

A dramatic landscape featuring a dark, stormy sky with heavy, grey clouds. A bright, jagged lightning bolt strikes down from the upper left towards the horizon. The foreground consists of a flat, green field under a deep blue sky.

UTILISATION OF NWP PRODUCTS FOR **WEATHER SUPPORT SERVICES FOR** **AVIATION: PRESENT AND** **WAY AHEAD....**

WG CDR SHREYA PANDIT

AIR FORCE CENTRE FOR NUMERICAL WEATHER PREDICTION,

DIRECTORATE OF METEOROLOGY, AIR HEADQUARTERS, NEW DELHI

SCOPE

- CHALLENGES FOR AVIATION FORECASTER
- AVIATION SPECIFIC FORECAST ELEMENTS
- NWP AS TOOL TO AVIATION FORECASTER
- USE OF NWP GUIDANCE: NCMRWF
- WAY AHEAD
- CONCLUSION

FORECASTING FOR AVIATION

- **FOR AVIATION**

- **NON CONVENTIONAL**
- **PLACE SPECIFIC**
- **TIME SPECIFIC**
- **INTENSITY SPECIFIC**
- **FOR PLANNING**

- **EXERCISES**

- **FOR VVIP / VIP COMMITMENTS**

- **EVENTS OF NATIONAL SIGNIFICANCE**

- **DISASTER RELIEF OPERATIONS**

CHALLENGES FOR AVIATION FORECASTER

- **SPATIAL AND TEMPORAL SCALE**
- **SPECIFICATION OF INTENSITY**
- **TIME BOUND COMMITMENTS**
- **FEEDBACK / VALIDATION**

AVIATION SPECIFIC FORECAST ELEMENTS

- **WINDS**
 - CROSS WINDS
 - HEAD/TAIL WINDS
- **TEMPERATURE**
 - PERFORMANCE LIMITATION OF MAN AND MACHINE
 - LENGTH OF RUNWAY
 - LOAD CARRYING CAPACITY
 - DENSITY ALTITUDE
- **PRESSURE**
 - ALTIMETER SETTING
- **HUMIDITY**
 - PERFORMANCE LIMITATIONS OF MAN AND MACHINE

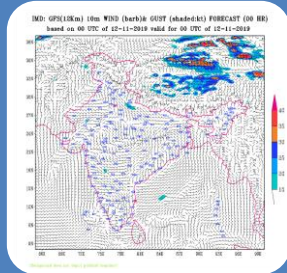
AVIATION SPECIFIC FORECAST ELEMENTS

- **CLOUDS**
- **ICING**
- **CLEAR AIR TURBULENCE (AND WIND SHEAR)**
- **ATMOSPHERIC VISIBILITY**
- **GALE FORCE WINDS ASSOCIATED WITH TS / DS**

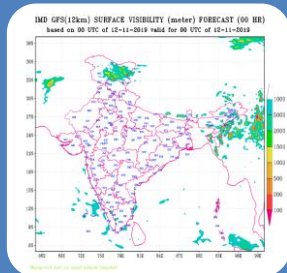
NWP AS TOOL TO AVIATION FORECASTER

- **OBJECTIVE TOOL**
- **JUDICIOUS USE**
- **EXPLOITED FOR ADVANTAGE**
- **DATA SPARSE REGION**

INTERPRETATION OF PRODUCTS



BY METEOROLOGISTS



BY AVIATORS / USERS

UTILITY OF PRODUCTS

- **EASY TO INTERPRET AND USE**
- **ASSIST IN DECISION MAKING**
- **MEETING THE REQUIREMENT OF USER**
- **SUITABLE FOR PLANNING AND EXECUTION**

NWP GUIDANCE: NCMRWF

NCMRWF ADVISORY

Select Date ▼

10 Day Rainfall Forecast

Probabilistic RRR > 2.5 mm

Probabilistic RRR > 15.6 mm

Probabilistic RRR > 65.5 mm

Probabilistic RRR > 115 mm

Probabilistic RRR > 195 mm

Day 1

Day 2

Day 3

Day 4

Day 5

Day 6

Day 7

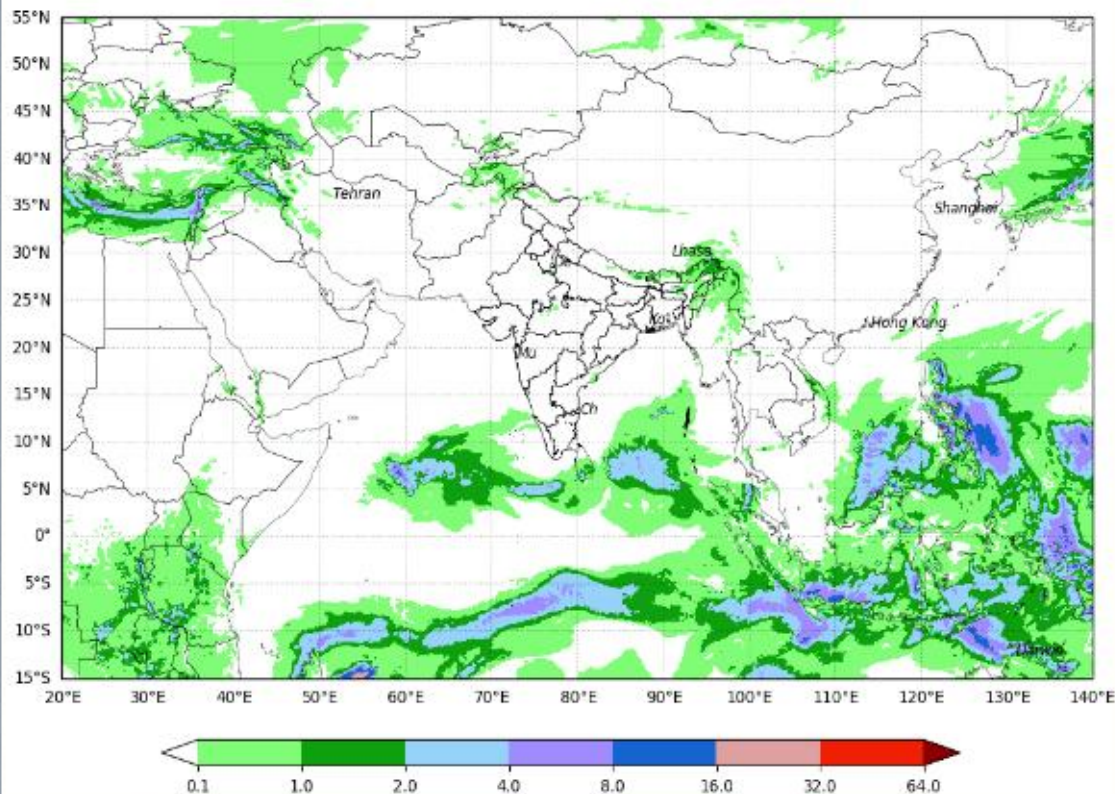
Day 8

Day 9

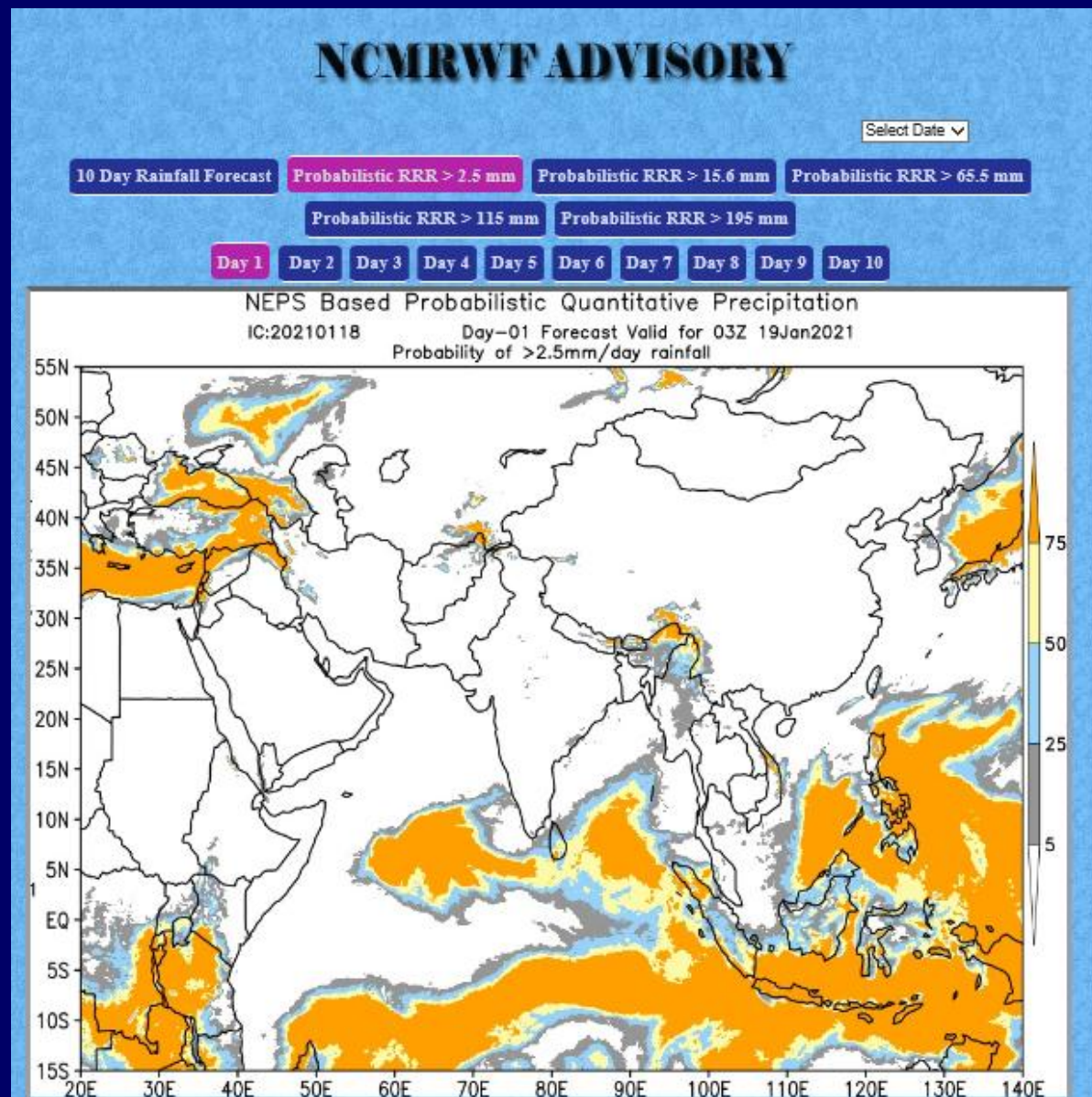
Day 10

NCUM 24HR FORECAST VALID ON 03Z19Jan2021

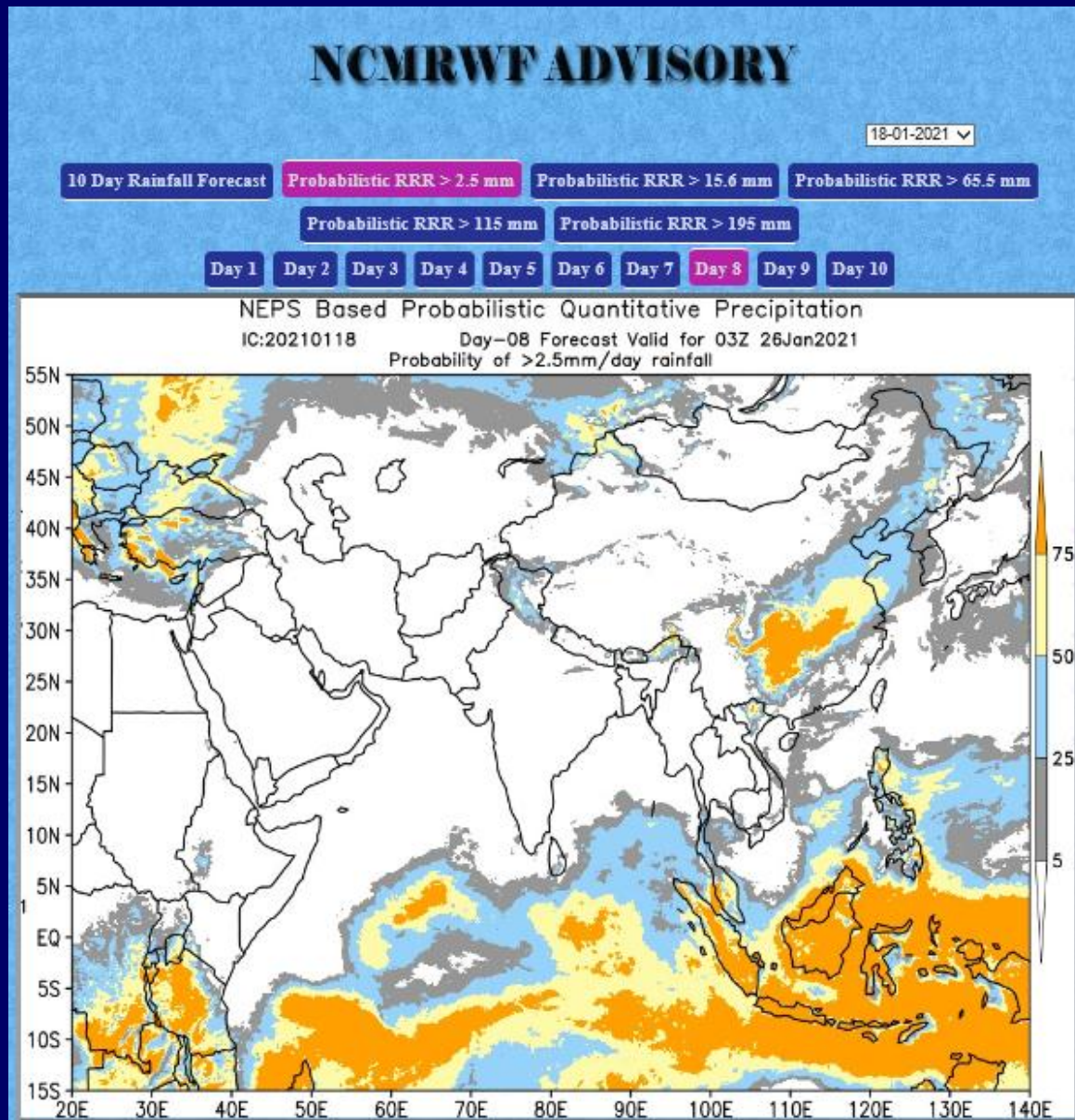
RAINFALL(cm) CI=0.1,1,2,4,8,...



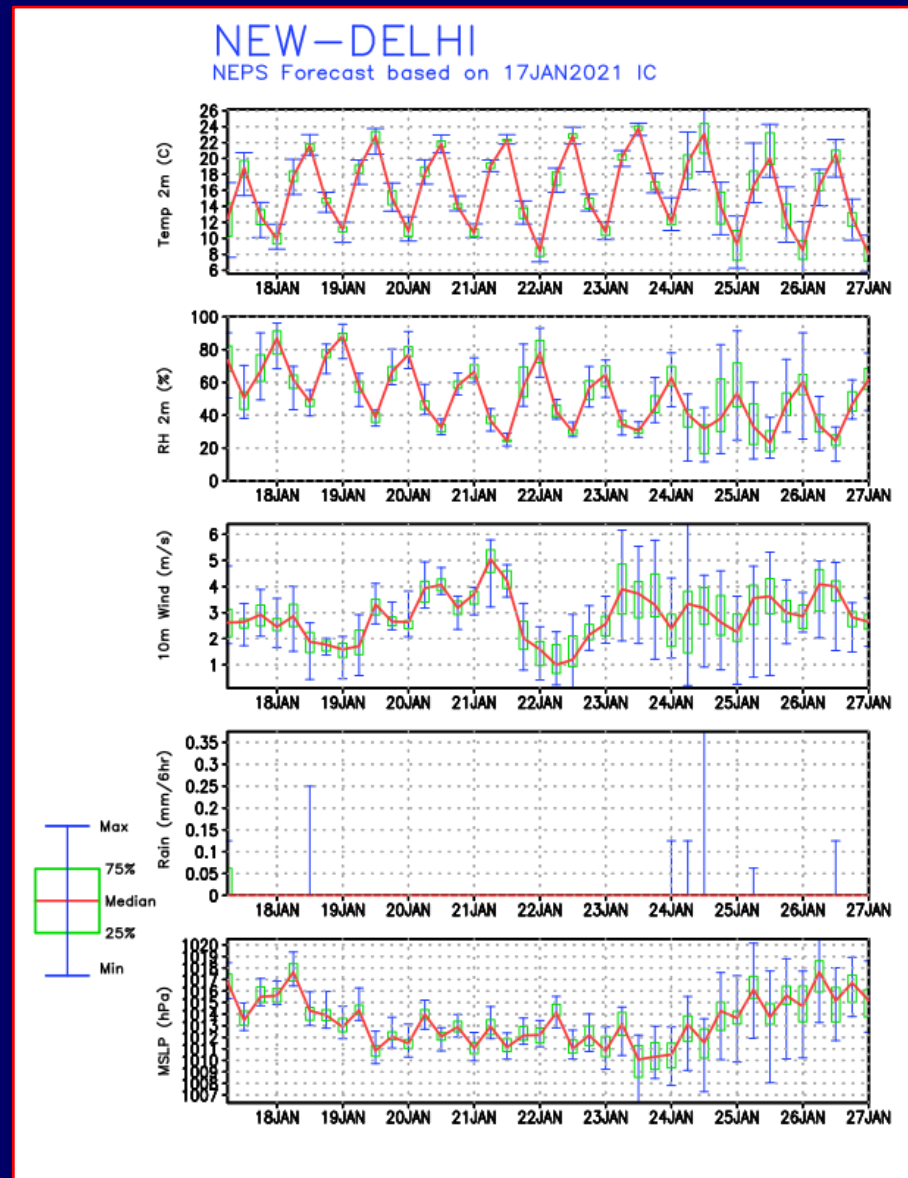
NWP GUIDANCE: NCMRWF



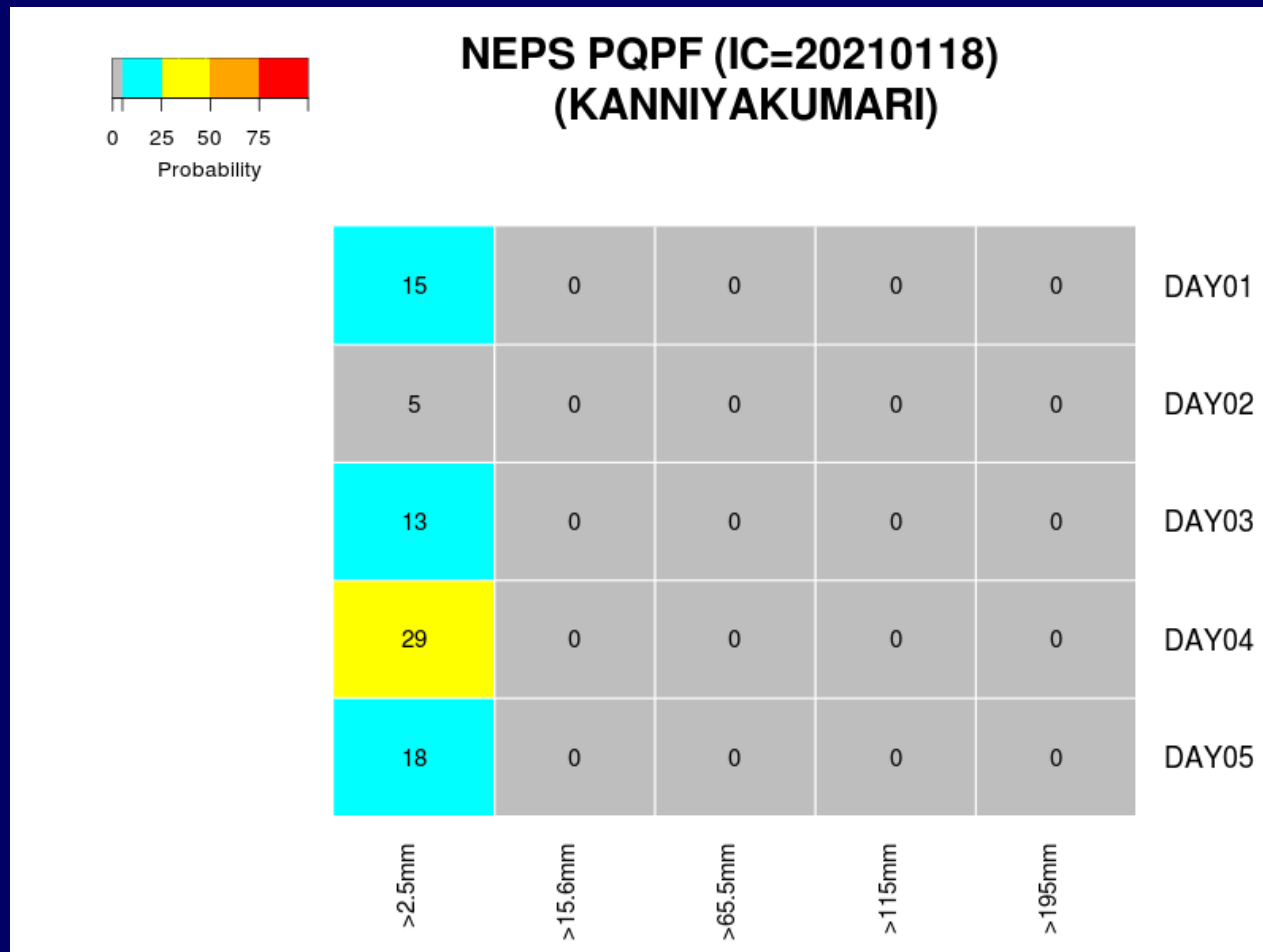
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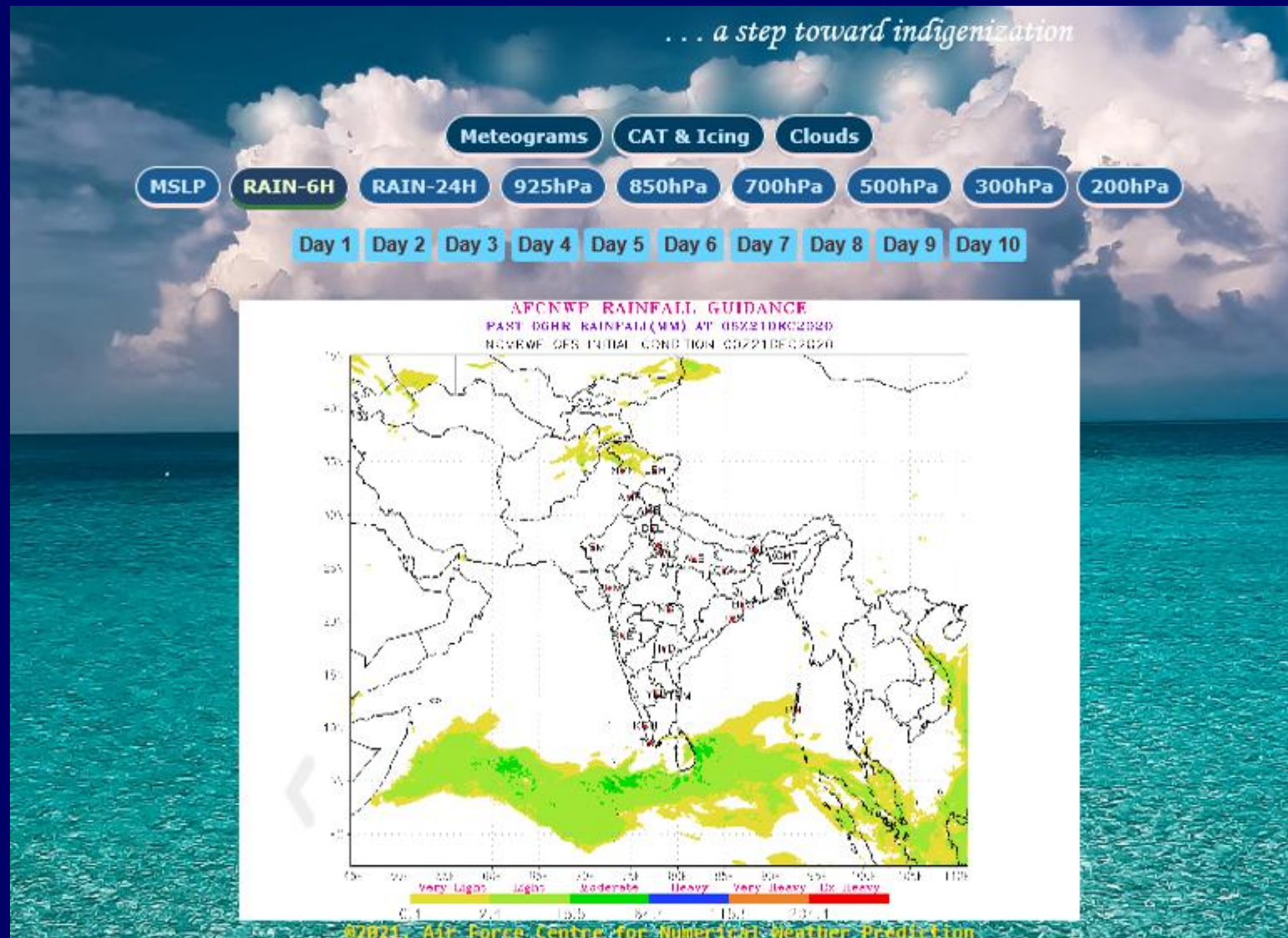
NWP GUIDANCE: NCMRWF



NWP GUIDANCE: NCMRWF



NWP GUIDANCE: NCMRWF



WAY AHEAD.....

- DEALING WITH UNCERTAINTIES (ATTACHING RELIABILITY FACTOR WITH EACH FORECAST)
- AWARENESS
 - USER GUIDES FOR NON METEOROLOGISTS
- LOCATION SPECIFIC HIGH RESOLUTION GUIDANCE
 - DATA / FORECAST ON USER SELECTED LAT / LONG

WAY AHEAD.....

- **REFINED ALGORITHMS FOR INFLIGHT WEATHER HAZARDS CAT, ICING, CLOUDS**
- **HORIZONTAL AND INFLIGHT VISIBILITY PREDICTION**
- **USER DEFINABLE OUTPUT**
 - **BASED ON PERFORMANCE LIMITATIONS OF MACHINE**

WAY AHEAD.....

- **DECISION MAKING TOOLS**
 - **BASED ON CLIMATOLOGY**
 - **BASED ON REAL TIME DATA**
- **360° FEEDBACK MECHANISM**
- **VALIDATION**

THANK YOU