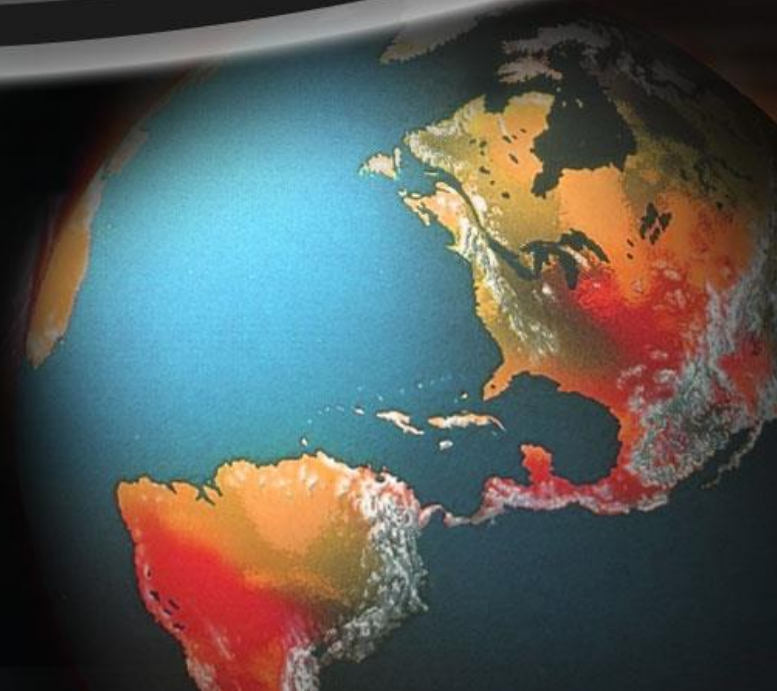


# Climate change

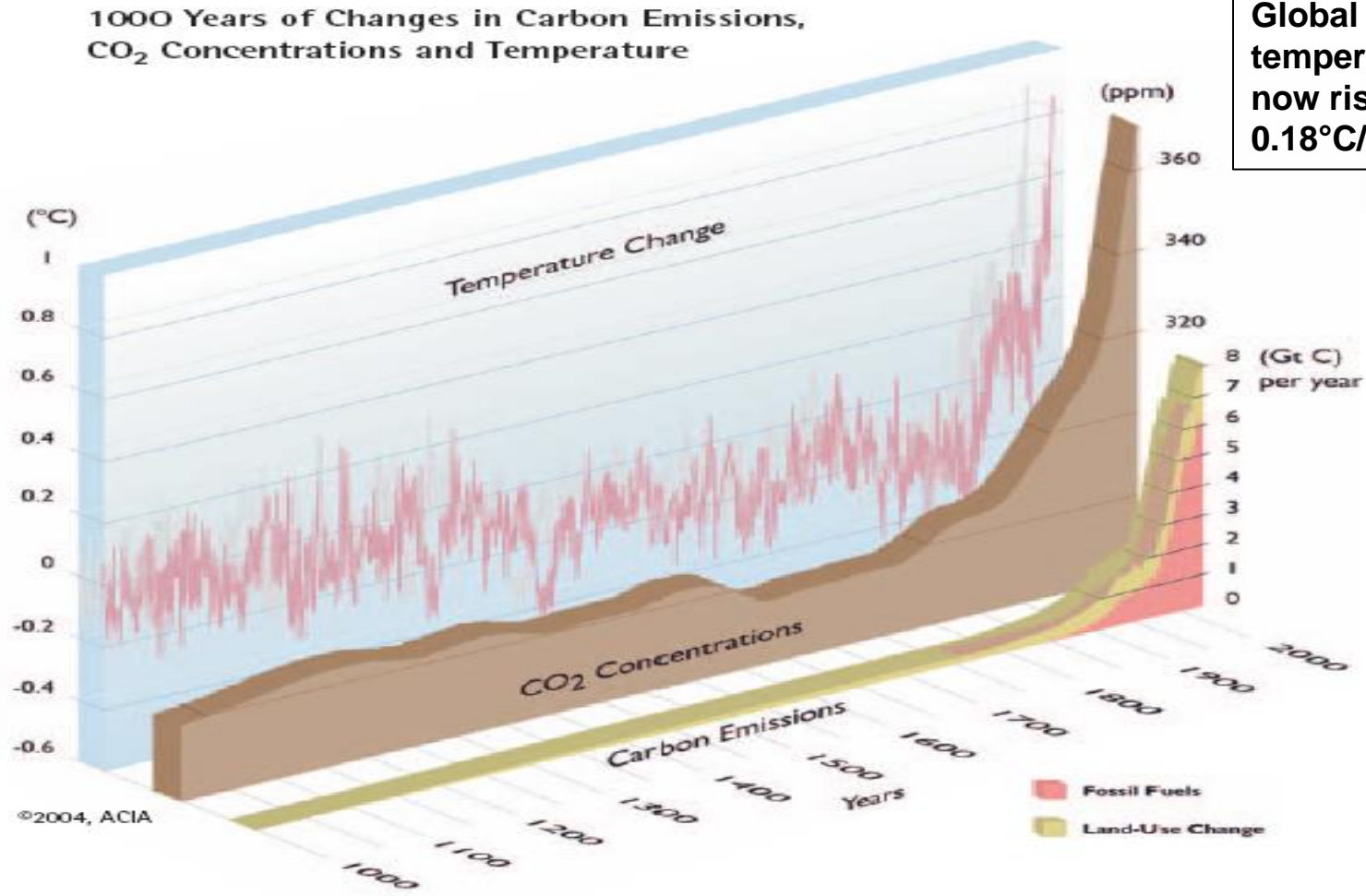
Rajarshi Chakraborty  
Project Secure Himalaya  
UNDP India



# What is CC and change? Really?

- Climate: the aggregate of weather patterns including averages and extremes, timings, etc. Therefore CC generally refers to changes in these patterns.
- Global average temperature, among other things, is a way to detect or measure these changes in patterns
- In spite of the controversies and criticisms from individuals and organizations alike, one fact is beyond doubt, that **our climate is changing and we are the ones to be held responsible.**

# Everything is related- greenhouse emissions, CO<sub>2</sub> concentrations and temperature increase!



Global temperatures are now rising @ 0.18°C/decade

# The Other Symptoms of climate change

- Erratic weather patterns
- Rising sea levels
- Increased forest fires and desertification
- Melting of polar ice caps and glaciers
- Changes in crop productivity



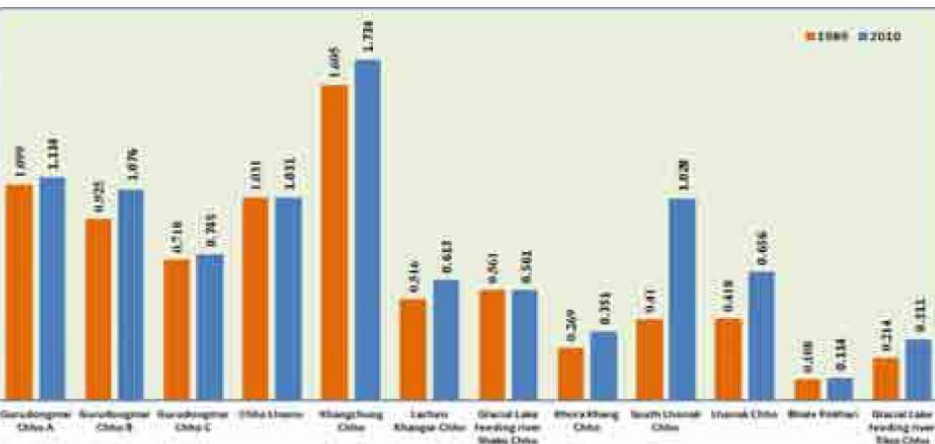


# Glacier melting- example from Rongbuk glacier, Tibet



# Glacial Lake Outburst Flood (GLOF)- A ticking timebomb

- Formation of lakes caused by melting glaciers and their gradual increase in size pose serious flood threats for downstream areas.
- Many glacial lakes in Sikkim have witnessed size increase due to melting glaciers and even famous wetlands like one of the lakes in the Gurudongmar complex, has increased five times in size since 1965.



# Ecological impacts of climate change

- Any change in climate automatically affects the ecosystem and all living beings dependent on it.
- As a result of climate change, species and ecosystems are experiencing changes in:
  - ranges
  - timing of biological activity
  - growth rates
  - relative abundance of species
  - cycling of water and nutrients
  - the risk of disturbance from fire, insects, and invasive species





# Ecological impacts of climate change-II

## **Range shifts**

Mosquitoes

Snakes and frogs

Crops

## **Biological calendar**

Irregular flowering/ fruiting

Slow growth

Loss in productivity

## **Relative abundance**

Dominance of heat  
resisting species

Loss of species diversity

## **Other potential impacts**

More forest fires

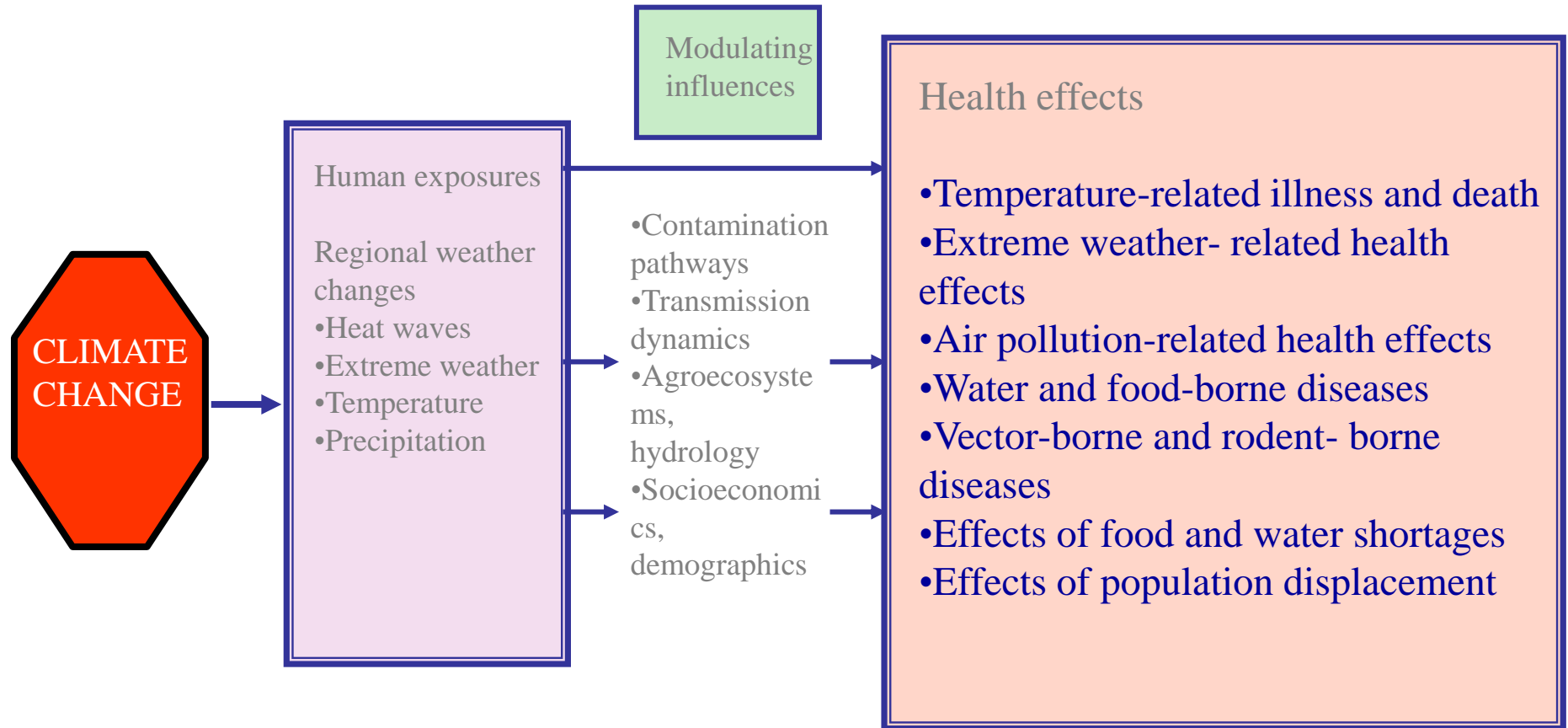
Spread of invasive  
species



# What future changes in weather are we looking at?

Phenomenon and Direction of Trend	Likelihood that trend occurred in 20 <sup>th</sup> Century	Likelihood of a Human Contribution to Observed Trend	D	Likelihood of Future Trend Based on Projections for 21 <sup>st</sup> Century
Warmer and fewer cold days and nights over most land areas	Very likely	Likely	*	Virtually certain
Warmer and more frequent hot days and nights over most land areas	Very likely	Likely (nights)	*	Virtually certain
Warm spells / heatwaves: frequency increases over most land areas	Likely	More likely than not		Very likely
Heavy precipitation events: frequency (or proportion of total rainfall from heavy falls) increases over most areas	Likely	More likely than not		Very likely
Area affected by droughts increases	Likely in many regions since 1970s	More likely than not	*	Likely
Intense tropical cyclone activity increases	Likely in many regions since 1970s	More likely than not		Likely
Increased incidence of extreme high sea level	Likely	More likely than not		Likely

# How does climate change affect our health?





What can ordinary citizens do?

**R**

*Reduce, Reuse,  
Recycle, Raise  
awareness*

**S**

*Save energy  
Stop forest loss*

**V**

*Volunteer*

**P**

*Promote renewable  
energy  
Plant trees*

**Climate change is real,**  
it is happening **right now**. It is  
the **most urgent threat** facing  
our entire species, and we need  
to **work collectively together**  
and **stop procrastinating**.

Leonardo DiCaprio  
*2016 Oscar acceptance speech*







