GOVERNMENT OF INDIA
MINISTRY OF EARTH SCIENCES
LOK SABHA
UNSTARRED QUESTION NO. 5527
TO BE ANSWERED ON WEDNESDAY, 6TH APRIL, 2022

EXTREME WEATHER CONDITIONS

5527. ADV. ADOOR PRAKASH:
SHRI T.N. PRATHAPAN:

Will the Minister of EARTH SCIENCES be pleased to state:

(a) whether the data from the India Meteorological Department (IMD) reveals that the highest number of extreme weather events were recorded during the last five years;
(b) if so, the action being taken to build resilience against the same;
(c) whether the Central Indian States accounted for the most number of extreme weather related deaths in 2021 and if so, the reasons therefor;
(d) whether any study has been conducted on the abnormal rise in the temperature in States like Kerala and if so, the details thereof;
(e) the number of deaths due to extreme weather events from 2014 to till date, State/year-wise;
(f) whether the Government has any plans to implement immediate and long term policy changes to address the impact of climate change on weather, especially in Central Indian States; and
(g) if so, the details thereof and if not, the reasons therefor?

ANSWER
THE MINISTER OF STATE (INDEPENDENT CHARGE) FOR
MINISTRY OF SCIENCE AND TECHNOLOGY
AND EARTH SCIENCES
(DR. JITENDRA SINGH)

(a) Yes Sir. Every year, India Meteorological Department (IMD) prepares "Annual Climate Summary" for Indian region" which contains information regarding various extreme weather events observed within the country. The reports are available in Climate Research & Services (CRS) Division, IMD, Pune website (https://www.imdpune.gov.in/Clim_Pred_LRF_New/Reports.html). In addition, IMD also brings out publication on the “Disastrous weather events” every year.

(b) IMD issues various outlook/forecast/warning at various time and spatial scales for Public as well as Disaster Management Authorities for the preparedness of extreme weather events. India is now having one of the best dynamical prediction systems for supporting early warning. IMD has developed capability for generating real time forecasts and warnings in all spatial scales from a location to Block, district, meteorological subdivisions and homogeneous regions and temporal scales of a few hours (nowcast), 3 days (short range forecast), 4-7 days (medium range forecast) 1-4 weeks (extended range forecast) and one month to a season (long range forecast). Now, more focus is given to develop on sectoral applications and further improvement in the prediction of extreme weather events.

Recently IMD brought out "Climate Hazard & Vulnerability Atlas of India" prepared for the thirteen most hazardous meteorological events, which cause extensive damages, economic, human, and animal losses. The same can be accessed at https://imdpune.gov.in/hazardatlas/abouthazard.html. This atlas helps IMD as a reference to issue impact-based forecast for various extreme weather events.

The climate Hazard and vulnerability atlas will help state government authorities and Disaster Management Agencies for planning and taking appropriate action to tackle various extreme weather events. These information are used as reference for weather and climate services extended by the Department.

(c) Central Indian States fall in the Core Monsoon Zone where the maximum number of rainy days occur normally during th monsoon season. Also, the monsoon rain bearing systems such as low pressure area and depressions move through these states (west-northwestwards along the monsoon trough region) and provide copious rainfall, which often lead to flood like situations.

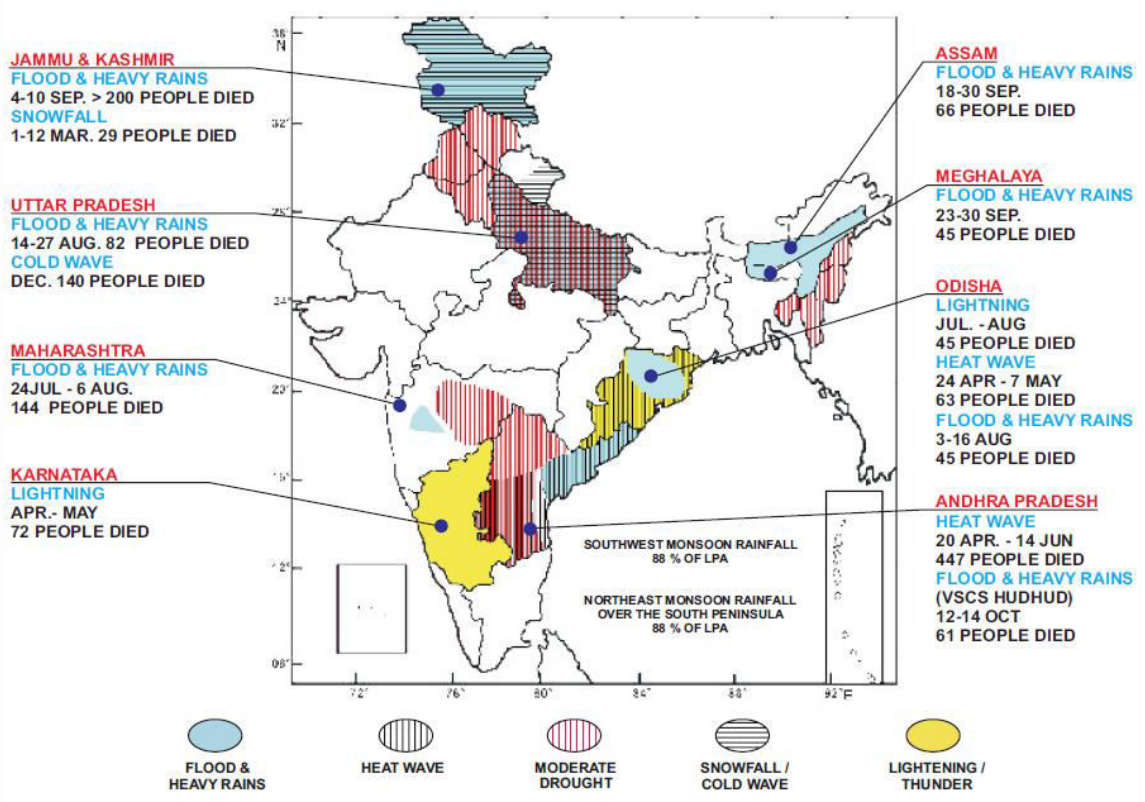
(d) Yes. Ministry of Earth Sciences has published "Assessment of Climate Change over Indian Region" recently. This report prepared by the CCCR, contains the details of observed changes in our climate system and future projections of climate change based on observations and climate model simulations.Past climate records show that the surface air temperature over India has risen by about 0.7 °C during 1901–2018. The surface temperature rise during 1986-2015 is at a faster rate of 0.15^{o}C per decade. Future projections of regional climate, performed under different climate change scenarios, too indicate robust changes in the mean, variability and extremes of several key climatic parameters over the Indian subcontinent and adjoining areas (e.g. land temperature and precipitation, monsoons, Indian Ocean temperature and sea level, tropical cyclones, Himalayan cryosphere, etc).The report is available free of cost as reference material for further research work at the following link: https://www.springer.com/gp/book/9789811543265

(e) State/year-wise loss of life due to various extreme weather events is given as figures in Annexure-I.

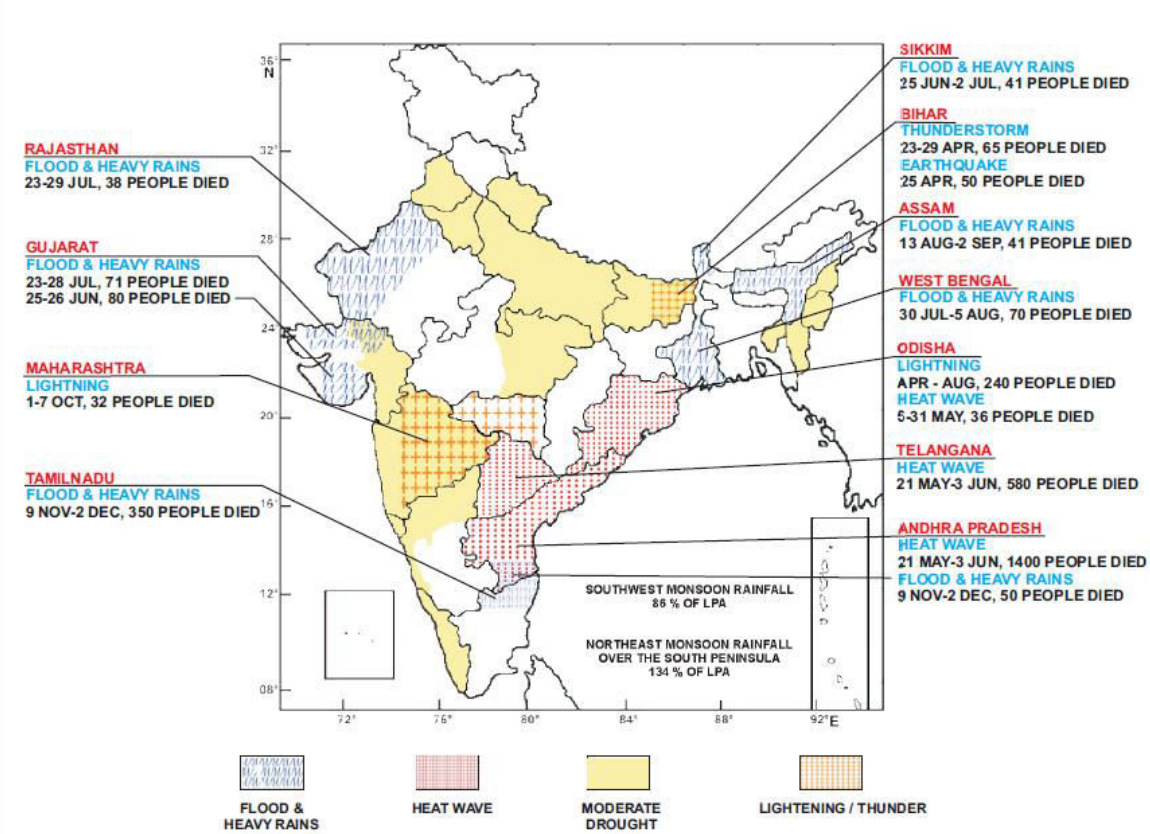
(f)-(g) Ministry of Earth Sciences (MoES) has established a Centre for Climate Change Research (CCCR) at the Indian Institute of Tropical Meteorology (IITM), Pune. The centre is dedicated to carry out research on global and regional climate change with a particular focus on the Indian climate and the monsoons. CCCR has started the coupled climate modelling, and based on the efforts, an Indian Climate specific Earth System Model (ESM) has been developed which is contributing to the Intergovernmental Panel on Climate Change (IPCC) 6thAssessment (IPCC-AR6). Currently efforts are on going to generate the climate change scenarios.

Recently, MoES has published “Assessment of Climate Change over Indian Region” recently. This report prepared by the CCCR, contains the details of observed changes in our climate system and future projections of climate change based on observations and climate model simulations. The assessment report provides a detailed overview and synthesis of the published scientific literature on climate change over India and adjoining regions. While the Intergovernmental Panel on Climate Change (IPCC) assessment reports published every 6–7 years, largely provide a global perspective on climate change, the focus on regional climate change aspects is considerably limited. Therefore, this report fills this gap by discussing the past climate and regional climate change projections over the Indian subcontinent based on the climate models. The future projections of climate change are based on different scenarios as prescribed by IPCC.

Annexure-I



For the year 2014



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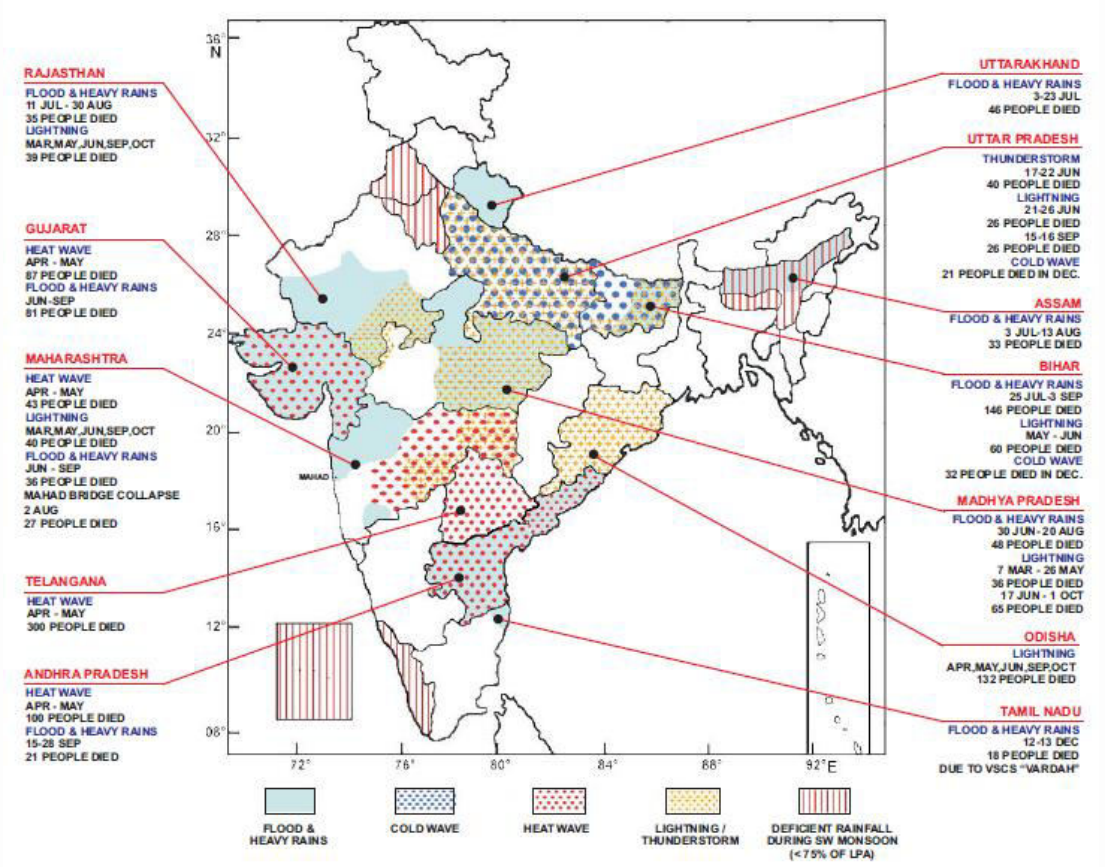

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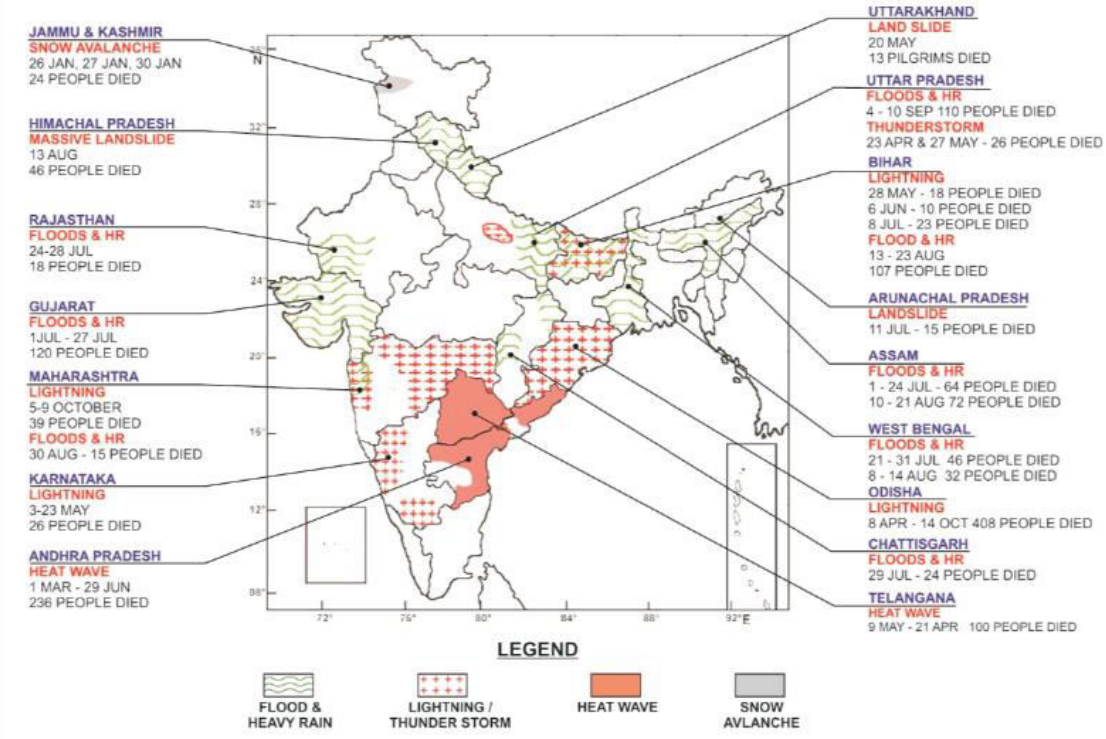

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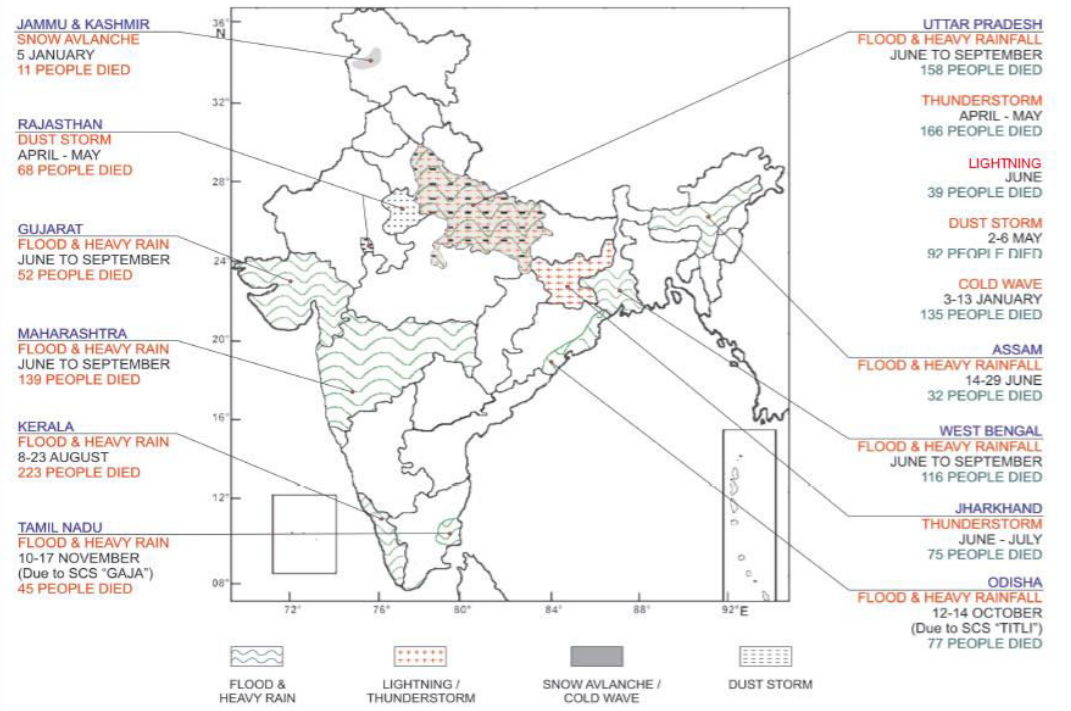

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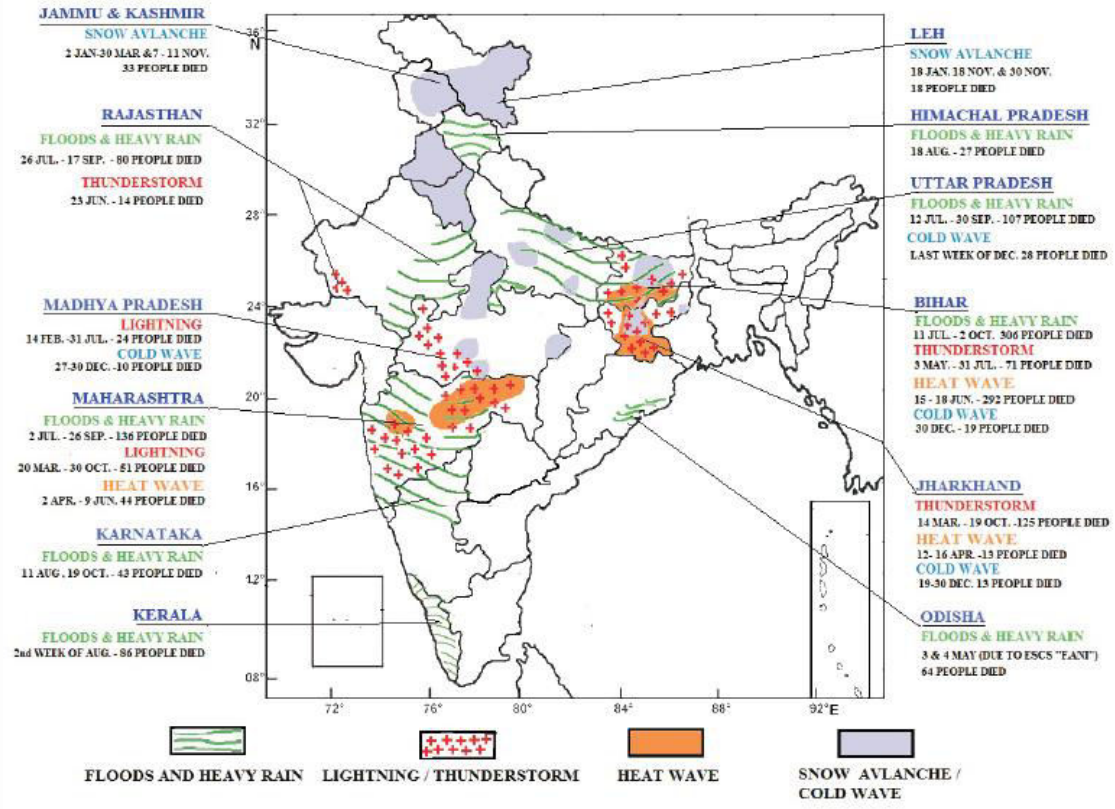

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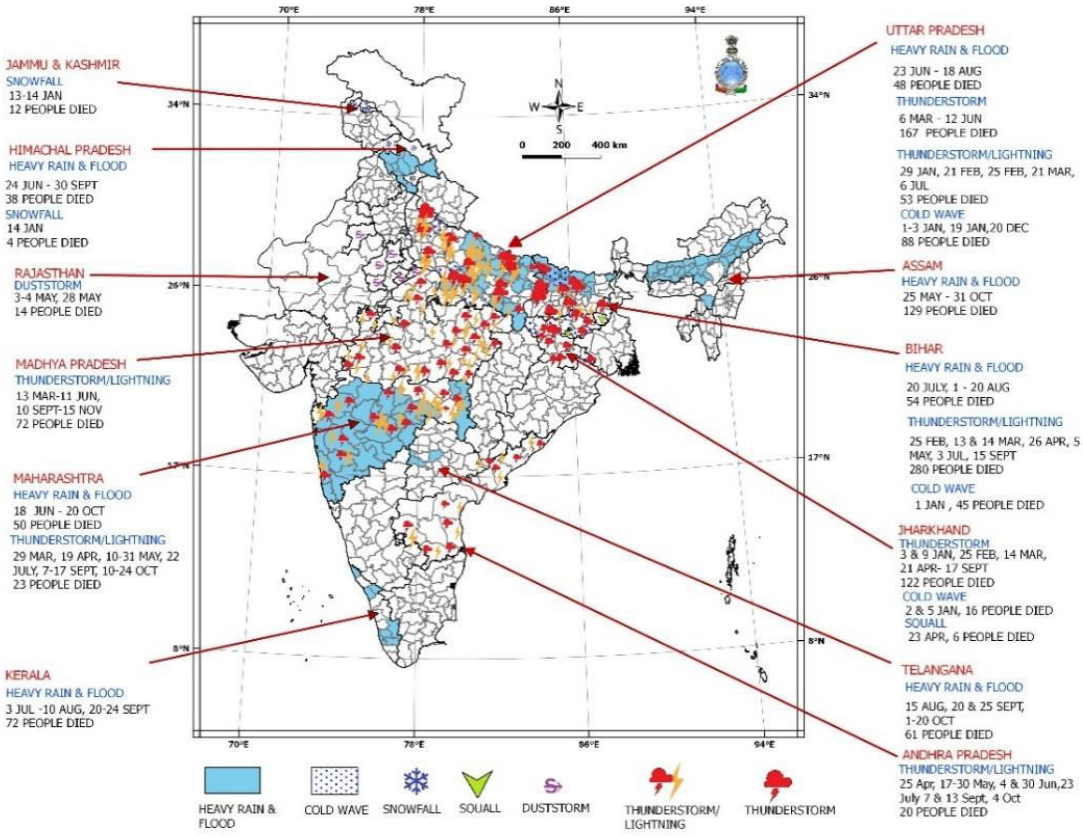
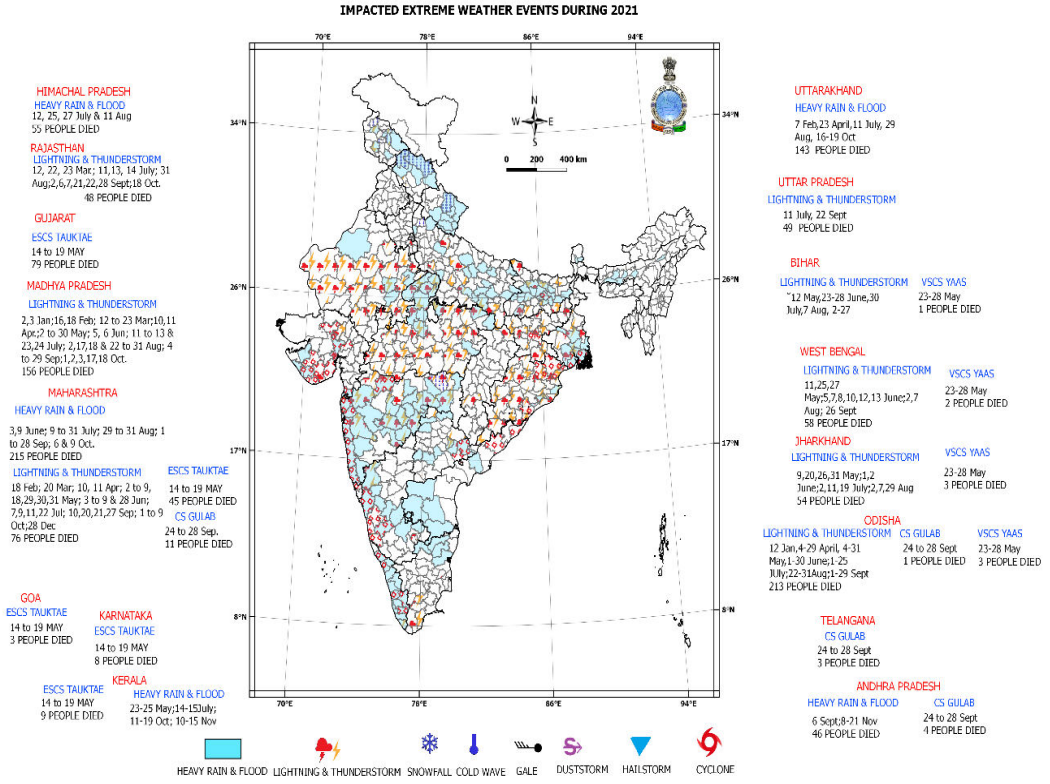


For the year 2020



For the year 2021

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