



HEROES: *Monitoring the change*

Climate Change 2013: The Physical Science Basis

Working Group I contribution to the IPCC Fifth Assessment Report

Observed warming(1951-2010): 0.6°C - 0.7°C

Expected warming (21st Centaury): 1.5°C

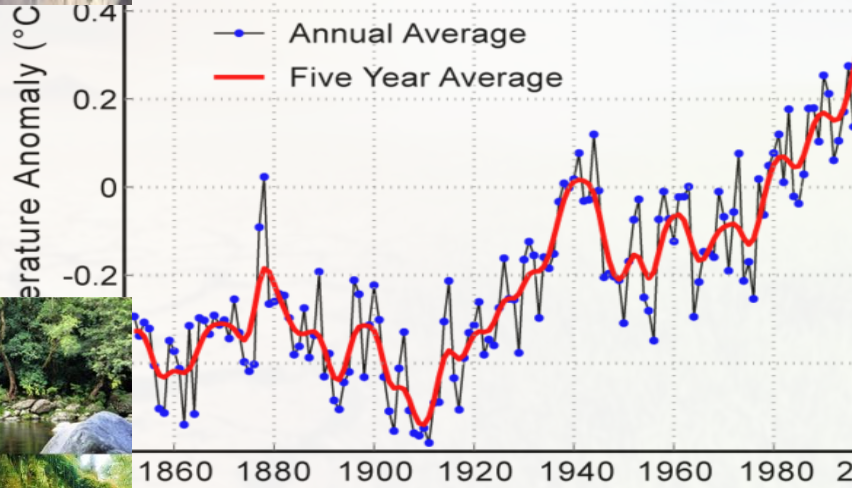
Further Information

www.climatechange2013.org

Climate Change



Global Temperatures



16 cm : 1901-2010

20-30% -(1.5.2-5) :
1980-1999



75-250 million : 2020



BIODIVERSITY



Bhutan: Impacts of Climate Change

POTENTIAL IMPACTS OF CLIMATE CHANGE



Agriculture:

80% of the Bhutanese practice subsistence farming. Climate Change can cause changes in temperature and precipitation patterns and increase the vulnerability of a large group of this population.

Water Resources:

Changes in the hydrological cycle such as lower winter flows in streams and intense monsoon rains may affect drinking water and supplies as well as hydropower generation



Forests & Biodiversity:

Increasing temperatures may cause species and ecosystems to shift and species at higher elevations and other species unable to migrate to become extinct.



Natural Disasters:

Rapidly retreating alpine glaciers is increasing the risk of 'glacial lake outburst floods' endangering life and property downstream. Increasing flash floods may also be caused by intensifying



Human Health:

Rising Temperatures may cause the spread of tropical diseases and heat stress into higher altitudes.



2013



KUENSEL ONLINE

Bhutan's daily news site

Download Kuensel Calendar - Wood Male Horse Year

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Come

MAY 31, 2013 - 0

ZOOM: + - Reset

Paro farmers preoccupied with army worms



A major distraction: An army worm feeds on paddy sapling

So much so that the primary election has taken a backseat in their order of priorities

Many farmers in Paro valley are more concerned about their paddy fields, which are swarming with the army worm, than the primary elections.

"The parties came to campaign in our locality, but I couldn't attend because the armyworms had flooded my field," a 47-year-old farmer said.

A farmer said that, if the agriculture department issues insecticides before the day of election, they want to spend their time in spraying the insecticides, rather than going to vote, because a single day can make a great difference in their field.

In Paro valley, even paddy field, maize fields and oat field have come under attack by the
[s/Calendar.pdf](#)

■ Crop Damage in %



Source: MoAF

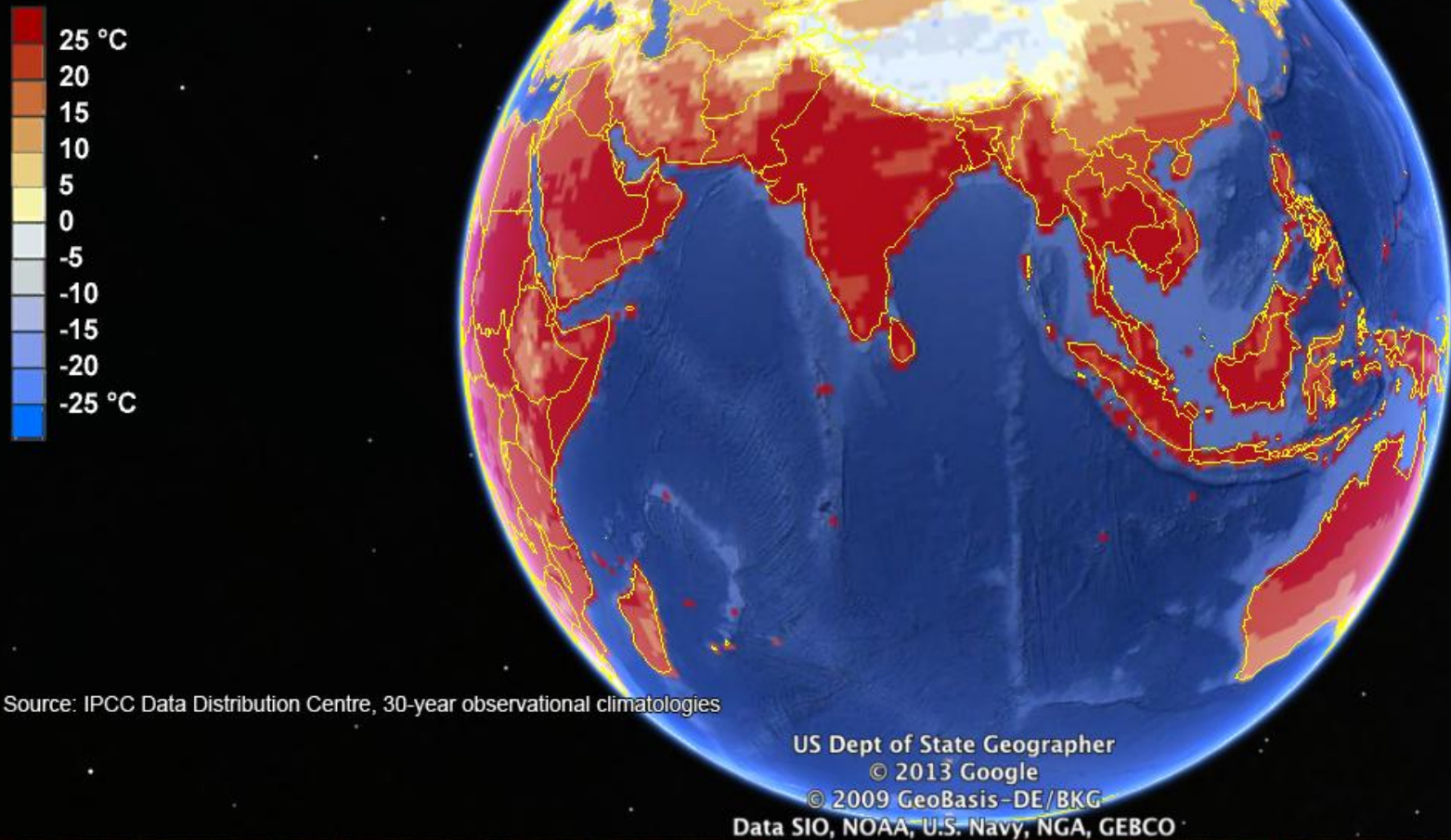
Knowing The Best
Choice

Adaptation
Mitigation



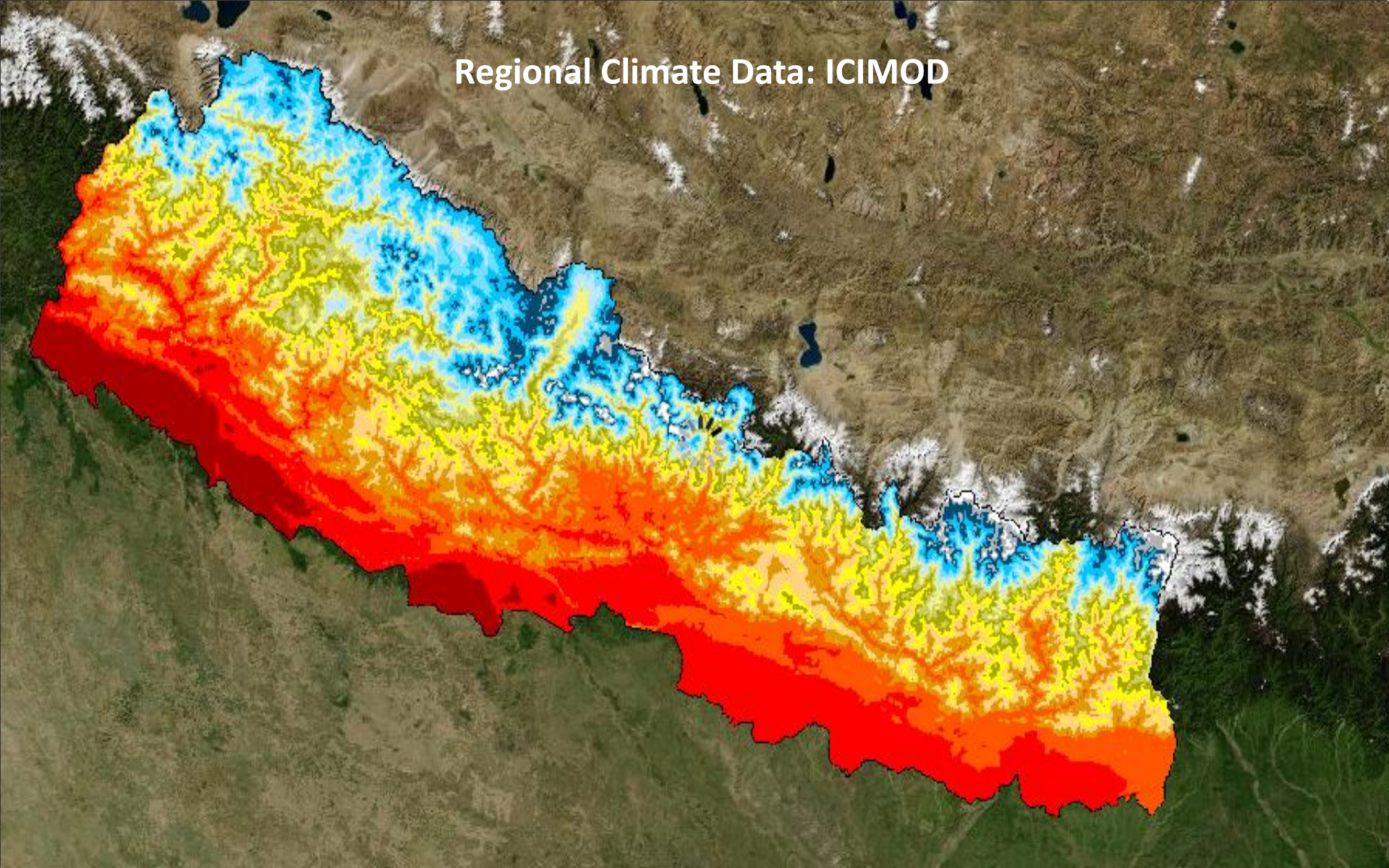
1961-1990

Historical Mean Temperature



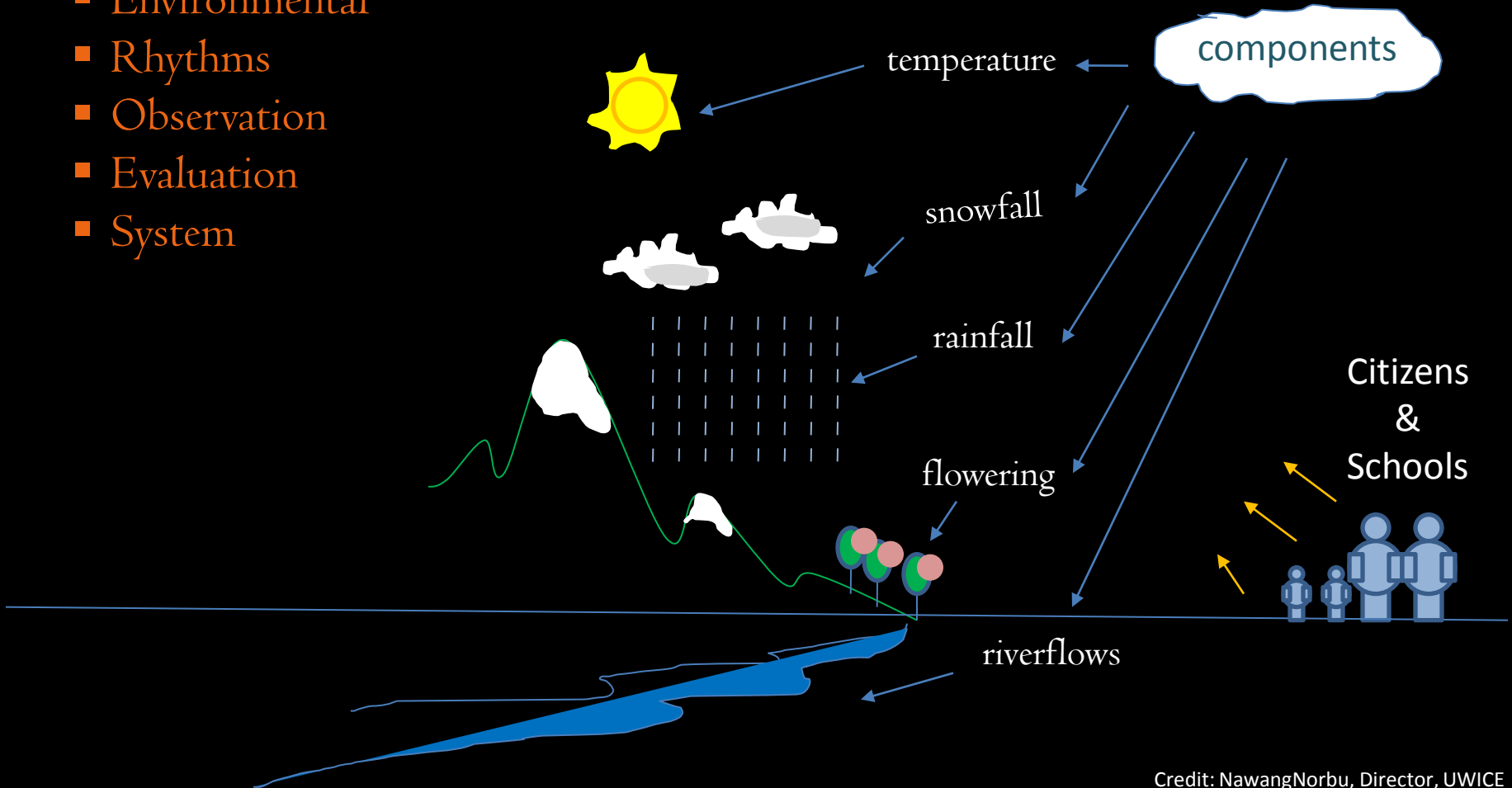
Google

Regional Climate Data: ICIMOD



HEROES:

- Himalayan
- Environmental
- Rhythms
- Observation
- Evaluation
- System

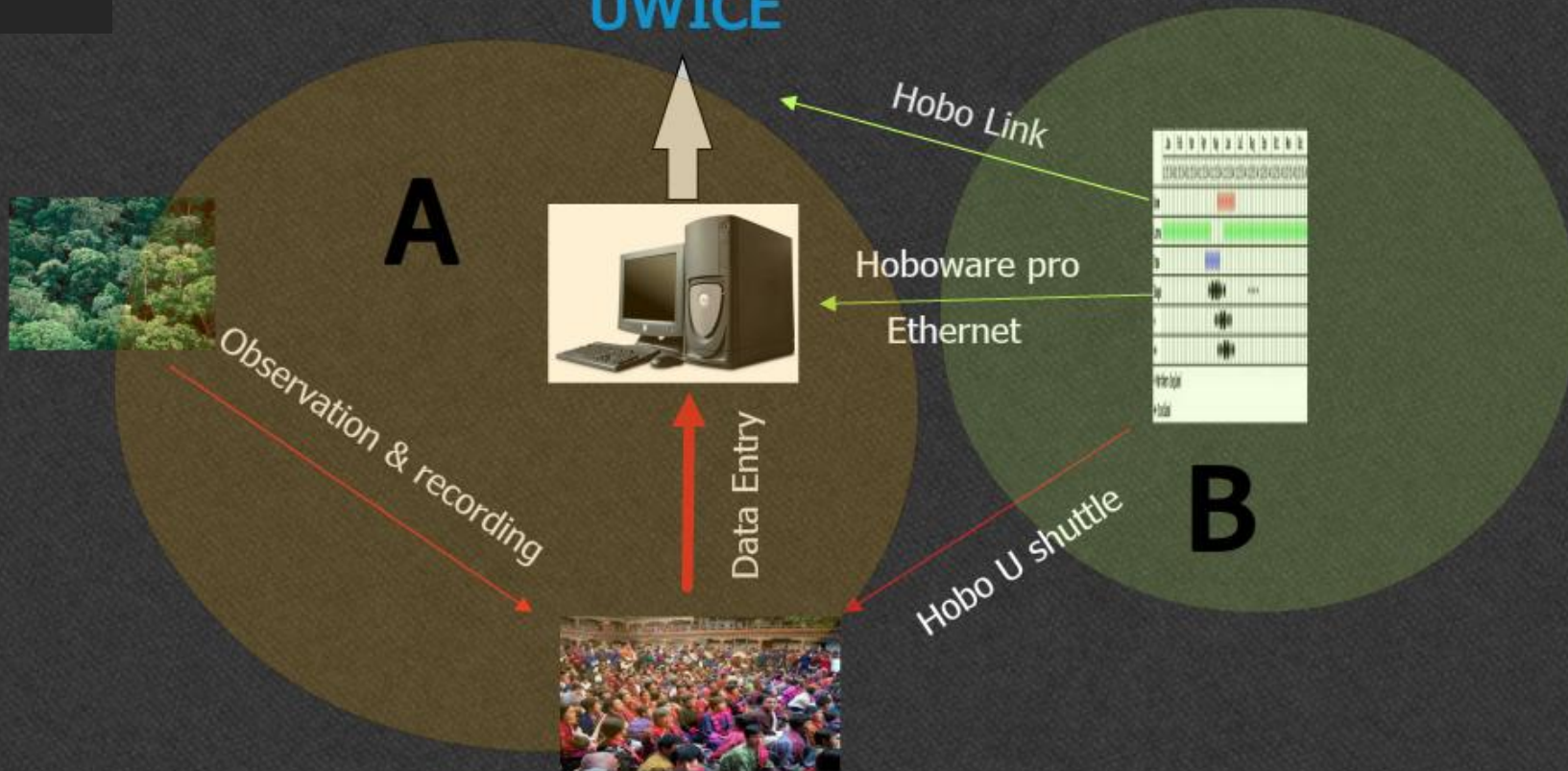






STRUCTURAL & OPERATIONAL FRAMEWORK OF HEROES

UWICE





Phenology Data

Climate data

Capacity
development



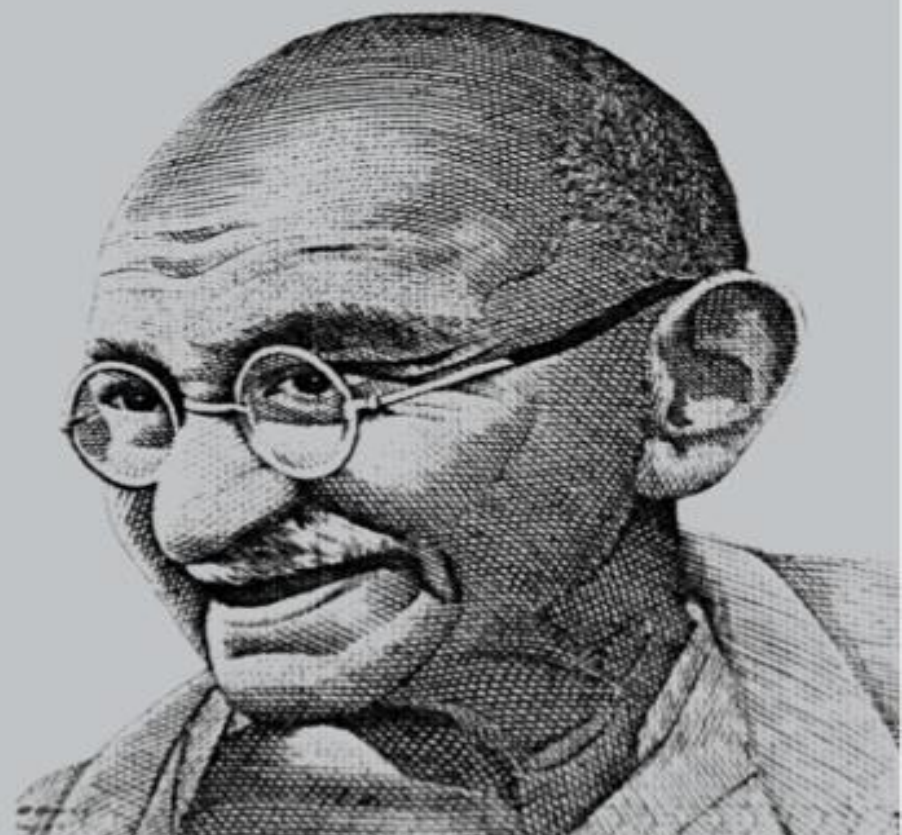
Applications



"A technological society has two choices. First it can wait until catastrophic failures expose systemic deficiencies, distortion and self-deceptions..."

Secondly, a culture can provide social checks and balances to correct for systemic distortion prior to catastrophic failures."

- Mahatma Gandhi



THANK YOU
