

# **The 1<sup>st</sup> Thailand Weather and Climate Symposium 2021**

## **Concept Note**

### **Symposium 2021 theme: Weather and Climate Extremes**

#### **1. Conference Overview**

The Weather and Climate Symposium 2021 aims to conduct the weather and climate research community to academic institutions and government agencies, uncover weather and climate research in nation level and build up the atmosphere for young scientists. In term of climate science, it is not only to share innovative techniques for better data analyses and utilization of climate information but also to exchange scientific knowledge on agricultural, water resource, environmental, and disaster risk responses to weather and climate extremes.

Since 2013, the improvement of IPCC Assessment Report (AR5) in science basis provided a comprehensive view of each component of the earth climate system and its changings. Climate model simulations, data analyses, and methods combining multiple lines of evidence lead to improved understanding on weather and climate extremes. Recently released from IPCC AR6 has finalized the physical science basis on 6 August 2021. It is the most up-to-date physical understanding of the earth climate system and climate change, bringing together the latest advances in climate science, and combining multiple lines of evidence from paleoclimate, observations, process understanding, and global and regional climate simulations. Global climate change led to weather and climate extremes events in multifaceted phenomena as the frequency, intensity, spatial extent, duration, and timing and result in unprecedented extremes. Weather and climate extremes events can still lead to extreme conditions or impacts, either by crossing a critical threshold in a social, ecological, and physical system, or by occurring simultaneously with other events. Some climate extremes (e.g., droughts, floods) may be the result of an accumulation of weather or climate events that are, individually, not extreme themselves. A weather system such as a tropical cyclone can have an extreme impact, depending on where and when it approaches landfall. Changes in extremes can also be directly related to changes in mean climate because mean future conditions in some variables are projected to lie within the tails of present-day conditions. In term of extreme events, the definition is

complex and the assessment of changes in climate that are relevant to extreme impacts and disasters needs to consider several aspects. Many weather and climate extremes are the result of natural climate variability and change including phenomena such as El Niño Southern Oscillation (ENSO), Indian Ocean Dipole (IOD), and natural decadal or multi-decadal variations such as Pacific Decadal Oscillation (PDO) provide the backdrop for anthropogenic climate changes.

Over the past decade, long-term drought, severe floods, heat waves and long dry spells were not experiencing in global but in regional and local scales. Conceptually, with a change of climate to warmer and drier/wetter conditions than present, the nature and occurrence of extreme weather and climate events could change. Indochina Peninsula and Maritime continent (INPSMC) are in tropical weather and climates system. It is the key area connecting South China Sea, Indian monsoon, and East Asian monsoon system, also very important to the formation and variation of many atmospheric circulations. INPSMC has a varied topography with longitudinal oriented mountains and high and low terrains distributed from west to east. INPSMC surrounded by the largest warm pool of the earth and containing the most complicated ocean-land-atmosphere interaction. The extreme rainfall events in INPSMC are frequent with significant multi-scale variations. IPCC report AR5(2013) and AR6(2021) pointed out that climate change makes the extreme rainfall events more frequent, intense, larger affected area, and longer lasting time. In recent years, the intensified occurrence of extreme rainfall events under the global climate change causes critical influence on economy, society, people's lives and asset, and biophysical environment. It becomes the focused research area on how to accurately predict the future extreme precipitation variations, the latent heat, the global atmosphere circulation, and impact the surrounding weather and climate. It has great scientific meaning to study the spatial variability, temporal characteristic, and physical mechanism of the extreme events in INPSMC region under global climate change background, to evaluate the earth climate system model simulation and project future changes toward extreme events.

Thailand has been facing and experiences with dramatic change in agriculture, water resources, environment, and disaster risk because of changing climate. In addition, these events have also increased concern as to whether the intensity and frequency of

future extreme weather and climate events. The results of weather and climate research areas could provide the understanding in scientific knowledge and useful policy decision information to climate adaptation, mitigation and to achieve the nation's sustainable development goals.

## **2. Specific Conference Objectives**

1. To promote the weather and climate research forum to academic institutions and government agencies.
2. To evaluate the current weather and climate research in national level included with climate information and services to community for improving the research community.
3. To explore new and innovative techniques for better data analyses and utilization of climate change information for sustainable development goals.
4. To exchange the knowledge and recommendation on agricultural, water resource, environmental sectors, and disaster risk responses to weather and climate extremes.
5. To review and summarize the high impact of weather and climate events, mainly in agricultural and water resources sectors, including monitoring, forecasting and preparedness measures for decision-making and adaptation strategies to cope with climate extremes, variability, and change.

## **3. Expected Conference Outcomes**

Experts in several fields will be invited to prepare the discussion papers to address the above objectives. The conference is designed to open floor and engage all the participants in discussions on each of these papers.

1. Improved understanding of the global climate change framework and the key positions that researcher can take to enhance knowledge.
2. Conducted the weather and climate research community to academic institutions and government agencies.
3. Uncovered weather and climate research in nation level and build up the atmosphere for new young scientists in these areas.
4. Increased understanding of the role of weather and climate science and data analysis.
5. Shared new and innovative techniques for better data analyses and utilization of climate change information.

6. Exchanged scientific knowledge on agricultural, water resource, environmental, and disaster risk responses to weather and climate extremes.
7. Reviewed and summarized the high impact of weather and climate events, mainly for agricultural and water resources sectors, including monitoring, forecasting and preparedness measures for decision-making and adaptation strategies to cope with climate extremes, variability, and change.

Recommendations from the conference will be considered at the ensuing session of Thai Meteorological Department (TMD), Thailand Science Research and Innovation (TSRI), and National Research Council of Thailand (NRCT) for promoting and improving weather and climate research fund.

#### **4. Conference Theme**

The impact of weather and climate extreme events in Thailand past 5 years under climate change. By high impact weather, they should be thinking of events which have endangered lives or had a detrimental social or economic impact. So, this could include drought, severe flooding, heatwaves, strong winds, etc. these might be from large-scale systems such as El Niño event, monsoon system, tropical cyclones, or smaller convective events.

#### **5. Conference Format**

To open a space for profound discourse on the specific weather and climate extreme tracks under climate change identified. The event will consist of two activities: online presentation and poster competition.

Call for presenting on research in the areas of weather and climate extreme events and its impacts will be launched in September 2021. The poster's winner will be asked to prepare article submitting for ASEAN Specialized Meteorological Centre (ASMC) Bulletin Issue #9 in March 2022.

#### **Two-day conference:**

Day1 is for online presentation and judging the posters. Day2 is for online presentation and invited speakers from UK Met Office (UKMO) who are experts to give a special talk and discuss in the current weather & climate extreme events. We will be grateful if you can indicate your interest to contribute an article from 30<sup>th</sup>

October 2021 for early bird. Subsequently, we would appreciate if you can submit a full article by 15<sup>th</sup> November 2021 to allow for some editorial processing time.

**Conference instruction:**

We would like to invite you to write a short article on a notable weather and climate extreme events affecting your areas of interest. Please write your article in word document format with two-column and Time New Roman 12pt around 2-3 pages and including some graphics. To ensure that the document is in your right position, please attach both document in word(.docx) and portable document format(.pdf) file formatted, see attached example. For detail as described, the article would get involving with investigation and exploration of high impact weather and climate events which have endangered lives or had a detrimental social or economic impact. They could include severe flooding, drought, heatwaves, strong winds, severe lighting, etc. these might be from large-scale systems such as tropical cyclones or smaller convective events.

In the article you may want to include contents such as:

1. Why the event mattered? How it affected the public? The cost of the event, for e.g., damages to property, lives affected.
2. Plot(s) on observation data (e.g., rainfall or temperature anomaly), meteorological analyses of the event (e.g., wind flow/circulation anomalies, MSLP, temperature, rainfall).
3. How was the forecast issued? Using what models, how public was alerted if any.
4. Any others, e.g., collaboration with Agriculture, Environment or/and Disaster Risk Management agencies.
5. The article may be included with texts, figures, and plots within one poster and one-two pages of article for ASMC Bulletin Issue.

**Summary of schedule:**

Conference Announcement	by 30 <sup>th</sup> September 2021
Early Bird Abstract & Full Submission Deadline	by 30 <sup>th</sup> October 2021
Final Abstract & Full Submission Deadline	by 15 <sup>th</sup> November 2021
Review and Presentation Schedule (email)	by 29 <sup>th</sup> November 2021
Conference Dates 2021	by 16-17 <sup>th</sup> December
Finalize Discuss and ASMC Bulletin Announcement	by 24 <sup>th</sup> December 2021

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