1st Telecon of Asia-Australia Monson Working Group on 19th August, 2016

Participations:

Hariharasubramanian Annamalai	Co-Chair
Aurel Moise	Co-Chair
Andrew Marshall	Member
Gill Martin	Member
William Boos	Member
Parthasarathi Mukhopadhyay	Member
Suryachandra Rao	Member
Renguang (Randy) Wu	Member
Govindarajalu Srinivasan	Member
Koh Tieh Yong	Member
Yi Ming	Member
Brian Mapes	Member

This Telecon is arranged to introduce and get to know each of the participant. Following are the brief details of the participants and their interests.

Dr. Hariharasubramanian Annamalai

Dr. Hariharasubramanian Annamalai (Co-chair AAMWG) is a senior researcher at the International Pacific Research Center (IPRC), School of Ocean and Earth Sciences and Technology, University of Hawaii. He focuses on identifying and understanding the leading processes that account for the mean and variability of the monsoons. In this pursuit, he applies process-based diagnostics on available observations, reanalysis products and climate models and stresses the need for more "direct" observations to constrain model physics. The diagnostics shed insights into strengths and weaknesses in model physical parameterizations, and thus provide pathways for model improvement. Viewing the monsoons as a coupled ocean-atmosphere phenomena, he is focused on understanding the role of upper-ocean processes in shaping the monsoons.

Web: http://iprc.soest.hawaii.edu/people/annamalai.php

Dr. Aurel Moise

Dr. Aurel Moise (Co-chair AAMWG) is a Senior Research Scientist in the Climate Change and Variability Program within the Australian Bureau of Meteorology R&D branch. His work is mainly focused on leading projects on climate change science (global and regional); climate model simulations and evaluation; climate projections science as well as tropical processes (e.g. Australian and other monsoons). He also has a strong interest in stakeholder engagement activities aimed at forging links between the science of regional climate change and impact and adaptation groups as well as natural resource managers.

His interest also includes building community services around big data sets. He leads the NeCTAR funded project on the Climate and Weather Science Laboratory (CWSLab): This laboratory is a virtual laboratory led by the Bureau of Meteorology in close collaboration with the CSIRO. providing an integrated platform of tools and resources for researchers and government agencies to simulate, analyse and predict climate and weather phenomena.

Web:
http://www.climatechangeinaustralia.gov.au/en/ for latest Australian Climate Change Projections
http://cwslab.nci.org.au/ to check out the Climate and Weather Science Laboratory
http://nespclimate.com.au/ to find out about the new Australian Earth Systems and Climate Change Hub

Dr. Andrew Marshall

Dr. Andrew Marshall is a Senior Research Scientist at the Australian Bureau of Meteorology in Hobart and a member of the S2S Monsoon Prediction Subproject. His research specialises in sub seasonal to interannual variability of the atmosphere-ocean climate system and its role in weather and climate

prediction, with particular specialisation in drivers of global weather and climate variability and extremes, including the regional monsoon. Using the Predictive Ocean Atmosphere Model for Australia (POAMA), Marshall and Hendon (2015) assessed sub seasonal prediction of the Australian monsoon and the role of the MJO, developing a simple real-time rainfall index for the Australian summer monsoon (www.marine.csiro.au/~mar75h/).

Dr. Gill Martin

Dr. Gill Martin works at the UK Met Office. During her 25 years at the Met Office she has been involved in a wide range of atmospheric science, including studying the microphysical properties of low-level clouds, developing and testing boundary layer and convection parameterisations, developing and evaluating climate models, studying the representation of tropical precipitation on a range of time and space scales, and analysing the simulation of monsoon systems and their sensitivity to model physics and resolution. Current projects include: INCOMPASS (Interaction of Convective Organisation and Monsoon Precipitation, Atmosphere, Surface and Sea), a major undertaking funded by NERC (UK) and MoES (India) including a recent extended field campaign in India; the Climate Science for Service Partnership - China (CSSP-China), supported by the Newton fund, a strategic partnership between UK and Chinese climate scientists carrying out cutting-edge scientific research to underpin the development of climate services; and evaluation of monsoons and the hydrological cycle as part of ongoing MetUM development under the Met Office Hadley Centre Climate Programme. In all of these projects she is concerned with understanding and improving the representation of rainfall processes and variability in the tropics, with particular focus on the South Asian and East Asian monsoon regions, with a view to improving model simulations and allowing increased confidence in climate projections. One of her main interests is to understand the relationships and interactions between the regional monsoon systems on inter-annual and intra-seasonal timescales, their local and remote drivers, and how they might change in future.

Web: http://www.metoffice.gov.uk/research/people/gill-martin

Dr. William Boos

Dr. William Boos works to understand the processes responsible for variations in tropical climate over a broad range of time scales. He has worked most extensively in monsoon dynamics, helping to improve understanding of these tropical circulations that deliver water to billions of people. He uses observational data together with computer models of the atmosphere to guide development of theories for monsoons and other tropical circulations. His research group has recently studied the dynamics of tropical depression spinup, the influence of atmospheric energy transports on regional precipitation, the variability of the Asian, African, and Australian monsoons on a range of time scales, and other topics in climate dynamics. He is an Associate Professor at Yale University.

Web: http://people.earth.yale.edu/profile/william-boos/about

Dr. Parthasarathi Mukhopadhyay

Dr. P. Mukhopadhyay has been working in the field of Tropical cloud and convective processes in general and for Indian region in particular using numerical model since last two decades.

His interest encompasses the multiscale interaction of convective processes and its representation in numerical model particularly General Circulation Model (GCM) to enhance the model fidelity for short through medium to seasonal scale forecast.

To address the multiscale interaction of clouds in GCM, he has developed skill in demonstrating super parameterization (SP) or multiscale modelling framework (MMF) in the NCEP Climate Forecast System (CFS) model for improving systematic bias of the model.

Besides SP, approach, he is working on high resolution global model (~10 km) and attempting to improve the representation of sub-grid scale cloud processes through a suite of approaches including stochastic parameterization, realistic cloud microphysics etc. constraining the scheme by observations.

Apart from research, he is actively engaged in teaching in Masters level students and enhancing career of young research student by guiding them for Ph. D.

Dr. Suryachandra Rao

Dr. Suryachandra Rao leads two ambitious inter-institutional programs (Monsoon Mission and High Performance Computing) at the Indian Institute of Tropical Meteorology, Pune, India. "Monsoon Mission" is a mission mode project to improve the prediction skill of Indian Summer Monsoon Rainfall in dynamical coupled models. This task was accomplished by the group led by him by improving the model's physics and resolution. His major scientific contributions include documenting the role of Indian Ocean warming on the Indian Summer Monsoon rainfall, Indian Ocean coupled dynamics, highlighting coupled model biases and the model development activities. His strategic planning helped Ministry of Earth Sciences, Govt. of India to increase its HPC capacity 10 times once in every 4/5 years. Based on his contributions he was invited to be core member of different international working groups and also editor of Elsevier journal. He has published around 60 research papers and his works are highly cited with H-index of 24.

Dr. Renguang (Randy) Wu

Dr. Renguang (Randy) Wu is based at the Institute of Atmospheric Physics (IAP), Chinese Academy of Sciences. His general research interests are in understanding climate variability and predictability from intraseasonal to decadal time scales and roles of atmosphere-ocean-land interactions. Particularly, he is interested in the ocean-atmosphere interactions on different time scales over the tropical Indo-Pacific region and the land-atmosphere interactions over mid- and high-latitude Eurasian land and their impacts on intraseasonal and interannual variability of the Asian summer and winter monsoons and seasonal transitions. Given the dependence of monsoon variability upon the land and ocean states, knowledge of regional atmosphere-ocean-land interactions and remote oceanic forcing is very much relevant to the understanding of regional monsoon variability.

His current projects include the study of the influences of ocean-atmosphere interaction on variation and transition of the spring-summer climate over the South China Sea and surrounding regions under the global change background; assessment of the role of regional air-sea interaction and Indo-Pacific remote forcing in the interannual variability of the South China Sea climate; distinguishing intraseasonal air-sea interactions over tropical western North Pacific on quasi-biweekly and 30-60-day time scales; and investigating the role of ocean-land-atmosphere processes in the variability of spring climate and the connection of winter and summer climate anomalies over Asia.

Dr. Govindarajalu Srinivasan

Dr. Govindarajalu Srinivasan is currently working as Chief Scientist, Climate Applications at the Regional Integrated Multi-hazard Early warning System (RIMES) for Asia and Africa located near Bangkok, Thailand.

His work focuses on enhancing the use of climate information to manage climate risks and make optimal use of favourable opportunities in south and south East Asian context. Most the projects that he is involved in deal with operational use of climate information, developing applications and services in close collaboration with National Meteorological and Hydrological Services. Activities of interest to this group that I coordinate are the South Asian Seasonal Climate Outlook Forums and National Climate Outlook and Monsoon Forums designed to facilitate interaction between user departments and meteorological departments to share seasonal outlooks.

Weblink: http://www.rimes.int/people_hydromet.php

Assoc. Prof. Tieh-Yong Koh

A/Prof Tieh -Yong Koh is based at the Singapore University of Social Sciences. He is interested in the fundamental understanding of tropical atmospheric dynamics and its connection to the real weather and climate that we observe around us, especially in Southeast Asia. The monsoon is a major feature of the meteorology of the Maritime Continent, having multi-scale interactions with the local diurnal circulation, the intra- seasonal oscillations, as well as inter-annual climatic variations. Through numerical modeling, either in the geophysical dynamical approach or in the verifiable simulative approach, he hopes to advance tropical meteorology both as a diagnostic and a prognostic science. His current activities include studies in geophysical fluid dynamics, multi-scale interaction of convective systems and regional weather and climate in Southeast Asia.

Web: http://alum.mit.edu/www/tiehyong

Dr. Yi Ming

Dr.Yi Ming leads the Atmospheric Physics and Climate Group at NOAA/Geophysical Fluid Dynamics Laboratory. He strives to understand the inner working of the Earth's climate system and to apply that understanding to predict certain key physical aspects of the environmental change caused by humans, in

the hope of better informing impact and policy research. He is particularly interested in how the radiative balance and hydrological cycle respond to anthropogenic perturbations, with a focus on atmospheric physical processes and their interactions with large-scale circulation. For example, he studied how anthropogenic aerosols may have caused a multi-decadal drying trend for the South Asian monsoon and whether a uniform warming of sea surface temperatures (SST) would suppress the West African monsoon. He uses comprehensive and idealized climate models for developing physical intuition and theories, while relying on remote sensing and in-situ observations for testing models and hypotheses. His homepage can be found at:
https://www.gfdl.noaa.gov/yi-ming-homepage/.

Prof. Brian Mapes

Brian Mapes is a Professor at the Department of Atmospheric Sciences and Meteorology and Physical Oceanography Program, Rosenstiel School of Marine and Atmospheric Sciences (RSMAS), University of Miami (http://www.rsmas.miami.edu/users/bmapes/).

My general curiosity in life is to understand how scales of activity relate to each other. In meteorology, my work aims to expose the causality of how column processes relate to large-scale flows, especially in the case of tropical moist (convection-containing) atmospheric flow. The monsoon is one instance of this puzzle about mechanisms and causality — but a very important instance. A recent issue I have come to appreciate is the role of areas of high column water vapor CWV (or "precipitable" water PW), which retain their distinct identity despite the significant rain rates that occur within them, as seen for instance in this data product http://tropic.ssec.wisc.edu/real-time/mimic-tpw/global2/main.html. Integrating more data types, I maintain a web site with carefully designed if busy graphical loops of monsoon weather, http://weather.rsmas.miami.edu/repository/alias/MiamiMonsoonLoops, reflecting my interests in software and visualization practices. Prominent in these loops is the 50mm threshold in CWV or PW which can be seen to enclose the deep convective clouds and rain quite reliably.

Translating such a vapor-centric view into system-level understanding of monsoon sensitivities and consequences for statistical climate modulations and predictability is not simple. But it may point inquiry in directions different than vertical stability-oriented views (like cloud work function) that are more traditional.