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Resource Website on Climate Change Impacts on Health

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Climate Change in Bangladesh: Impact on Infectious Diseases and Mental Health

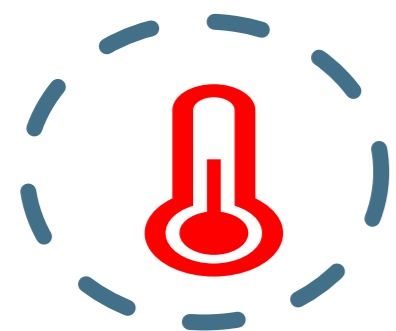
Evolving climatic conditions have had detrimental effects on physical and mental health, leading to an increase in prevalence and variation of infectious diseases and mental health issues such as depression and anxiety disorders



Where do we find data on susceptible infectious diseases like malaria, Dengue Fever, Chikungunya, Zika?



What proportion of cases can we attribute to climate change?



Are the climate forces (rainfall, humidity, temperature) the same for all?



**Can we measure mental health well enough to say this?
How do we know poor mental health is due to CC and did not precede it, or evolve independently of CC?**

The Climate Reality Project

December 9, 2021

- ❑ It has been estimated that by 2050, **one in every seven people** in Bangladesh will be displaced by climate change.
- ❑ Increasingly, supercharged water levels in the Ganges-Meghna-Brahmaputra River Basin are destroying entire villages and hundreds of thousands of livelihoods. Devastation that contributes to **over 10 million** Bangladeshis already being climate refugees.
- ❑ By one estimate, **up to 50%** of those now living in Bangladesh's urban slums may be there because they were forced to flee their rural homes as a result of riverbank flooding.

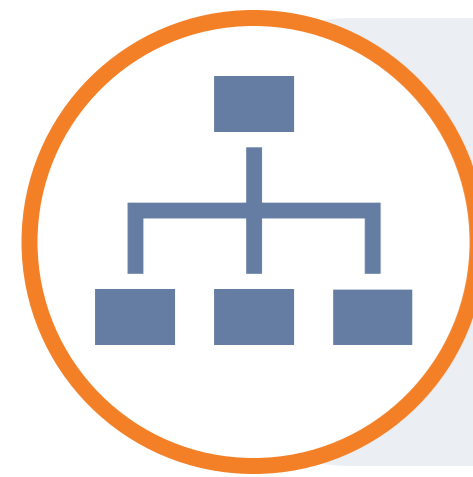
WHO Global School on Refugee and Migrant Health in Dhaka 2022

*“Over **7.1 million Bangladeshis** were displaced by climate change in 2022, a number that could reach **13.3 million by 2050**, according to the **World Health Organisation (WHO)**”*

- This is an extremely difficult **number to estimate.**
- Should include those subject to river erosion and homestead / agricultural land loss, salinity in irrigation and/or drinking water, extreme weather events like cyclones, tidal surges, flooding, etc.
- Our **icddr,b ‘Lost Villages’ study** found village loss was spread over several years and often involved multiple steps of displacement.
- Alternative responses to entire families moving, such as individual family members migrating for work. **Is that displacement?**



In 2003 WHO published one of the first overview documents on climate change impacts on health.



Complex framework showing links between driving forces, adaptive capacity, mitigative capacity, natural causes, health-specific adaptation measures, health effects

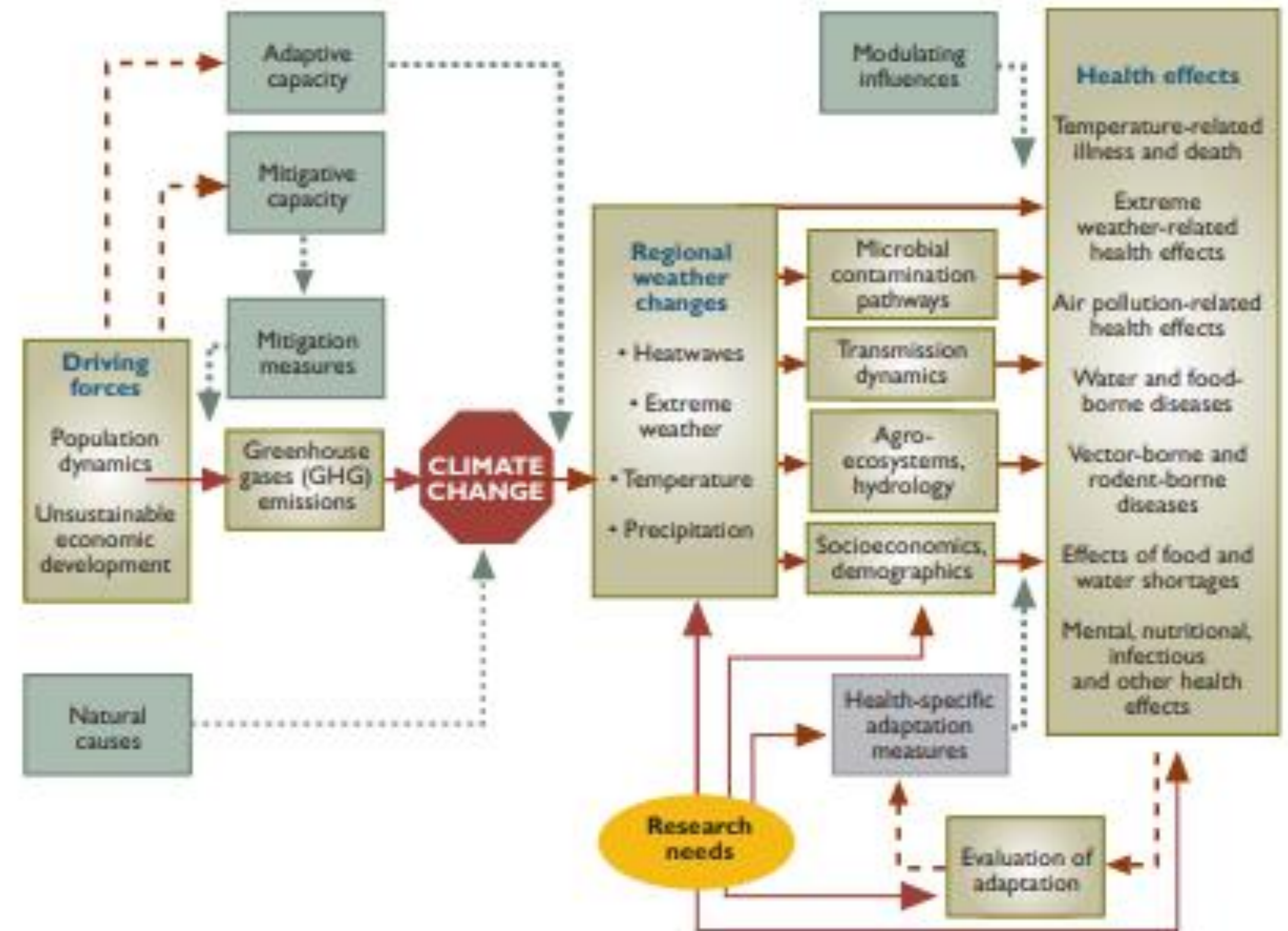


Many of the factors are slow to change so require trend data. Many factors also do not have readily accessible data



This website is a first step in making needed global and local (national) data more accessible.

Figure 13.1. Climate change and health: pathway from driving forces, through exposures to potential health impacts. Arrows under research needs represent input required by the health sector. (Modified from reference 4)



Climate Factors and Health

Global indicators (data) for Climate Change



Global Temperature Trends



Global Carbon Dioxide Trends

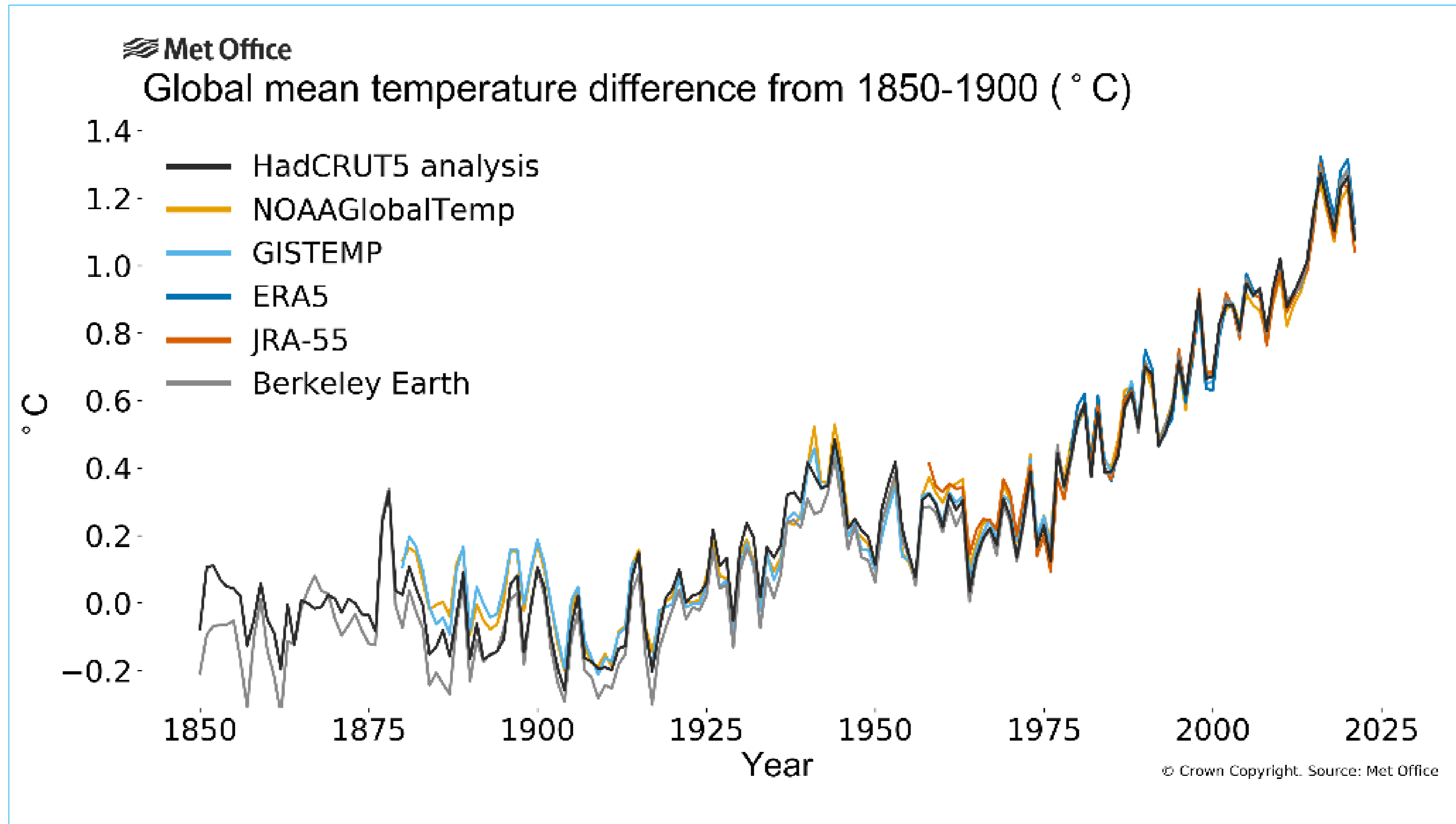


Sea Level Rise

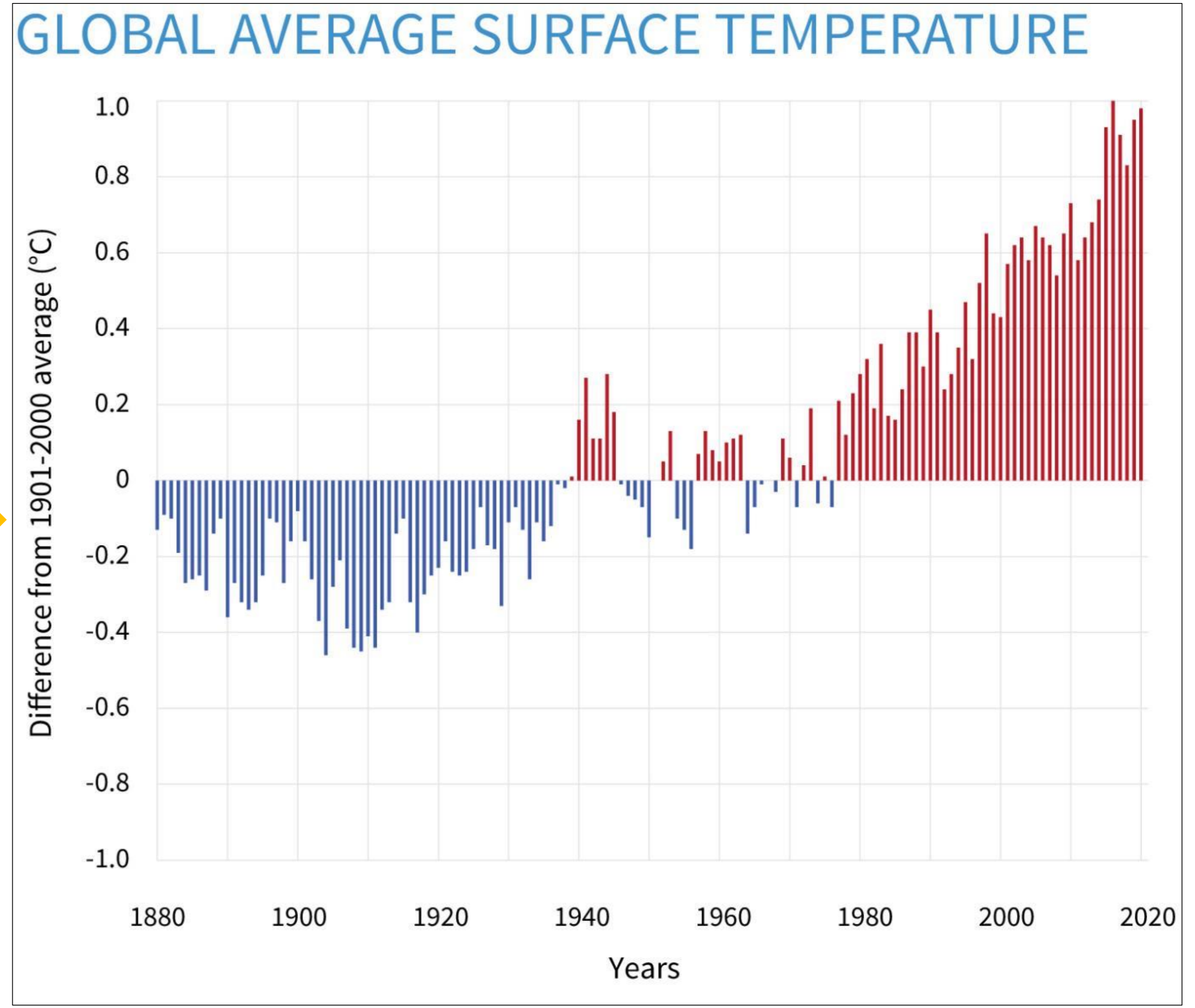
Impacts of Climate Change in Bangladesh

- B-o-B Sea Level Rise
- Sea Surface temperature
- Land temperatures and Cyclones
- Vector Borne Diseases
- Malaria
- Dengue Fever
- Salinity in drinking water and possible hypertension
- River Water Levels
- Internal / Domestic Migration
- Food Security
- Data on health impacts

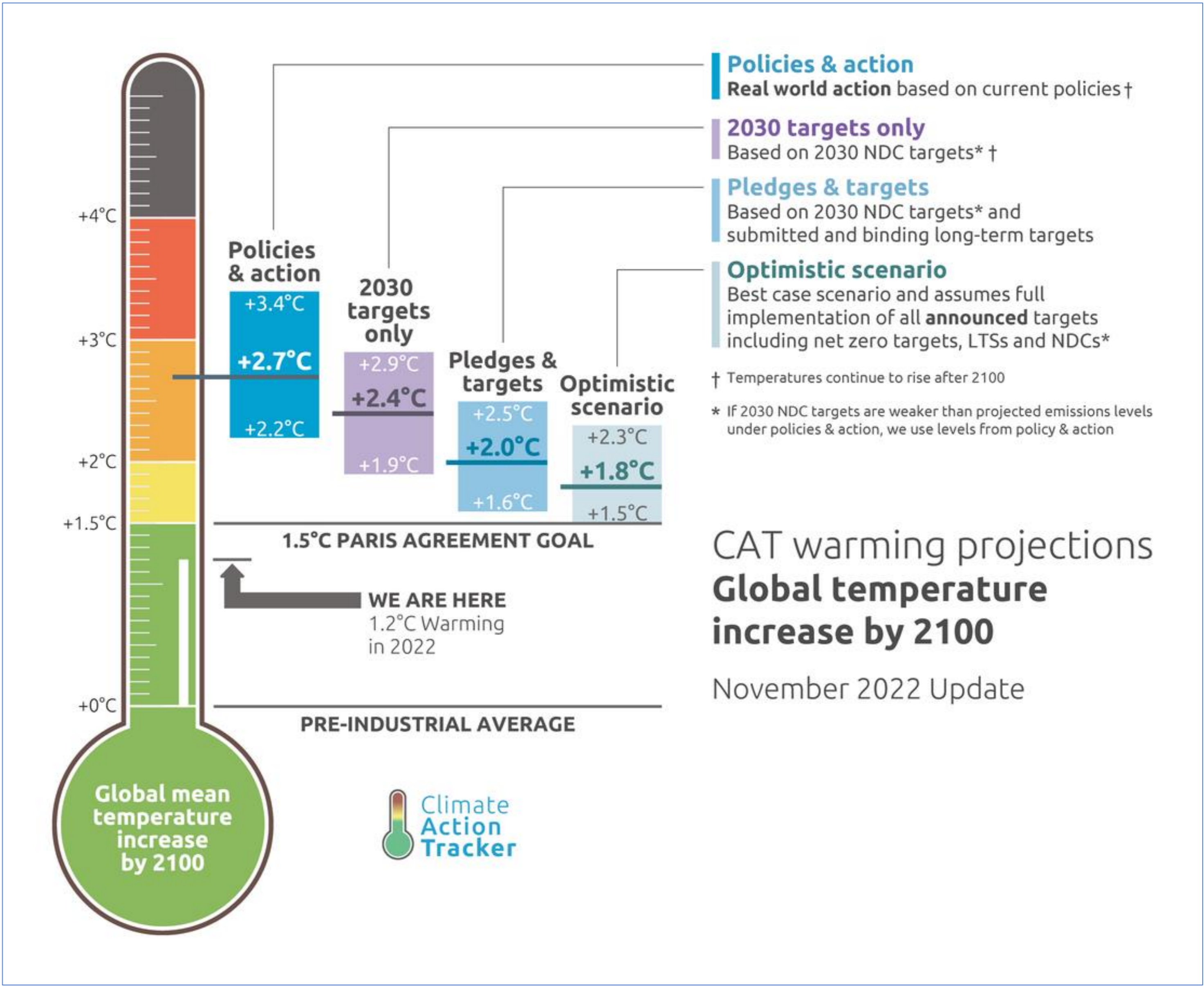
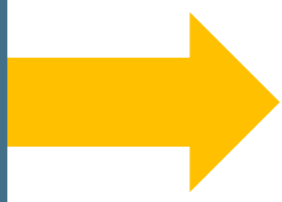
Global Temperature Trends, Multiple Sources, 1850-2022



Global Temperature Trends



Global Temperature Increase by 2100 if Paris Agreement met



Policies & action
Real world action based on current policies †

2030 targets only
Based on 2030 NDC targets* †

Pledges & targets
Based on 2030 NDC targets* and submitted and binding long-term targets

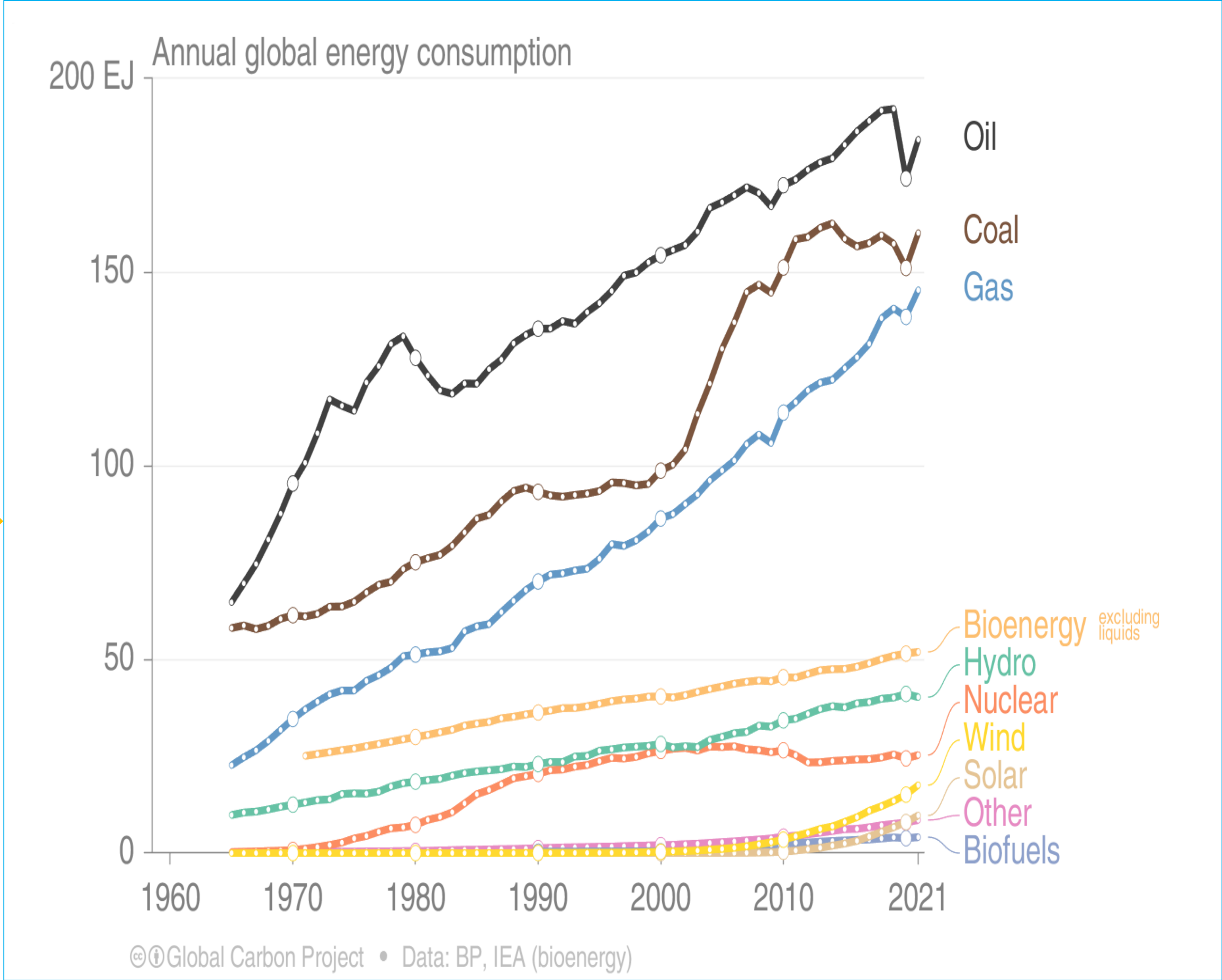
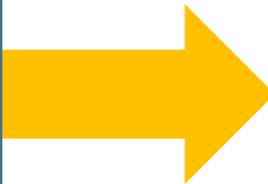
Optimistic scenario
Best case scenario and assumes full implementation of all announced targets including net zero targets, LTSs and NDCs*

† Temperatures continue to rise after 2100

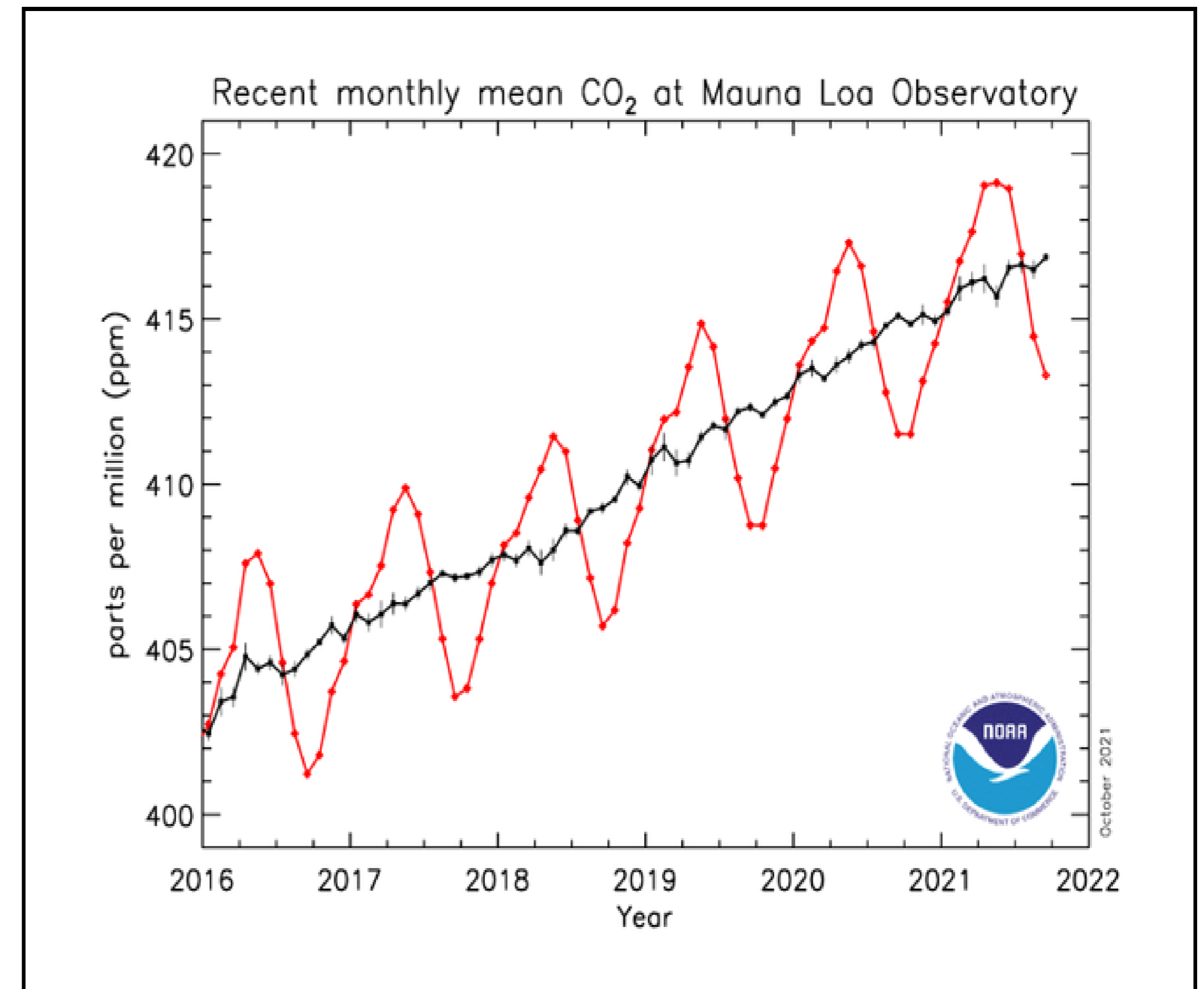
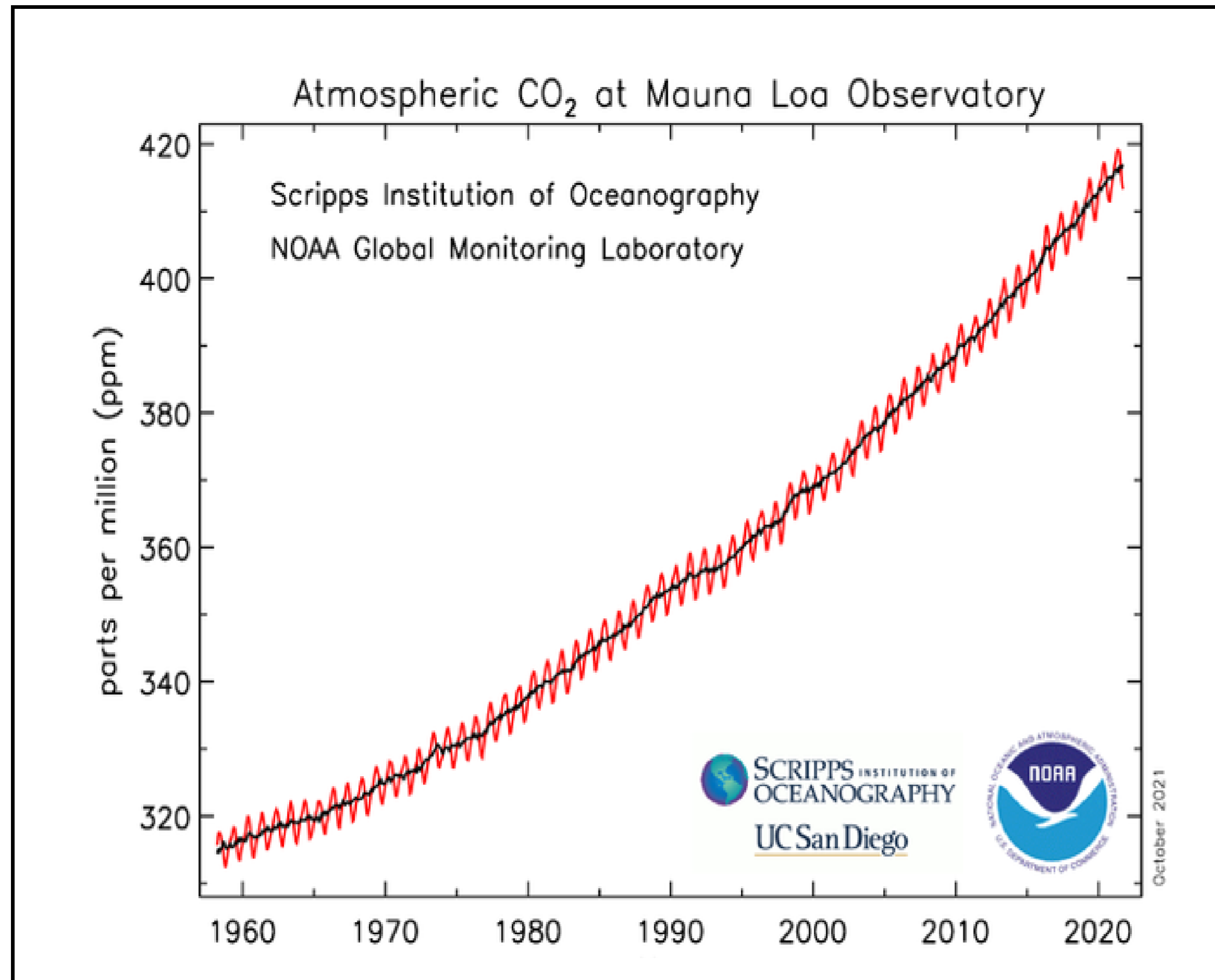
* If 2030 NDC targets are weaker than projected emissions levels under policies & action, we use levels from policy & action

CAT warming projections
Global temperature increase by 2100
November 2022 Update

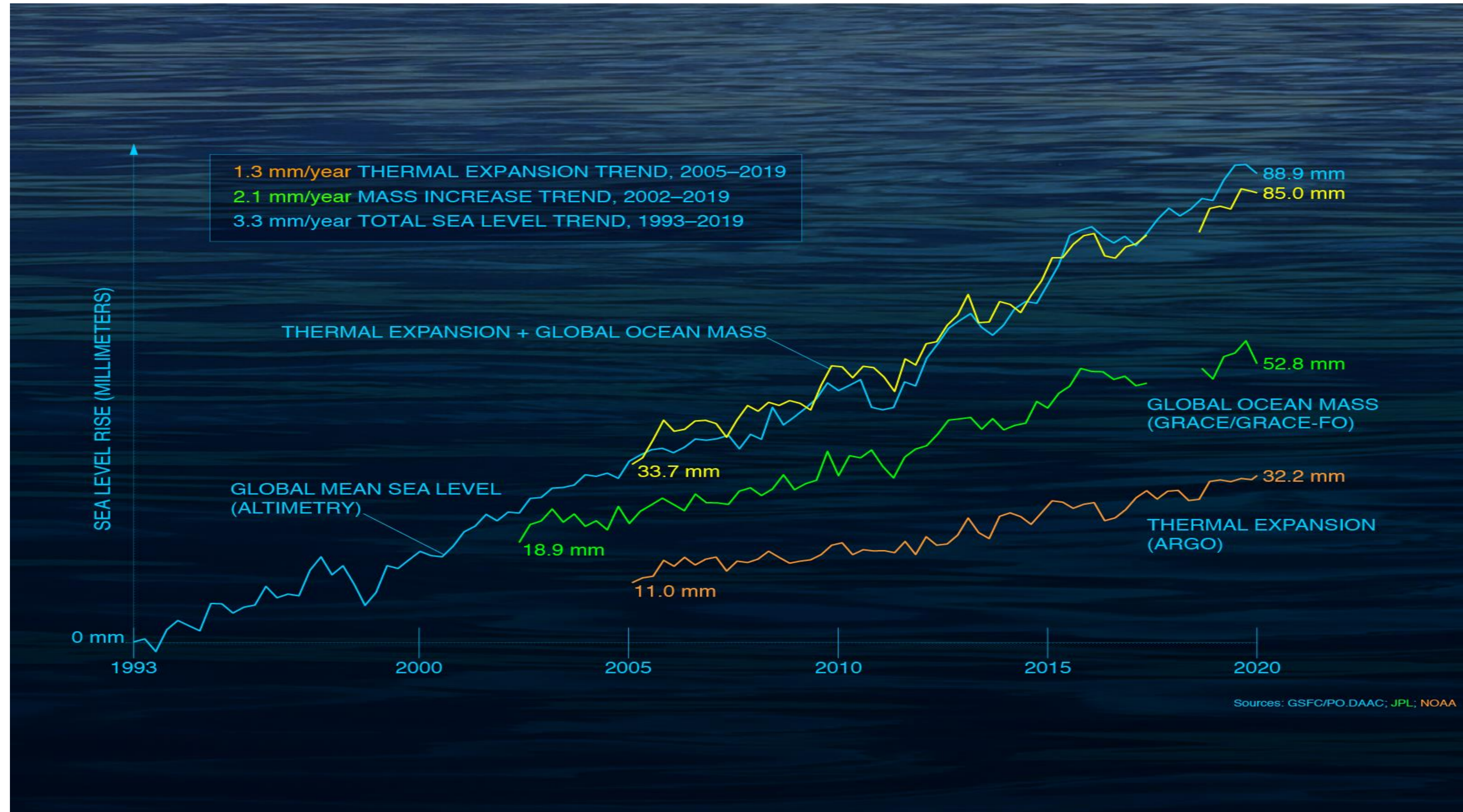
Global Energy Consumption Trends, by Source, 1965-2021



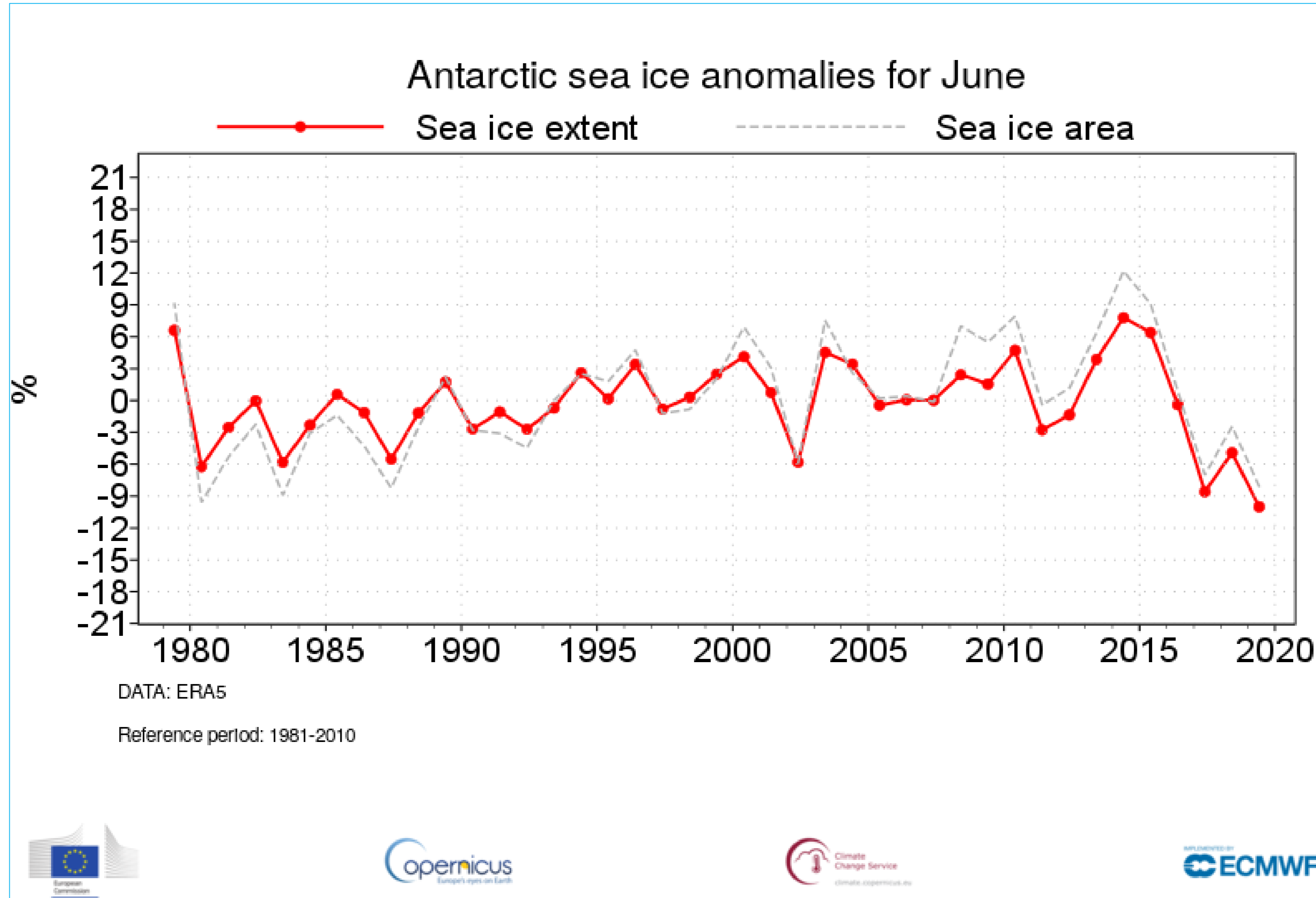
Global Carbon Dioxide Trends, Mauna Loa, 1959-2022



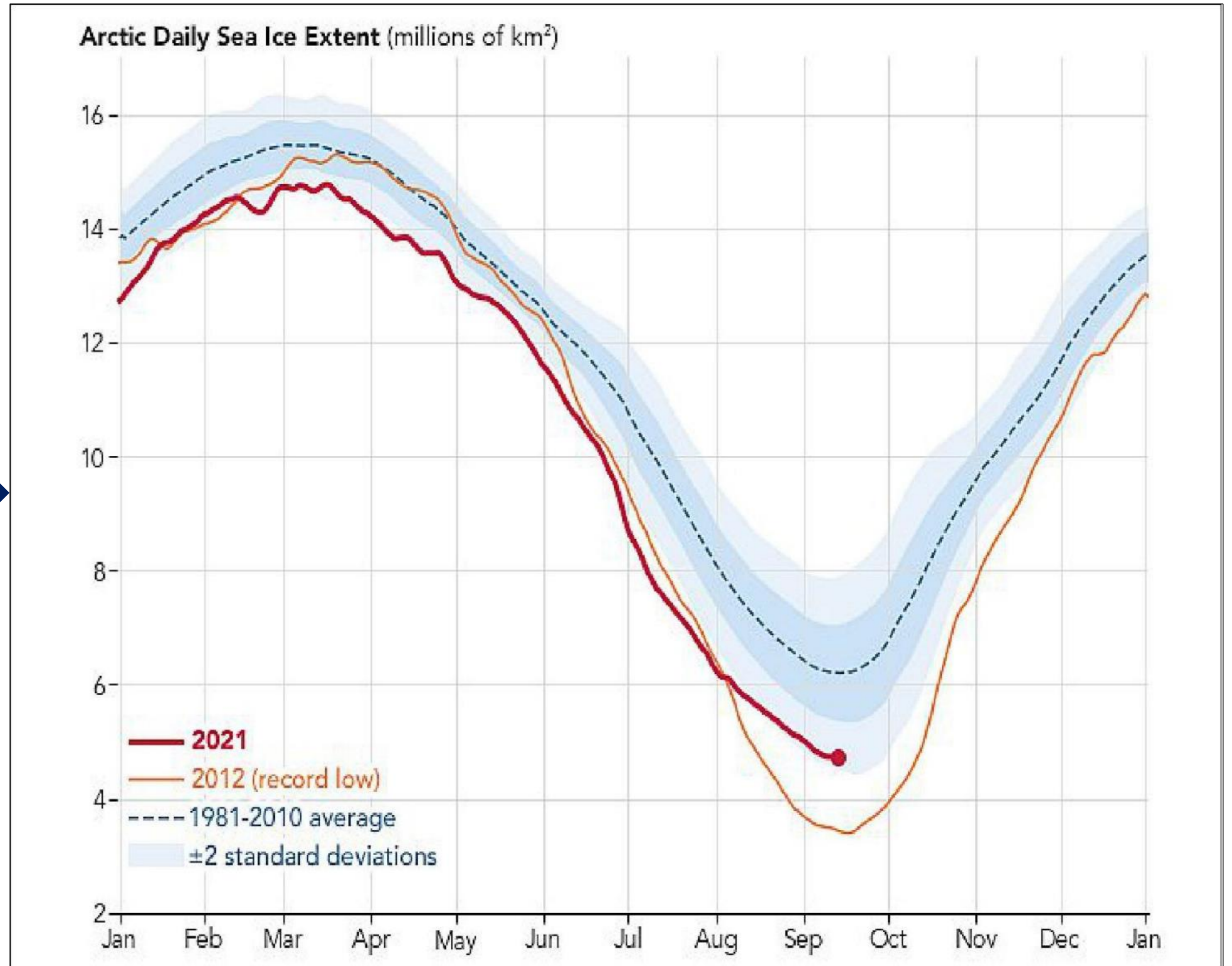
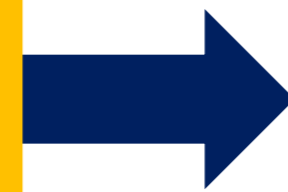
Global Sea Level Trends, 1993-2020 (mm)



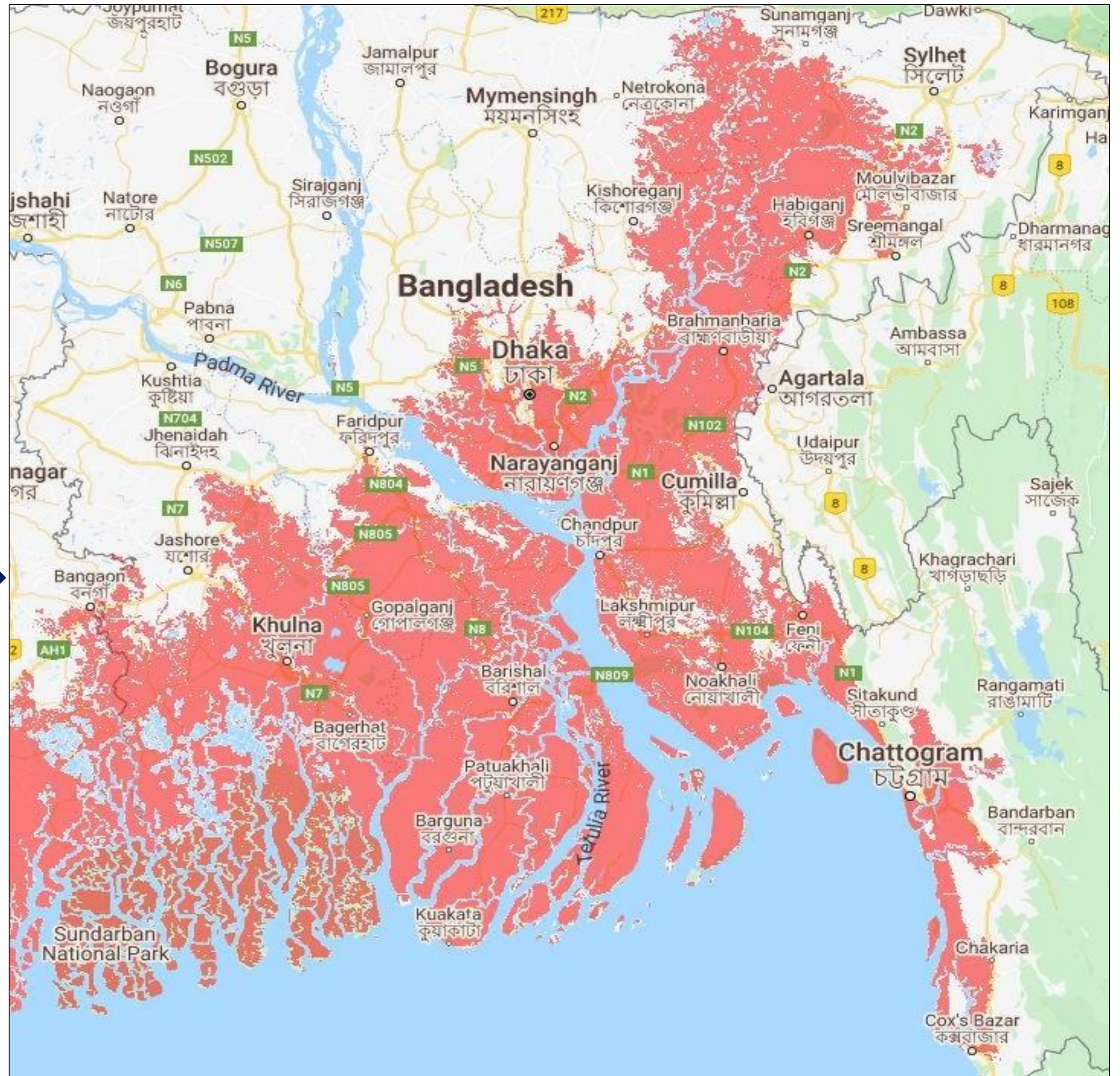
Antarctic Sea Ice Extent, 1980-2020



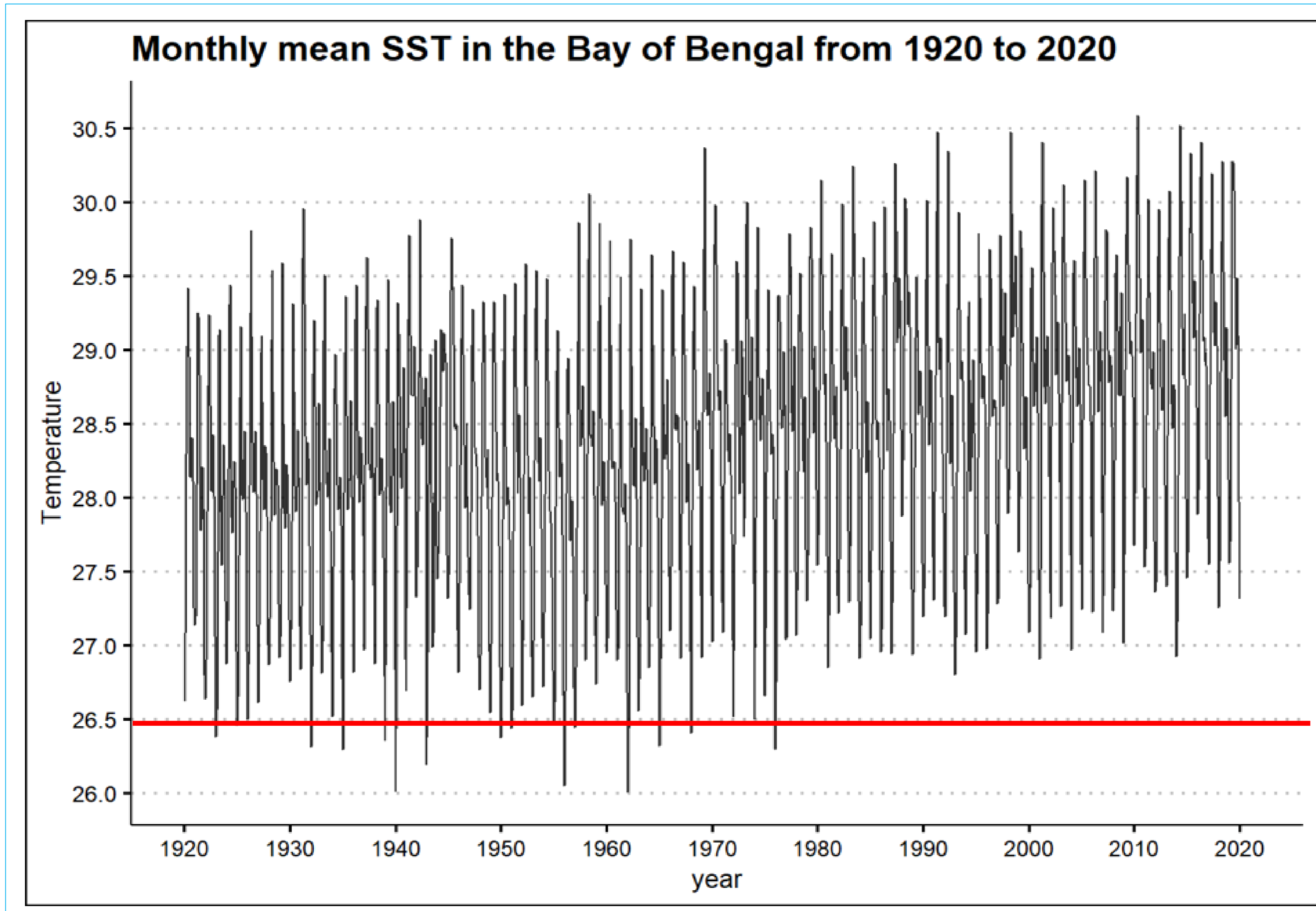
Trends in Arctic Sea Ice Extent (Recent v 1981-2010)



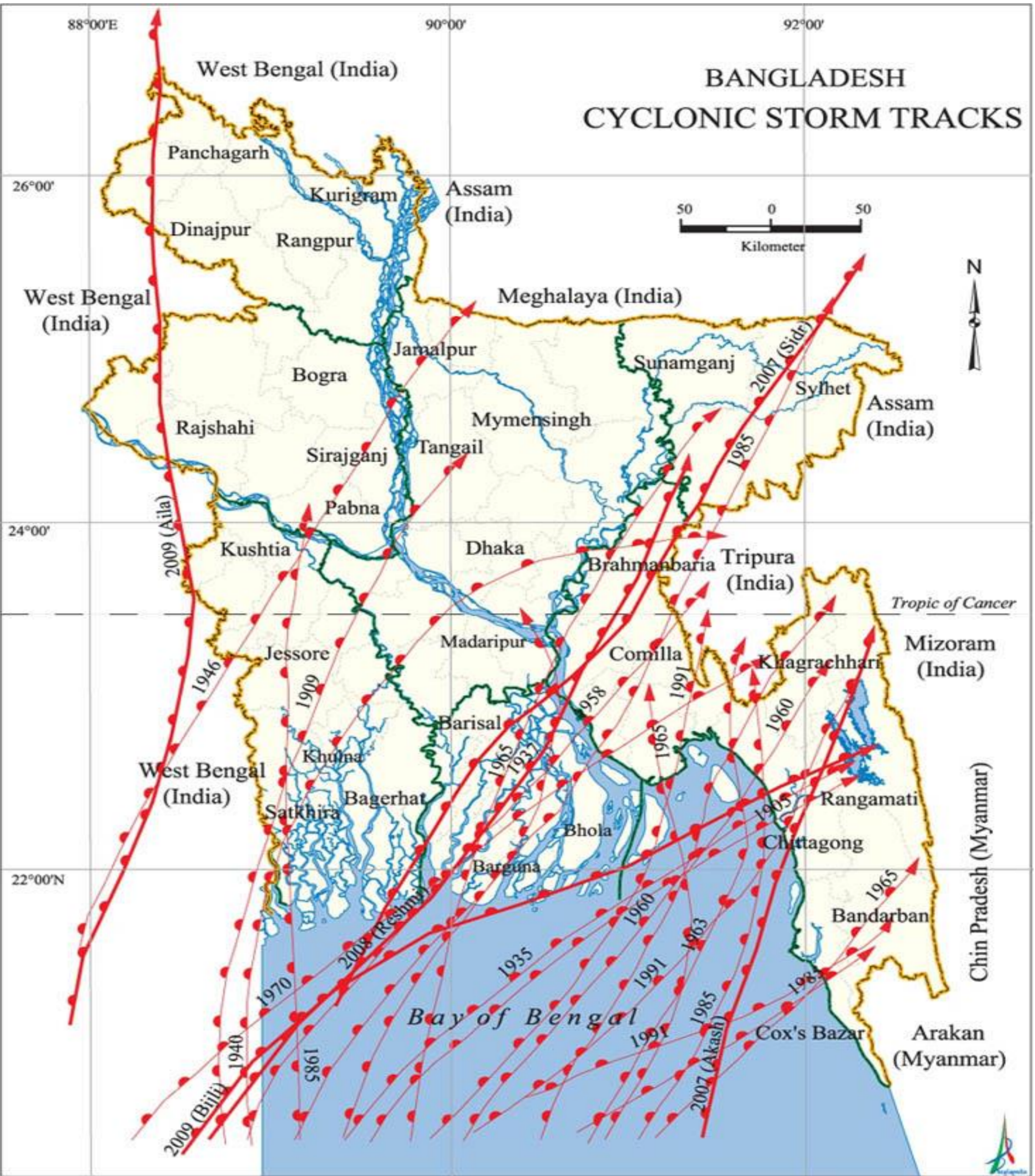
**Projected
Flooding (Red)
from Monsoon +
Sea Level Rise,
2030**



Trends in Sea Surface Temperature, Bay of Bengal, 1920-2020

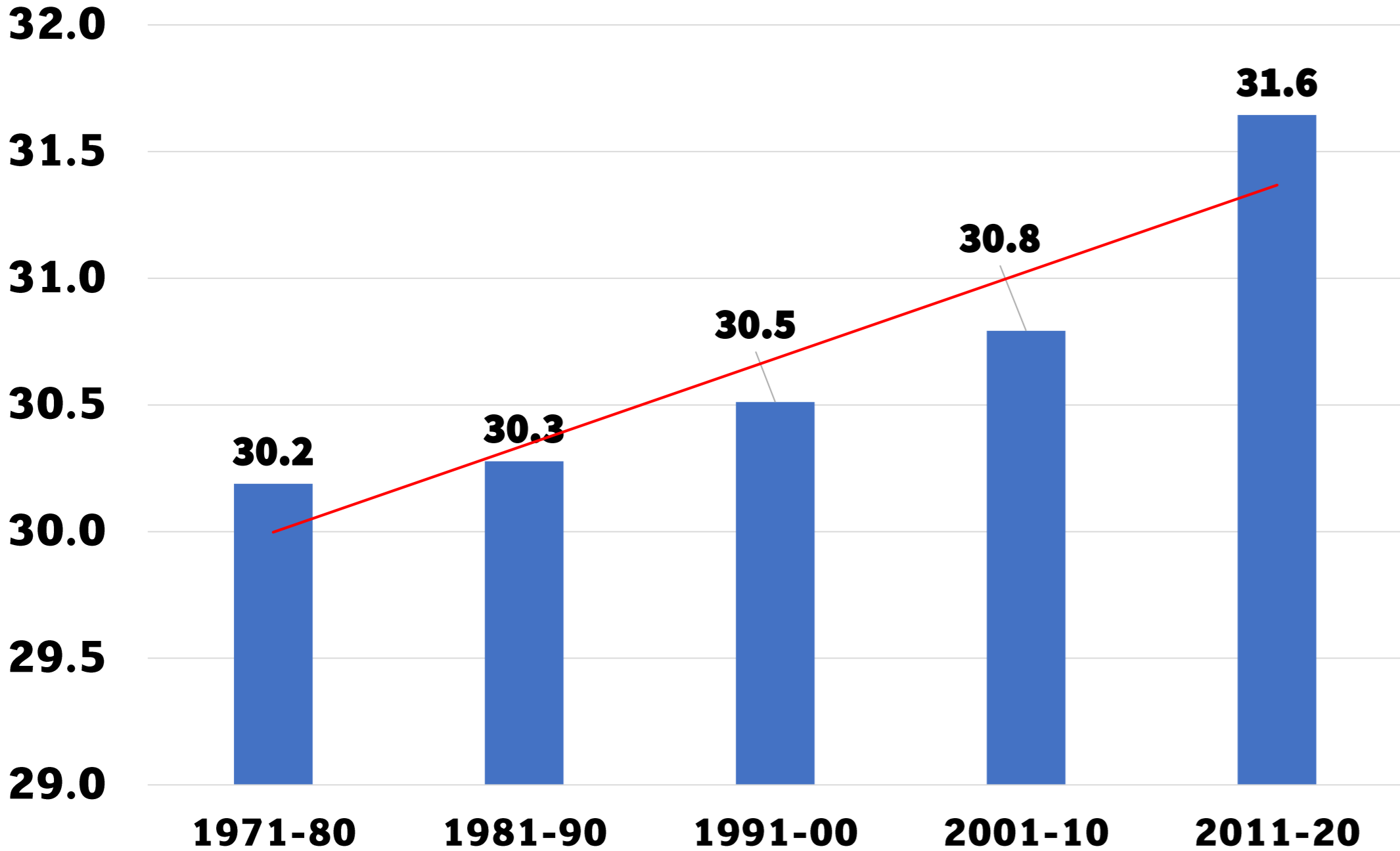


Tracks of Cyclones, Bay of Bengal

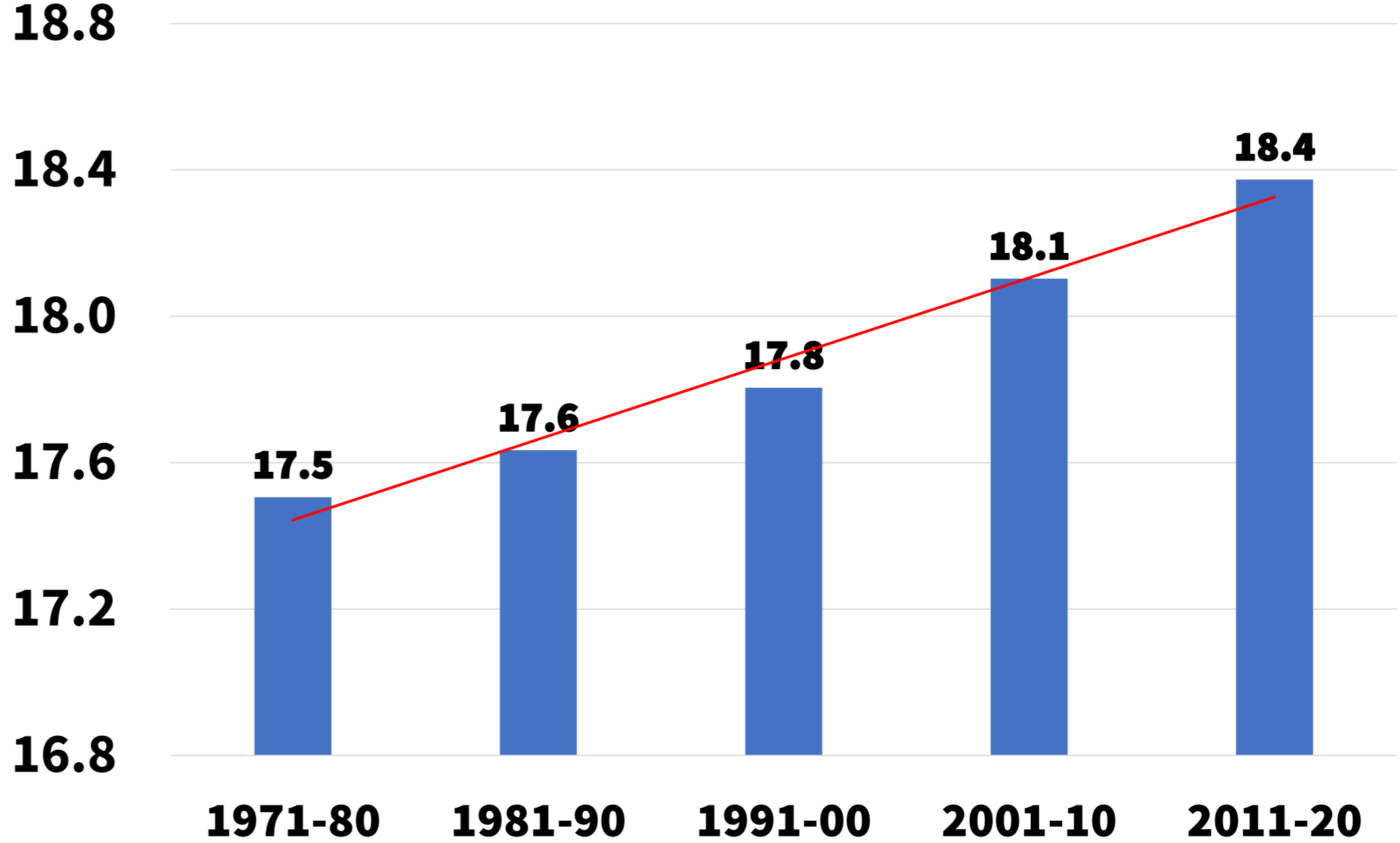


Trends in Temperature, Dhaka, BMD 1990-2020

Decadal Trend in Max. Temp (°C), Bangladesh



Decadal Trend in Min. Temp (°C), Bangladesh



Malaria Cases, Deaths, Bangladesh 2007-2017

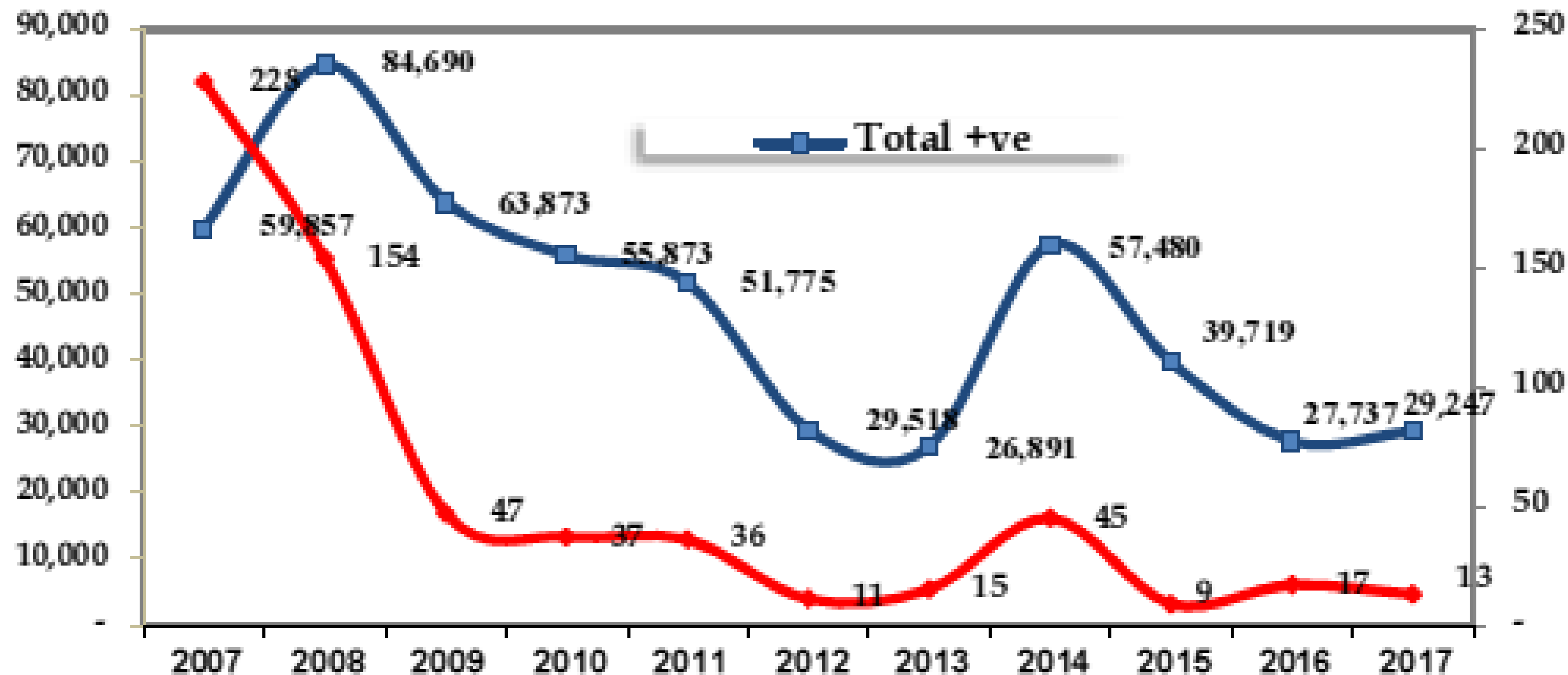
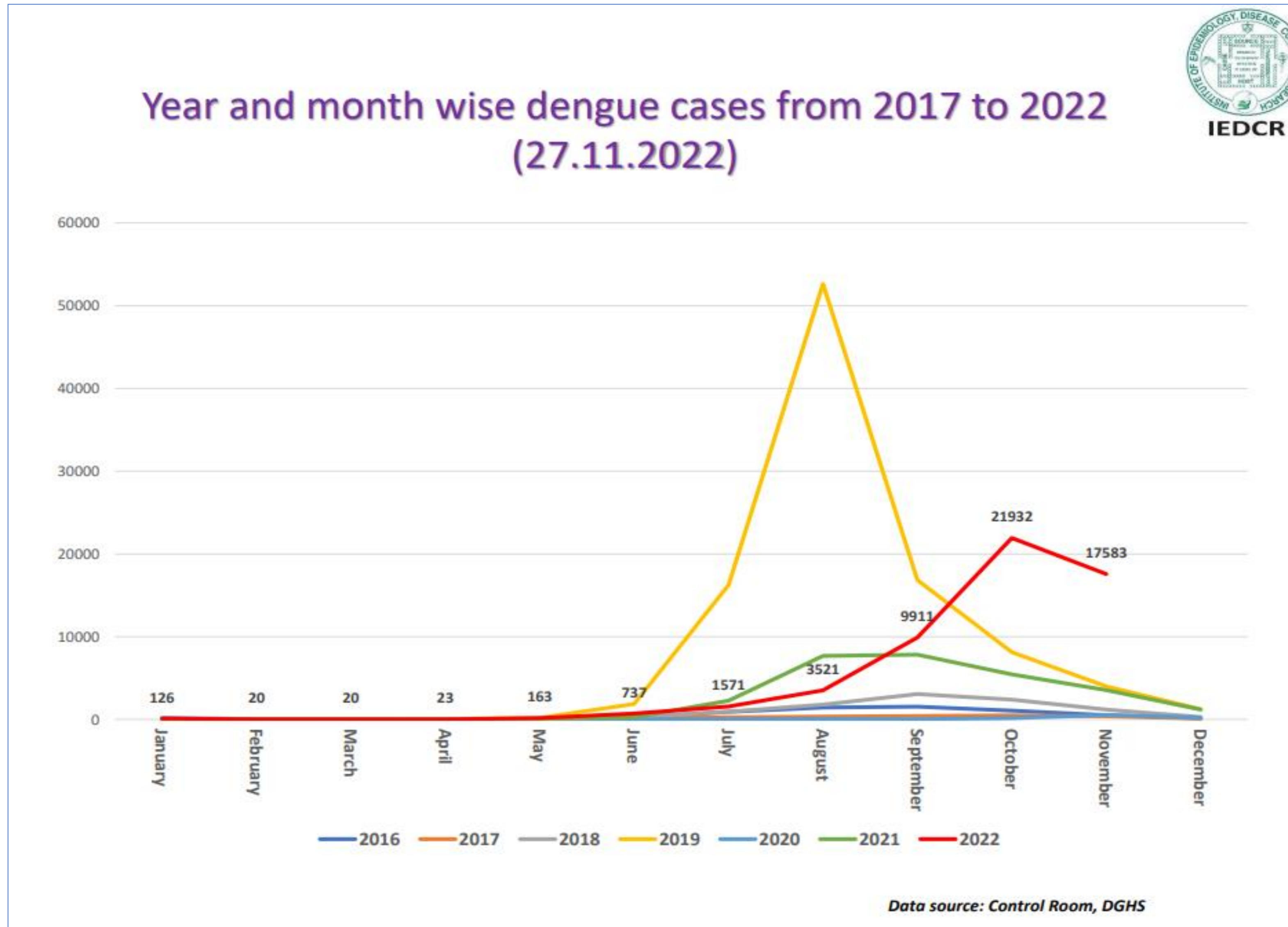
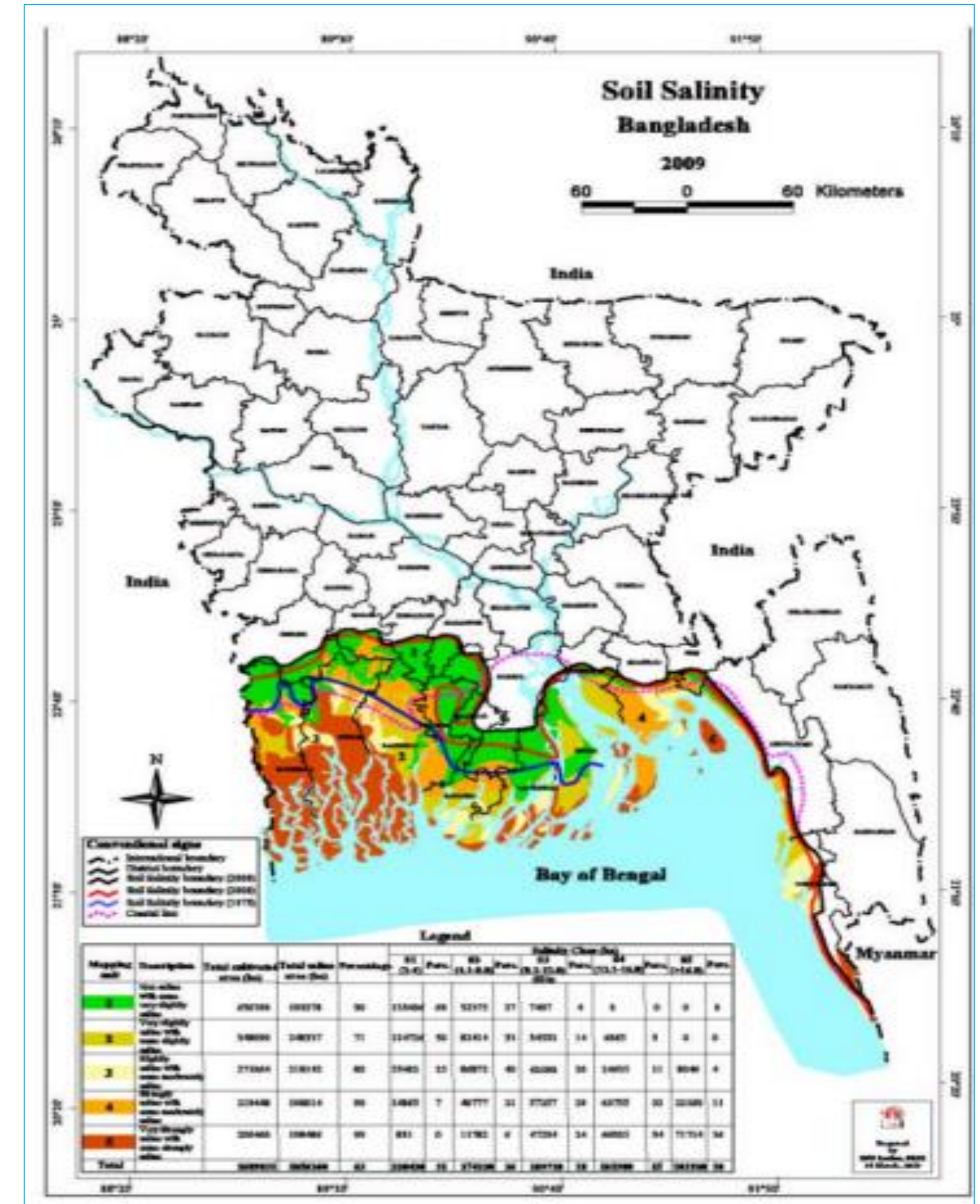
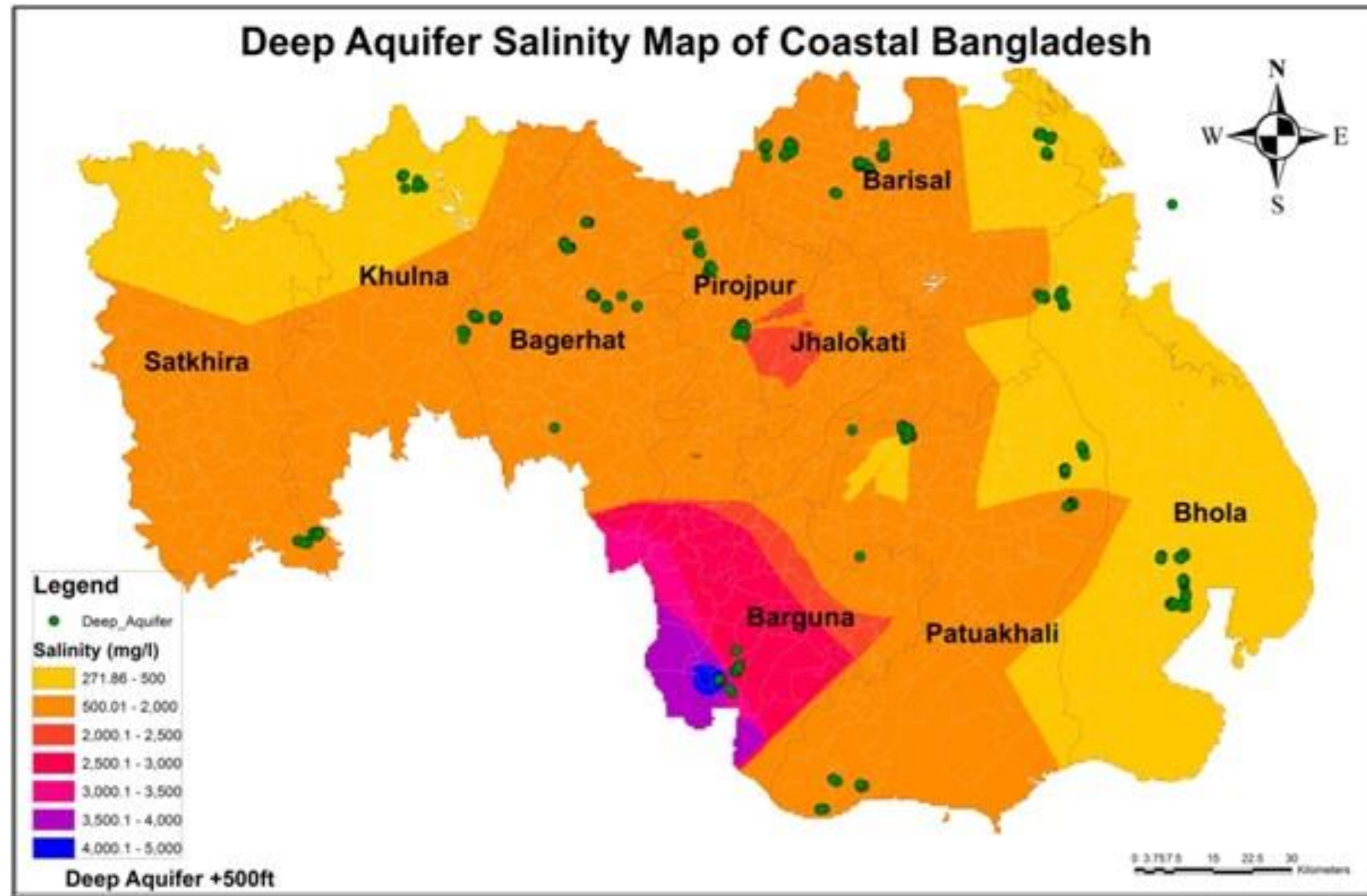


Figure 4 Decreasing trend of malaria cases and death over last decade

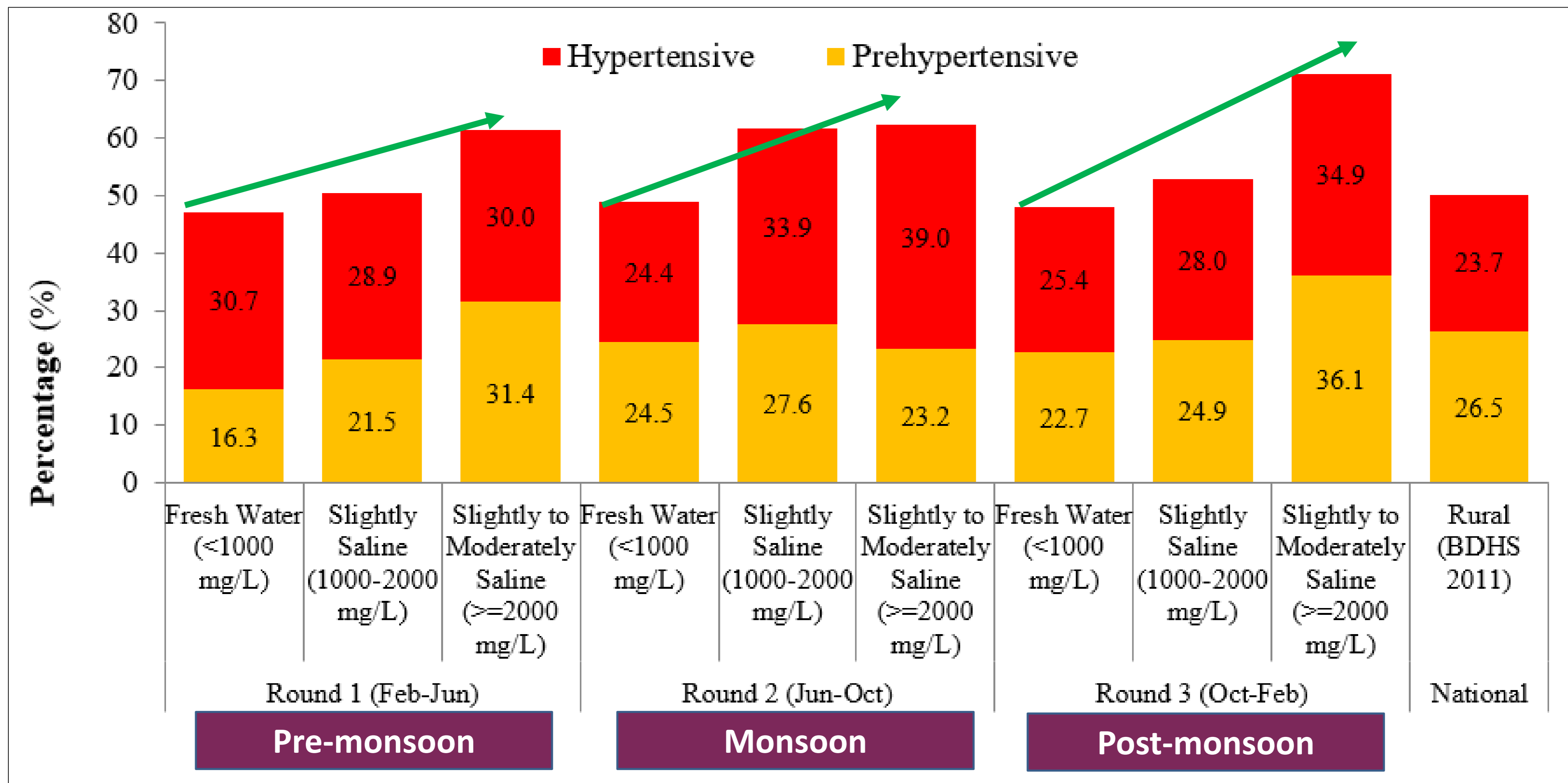
Dengue Fever Cases, Bangladesh, 2016-2022



Soil Salinity Patterns SW Bangladesh

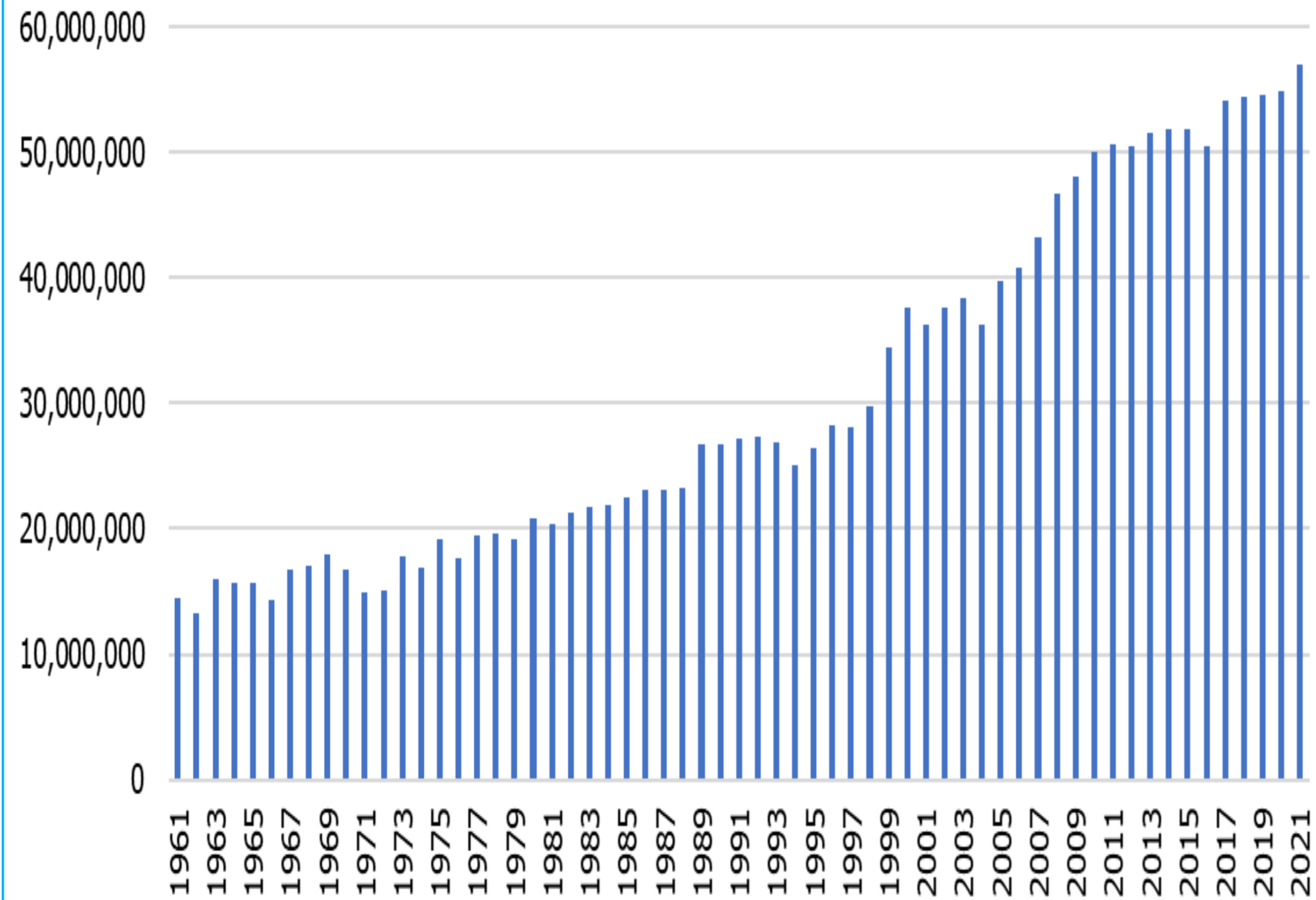


ESPA Study of Salinity & Hypertension, Khulna/Barisal, 2015

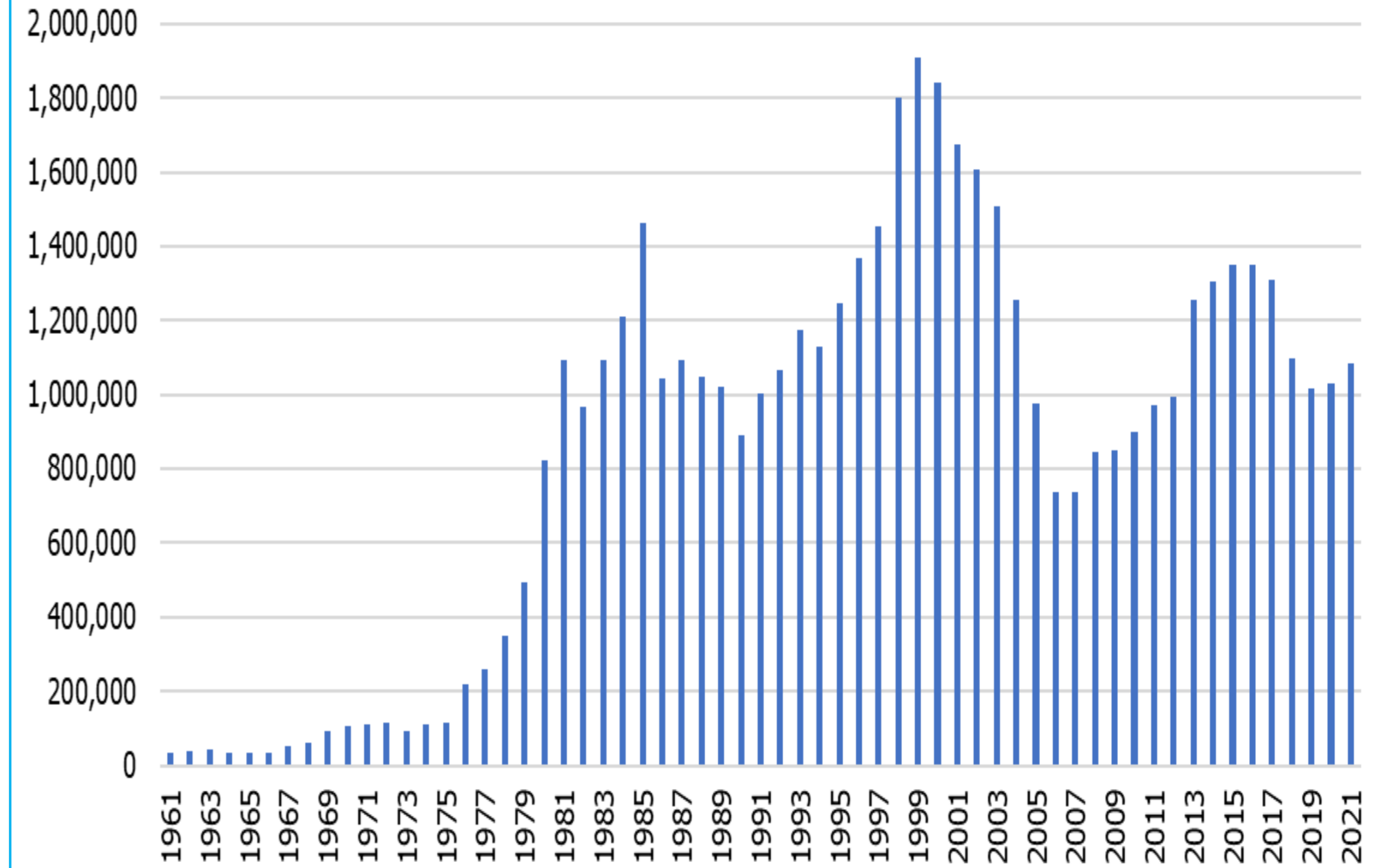


Bangladesh Rice and Wheat Production Trends

Tonnes Rice, Bangladesh



Tonnes Wheat, Bangladesh



A Few Other Issues

- **Drought and river levels:** Himalayan glaciers will melt over time. Meltwater used for crop irrigation in the Gangetic plain (India) will decrease, after some moraine dam collapses, like Kosi River 2012.
- India is implementing the Inter-River Linking Project to divert Ganges River water within the country through a series of canals. They will be tempted to reduce the flow through the Farraka Barrage into Bangladesh.
- Is the Joint Rivers Commission sufficient protection for Bangladesh. Can we monitor river levels through BWDB?
- **Internal (domestic) migration** is very poorly measured and monitored now. Few sources. Urban Health Surveys. Annual BBS Sample Registration Surveys, but is that enough?
- **Impacts on Health:**
 - MOHFW annual Health Bulletins – facility based morbidity and deaths on ~10%
 - Bangladesh Demographic and Health Surveys – only child mortality, usually no causes of deaths. No adult mortality.
 - Cause specific surveys like Bangladesh Maternal Mortality Survey – only female mortality (reproductive ages)
 - HDSS data from surveillance sites – comprehensive but not representative of the country. Verbal Autopsy has limitations.

WEBSITE DEMONSTRATION

Disclaimer

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