



**A SUMMARY REPORT ON SCIENCE SEMINAR  
WORLD METEOROLOGICAL DAY  
MARCH 23, 2021  
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THIMPHU**

## **INTRODUCTION**

National Center for Hydrology and Meteorology (NCHM) as the focal agency of Bhutan with WMO and IPPC observed the World Meteorological Day on 23 March 2021 in partnership with United Nations Development Program (UNDP), Bhutan by organizing a half day Science Seminar to showcase and share scientific contributions made by the Center towards the safety and wellbeing of the society and climate resilient socio-economic development.

World Meteorological Day, is an event that provides for a moment of reflection around the world, on the purpose of the work performed every day and night by a very large number of professionals, especially working in delivery of 24/7 meteorological and hydrological services.

The day was observed with the following objectives:

- a. To honour the important role played by WMO in fostering international cooperation and coordination on the state and behaviour of earth's atmosphere, its interaction with land and oceans, weather and climate it produces and resulting distribution of water resources and its contribution to society;
- b. To recognize the services provided by National Center for Hydrology and Meteorology (NCHM) in the field of meteorology, Hydrology and Cryosphere sciences and its contribution to the sectoral agencies and public and
- c. Share scientific information that would facilitate development of adaptation strategies and science informed policy responses to implement the adaptation and mitigation measures to promote climate resilient sustainable development.

The opening session was graced by His Excellency Lyonpo Dr. Tandin Dorji, Minister for Foreign Affairs as the chief guest. Resident Representative of UNDP Bhutan and representatives from World Bank, WWF, WFP and JICA along with Cabinet Secretary, Member of Parliament, HM Secretariat, Royal University of Bhutan, Board members of NCHM and other head of the agencies were also present.

## **Proceedings:**

### **Opening session**

Director, NCHM welcome chief guest and to the event and highlighted on the importance of observing World Meteorological Day. He also informed the gathering on the important role played by NCHM in delivering science based information in the field of meteorology, hydrology and cryosphere to the end users. Few constraints that are hampering the service delivery of the center were also highlighted which included lack of proper office space, insufficient budgetary allocation and lack of proper coordination & involvement of the Center by other sectors which undermines the Centers vast potential in providing the required data and scientific information which can form the basis of all decision making process in the implementation of developmental activities in the country.



*Director NCHM giving welcome address*

A pre-recorded video message for the event from Professor Petteri Taalas, Secretary General of the World Meteorological Organization played. The Secretary General also highlighted the importance of WMO day and applauded Bhutan policies for environment conservation and climate change.



*Prof. Petteri Taalas, Secretary General, World Meteorological Organization with his key note address*





***Ms. Kinley Zam Dhaphel, a student from CNR speaking on the youth concern on climate change***

An interesting feature of the event was the youth speaker. Ms. Kinley Zam Dhaphel, a student from the College of Natural Resources (CNR), Roya University of Bhutan who addressed the gathering and raise concerns on the impact of climate change from the perspective of Bhutanese youth who will be the future citizens of Bhutan. In her talk she urged the concern authorities, agencies and individuals to be more cautious while taking decisions for any developmental activities in the country.



***Ms. Azusa Kubota, RR UNDP Bhutan addressing the gathering***

Ms. Azusa Kubota, Resident Representative of UNDP Bhutan in her statement highlighted on the importance of water both as natural resources and threat in the context of climate change. She also noted the important roles played by NCHM in adaptation process to climate change by providing the required data and science-based information to the line agencies and end users.



***Chief Guest, Lyonpo Dr. Tandin Dorji, Minister for Foreign Affairs addressing the Keynote statement during the opening session***

Honble Chief Guest Lyonpo Dr. Tandin Dorji in his keynote address thank WMO, UNDP World Bank and all other donors for the support provided to Bhutan through the national focal agency (NCHM) so far in strengthening the hydrological and meteorological services in Bhutan. Lyonpo also informed the gathering on the importance of NCHM's role in the developmental activities in the country. He also applauded NCHM for doing their part by providing science based information to cope with the various impacts and threats from climate change.





***Signing of MoU between Director NCHM and President CNR, RUB doing the opening session***

Keeping with the Center's strategy to enhance scientific collaboration and partnership with the national institutes, a formal Memorandum of Understanding (MoU) was signed between the National Center for Hydrology and Meteorology and College of Natural Resources.



***Releasing the scientific publications by the Chief Guest***

As a testimonial to the Center's achievement in the field of scientific research and fostering scientific partnership with our partner institutes, the following four scientific reports were release.

- a. Inventory of Glacial lakes in Bhutan (2019) updated based on the latest satellite images and ground base information.
- b. Technical Report on Glacier Mass Balance on the two Long-term Monitoring Bench Marked Glaciers of Bhutan (2020).
- c. A Joint Technical Report “Hydrograph separation of river flow using stable isotope of water and geochemical tracers in Pa Chu basin, Paro, Bhutan (2020)”, NCHM & Sherubtse College under World bank Support;
- d. Bhutan State of Climate of Bhutan 2020; and

### **Science Seminar (Technical session)**

Following the opening session, a technical session was commenced. There were five scientific presentations in the technical session focussing on water and climate based on the theme for this year’s World Meteorological Day which is “The Ocean, our Weather and Climate”. Dr. Pema Wangda, Executive Director, Bhutan for Life (BFL) and Mr. Karma Dupchu, Director, National Center for Hydrology and Meteorology moderated the session.

Dr. Singay Dorji from the Weather and Climate Service Division of NCHM presented on “State of the Climate and Predicting summer monsoon of Bhutan” He provided a detail process followed in coming up with climate projection for Bhutan which was released through the SPCR project. He also highlighted on how the Center is predicting summer monsoon in Bhutan.



***Dr. Singay Dorji, Specialist, NCHM presenting on state of climate and predicting summer monsoon in Bhutan***



Ms. Sonam Lhamo from the Cryosphere Service Division of NCHM presented on the updated inventory of glacial lakes in Bhutan “Bhutan Glacial Lake Inventory 2021”. In her presentation she provided the rationale for updating the inventory of glacial lakes in Bhutan, method followed and data used. She concluded her presentation by informing the audience that there are 567 glacial lakes in Bhutan as per the Bhutan Glacial Lake Inventory 2021 which occupy an area of 55.04 Km<sup>2</sup>.



***Mrs. Sonam Lhamo, NCHM presenting on Bhutan Glacial Lake Inventory 2021***

Mr. Phutsho Tshering also from the Cryosphere Service Division of NCHM presented on “Mass Balance Status of Glaciers in Bhutan: As observed on Gangju La and Thanza Glaciers”. Based on the result from the data analysis carried on these two glaciers since 2003 and 2013 respectively, he concluded that both the glaciers are losing mass. Such mass loss is clear from the retreat rate of the terminus position of the glaciers. On the average, Gangju la glacier is retreating about 10.4 m per year from 2004 to 2014 and 13.3 m per year from 2014 to 2020.





***Mr. Phuntsho Tshering, NCHM presenting on Mass Balance Status of Glaciers in Bhutan***

Mr. Tshewang Dhendup, a lecturer from Sherubtse College presented on “ Hydrograph Separation Using Geochemical and Isotopic Chemistry to Evaluate Glacier Melt Contribution to the Paa Chu”. Through his presentation he informed that using isotopic method and geochemistry method it has been found that glacier melt contribution to Paa Chu river ranges from 33.3% to 49.6% depending on season and distance from the glacier.



***Mr. Tshewang Dhendup, Faculty Sherubtse College presenting on contribution of glacier melt to Paa Chu River using geochemistry and isotopic method***

The last presentation if from the College of Natural Resources where Mr. Ugyen Dorji, a lecturer presented on “Water Resources Management in Bhutan”. He pointed out that Bhutan is one of the richest nations in the world when it comes to per capita water availability but ironically many of the places in the country are facing water shortage problem. He also pointed out that the issue of water is more of management issue than availability. He went on further to recommend methods to minizie water wastage in terms of distribution and also conservation and protection at the source through watershed management.



***Mr. Ugyen Dorji, FacultyCNR presenting on Water Resource Management in Bhutan***

After the five scientific presentations, the floor was open for discussion where various discussions and interaction took place between the presenters and audience. The technical session was concluded with a wrap up by the moderators and closed the event with a closing remarks by the Director, NCHM.