1. **Date** : 5 February 2021, Friday (11:00 – 12:00)
Presenter : Song Chen (CCRS)
Theme : Applicability of urban canopy parameterization in urban grey zone

Abstract
There have been continuous interests in developing high-resolution models for numerical weather prediction and climate modelling. As grid resolutions increase to the grey-zone region (i.e., on the order of tens to hundreds of meters), the current single layer urban canopy model MORUSES tends to fail or lose its accuracy. This is due to both physics (turbulence is partially resolved) and building representations (morphology may vary significantly from one grid box to another). In this work, we focus on the effect of urban representation at different resolutions and try to shed light on how this would affect the model predictions.

2. **Date** : 25 February 2021, Thursday (11:00 – 12:00)
Presenter : Kuldeep Sharma (CCRS)
Theme : Diagnostics and Evaluation of Unified Model based Medium Range Prediction

Abstract
Rainfall forecast and its verification are always of a great interest because of its socioeconomic impact. Accurate rainfall forecasts can minimize the impacts of severe or extreme rains on the local and national economy by reducing the losses in terms of saving human lives and protecting property. Therefore, accurate forecasts are critical and highly sought after by all. Additionally, verification of precipitation forecasts is equally important to monitor the forecast performance of a modelling system which in turn provides a useful feedback for the improvement. Most of the medium range forecast verification studies in India are based on one or two monsoon seasons, case studies of thunderstorms and tropical cyclone events etc. However, the detailed verification in medium range operational rainfall forecast using long period data has not been carried out so far. With an ever increasing resolution of model forecast year by year, the categorical and continuous verification approaches are inadequate to represent the true skill of a weather model. Though, continuous and categorical verification approaches are still used by most of the operational to visualize the forecast quality at a glance, there is a need of alternative approaches to verify the skill of rainfall forecast. Here, in the present work, an attempt has been made to evaluate the skill of UK based operational Unified model (UM) using traditional and advanced spatial verification methods like Contiguous Rain Areas (CRA).

3. **Date** : 10 March 2021, Wednesday (11:00 – 12:00)
Presenter : Byoung Woong An (CCRS)
Theme : Understanding the Sea level variation along the coast of Southeast Asian Sea

Abstract
Sea level is changing due to climactic factors, and tidal range may also change due to sea level change. To understand how tidal behavior (range) changes with the sea level changes, we analyzed the freely available hourly sea-level data, GESLA (Woodworth, 2017), focused on the coast of Southeast Asian Sea where a wide range of tidal behaviour and tidal ranges have been shown. This observed sea-level is a combined effect of a tide component and a storm surge component. Therefore we analysed the sea-level data separately for understanding the causation of the sea level change. We used the tidal harmonic and the correlation analysis methods to quantify the tidal evolution related to the sea level changes. Here we focused along the Malay Peninsula and showed how tidal evolution e.g. the form factor calculated as (K1+O1)/(M2+S2), MSL (mean sea level), have been changed temporally and spatially. From this result, we assume that the sea level around this area has been changed mainly by the tidal behavior which has changed by the surge. This conclusion is confirmed by the tide-only and the surge simulations using a NEMO numerical model. The water density driven baroclinic effects were not considered in this study.

4. **Date** : 17 March 2021, Wednesday (4:00pm – 5:00pm)
Presenter : He Yujia (WSD)
Theme : Data-driven nowcasting model in Analogue-based heuristic forecasting

Abstract
The purpose of this study is to find a computationally efficient method for operational flood forecasting in the district of Birmingham. The methodology is based on a two-layer analogue framework, with the first layer utilizing mesoscale climate forcing and the second layer using rainfall forcing. The predicted rainfall is subsequently compared against the rainfall from a database of historical flood events, and the corresponding flooding information is extracted. Performance of the model prediction varies for rainfall events of different durations. The model tends to over-predict for short-duration rainfall events but under-predict for long-duration rainfall events. In terms of the total accuracy index values, the model predictions for long-duration rainfall are more stable and consistency.

5. **Date** : 30 August 2021, Monday (3:00pm – 4:00pm)
Presenter : Joshua Lee (CCRS)
Theme : Assimilation of locally-received Mode-S EHS data in SINGV-DA: Current progress and issues

Abstract

Aircraft observations play an important role in the SINGV-DA observation network. Recently, a promising new aircraft-based observational source, termed Mode-Selective Enhanced Surveillance (Mode-S EHS), derived from air traffic management data has been reported by various research groups in Europe. The availability of the required air traffic management data, provided by the Civil Aviation Authority of Singapore, has allowed similar studies to be conducted over Southeast Asia. In this presentation, we outline the efforts to assimilate Mode-S EHS data in SINGV-DA, including the parsing, decoding, derivation and quality control of Mode-S EHS data. Results from two month-long trials are presented, indicating that more effort is required to better understand the quality control and bias corrections required for assimilating Mode-S EHS data over Southeast Asia.

6. **Date** : 10 December 2021, Friday (2:00pm – 3:00pm)
Presenter : Marvin Seow (University of Tokyo)
Theme : Atmospheric impacts of local sea surface temperatures versus remote drivers during strong South China Sea winter cold tongue events

Abstract

Sea surface temperatures (SSTs) in the western part of South China Sea (SCS) are cooler than the eastern part in boreal winter, owning to a winter climatological cold tongue (CT). Atmospheric impacts of local (or SCS) SSTs compared to remote drivers (e.g. western tropical Pacific SSTs) during strong CT events with anomalously cool SSTs are assessed using a regional atmospheric model configured for the Maritime Continent. In the local run, more rainfall is observed over the eastern SCS, but no significant atmospheric impacts are found over the CT region when SSTs associated with strong CT events are imposed within the SCS while climatological conditions are imposed elsewhere. SCS SST anomalies during strong CT events do not significantly modify the regional wind circulation. The lack of atmospheric response to SSTs over the CT region may be explained by the wintertime mean SSTs (i.e. < 27–28°C) over the CT region that are inadequate to trigger deep atmospheric convection, while eastern SCS SSTs are high enough. Underlying warm eastern SCS SST anomalies may explain the positive rainfall anomalies. In the remote run, imposing climatological SCS SSTs but remote SSTs and lateral boundary conditions linked to strong CT events results in cyclonic wind and positive rainfall anomalies over the eastern SCS and Philippines, which are a Matsuno-Gill response to the diabatic heating anomalies over the warm western tropical Pacific SST anomalies.