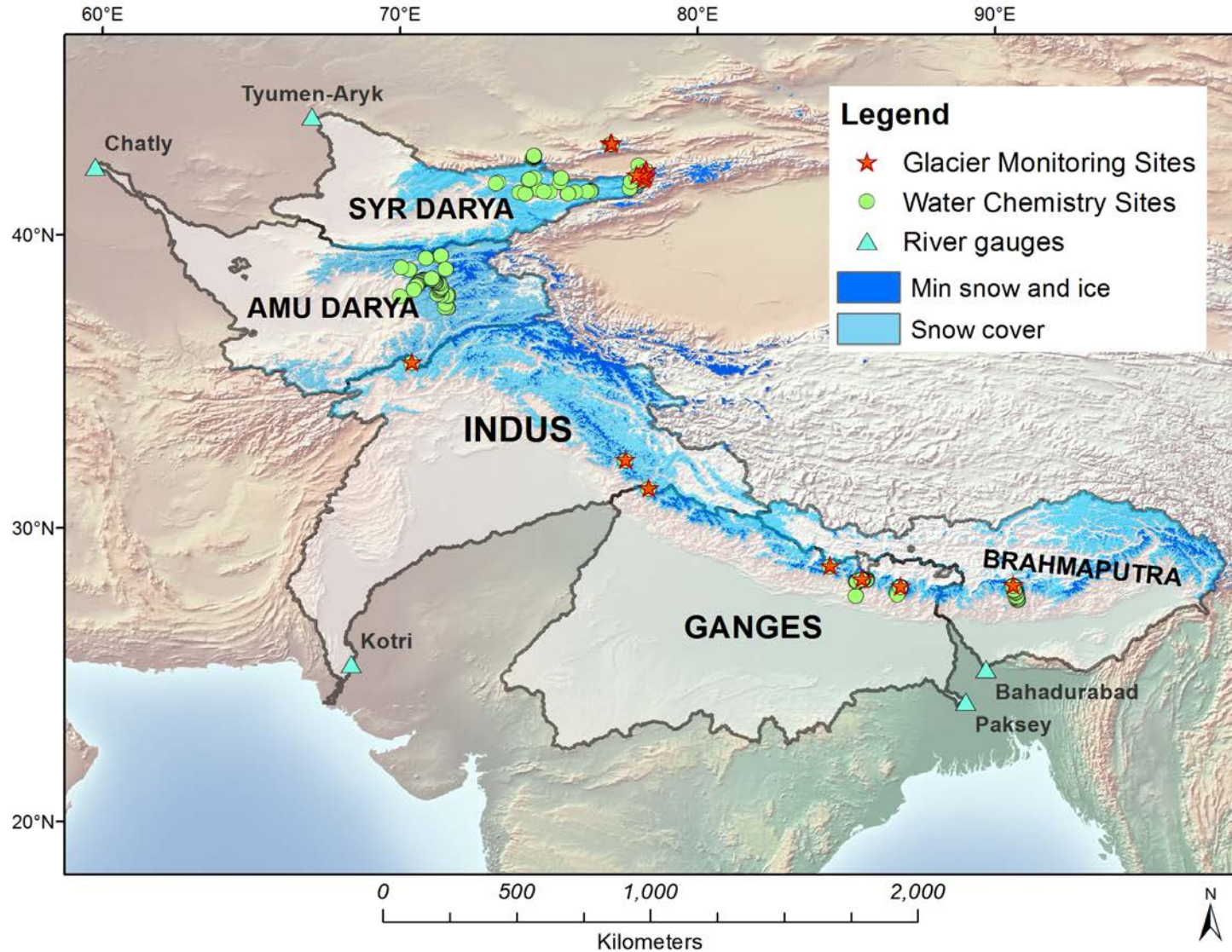


Institutional Capacity Building for the CHARIS project

Adina E. Racoviteanu
Aberystwyth University, UK
adr18@aber.ac.uk



Need for standardized methodology



1: Water sampling protocol

CHAMKAR CHHU VALLEY, BHUTAN



Photo credit: Dendup Tsering

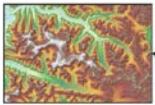


2: GIS and Remote sensing methods

- Glacier mapping
- Basin delineation

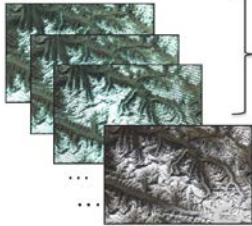
Temperature index

Elevation



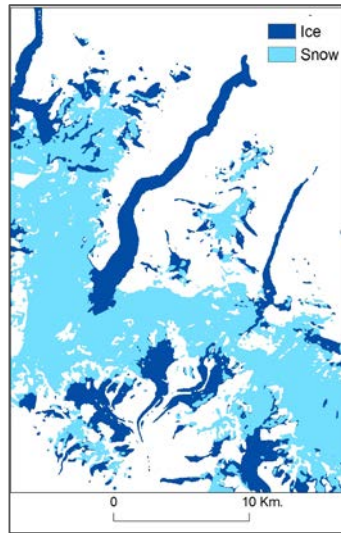
CHARIS DEM*

Imagery



Landsat ETM+
2001 - 2012
15 scenes
Sept-Nov

Landsat OLI
2013 - 2015
(monthly)
11 scenes
June-Nov



Melt from
snow and
ice

GIS-RS training

Main CHARIS training

Training workshops

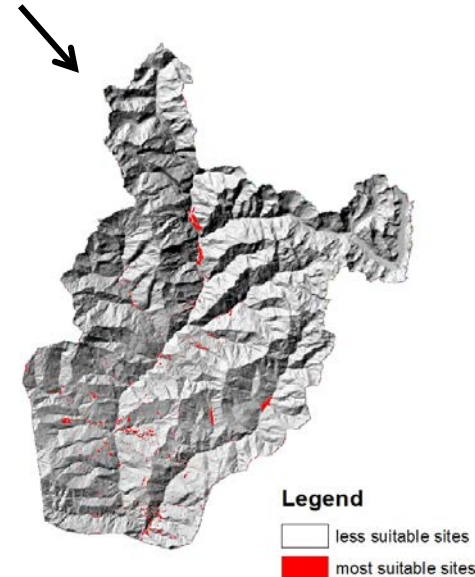
YEAR	WHAT	WHERE	DURATION
2014	Glacier and hydrologic mapping	DEHRA DUN, INDIA	3 DAYS
2015	Fundamentals of remote sensing and GIS	SHERRUBTSE COLLEGE, BHUTAN	5 DAYS
2016	Glacier mapping and hydrologic tools	ALMATY, KAZAKHSTAN	3 DAYS
2017	Python tools for loop processing	KATHMANDU UNIVERSITY, NEPAL	2 DAYS
2018	GIS and RS for geoscience applications	ROYAL THIMPHU COLLEGE, BHUTAN	2 DAYS

5-day training on GIS fundamentals and Remote sensing analysis, Sherubtse College, 2015

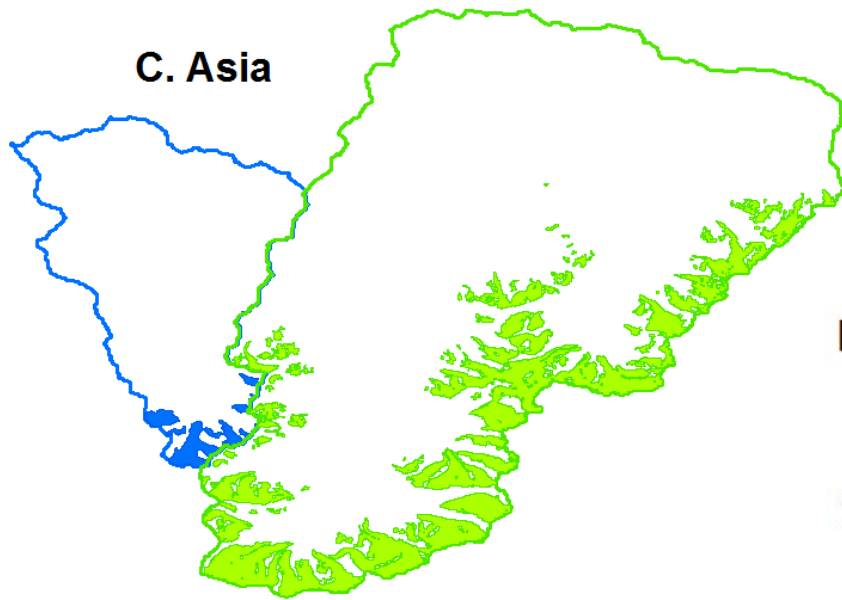


- Fundamentals of GIS
- Image analysis in ArcGIS software
- Hydrologic analysis
- Fieldwork preparation
- **Optimal localization**

- *18 participants from various departments*
- *5 women*

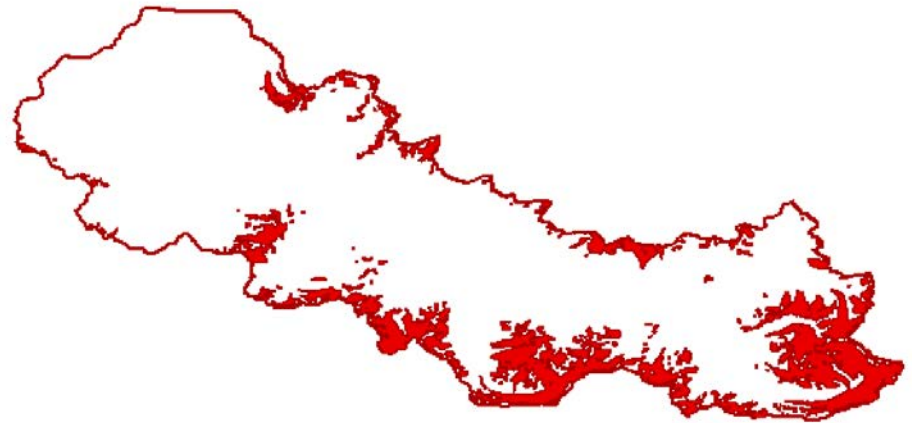


3-day training on GIS and Remote sensing for melt modeling, **Almaty 2016**



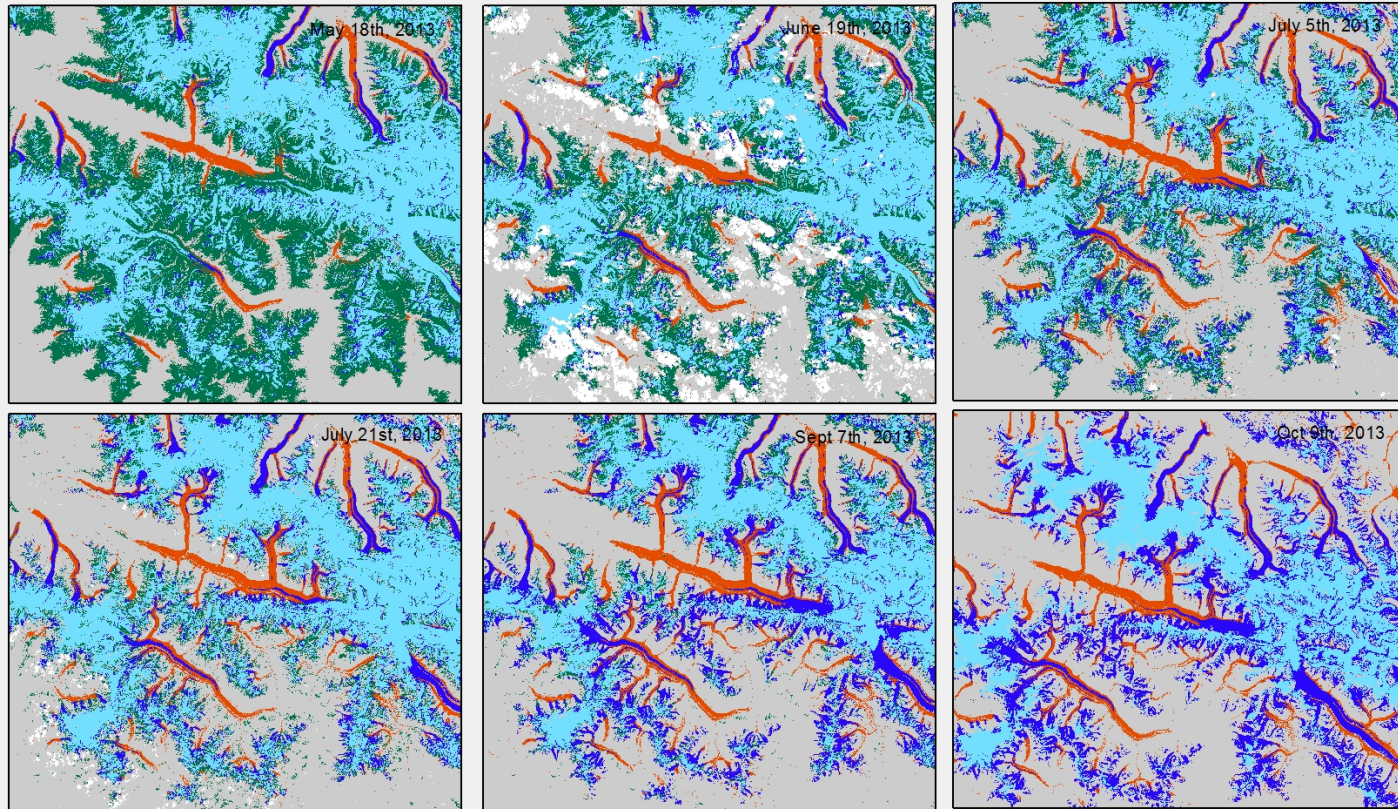
**Preliminary maps of
glaciers and watersheds**
Per institution

Indus (Baspa)



2-day training on automating glacier mapping and surface partition, Kathmandu Univ. 2017

Hunza snow and ice partition using Landsat OLI, 2013



Racoviteanu et al,
in prep

2-day training on remote sensing for geoscience applications, Royal Thimphu College Bhutan 2018

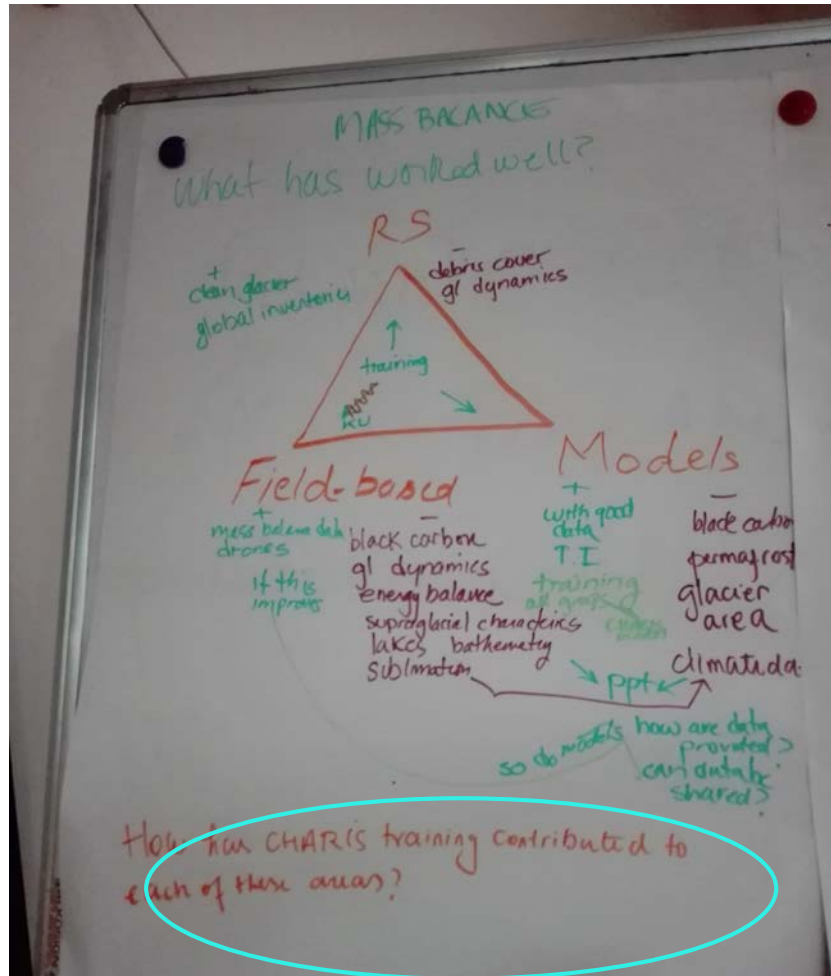


23 participants (11 female and 12 male)
from 8 different agencies and colleges

Photo credit: Thupstan Angchuk



2-day CHARIS meeting, Thimphu June 2018



Focus sub- groups:

Glacier group

- Remote sensing
- Field studies
- Modeling

Q: How has CHARIS Contributed to each?

New Initiatives inspired by the CHARIS project



IGCP 672/ UNESCO Project (2018-2022)

Goal: Establish and transfer a glacier and lake hazard assessment scheme

Start-up meeting, Thimphu
June 2018

From left to right: Anubha Aggarwal (Delhi), Smriti Basnett (Sikkim), Farooq Azam (IIT Indore), Adina Racoviteanu (UK), Pankaj Thapa (Bhutan), Tsering Tashi (Bhutan)



IGCP Project 672: HIMALAYAN GLACIERS AND RISKS TO LOCAL COMMUNITIES



Training on glacier hazard mapping using GIS and remote sensing
November 1 - 5th 2018, Dhulikhel, Nepal



- Organized with Kathmandu University
- 22 participants from Kathmandu Univ, Tribhuvan Univ and ICIMOD
- 10 women participants

Summary

CHARIS project has helped embed standard methodology into local institutions

More capacity building planned in the following years!

Thank you!