



Adaptation at Scale Prize Project

Technical Support Workshop

Module 1

General Climate Change Information in Nepal



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New Partners' General Profile

Overall Theme: CCA

Project Objective: CB of more people & more organization and policy influence and impact

Project Outcome: informed, aware, capacitated and adaptive HHs, groups, villages and province

Partners' brief introduction

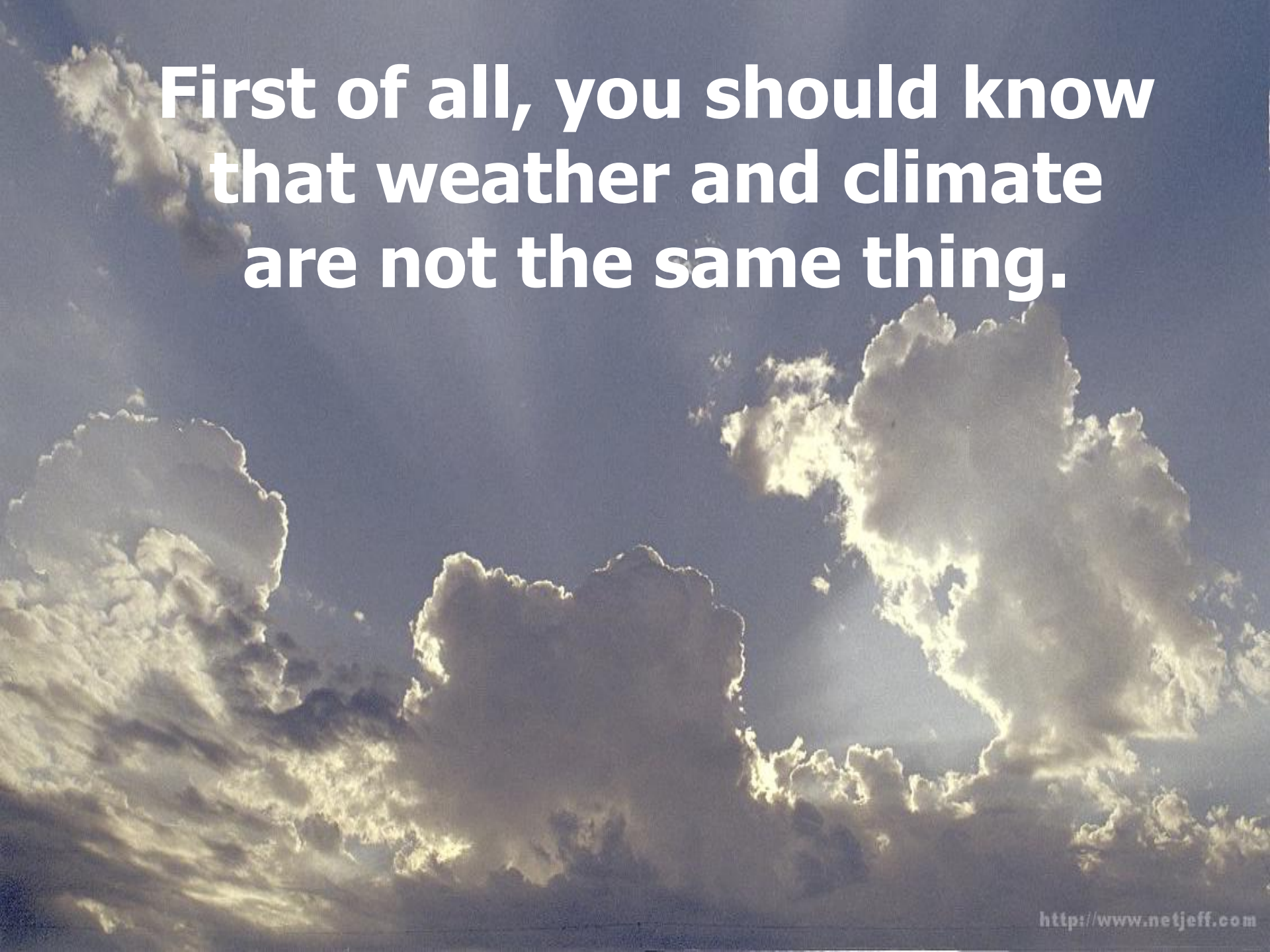
SN	Focus	Objective	method	Expected outcome
1	CCA, SD and food security	To build capacity and knowledge	Scaling-up	Enhanced capacity of partners to do VIA
2	Community mobilization and leadership development	To mobilize community for taking leadership role in CCA	Scaling-up	a) Awareness raised, b) Risk reduced, c) Social capital formed,
3	CBA, participatory adaptation planning	To work in a participatory and continuous manner	Scaling-up by promoting direct and sustained participation of local people in adaptation activities	a) Aware and knowledgeable coordination committee, and b) strengthened decision making process
4	IAPA	To improve sanitation (WASH)	Improve well	Clean, green and

Partners' general profile

SNO	Plan focus	objective	method	outcome
5	Capacity development, policy advocacy for EbA	Promote self-reliance of vulnerable people by making their ecosystem management more adaptive	Scaling-up by spreading out EbA to other neighboring districts	Informed, inclusive, coordinated and policy guided community
6	Climate smart water (multiple use)and agriculture	Introduce Climate adaptation	Water management in all 7 districts	Aware, networked and capacitated local organization
7	Capacity building of VC	To use different ideas and tools for CB	Inclusive capacity development	Knowledgeable and skilled local communities
8	Livelihood improvement	To build capacity and skill of people	More groups to be reached out through CB	HHs , groups and schools made more adaptive

General Information on climate change

GLOBAL



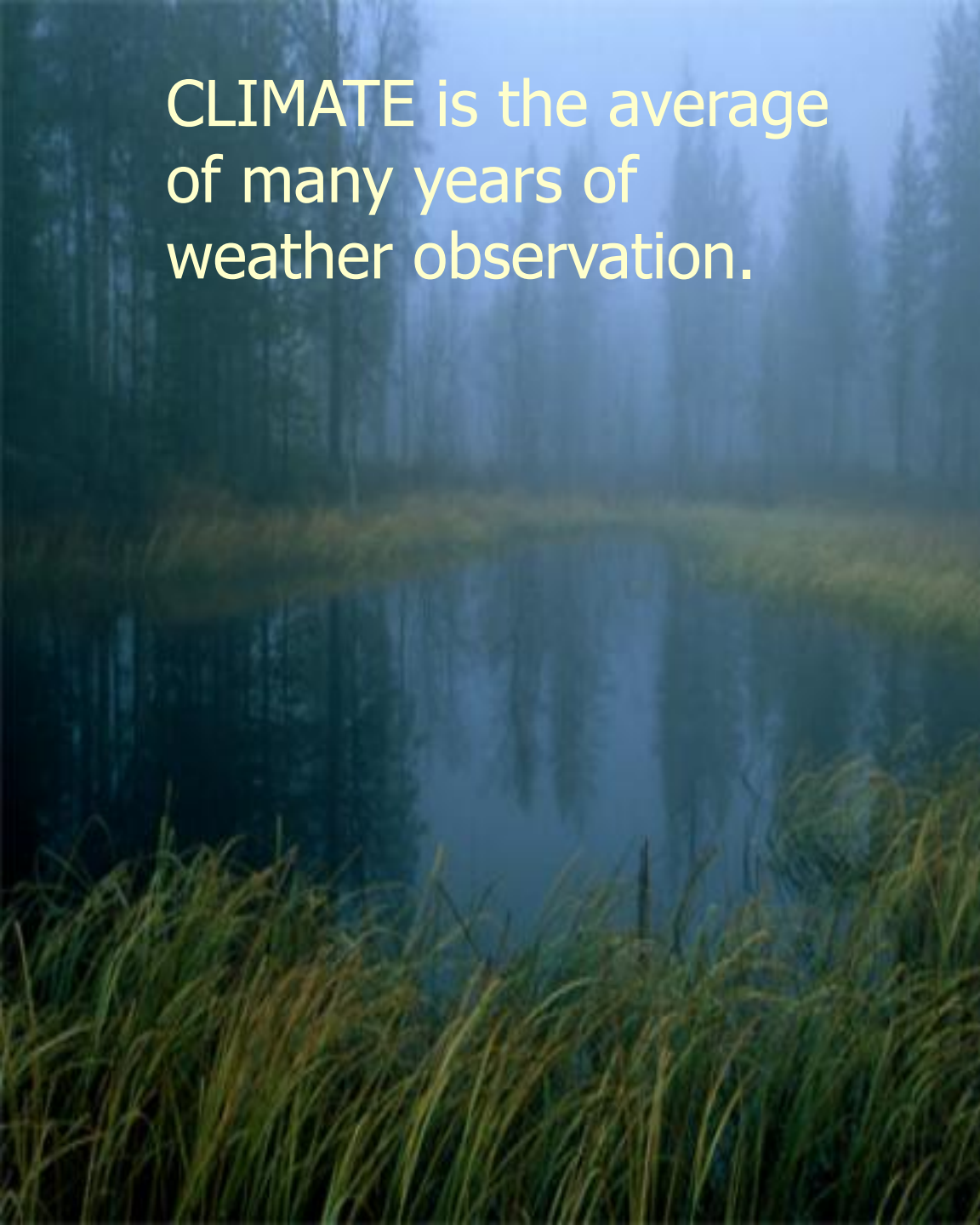
**First of all, you should know
that weather and climate
are not the same thing.**

WEATHER IS:

- Short term
- Limited area
- Can change rapidly
- Difficult to predict



WEATHER is what's
happening outside your
window right now.

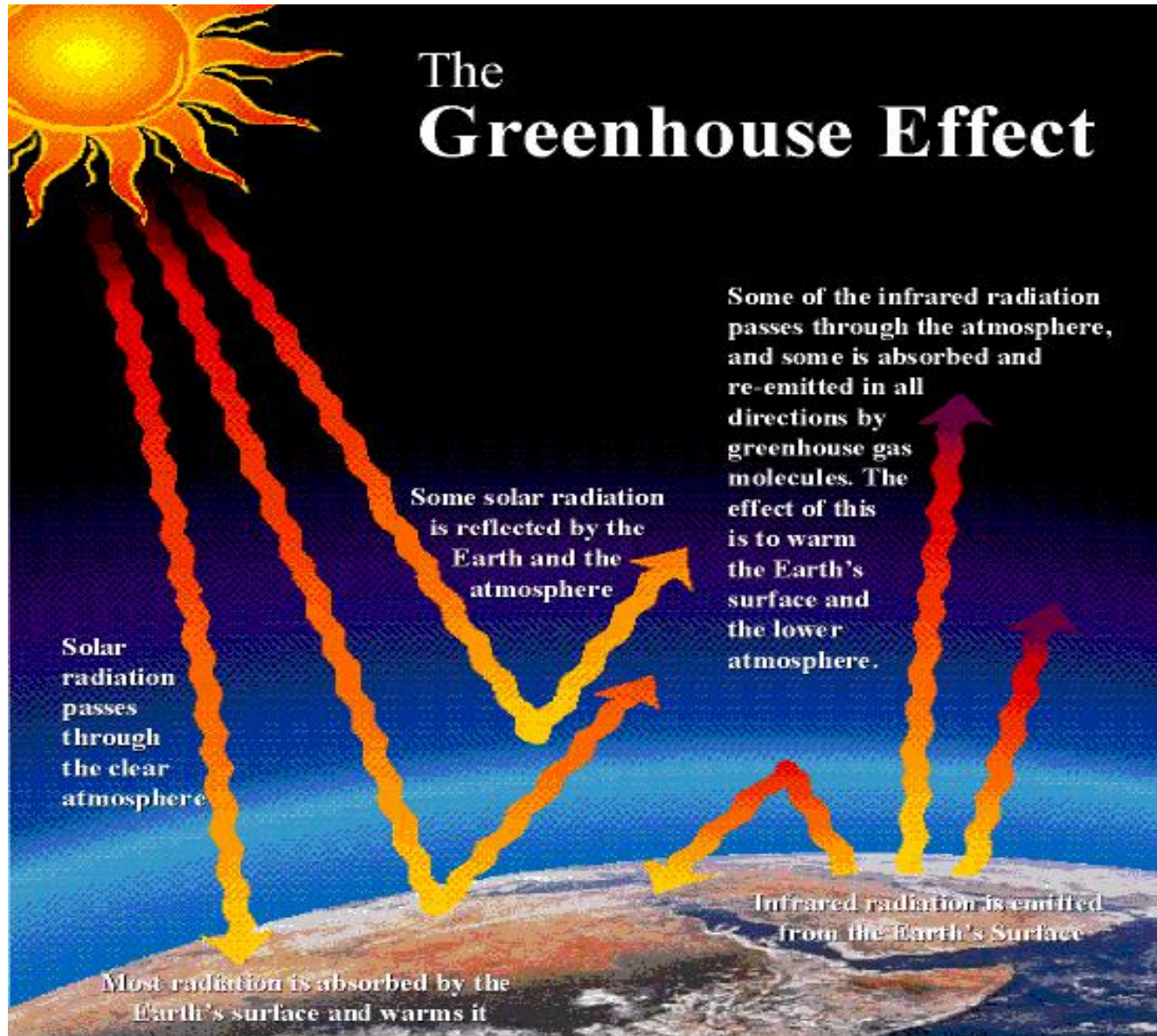
A misty forest scene with a pond and tall grasses in the foreground. The text is overlaid on the top left of the image.

CLIMATE is the average
of many years of
weather observation.

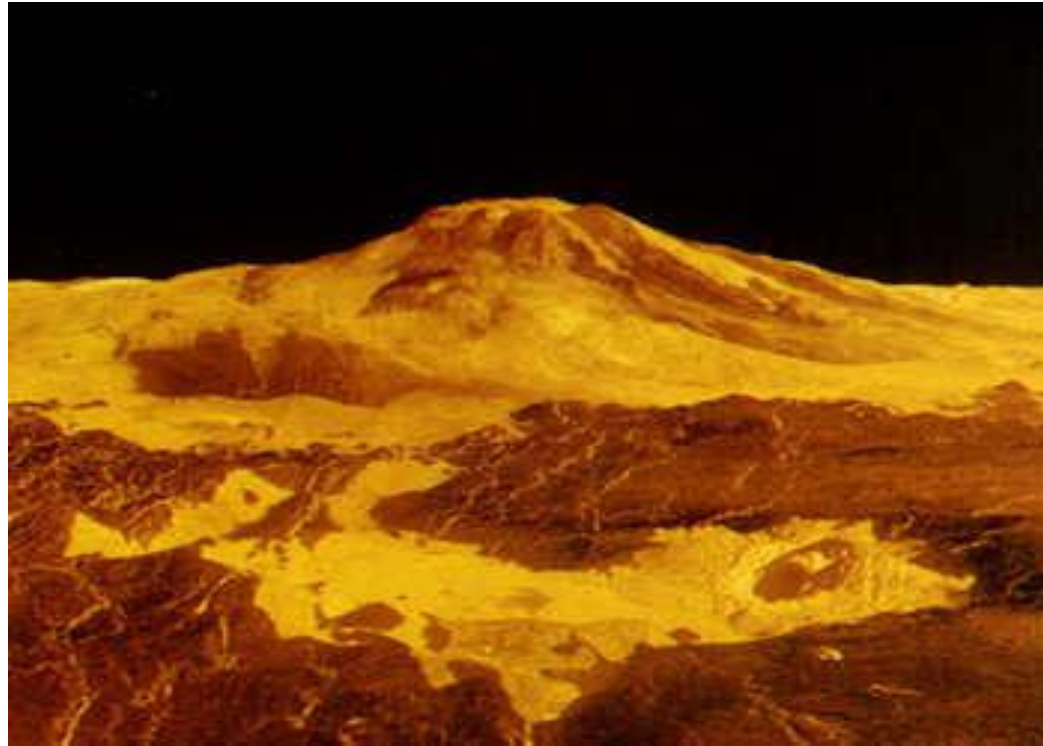
CLIMATE IS:

- Long term
- Wide area
- Seasonal changes
- Measured over long spans of time

Greenhouse Gases are essential to our climate




Planets with abundant greenhouse gases are very hot



The average temperature on Venus is about 855° F!

A number of greenhouse gases occur naturally in the Earth's atmosphere

- Water vapor
- Carbon dioxide
- Methane
- Nitrous oxide

The image features a clear blue sky with a large, fluffy white cloud in the center. In the bottom left corner, two tall, dark industrial smokestacks are visible, emitting a plume of white smoke that rises and spreads across the sky. The text is overlaid on the sky, with the first part in black and the second part in blue.

The greenhouse gas content of the atmosphere is being altered by human activity. The result of this change is global warming.

**Evidence of Climate
Change comes from many
different sources.**



Climate change in Nepal: quick facts & trends

- Nepal is one of the 10 most vulnerable country due to climate change impacts ;
- “ the rate of warming is more than five times faster than warming globally," (Lau et al, NASA, 2006);
- Glaciers in the Nepal have been melting one of the fastest;
- High-elevation plants and animals are losing habitat area as they move higher with some ‘disappearing’;
- Availability of water for irrigation, drinking and ecosystems is being seriously affected;
- Floods especially flash floods are more frequent and damaging;
- More lives and livelihoods are being lost (more than 130 in 2017).
- **Agriculture production decreasing and quality of environment degrading**

Climate change Impacts in Nepal

**Temperature, Rainfall and
Glaciers (Snow & Ice)**

Temperature predictions ($^{\circ}\text{C}$ relative to 1970-1999 mean) from GCM projections (Source NCVST, 2009) in Western Nepal

Time Period	Annual	Pre-monsoon (MAM)	Monsoon (JJA)	Post Monsoon (SON)	Winter (DJF)
2030s	1.4 (0.8-2.0)	1.8 (0.8-2.1)	1.4 (0.5-2.2)	1.1 (0.5-2.0)	1.5 (0.7-2.8)
2060s	2.8 (1.9-3.8)	3.0 (2.2-4.4)	2.3 (1.4-3.3)	2.6 (1.8-4.0)	3.4 (1.7-4.5)
2090s	4.9 (3.7-5.9)	5.3 (4.0-6.5)	4.4 (2.8-5.9)	4.3(3.3-5.5)	5.6 (3.7-6.2)

Table 3: Climate Change in mid-century (2039-2069) compare to base line (1961-1990)

	Precipitation Change (%)		Temperature Change (°C)	
	West	East	West	East
Winter	-0.6	-9.6	2.2	2.1
Pre-Monsoon	1.0	-2.1	1.7	1.8
Monsoon	-8.4	-18.1	2.1	1.9
Post-monsoon	5.7	-5.9	2.2	2.0
Annual	-4.1	-13.2	2.0	1.9

(Source: DHM/APN/GCISC, 2007)

Climate Change Projections for Nepal

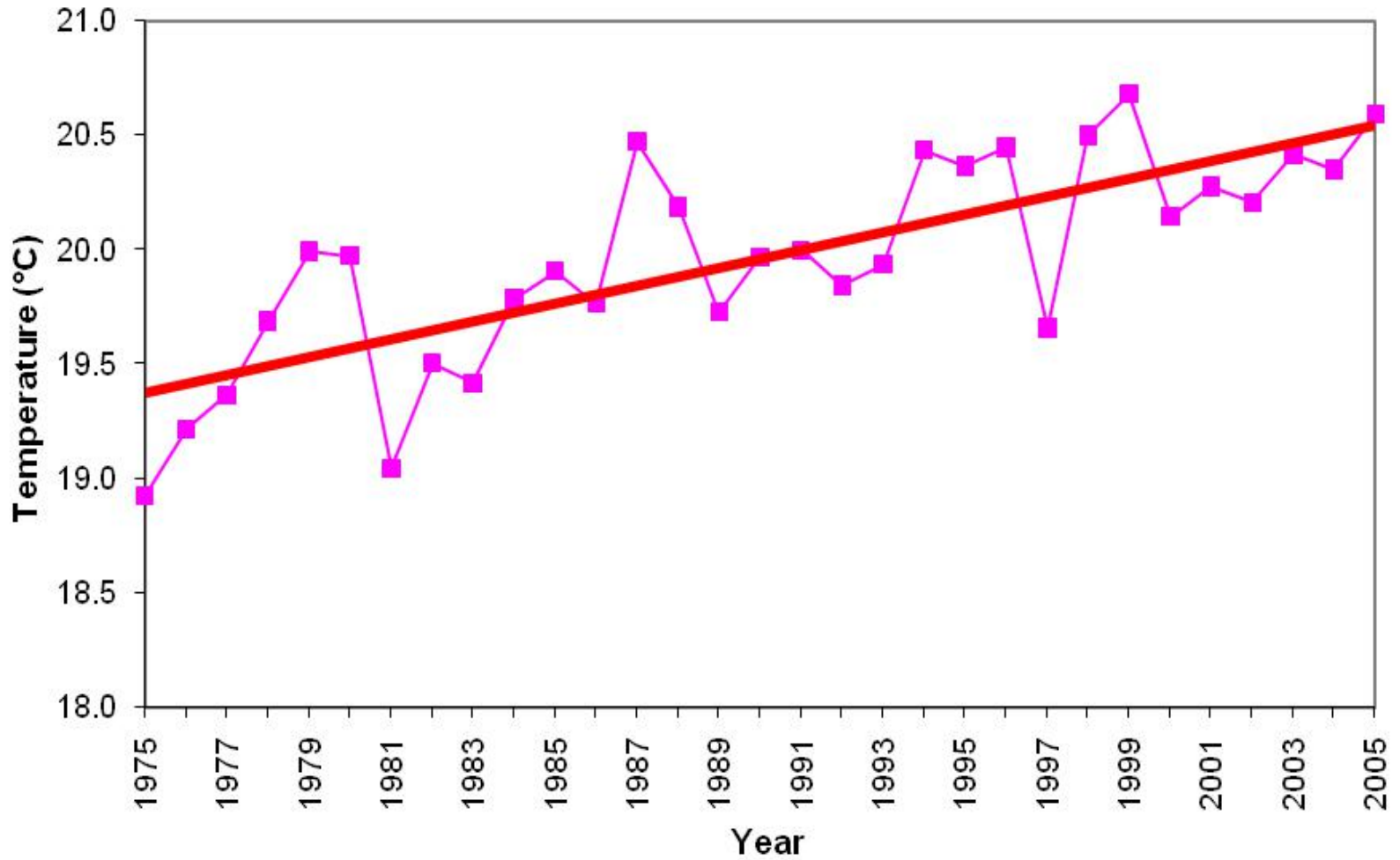
Table 2.5: GCM Estimates for temperature and precipitation changes in Nepal

Year	Temperature change (°C) mean (standard deviation)			Precipitation change (%) mean (standard deviation)		
	Annual	DJF ⁴	JJA ⁵	Annual	DJF	JJA
<i>Baseline</i>				<i>1433 mm</i>	<i>73 mm</i>	<i>894 mm</i>
<i>average</i>						
2030	1.2 (0.27)	1.3 (0.40)	1.1 (0.20)	5.0 (3.85)	0.8 (9.95)	9.1 (7.11)
2050	1.7 (0.39)	1.8 (0.58)	1.6 (0.29)	7.3 (5.56)	1.2 (14.37)	13.1 (10.28)
2100	3.0 (0.67)	3.2 (1.00)	2.9 (0.51)	12.6 (9.67)	2.1 (25.02)	22.9 (17.89)

Source OECD, 2003

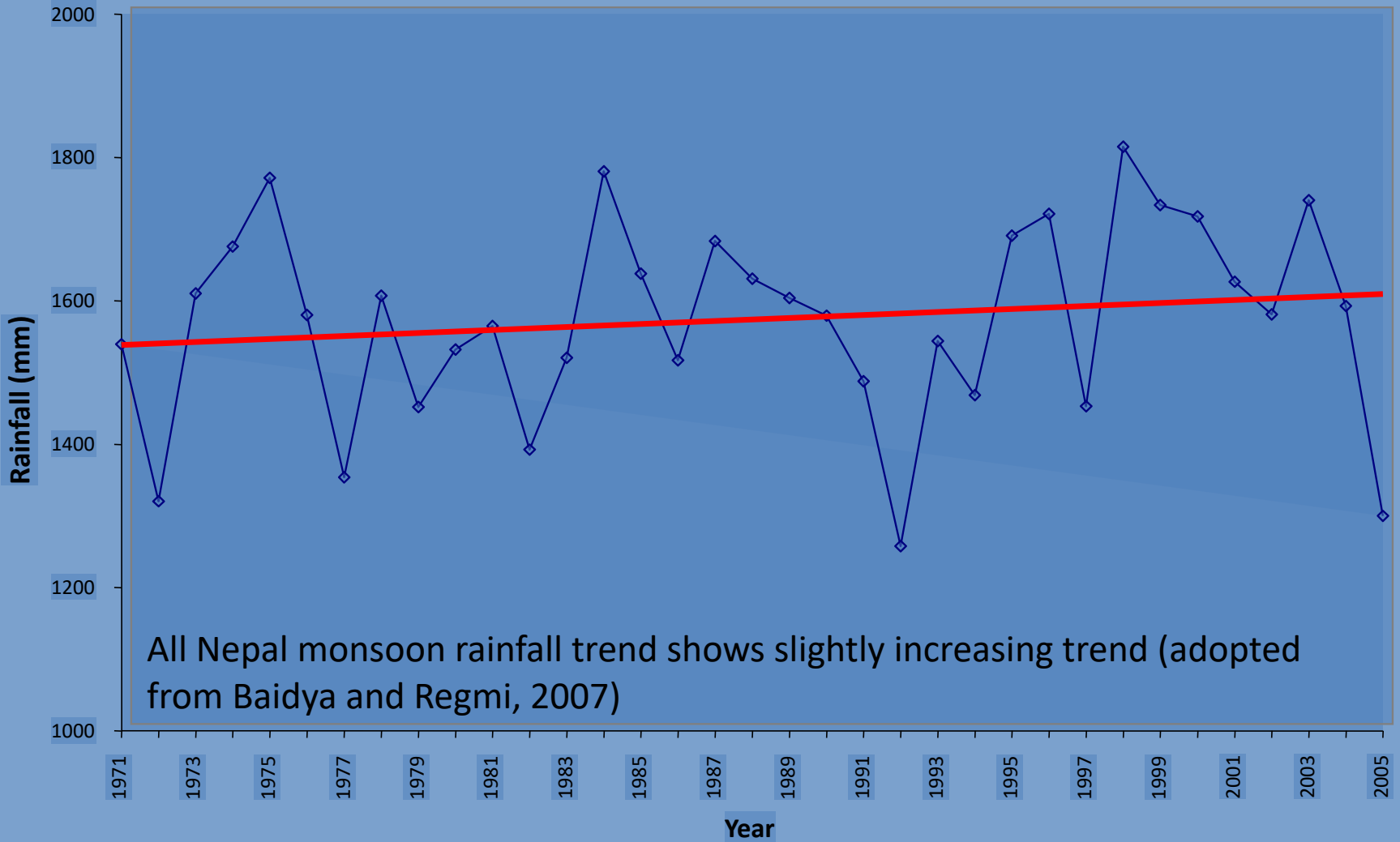
All Nepal Temperature Trend

$$y = 0.039x + 19.33$$
$$R^2 = 0.597$$

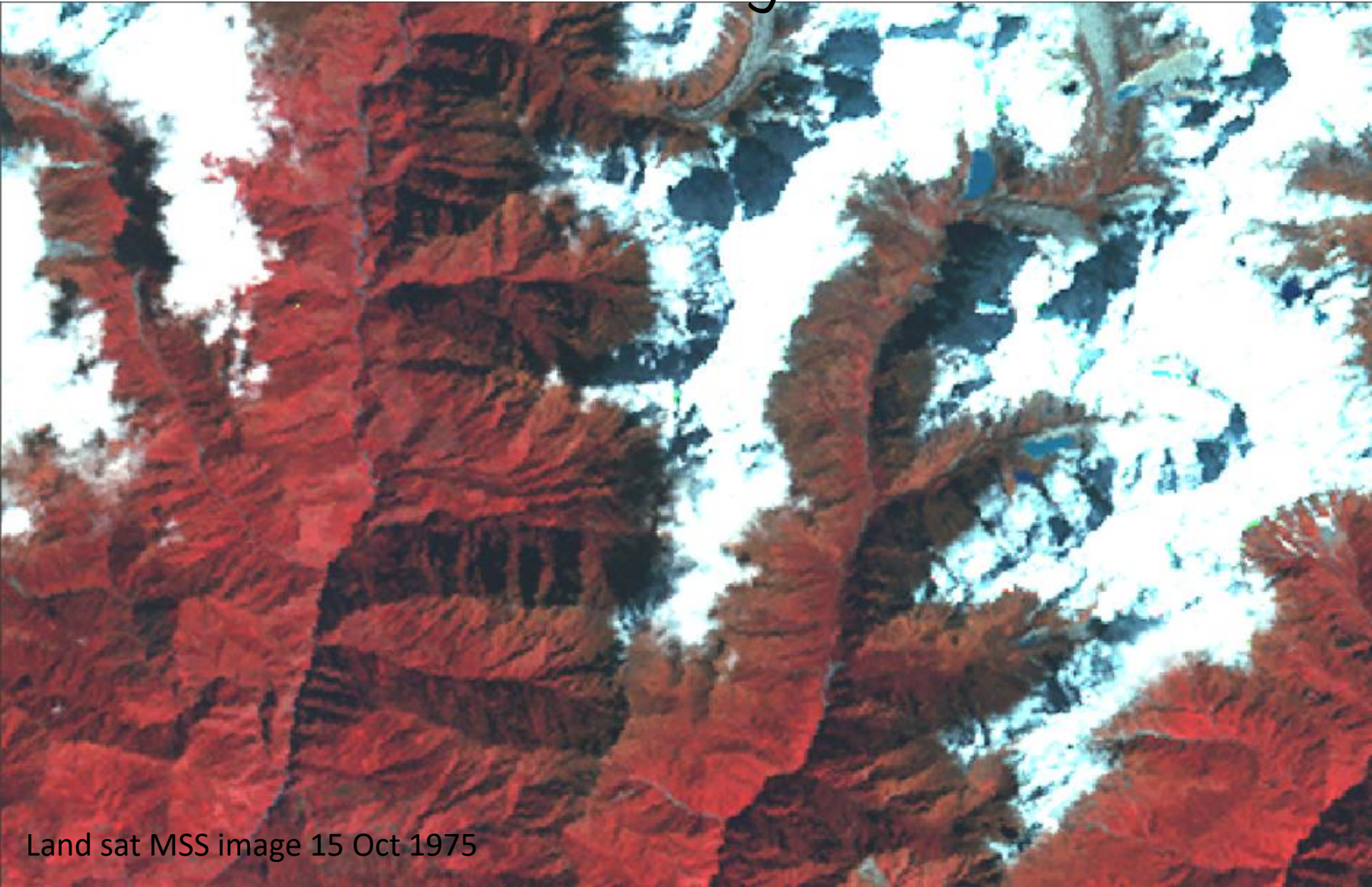


From Department of Hydrology and Meteorology (DHM)

All Nepal monsoon rainfall trend (1971-2005)



Snow-cover change in the Nepal Himalaya



Land sat MSS image 15 Oct 1975

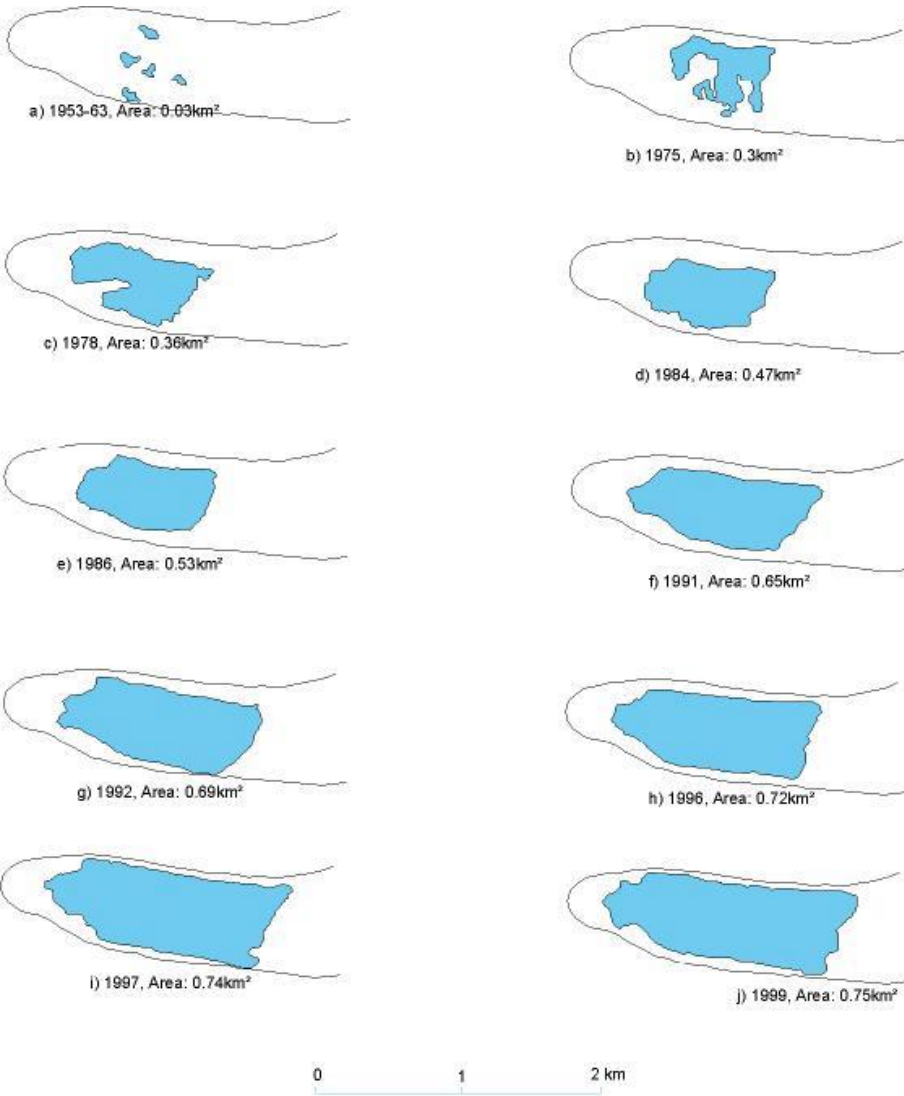
Snow-cover change in the Nepal Himalaya



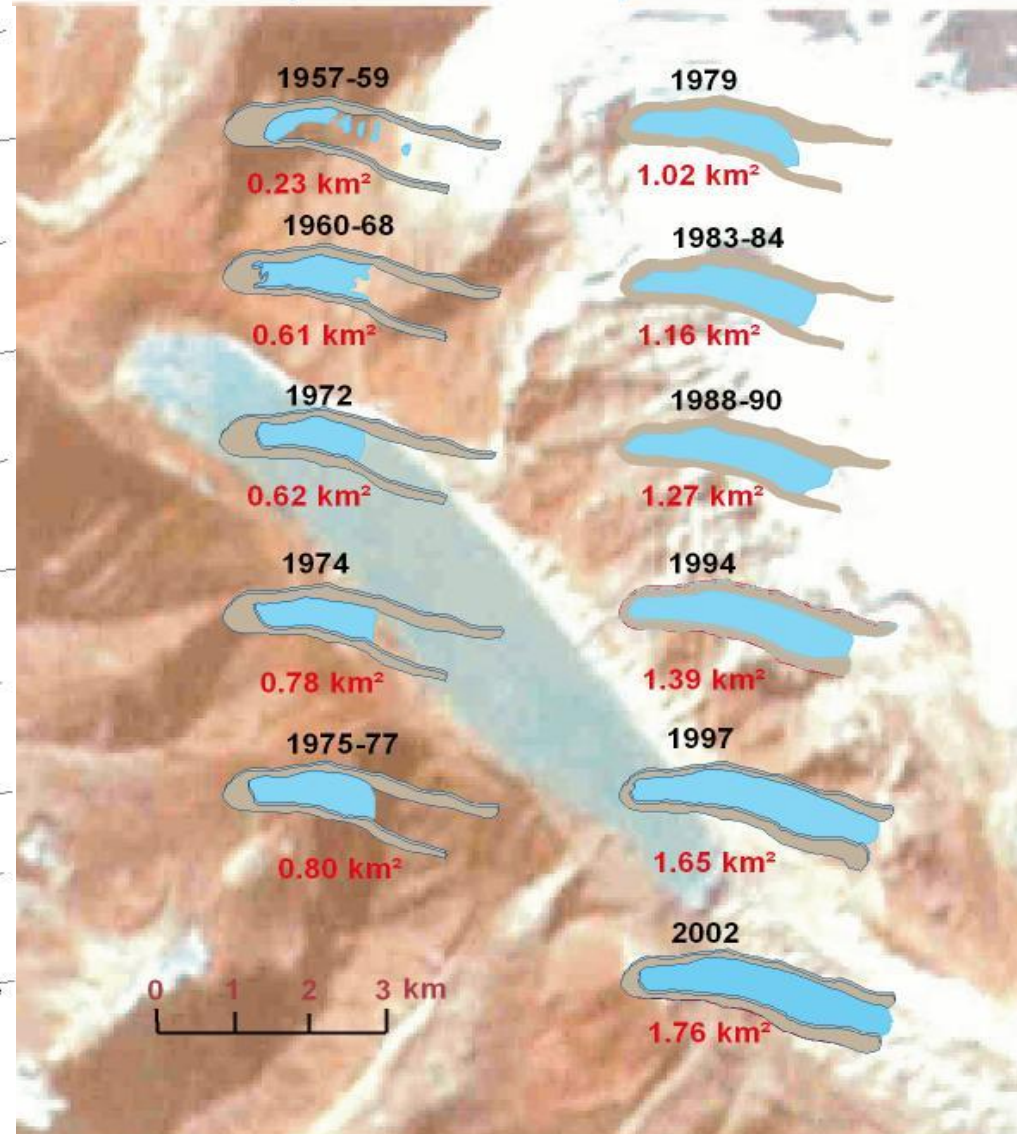
ASTER image of Feb 2006

Glacial lakes are forming and expanding

Development of Imja Glacial Lake



Development of Tsho Rolpa Glacier Lake



Glacial lakes studied in the Nepal Himalayas



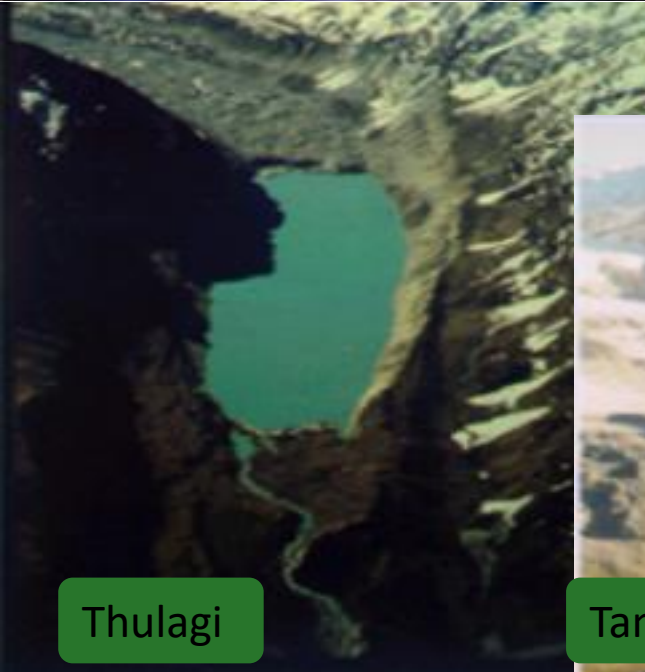
Lower Barun



Imja



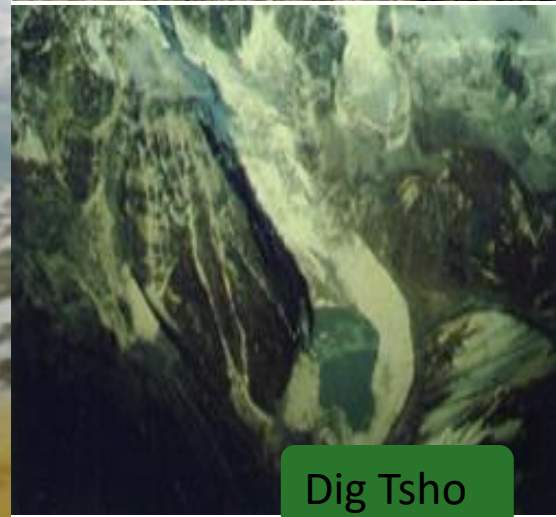
Tsho Rolpa



Thulagi

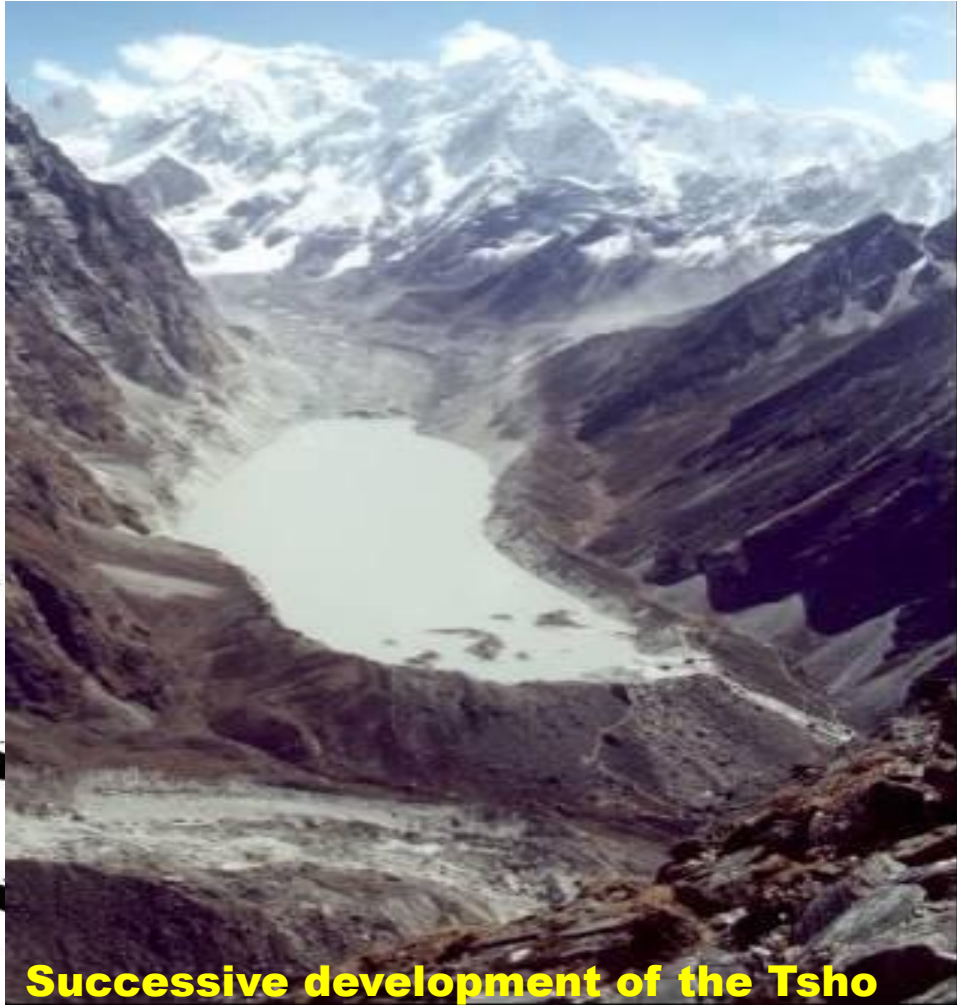


Tam Pokhari



Dig Tsho

Retreat of Trakarding Glacier & Growth of Tsho Rolpa Lake



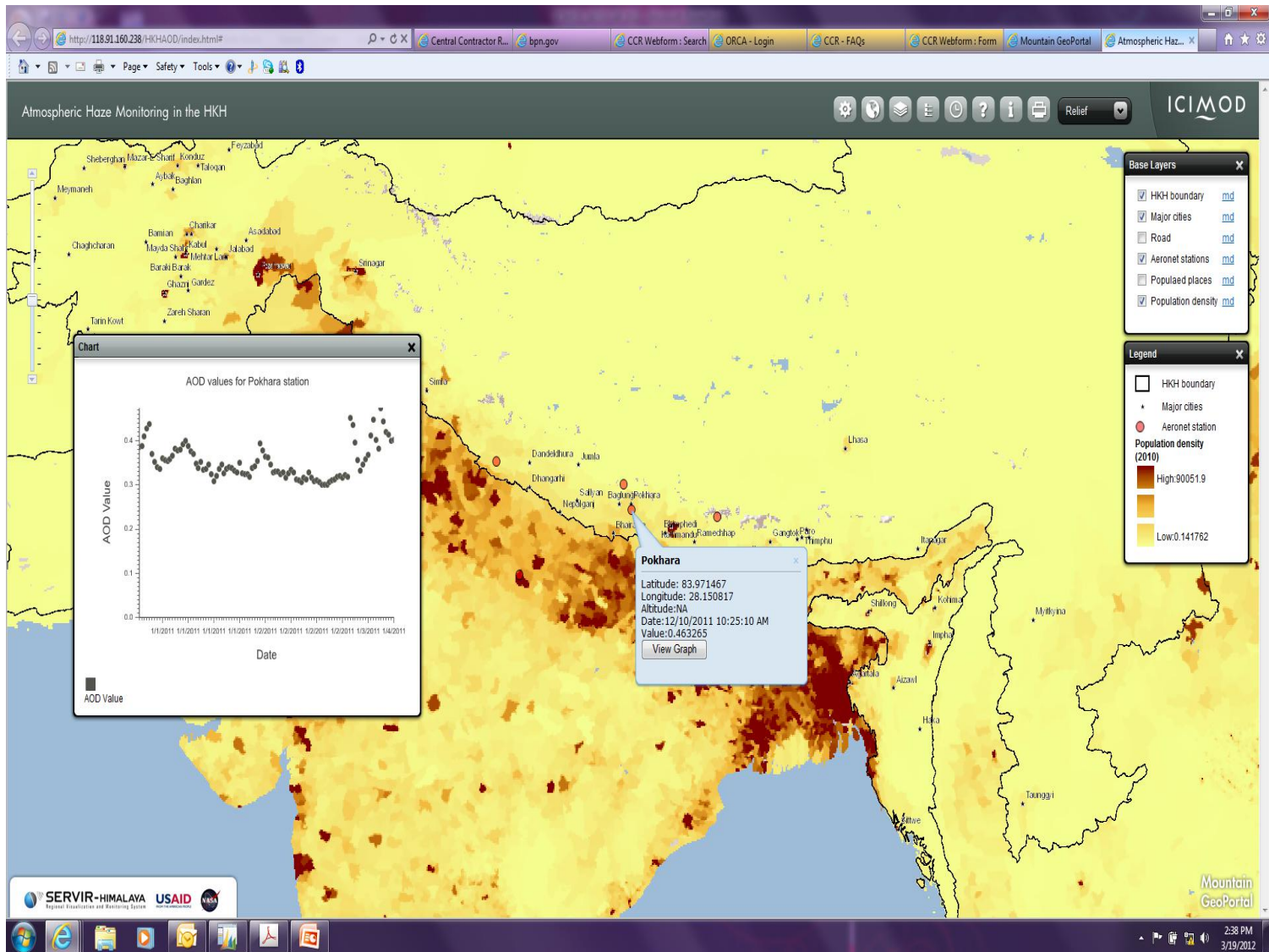
Successive development of the Tsho

Aerial picture of glacier melting process in Nepal



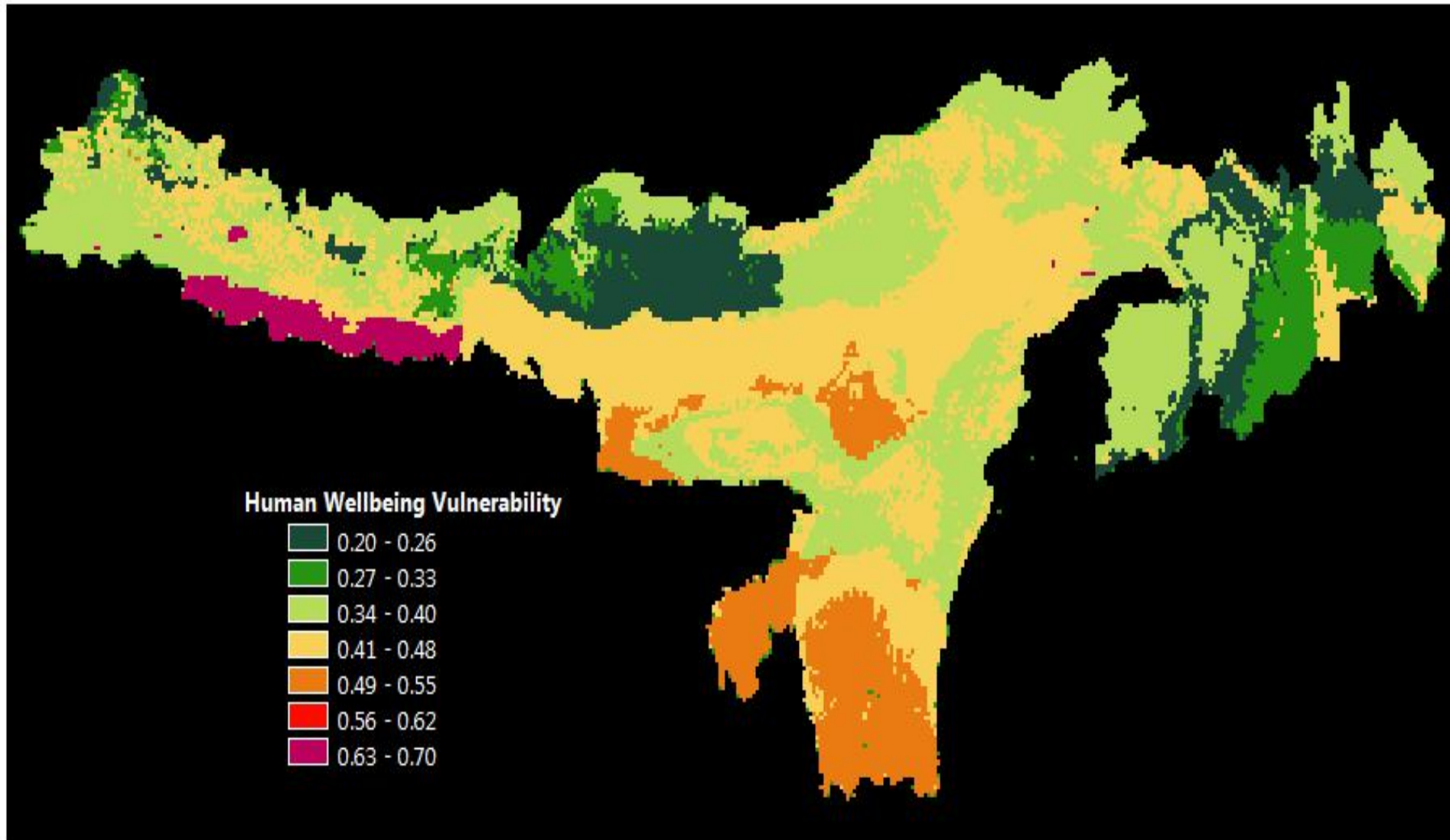
Flight reconnaissance observation carried out on 24th April 2009, in the Eastern Himalaya covering Tama Kosi Basin, Dudh Kosi Basin and surrounding areas.

Air Quality in Nepal & the SA Region



Vulnerability assessment in Eastern Himalaya:

Human wellbeing index is projected to be worst in Nepal & best in Bhutan



A lush green forest with a waterfall cascading over rocks. The waterfall is the central focus, with water flowing over several tiers of dark, mossy rocks. The surrounding vegetation is dense and vibrant green, with various types of trees and bushes. The lighting is bright, suggesting a sunny day. The overall scene is peaceful and natural.

THANK YOU FOR YOUR KIND
ATTENTION

Q&A?