KU, MC, and NEC of 3.2:4.0:6.4 and its minimum in September (50.6 Sv westward) with the ratio of 2.6:3.3:5.1. Interannual variability in the SSH and VTs are closely related to the El Niño/Southern Oscillation (ENSO) and Pacific Decadal Oscillation (PDO) with often out-of-phased VTs between the KU and MC. Sea Surface Temperature (SST) and Ocean Heat Content (OHC) for the upper layer of the KMN are linked to those of Seychelles Chagos Thermocline Ridge (SCTR, 5°S–12°S, 50–80°E) via Indonesian Throughflow (ITF) and South Equatorial Current (SEC) in the Indian Ocean, as well as those of warm pool region in the western tropical Pacific Ocean (WTP, 130–160°E, 5°S–5°N) and the Nino 3.4 region (NINO3.4, 170–120°W, 5°S–5°N) via MC and North Equatorial Countercurrent (NECC) in the Pacific Ocean. The interannual SST and OHC anomalies are generally in phase between KMN and WTP, and between SCTR and NINO3.4 while out of phase between KMN and SCTR, between KMN and NINO3.4, between WTP and SCTR, and between WTP and NINO3.4 with differences of up to -1.7 to 3.0 ºC and -1.8 to 1.6×10^4 J m^{-3}.

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Responses of the East Asian Jet Stream to the North Pacific Subtropical Front in Spring

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This study concerns atmospheric responses to the North Pacific Subtropical Front (NPSTF) in the boreal spring over the period of 1982-2014. Statistical results show that a strong NPSTF in spring can significantly enhance the East Asian jet stream (EAJS). Both transient eddy activity and atmospheric heat source play important roles in this process. The enhanced atmospheric temperature gradient due to a strong NPSTF increases atmospheric baroclinicity, resulting in an intensification of transient eddy activities and convection activities. On one hand, the enhanced transient eddy activities can excite an anomalous cyclonic circulation with a quasi-baraotropical structure in the troposphere to the north of the NPSTF. Accordingly, the related westerly wind anomalies around 30ºN can intensify the component of EAJS over the Northeast Pacific. On the other hand, an enhanced atmospheric heat source over the NPSTF, which is related to increased rainfall, acts to excite an anomalous cyclonic circulation in the troposphere to the northwest of the NPSTF, which can explain the enhanced component of EAJS over the Northwest Pacific. The two mechanisms may supplement each other to enhance the EAJS.

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Impact of ENSO on Rice Yields in Bihar, India

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Climate variability brought various negative results to the environment around us and area under rice crop in Bihar has also faced a lot of negative impacts due to variability in temperature and rainfall. Location of Bihar in Northern Plain of India automatically makes it prime location for agriculture and therefore variability in climatic variables brings highly sensitive results to the agricultural production (especially rice). In this study, rainfall and temperature variables are taken into consideration to investigate the impact on rice cultivated area. Change in climate variable with the passage of time is prevailing since the start of geological time scale, how the variability in climate variables has affected the major crops? It is an interesting point for inquiring into. Does there exists direct relation between climate variability and area under agricultural crops? How many important variables directly signals towards the change in area under agriculture production? These entire questions are answered with respect to change in area under rice cultivation of Bihar State of India. Temperature, rainfall and ENSO oscillation are a good indicator with respect to rice cultivation in Indian subcontinent. Impact of high