



Quarterly

NEWSLETTER

Department of Meteorology, University of Dhaka

Vol. 1, Issue 1, March-May 2021 (Pre-monsoon)

HEADLINES

- Background and Establishment of the Department of Meteorology
- Strength of the Department
- Resources for Teaching-learning and Research
- M.Sc. in Meteorology
- B.S. in Meteorology
- Research at Department of Meteorology
- International Conference
- Scholarship for Faculty and Students
- Funding Support
- Collaboration : International and Local
- Internship of Students
- Alumni of the Department
- The Dhaka University Journal of Earth and Environmental Sciences (JEES)
- Chronological Development of the Department
- Highlights of Pre-monsoon 2021
- Research on Pre-monsoon 2021
- Summer Monsoon Prediction 2021

LIST OF ABBREVIATIONS IN THE NEWSLETTER

AO	: Atmospheric Observatory
AWS	: Automatic Weather Station
BAF	: Bangladesh Air Force
BARI	: Bangladesh Agriculture Research Institute
BJRI	: Bangladesh Jute Research Institute
BMD	: Bangladesh Meteorological Department
BRRI	: Bangladesh Rice Research Institute
CURAJ	: Central University of Rajasthan
DAE	: Department of Agricultural Extension
DoM	: Department of Meteorology
DU	: University of Dhaka
RIMES	: Regional Integrated Multi-Hazard Early Warning System
SAU	: Sher-e-Bangla Agricultural University
SGS	: Satellite Ground Station
UCAR	: University Corporation for Atmospheric Research
UGC	: University Grants Commission
UNL	: University of Nebraska-Lincoln
UoR	: University of Reading
WB	: World Bank

FROM THE EDITOR



Dear Readers

We take great pleasure in welcoming you to our new newsletter! We have created this publication with the intention of providing information about the newly established department, the Department of Meteorology in the University of Dhaka. It is a well-recognized fact that Bangladesh is one of the most vulnerable to climate change and with the least exiting capacity to respond. As a result, the country needs expertise in this field to develop its own capacity. It is also a known fact that most of our disasters have meteorological origin. Meteorologists can contribute significantly to the economy of the country in the areas of agriculture, fisheries, water resources, human health, aviation, marine and riverine navigation and disaster management with issuance of the weather forecast/early warning and management advisories for undertaking appropriate short- and long-term measures for adaptation. Reliable weather forecast and warning system with adequate lead time is crucial in achieving the Social Development Goals of the nation. In addition, climate change impacts pose to be a leading factor which retards the development process of the country. To address the severe climate change issues in building the national policies and plans of adaptation action and handle the climate change aspects in the world forum, it is highly imperative to have cohort of expert manpower in the relevant fields i.e., meteorology and climate science. With this vision, the Department of Meteorology has been opened in the University of Dhaka under the Faculty of Earth and Environmental Sciences in 2016.

The Department of Meteorology is going to complete 5 years soon and we are extremely pleased to come up with inaugural newsletter, which covers all academic and research information since inception and also provides chronological development of the department. This Newsletters are planned to electronically publish on quarterly basis, which will enlighten the relevant stakeholders, researchers, academicians, policy makers and development partners with the academic, research and development activity of the department. It is our intention to establish bridge with the meteorological user agencies and stakeholders. The Newsletters will not only contain the information about the activities of the department but also the interesting meteorological and climate information provided by other relevant departments. We are delighted that you are joining us as readers and hope you to join us as contributors to the newsletter. We expect to have feedback from you for enhancing the quality of our publication.

Towhida Rashid, PhD
Editor

Background and Establishment of the DEPARTMENT OF METEOROLOGY



Department of Meteorology (academic block)

The Department of Meteorology at the University of Dhaka is the one and only academic department in Bangladesh which has been established in 2016 under the faculty of Earth and Environmental Sciences. Since inception, the department has been granted a number of development and research projects from World Bank, University Grants Commission, People's Republic of Bangladesh and many more.



WB team at DoM, DU



*MoU signing ceremony between UoR, UK and DoM
DU on 17 June 2017*

It has established a good number of academic and industrial collaboration, such as, Reading University, University of Nebraska-Lincoln (UNL), Central University of Rajasthan (CURAJ), Kyoto University, University Corporation for Atmospheric Research (UCAR), Bangladesh Meteorological Department (BMD), Bangladesh Air Force, Sher-e-Bangla Agriculture University (SAU), Department of

Agriculture (DAE), Flood Forecasting and Warning Centre (FFWC), Tribhuban University, Regional Integrated Multi-Hazard Early Warning System (RIMES) with an objective of development of world class academic, research and institutional facilities in the department aiming at the production of expert professionals who will foster public or private sector delivery of meteorological services.



Inauguration of Satellite Ground Station



Meeting with WB and UGC members at DoM

STRENGTH OF THE DEPARTMENT

Faculty Strength

Right now, there are five (05) full-time faculty members including the Chairperson of the department. The departments also have three (03) part-time faculties and five (05) consultants in various fields of numerical modeling in the atmospheric and climatic research. Presently, two (02) of our esteemed faculty members are pursuing Ph.D. at the Department of Meteorology of the University of Reading (United Kingdom).



Automatic Weather Station at Atmospheric Observatory, DoM



Teaching at Classroom



Satellite Ground Station at DoM, DU



Cluster PC & Server



Research Block at the Department of Meteorology



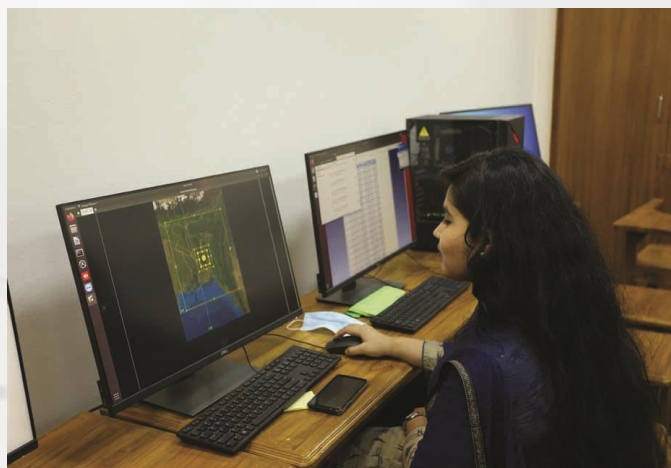
Computational Lab

RESOURCES FOR TEACHING-LEARNING AND RESEARCH

Department has five well-equipped modern class rooms, six well-equipped laboratories and one enriched library. All these are accommodated in a well-spacious campus located at Khundker Mukarram Hussain Biggyan Bhaban of the University of Dhaka with 15000 square meter of floor areas. The department has been equipped with high speed dedicated internet facilities and online UPSs to ensure uninterrupted power supply along with a backup generator.

Name of Laboratories:

- a) Atmospheric Observatory: It consists of one AWS and about 14 traditional (manual) weather equipment's
- b) Synoptic and Satellite Image Processing Lab
- c) Computational Lab: It consists of 80 high performance computers
- d) Numerical Weather Prediction Modeling Lab: It has a High-performance Super Cluster of PCs with 56 cores.
- e) Physics and Fluid Lab: It has more than 30 equipment's for physics and fluid experiments.
- f) Advanced Meteorological Laboratory: It has more than 30 indoor and outdoor devices for advance experiment in agro-meteorology and cloud physics.
- g) Satellite Ground Station and Server system: The department has installed a Satellite Ground Station (SGS) on January of 2021. This SGS receives daily data from 30 bands across 13 polar-orbiting satellites.



Computational Lab

M.SC. IN METEOROLOGY

The Department of Meteorology is offering a three-semester (One and half year) M.Sc. in Meteorology Program with 4-5 months internship (at home and abroad) in Meteorology since 2018. Two (02) batches of students (29) completed their M.Sc. in Meteorology. The 3rd batch students are currently on their 2nd semester. Details of the program can be found at <http://met.du.ac.bd/m-sc-courses/>.



Field Work of Students at Air Force, Bangladesh

Eligibility for admission: Applicants must be a graduate of any recognized university of Bangladesh. Their first degree should include a selection from Physics, Mathematics, Applied Mathematics, Engineering, Geology, Aeronautics, Geography and Environment, Environmental Science, Disaster Science and Management, Chemistry, Agriculture Science, Soil Science, Hydrology, Water Resources, Oceanography. The candidate must have secured a minimum CGPA of 3.0 for applying for admission to the program.

Details of B.Sc. program of the department may be seen at <http://met.du.ac.bd/b-s-courses/>.



Students at Classroom

Eligibility for admission in B.S. program for local students (www.met.du.ac.bd/): A candidate has to fulfill the following minimum requirement to be considered eligible to get admitted in Meteorology:

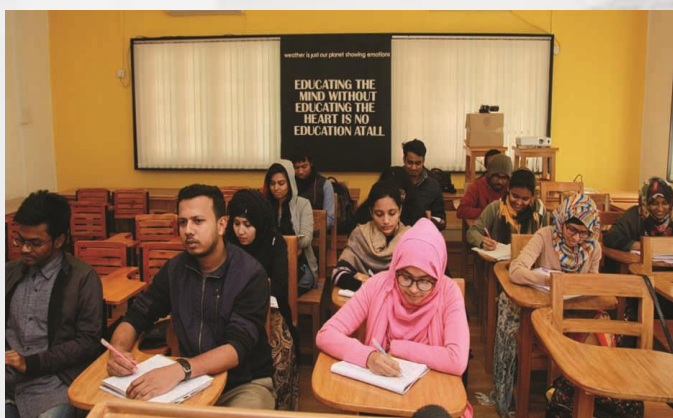
Grade of H.S.C./ Equivalent Examination	Mark of University Admission Test
Mathematics - A	Mathematics - 10
Physics - A	Physics - 10
Chemistry - A	Chemistry - 10

Admission Process for Foreign Students: The foreign student's admission process is controlled by Dhaka University International Office. Please find more details from this link: https://www.du.ac.bd/footer_widget/footer_widget_item/international_student



Field work of Students in India

The professionals from allied organizations may apply for the program. The selections are made based on written test and interview. Details are given in the website: www.met.du.ac.bd/



Students at Classroom

RESEARCH AT DEPARTMENT OF METEOROLOGY

Department of Meteorology is constantly involved in research work that benefits the nation and also mankind. Major areas of research at the department include–tropical and monsoon meteorology, numerical weather prediction systems, satellite meteorology, hydrometeorology, agrometeorology, climatology and climate science, climate projection, and aviation meteorology. It has published more than 13 scientific papers in reputed journals since 2016.

Details of the ongoing research of the Department of Meteorology could be found at <http://met.du.ac.bd/ongoing-research/>. Also, previous research activities are listed in <http://met.du.ac.bd/archives/>. All the publications from research works of the department can be found at <http://met.du.ac.bd/published-article/>.

B.S. IN METEOROLOGY

B.S. in Meteorology program will start from 2021. The program is being introduced on the basis of increased need of graduates in the field of Meteorology and related areas. Total duration is 04 years with 08 semesters, two semesters (06 months each) per year.

INTERNATIONAL CONFERENCE

The department organized the 1st International Conference on Earth and Environmental Sciences & Technology for Sustainable Development, ICEEST 2020 held on 25-27 January 2020.



Int'l Conference on January 2020

The 2nd 'International E-Conference on Meteorology and Climate Science - 2020 (ICMCS 2020)' was organized by the department on December 11 and 12 of 2020.



Int'l Virtual Conference on December 2020

The 3rd 'International E-Conference on Meteorology and Climate Science - 2021 (ICMCS 2021)' will be organized by the department on December 10 and 11 of 2021. Please see the link for details: <http://met.du.ac.bd/upcoming-events/>

SCHOLARSHIP FOR FACULTY AND STUDENTS

The department offers PhD scholarship for the faculties, and research fellowship (internship) for students under World Bank project. Dhaka University offers a scholarship named "Bangabandhu Scholarship" for the faculties and is planning to open this scholarship for foreign students soon.

FUNDING SUPPORT

The department has received various development and research projects and financial supports since inception. A few are as follows:

- Support to Capacity Building of the Department of Meteorology in the University of Dhaka, Funded by World Bank (Sept. 2017-June 2022)
- Investigation of Meteorological Conditions Relating to Lightning and Development of Resilient Communities in Lightning Prone Areas in Bangladesh, Funded by Climate Change Trust Fund (Jan 2019-Dec 2020)
- Climate Change Mitigation Strategies for Dhaka, Funded by The Innovation Fund Team, World Bank (July 2018-Dec 2019) Project
- Improvement of Teaching and Learning in Undergraduate and Graduate Programs for the Department of Meteorology of the University of Dhaka, Funded by HEQEP (May 2017-Sept. 2018)



Meeting with UoR, UK team

COLLABORATION : INTERNATIONAL AND LOCAL

At present, there exists a close collaborative linkage between Department of Meteorology, University of Reading and Department of Meteorology, University of Dhaka. The agreement was signed on 21 June 2017.



Collaboration between University of Dhaka and Bangladesh Meteorological Department

A Memorandum of Understanding (MOU) has been signed on 15 July, 2018 between Department of Atmospheric Science, Central University of Rajasthan (CURAJ) and DoM of the University of Dhaka.



Visit to Low cost AWSs field at Colorado, USA

A Memorandum of Understanding (MOU) has been signed in November 2020 between University of Nebraska-Lincoln and DoM, University of Dhaka.

The Department has collaboration with Kyoto University, Japan since 2017.



Visitors at DoM, DU

A Memorandum of Understanding (MOU) has been signed in November 2020 between University of Nebraska-Lincoln and DoM, University of Dhaka.

The department works in close collaborations with many eminent organizations of the country for advances in research and education, such as, Bangladesh Meteorological Department (BMD), Department of Agriculture (DAE), Sher-e-Bangla Agricultural University (SAU), Bangladesh Air Force (BAF). Apart from this, the department also maintains relations with Flood Forecasting and Warning Center (FFWC) Bangladesh, Regional

Integrated Multi-Hazard Early Warning System (RIMES), Bangladesh Agricultural Research Institute (BARI), Bangladesh Rice Research Institute (BRRI) and Bangladesh Jute Research Institute (BJRI).

INTERNSHIP OF STUDENTS

Every year, students pursuing M.Sc. in Meteorology, are sent for internship to the above institutions at home and abroad. In 2019, four (04) students pursued their internship at Central University of Rajasthan (CURAJ), India; while three (03) other pursued their internship in both India Meteorological Department (IMD), New Delhi, and Central University of Rajasthan (CURAJ), India. Besides, 06 students completed their internship at Bangladesh Meteorological Department (BMD), Dhaka. In 2020, five (05) students availed internship opportunities at Central University of Rajasthan (CURAJ), India; 02 students have completed internship at Tribhuban University, Nepal; 01 student at Bangladesh Water Development Board (BWDB), and 08 students at Bangladesh Meteorological Department (BMD), Dhaka. This year (2021), students will pursue their internship at CURAJ, BMD, RIMES, DAE, BARI, BRRI, BJRI and FFWC.



Field Work of Students in India

ALUMNI OF THE DEPARTMENT

Alumni are the crowned jewels of this department. Most of the alumni had a job placement relevant to their studies of meteorology. Our alumni are employed in the Department of Meteorology, University of Dhaka, Regional Integrated Multi-Hazard Early Warning System (RIMES), Center for People and Environment (CPE), and Bangladesh Agricultural Research Institute (BARI), and BRAC. All the details of our alumni may be seen in the site <http://met.du.ac.bd/alumni/>.

THE DHAKA UNIVERSITY JOURNAL OF EARTH AND ENVIRONMENTAL SCIENCES (JEES)

The Faculty of Earth and Environmental Sciences regularly publishes 'The Dhaka University Journal of Earth and Environmental Sciences (JEES)' which is a multi-disciplinary peer-reviewed journal. The JEES is dedicated to enhancing the depth of the subject across disciplines with ultimate aim of expanding knowledge related to earth and environmental sciences (Meteorology, Geology, Geography and Environment, Oceanography, Disaster Science and Management). Please see the link for details about the journal - <https://www.banglajol.info/index.php/DUJEES/index>

CHRONOLOGICAL DEVELOPMENT OF THE DEPARTMENT

Since its inception, the department has focused on researches on various aspects of meteorology and climate science. The objective of all these research activities has been to develop better understanding of weather and its prediction. For that purpose, the department has invested a lot in equipping the laboratories for advanced research. The department has a High-performance Cluster Super Computing System and many High-performance Computers for smooth operation of research as well as regular classroom activities. The department has high-speed dedicated internet facilities for timely downloading

the data used for NWP model initialization and downloading the climate change data in addition to other regular activities, where network facilities are required. The Department of Meteorology provides lot of efforts in downloading climate data from different sources.



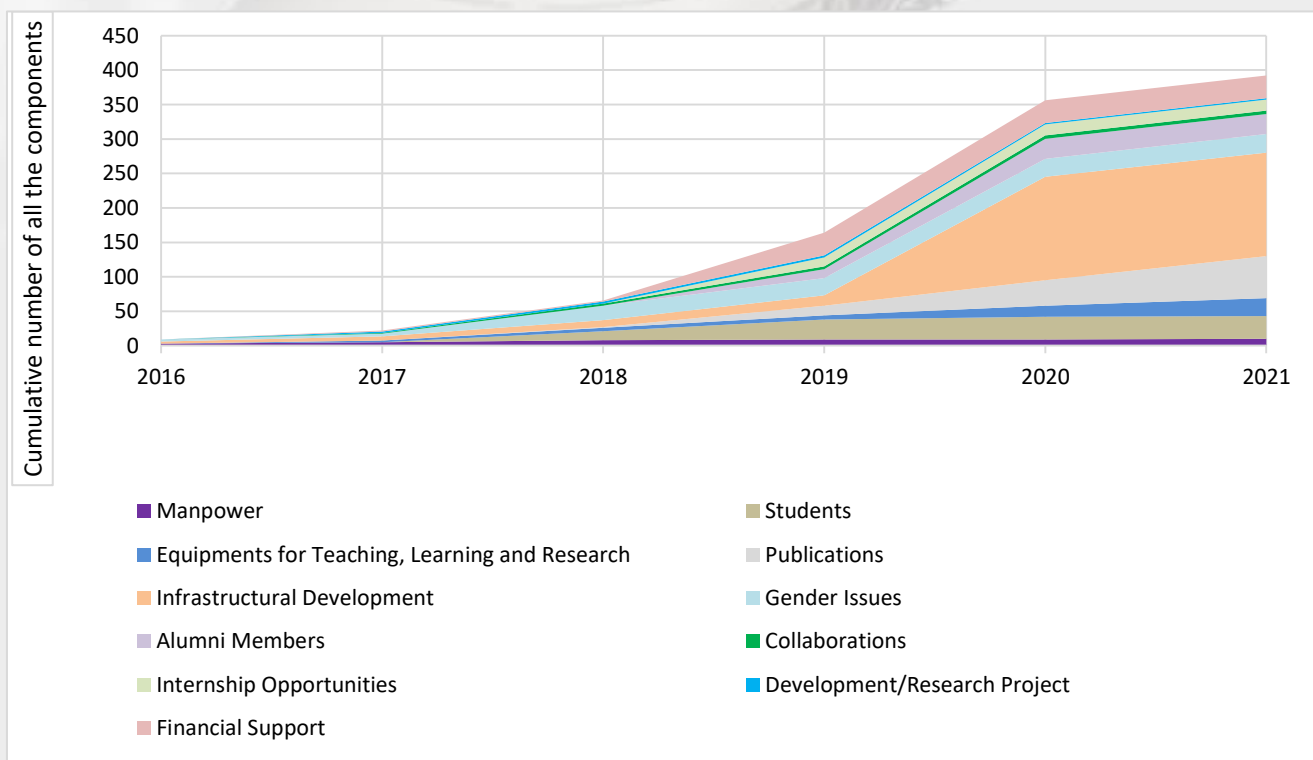
Meeting with DG, IMD on 22 Dec 2018

The department has installed a Satellite Ground Station (SGS) on January of 2021 which receives daily data from 30 bands across 13 polar-orbiting satellites. The academic and research capacity of the department has largely been enhanced with the data received from the polar orbiting satellites. The department is developing its own data management system, which needs to be expanded from time to time.

Table: At a glance chronological development of the Department of Meteorology from 2016 to May 2021

Component: Broad	Component: Detailed	2016	2017	2018	2019	2020	2021
Manpower	Faculty Members	1	2	3	4	4	5
	Staff Members	2	3	5	5	5	5
Students	Students	0	0	13	29	33	17
Equipment for Teaching, Learning and Research	Equipment for Teaching, Learning and Research	0	25	50	60	160	260
Publications	Published Research	0	0	1	1	6	13
	Unpublished Research	0	0	0	13	29	46
	Published Bulletin	0	0	0	0	2	2
Infrastructural Development	Total Space (sq. ft.)	300	600	1000	1500	15000	15000
	Number of Classrooms	0	0	1	2	5	5
	Number of Labs	0	0	1	2	4	4
	Number of Rooms for Faculty Members	1	1	2	2	10	10
	Conference Rooms	0	0	0	0	1	1
	Library	0	0	1	1	1	1
	Teacher-Student Counselling Place	0	0	0	0	1	1

Component: Broad	Component: Detailed	2016	2017	2018	2019	2020	2021
Gender Issues	Faculty and Staff Members (Male)	1	2	5	6	6	6
	Faculty and Staff Members (Female)	2	2	3	3	3	4
	Students (Male)	0	0	5	9	6	6
	Students (Female)	0	0	8	7	11	11
Alumni Members	Alumni Members	0	0	0	13	29	29
Conference and Seminar	Conference and Seminar: National	1	2	3	2	1	1
	Conference and Seminar: International	0	0	0	0	2	2
Collaborations	Collaborations: Local	0	0	1	2	2	2
	Collaborations: Foreign	0	1	2	2	3	3
Internship Opportunities	Internship Opportunities: Home	0	0	0	8	9	9
	Internship Opportunities: Abroad	0	0	0	5	7	7
Financial Support (amount in crores BDT)	Financial Support (amount in crores BDT)	0	1.5	1.5	33	33	33
Development/ Research Project	Development/Research Project	0	2	3	3	2	2



Chronological development of the Department of Meteorology from 2016 to May 2021

HIGHLIGHTS OF PRE-MONSOON 2021

Seasonal Outlook: Pre-monsoon

Bangladesh has a tropical climate because of its physical location. Meteorologically, Bangladesh has four distinct seasons: the pre-monsoon - hot season from March through May; monsoon season - lasts from June through September; a slightly cool but moist post-monsoon season - from October to November; and a cold dry winter season - from December through February.

The pre-monsoon season is characterized by high temperature and occurrence of thunderstorms. April is the hottest month in the country when the mean temperature ranges from 27°C in the east and south to 31°C in the west-central part of the country. Wind direction is variable in this season, especially during its early part, rainfall accounts for 10 to 25 percent of the annual total, which is mainly caused by thunderstorms.

Highlights of Pre-monsoon 2021: This year's pre-monsoon was unusually hot and dry. It showed nine (09) heat waves and maximum temperature has been recorded at Jashore (41.2°C) on 25 April 2021 (Ref: BMD, 2021).

SL	Month	Forecast	Observation
01	March 2021	01-2 Mild/ Mod HW may seep over W/ NW part of BD	01 Mild-Mod HW swept over W, SE of BD 39.3°C at Sitakunda (23 March 2021)
02	April 2021	(i) 01 Severe HW (ii) 01-02 Mild. Moderate HW	01-04, 10-16, 19-21 & 23-30 April Mild-Mod HW swept over Khulna, Barishal, Chattogram, Sylhet, Dhaka, Rangpur, Mymen, Rajshahi divisions. Highest MaxT: 41.2°C, Jashore (25Apr)
03	May 2020	(i) 01 Severe HW (ii) 01-02 Mild. Moderate HW	01-03, 15-25, & 29-30 3-30 May Mild-Mod HW over Khulna, Barishal, Chattogram, Sylhet, Dhaka, Rajshahi divisions. Highest MaxT: 39.8°C, Jashore (23 May)

Significant heat waves of Pre-monsoon 2021 (Source: BMD, 2021)

RESEARCH ON PRE-MONSOON 2021

In pre-monsoon 2021, the Department of Meteorology, University of Dhaka, has undertaken research on the following two topics:

- Characteristics of the Unprecedented Nor'wester (Squall line) occurred on 4 April 2021 over Bangladesh and its Impact on Boro Rice.
- Atmospheric Vapour Pressure Deficit Effect on Spikelet Sterility of Boro Rice: A Probable

Indicator for Varietal Screening Against Heat-induced Grain Sterility in Bangladesh.

The major findings of the research works are highlighted below:

- The Nor'westers (Squall line) that occurred on 04 April 2021 over Bangladesh generated heat shock condition due to low humidity and high temperature at the lower level of the troposphere. The systems occupied large area and moved slowly to the east-southeast and produced unusually low rainfall. Spikelet of Boro rice dried up due to the heat shock induced by the storms of the squall line.
- The study areas (Gopalganj, Dhaka and Netrakona) were characterized by high vapor pressure deficit in the order of 50-60%. High vapor pressure deficits signifies dry condition of the atmosphere, when the rice plants need to draw more water from its roots. As a result, spikelets of Boro rice dried up due to the heat shock induced by the storm and high vapor pressure deficit.

SUMMER MONSOON PREDICTION 2021

Monitoring of Summer Monsoon 2021

A research team of the Department of Meteorology, University of Dhaka is regularly monitoring the arrival, progress and withdrawal of summer monsoon 2021 over India as well as Bangladesh. The main objectives of the research team for monitoring of summer monsoon 2021 are:

- To monitor the onset and withdrawal of monsoon-2021 over Bangladesh
- To investigate the progress of monsoon and investigate intra-seasonal variability of monsoon-2021
- To monitor the Monsoon disturbances during monsoon-2021
- Prediction of temperature and rainfall of summer monsoon-2021 and compare with observed characteristics of monsoon 2021

At the end of the season, a report will be published. The highlights of the research will be published in the upcoming issue of the Newsletter.

EDITORIAL BOARD

Editor



Prof. Dr. Towhida Rashid

Chairperson

Department of Meteorology, University of Dhaka

Email: towhida_rashid@yahoo.com, towhida_rashid@du.ac.bd

Members



Prof. Dr. Dewan Abdul Quadir

Consultant

Senior Meteorology Expert

Department of Meteorology, University of Dhaka

dquadir@yahoo.com



Dr. Md. Nazmul Ahasan

Consultant

Meteorologist: Weather and Climate Modeling

Department of Meteorology, University of Dhaka

drmnahasan@gmail.com



Dr. Fatima Akter

Assistant Professor

Department of Meteorology, University of Dhaka

Fatima.geoenv@du.ac.bd



Saurav Dey Shuvo

Lecturer

Department of Meteorology, University of Dhaka

Email: sauravshuvo@du.ac.bd

Department of Meteorology

Level-6, Mukarram Hossain Khundker Biggan Bhaban Faculty of Earth & Environmental Sciences, University of Dhaka, Dhaka, Bangladesh
Phone: +880-2-9661920-73, Extn. 7275, Fax: +880-2-9667222, E-mail: meteorology@du.ac.bd, Website: met.du.ac.bd