

**GOVERNMENT OF INDIA
MINISTRY OF EARTH SCIENCES
LOK SABHA
UNSTARRED QUESTION NO. 2874
TO BE ANSWERED ON WEDNESDAY, 3RD AUGUST, 2022**

RISE IN AVERAGE TEMPERATURE

2874. SHRI PALLAB LOCHAN DAS:
PROF. SOUGATA RAY:

Will the Minister of EARTH SCIENCES be pleased to state:

- (a) whether the average temperature during the monsoon season from June to September is rising since the last two decades and if so, the details of rise in average temperature in the country, season-wise and region-wise since the last five years;
- (b) whether it is also a fact that crop production has decreased due to rise in temperature during the monsoon season and if so, the details thereof;
- (c) whether the Celsius of temperature increased gradually and if so, the steps being taken to check such an alarming issue;
- (d) whether this causes rise in sea level and erosion among the coastal lines of the country and if so, the details thereof; and
- (e) the number of heatwave deaths that has been reported in the country since the last three years, State-wise?

ANSWER

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

- (a) Yes Sir. The average temperature during the monsoon season (June to September) is found to be rising since the last two decades. The plots of mean temperature for All India, North East India, Central India, Northwest India and South Peninsula during the season for the recent two decades are given in **Annexure**. From the plots, it is clear that there is a positive trend in mean temperature over all these region during the last two decades in monsoon season.

The mean temperature for all these region for the last five years are given in the table below:

Mean Temperature (°C) for All India and 4 homogenous region for the recent 5 years during June to September					
Years	AI	NW India	East & NE India	Central	South Peninsular
2017	28.39	28.08	28.50	28.54	28.44
2018	28.28	28.01	28.70	28.23	28.28
2019	28.60	28.52	28.80	28.74	28.46
2020	28.45	28.52	28.44	28.59	28.32
2021	28.36	28.26	28.55	28.38	28.33

From the details, it is seen that in the short term, there is no such clear cut trend in mean temperature during monsoon season.

- (b) It is reported that the farming activities were delayed due to the changes in the rainfall pattern this year. However, centralized data on crop production and farming activities are not maintained by this ministry.
- (c) It is a fact that, annual temperature is increasing globally and the impact of the same is reflected in the increase in severe weather occurrence in various parts of the globe including India.

IMD issue forecast and warnings related to severe weather events in different spatial and temporal scales and share the same with public as well as disaster management authorities so as to initiate required mitigation measures.

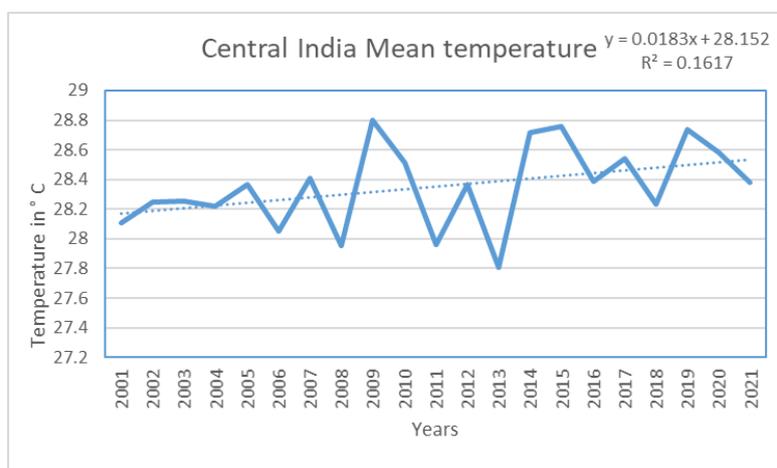
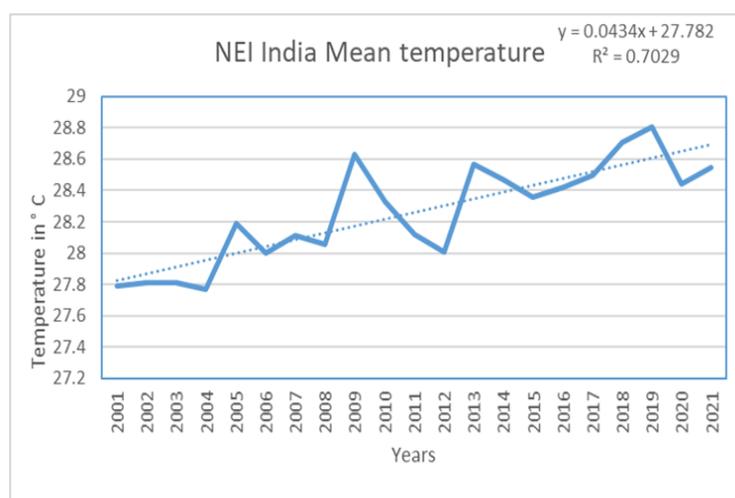
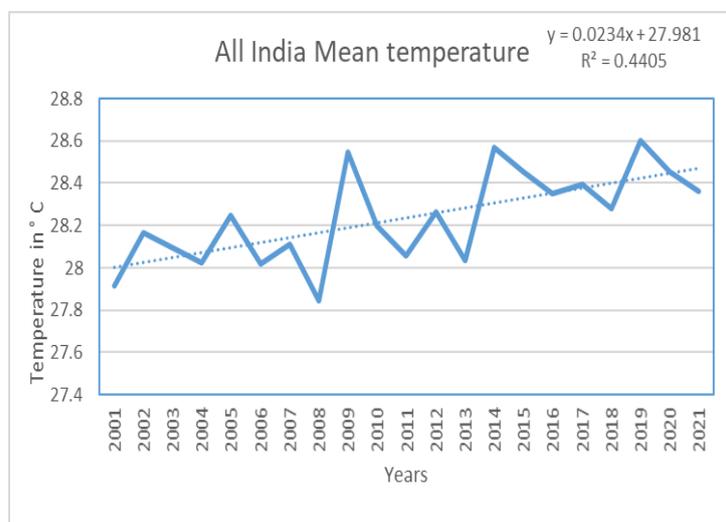
While issuing the warning suitable colour code is used to bring out the impact of the severe weather expected and to signal the Disaster Management about the course of action to be taken with respect to impending disaster weather event. Green color corresponds to no warning hence no action is needed, yellow color corresponds to be watchful and get updated information, orange color to be alert and be prepared to take action whereas red color signals to take action.

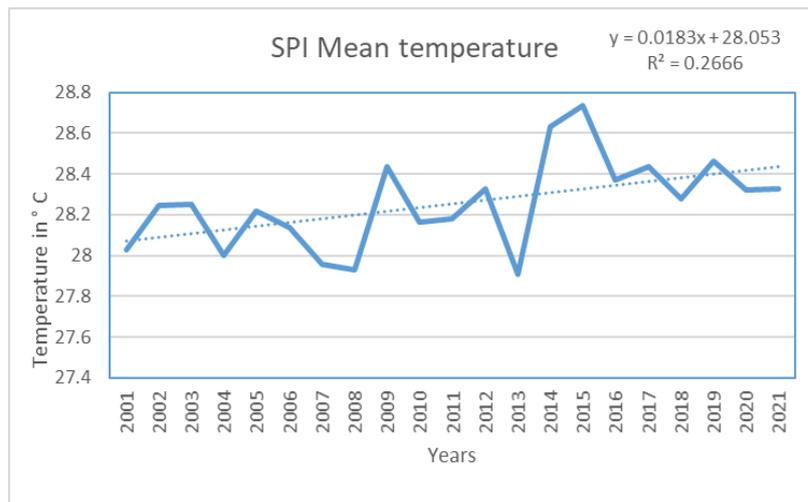
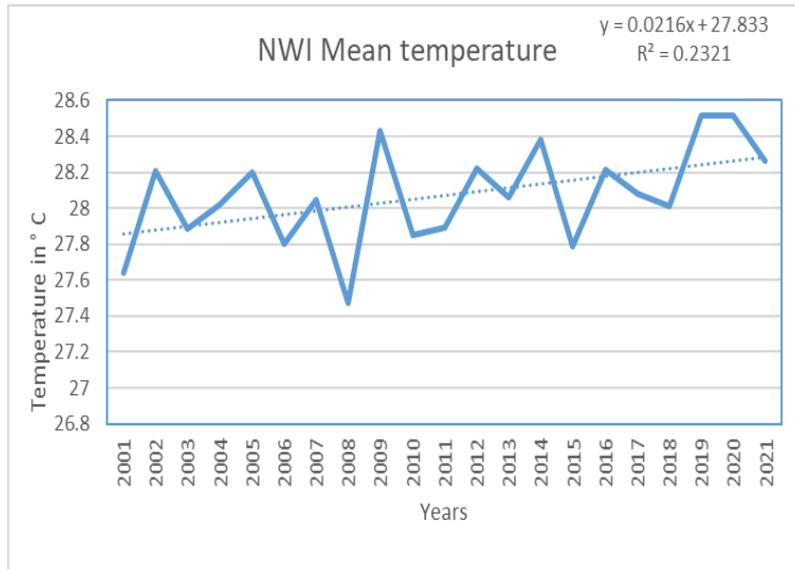
IMD started issuing Impact Based Forecast (IBF) recently which give details of what the weather will do rather than what the weather will be. It contains the details of impacts expected from the severe weather elements and guidelines to general public about do's and don'ts while getting exposed to severe weather. These guidelines are finalised in collaboration with National Disaster Management Authority (NDMA) and is already implemented successfully for cyclone, heat wave, thunderstorm and heavy rainfall. Work is in progress to implement the same for other severe weather elements.

- (d) The sea level rise is one of the major impacts of Global warming. Sea levels have risen globally because of the continental ice melt and thermal expansion of ocean water in response to global warming. Sea-level rise in the North Indian Ocean (NIO) occurred at a rate of 1.06–1.75 mm per year during 1874–2004 and has accelerated to 3.3 mm per year in the last two and a half decades (1993–2017), which is comparable to the current rate of global mean sea-level rise.
- (e) The State-wise details of deaths due heatwave for 2019 to 17th July 2022 are given in **Annexure II** based on newspaper reports.

Annexure-I

Fig 1 show the Mean Temperature trend during monsoon season for the recent 2 decades for All India and 4 homogenous regions





Annexure-II

Details of state wise deaths due to heat wave from 2017 to 17 JULY 2022

State/Years	2017	2018	2019	2020	2021	2022	
Andhra Pradesh	236		45		No deaths reported due to Heat wave		
Arunachal Pradesh							
Assam							
Bihar			293	2			
Chhattisgarh		2					1
Gujarat							
Himachal Pradesh							
Jammu & Kashmir							
Jharkhand	4	3	13				1
Karnataka							
Kerala		1	14	1			
Ladakh							
Madhya Pradesh							
Maharashtra	16	16	53	6			13
Manipur							
Meghalaya							
Nagaland							
Odisha	17		9	16			9
Punjab							
Rajasthan		2	3				
Tamil Nadu							
Telangana	100		66				
Union Territory- Delhi							
Uttar Pradesh		9	9				
West Bengal	2						
Grand Total	375	33	505	25		24	
