

Residential Workshop On Development of Intra-Sectoral SoP for Heatwave Risk Management

Date: 29-30 May 2023

Venue: Gujarat Institute of Disaster Management

Collaborated by



**Gujarat Institute of Disaster
Management**



**Indian Institute of Public
Health**



**Natural Resource Defense
Council**

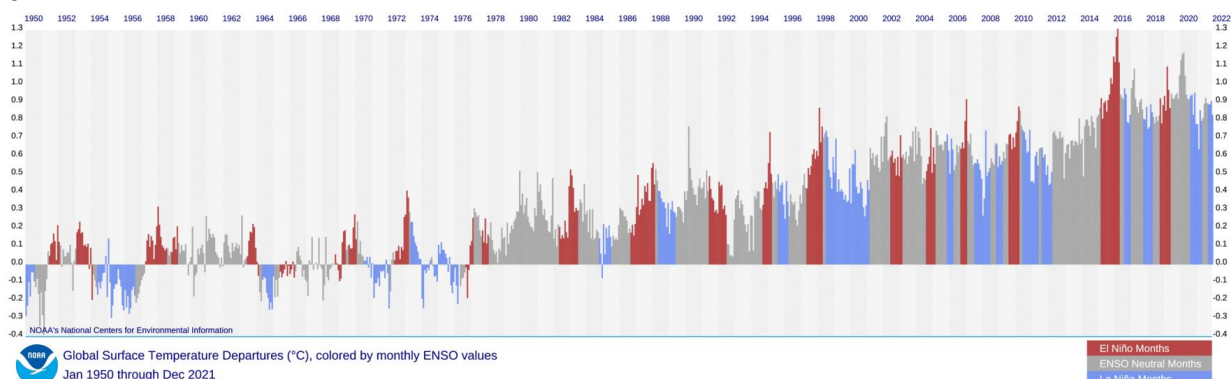
1. Background

The growing bodies of evidence are suggesting that due to human induced climate change, extreme weather events like extreme heat spells and heatwaves will become more frequent, intense, and long-lasting in the 21st century and we are already witnessing this happen. Each passing year is setting a new record of extreme heat. The world recorded its hottest decade ever from the year 2010 to 2019 and in that too year 2015 to 2019 were the hottest five years of world recorded ever in the history of mankind.

Recent international climate change and public health analyses underscore the intensifying human health dangers of climate change-fueled heatwaves. Global estimates indicate that by 2030 and 2050, an additional 90,000 and 255,000 people, respectively, could die prematurely each year because of climate change-worsened heat waves. The impacts of rising temperatures extend far beyond health to include damage to agriculture, marine ecosystems such as coral reefs, and vital infrastructure, and worker productivity. A recent analysis estimated that heat and humidity and heat cause 677 billion hours of lost labor worth \$2.1 trillion each year. The heat problem is especially risky in developing countries that are already coping with intense temperatures. According to climate and weather experts at the India Meteorological Department, the number of heatwave days across the country is increasing at a rapid pace, a pattern that is persistent across most the 103 weather stations in the country. And extreme heat in India is already deadly: in 2019, extreme heat caused nearly 47,000 premature deaths in India,

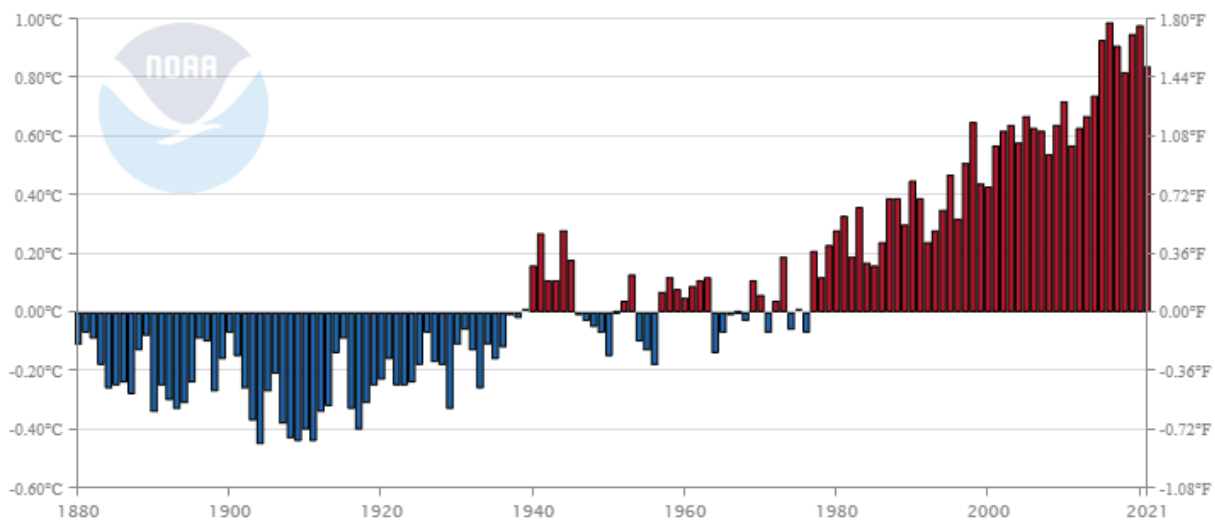
1.1 Global Temperature Anomalies

The year 2021 began with an episode of cold phase El Niño Southern Oscillation (ENSO) episode, also known as La Niña, across the central and eastern tropical Pacific Ocean, which had developed in August 2020. As seen in the graph below, ENSO can have an effect on global temperatures. La Niña episodes tend to cool global temperatures slightly, while the warm phase ENSO (also known as El Niño) tends to boost global temperatures. Although the monthly global temperatures were above average throughout the year, February 2021 was the coldest month of 2021 for the globe. The global temperature departure for February 2021 was $+0.64^{\circ}\text{C}$ ($+1.15^{\circ}\text{F}$) — the coolest February since 2014. However, after the month of February, temperatures were at 0.80°C (1.44°F) or higher for the remaining months of 2021.



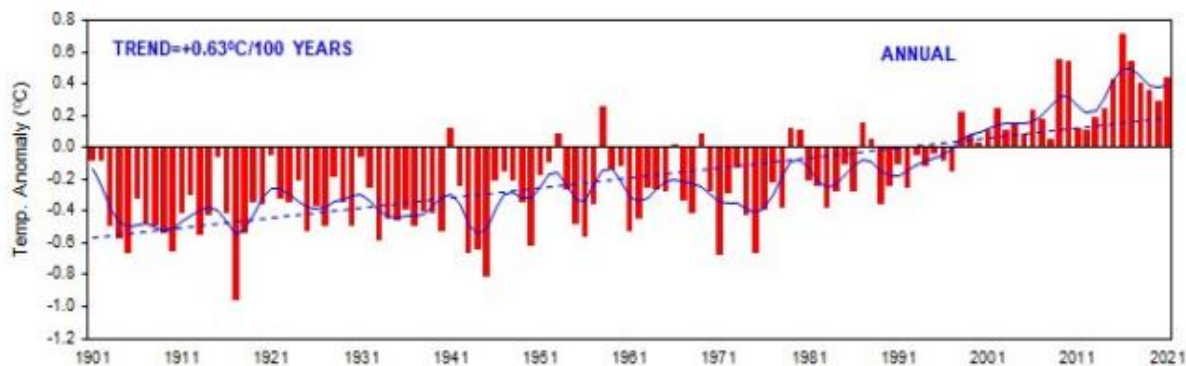
The year culminated as the sixth warmest year on record for the globe with a temperature that was 0.84°C (1.51°F) above the 20th century average. The years 2013–2021 all rank among the ten warmest years on record. The year 2021 was also the 45th consecutive year (since 1977) with global temperatures, at least nominally, above the 20th century average. Of note, the year 2005, which was the first year to set a new global temperature record in the 21st century, currently ties with 2013 as the 10th warmest year on record and 2010 ranks as the ninth warmest on record. Overall, the global annual temperature has increased at an average rate of 0.08°C (0.14°F) per decade since 1880 and over twice that rate (0.18°C / 0.32°F) since 1981.

Global Land and Ocean
January–December Temperature Anomalies



1.2 Temperature Anomalies in Indian Context

The annual mean temperature for the country was +0.44 °C above the 1981-2010 average, thus making the year 2021 as the fifth warmest year on record since 1901. The other 4 warmest years on record in order were: 2016 (anomaly +0.71 °C), 2009 (0.55 °C), 2017 (0.54 °C), 2010 (+0.539 °C). It may be mentioned that 11 out of the 15 warmest years were from the recent past fifteen years (2007-2021). In addition, the past decade (2011-2020/2012-2021) was the warmest decade on record with anomalies of 0.34 °C / 0.37 °C above average. During 1901-2021, the annual mean temperature showed an increasing trend of 0.63 °C/100 years with significant increasing trend in the maximum temperature (0.99 °C /100 years), and relatively lower increasing trend (0.26 °C/100 years) in the minimum temperature.



2. Report on Extreme Heat Exposure and Actions for Gujarat

Gujarat Institute of Disaster Management in collaboration with Climate Change Department, IIT Gandhinagar, IIPH Gandhinagar has prepared a research **Report on Extreme Heat Exposure and Actions for Gujarat** to support the Gujarat State Heat Action Plan preparation, build capacity, spread awareness and developing sector wise Standard Operating Procedures (SoPs). In this regard following insights from the report are highlighted,

1. Exposure to extreme heat affects health directly, exacerbating underlying conditions such as cardiovascular and respiratory disease, and causing heat stroke, adverse pregnancy outcomes, worsened sleep patterns, poor mental health, and increased injury-related death
2. Northern India witnessed a new record of average temperature of 36.32 °C, record high since 2010 with 55% rise in deaths due to extreme heat between 2000-2004 and 2017-2021, a recent study published in the medical journal, The Lancet, has found causing to large scale economic losses,
3. It is expected to create a platform with intersectoral coordination to reduce the risk of extreme heat.
4. We need to update the existing sector wise SoPs, Dos & Don'ts for Heatwave in the State of Gujarat following the NDMA advisory and the report highlights specific cases for the regular training and upgradation of Heatwave risk reduction IEC materials.
5. The report also highlights the different adaptive measures and the need of intersectoral coordination to create and implement coherent and real time adaptation to reduce extreme heat.

4. Objective of the Programme

- i. To develop sector wise updated IEC materials and SoPs in accordance with NDMA guidelines
- ii. To enhance the knowledge of the Nodal officers for different departments affected of Extreme heat impact in the State of Gujarat
- iii. To encourage Heatwave preparedness among the stakeholders of different different in their regular activities

- iv. To promote the use of Heatwave Early Warning and indigenous technologies for building resilience.