UIB - WG-1

Data Collection, Quality and Sharing

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UIB Working Group -1

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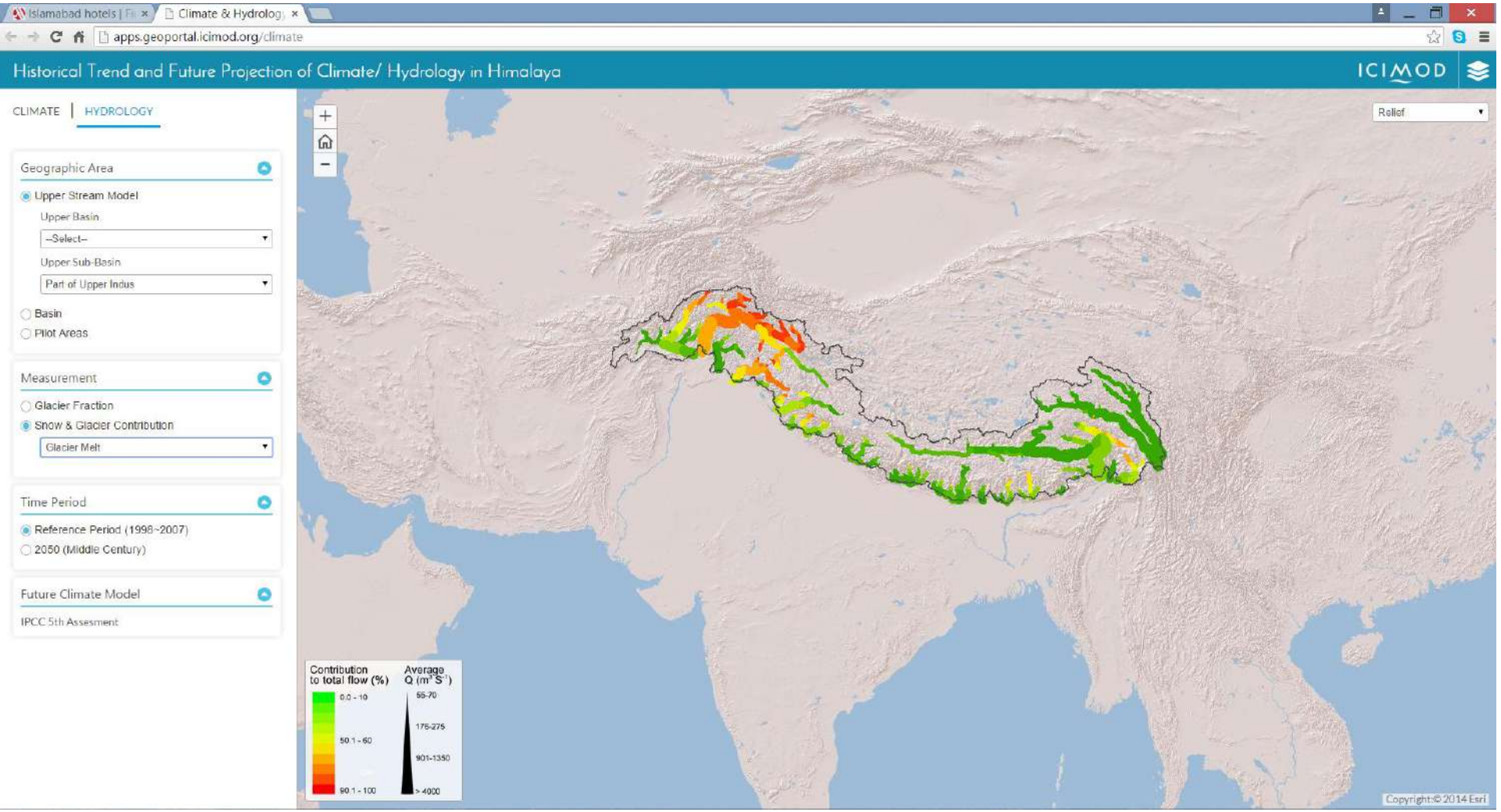
Anticipated Data Use

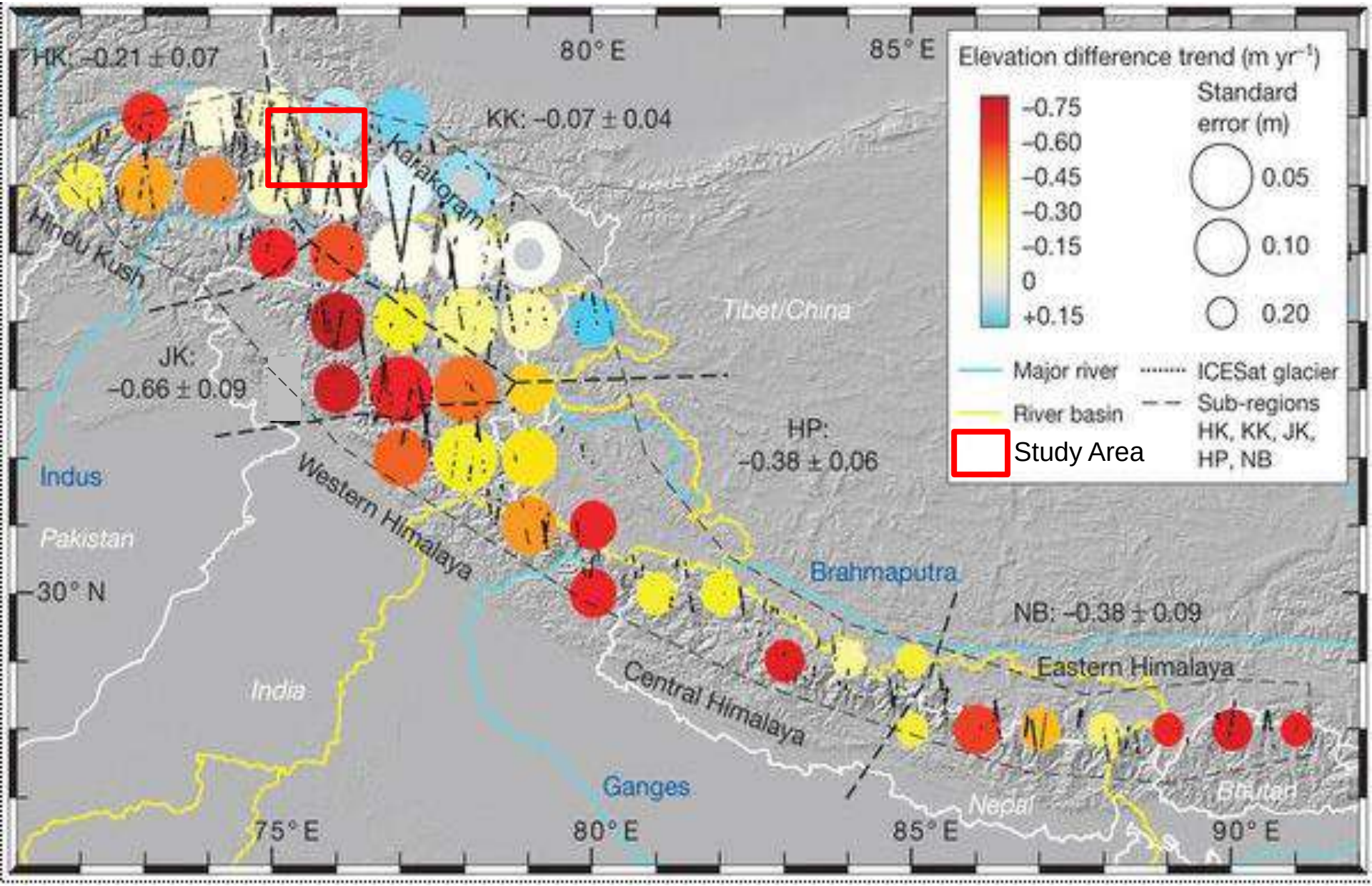
- Cryosphere monitoring, including Permafrost
- Water resources and hydropower planning and development
- Catchment and watershed planning
- Flood management and control
- Structure protection and retention
- Infrastructure planning and development
- Irrigation and drainage
- Aviation, forestry and agriculture

HKH Climate and Hydrology



(provided by Arun Shrestha, 2015)

Elevation difference trend m/year → Karakoram Anomaly



(A. Kääb et al, 2012, Nature 488:495-498)

Cryosphere : Models - Data/Field Evidence - Scales

Global to Regional Scales

General Glacier Model

Continental Topographic control

Satellite Data (Atmospheric and Surface Parameters)

General Atmospheric Model-Input Data

Regional/Local Topographic control

Data quality

Local Glacier Model

Field studies

Data quality

Regional/Local Meteorological Data

Proxy-Data

Regional to Local Scales

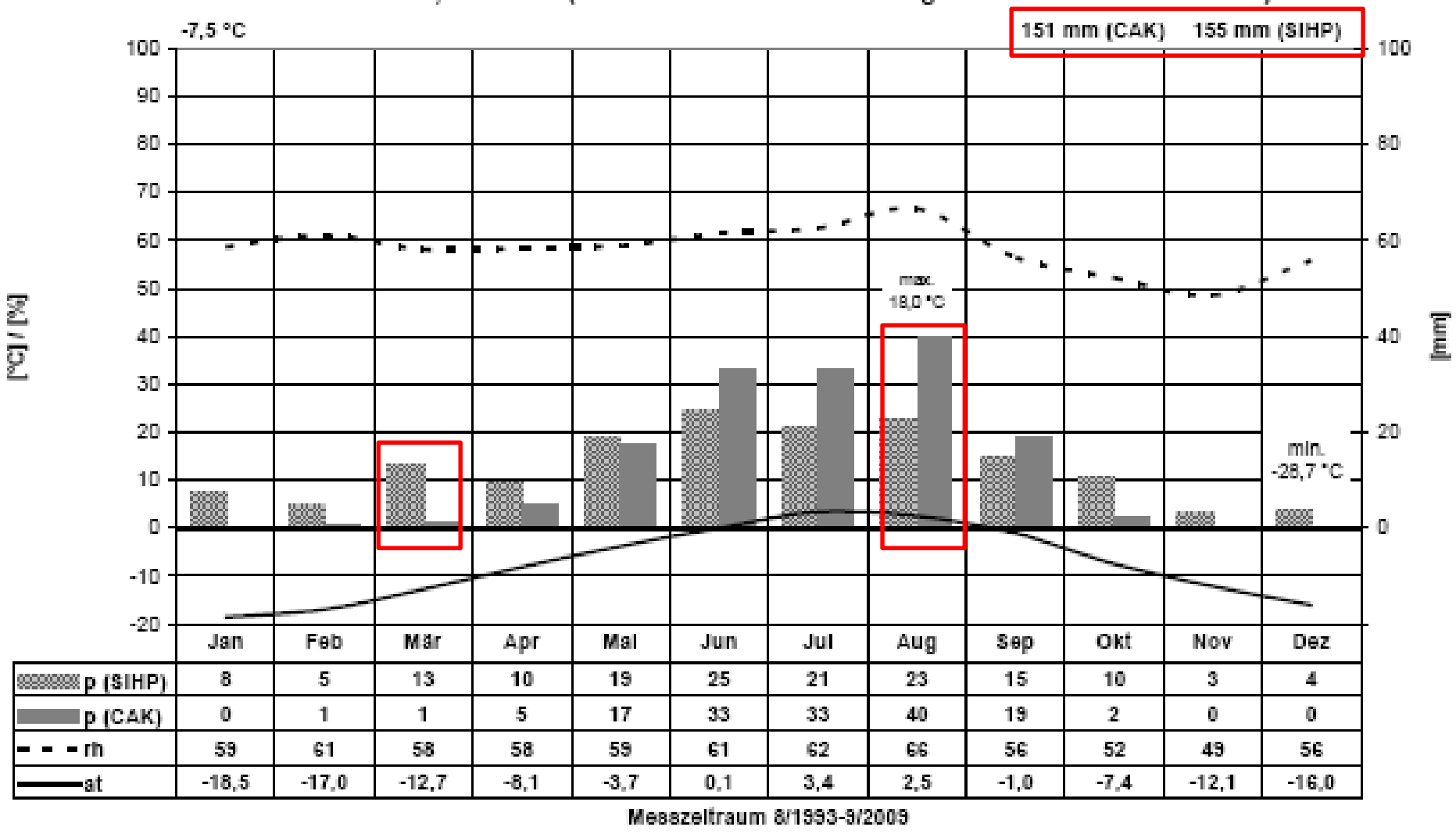
→**Vertical gradients/processes**

(Draft M.W., 2011)

UIB-Programme:
Where to set-up meteorological station?
How to assess rainfall/snowfall at high altitudes?
→ Example Kunjerab-Pass

Horizontal Distance: ~ 1,3 km
Difference in Altitude: ~ 150 m (WAPDA: ~4600m / GIUB: ~ 4750m)

Station Kunjerab **4750m,** (35°51'N 75°25'E) , Klimagang (Feuchte, Lufttemperatur, Niederschlag)
- Monatsmittel, -summen (CAK-Daten und Niederschlagsdaten von SIHP 6/94-12/98) -

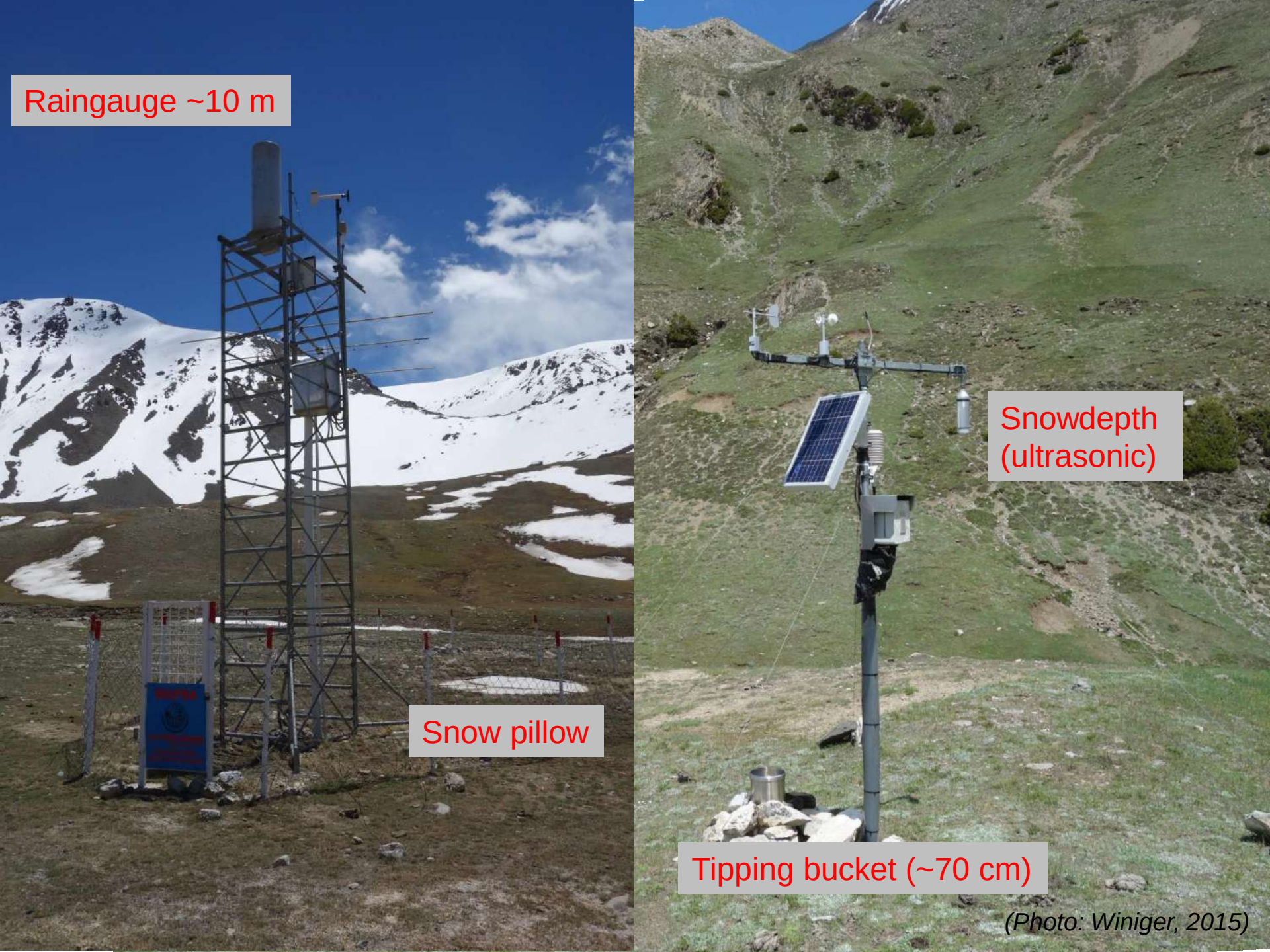


	Jan	Feb	Mär	Apr	Mai	Jun	Jul	Aug	Sep	Okt	Nov	Dez
p (SIHP)	8	5	13	10	19	25	21	23	15	10	3	4
p (CAK)	0	1	1	5	17	33	33	40	19	2	0	0
rh	59	61	58	58	59	61	62	66	56	52	49	56
at	-18,5	-17,0	-12,7	-8,1	-3,7	0,1	3,4	2,5	-1,0	-7,4	-12,1	-16,0

Messzeitraum 8/1993-8/2009

Identical annual precipitation totals ←→ different solid and liquid monthly precipitation totals
→ Which differencies are real, which ones have methodological reasons?

(Draft: M. Gumpert, 2009)


Raingauge ~10 m
Snow pillow
Snowdepth (ultrasonic)
Tipping bucket (~70 cm)
(Photo: Winiger, 2015)

The same locality – different approaches!
→ Ways of cooperation?

(Photo: Winiger, 2015)

Data Collection Mechanism-I

1. Purpose of Data Collection
   a) UIB Cryosphere Monitoring
   b) UIB Climate Monitoring
   c) UIB Hydrologic Monitoring
   d) UIB Landuse Monitoring
   e) UIB Socioeconomic Monitoring etc.

2. Where, What and How to Collect the Data

   Specific sites or communities. Desk studies and field campaigns required.

   Standard methods to be adopted and equipment to be identified.

   It is voluntary from the relevant department; agency or organization to come forward as it is generally long term commitment and financial resources have to be committed.

Data Collection Mechanism-II

3. Flagship Stations
   a) Benchmark glaciers
   b) Benchmark basins
4. Field campaigns for data collection
5. Data Management
6. Common Database: for data sharing

WG-I Progress

- WAPDA shared UIB Metadata with the WG-II
- Daily Discharge Data from the outlet of Hanza basin at Dainyour, covering period from 1966 to 2010, has been shared with Working Group –II .
- Daily Weather Data from all three Hunza Stations (Khunjerab, Ziarat and Naltar) for period 1995 – 2012 has also been shared with Working Group - II
- Efforts are underway to share the rest of UIB Data with the ICIMOD Partners
- EvK2CNR exchanged Askole Met data with WAPDA
- Professor Matthias Winiger shared Khunjerab Met data with WAPDA , PMD, WG-II and additional station data in number of publications
- WAPDA and PMD jointly shared UIB weather data on Climate Downscaling Project
- WAPDA shared UIB data with NARC on ICHARM

So Data Sharing among UIB Partners is taking place

Impediments in Data Sharing

- Data collection by different organizations is not consistent, not even in one organization
- Most critical: vertical gradients of precipitation (liquid and solid), evaporation (on different surface coverages), subsurface runoff
- Database are kept in different formats
- Data collection methods are to be standardized (from specific point, duration, time step etc)
- Data sharing is restricted in all departments
- Data gaps, especially from difficult terrains as UIB, are common. Data filling mechanism to be adopted (Standard)
- Common Database may not be possible under such conditions
- Need for capacity building & training in the fields of data collection and data processing

Data Sharing Mechanism

- What Data is really required? Met Data; Hydrologic Data; Glacier data; Socioeconomic data.
- Metadata to be available on the Portal for each willing organization. ICIMOD has such Portal in place.
- The real data to reside with the parent organization.
- Data can be shared on case to case basis.
- Data generated on Joint activity under ICIMOD UIB funded Programme to be shared among the UIB partners
- Best way of sharing data: Joint Studies
  - WAPDA, PMD and ICIMOD carried out on downscaling of Climate Data and WAPDA and PMD shared their climate data from UIB.
  - Such projects can be initiated in the future by involving relevant UIB partners and data can be shared.
  - This will enhance the capabilities of the relevant department collecting and maintaining the data.
  - It will also improve its capability in data management .

Indus Basin Knowledge Platform

- The Indus Basin knowledge platform (IBKP) is developed as a user friendly, internet-based knowledge platform where different research and policy related information can be obtained and used to make informed decision and to support further research. It provides information related to Indus basin, the thematic application, partner and latest news. The purposes for building the IBKP are:
- To fill knowledge gap between researcher and policy/decision makers,
- To develop regional knowledge hub,
- To increase the level of interaction among the researchers and share information at optimal level, and
- To coordinate well with partners of the Indus basin initiative.

Indus Basin Knowledge Platform

At present the web portal has following sections:

1. Information about the Initiative and its **goals** and **objectives**;
2. The **knowledge base**, containing bibliographical database of hydro-meteorological datasets and maps related to Indus Basin; Some key highlights under this section are;
   - *Datasets of Lower Indus, Upper Indus and Whole Indus for average of 10 years starting from 1951 to 2007 for seasonal basis for Rainfall, Maximum temperature and Minimum temperature*
   - *Maps of Lower, Upper and Whole Indus Basin for year 1950 to 2007 in seasonal basis*
   - *Satellite Estimate Rainfall Products (SRE) both ingested with observed rainfall and directly downloaded from CPC NOAA*
   - *Processed APHRODITE rainfall data*
   - *Processed PRECIS Temperature scenarios (Tmax, Tmin***)**
- 3. **Publications** (ICIMOD publications, journal articles, reports) related to Indus basin;
- 4. **News and Events** highlighting recent development, events and news in the basin;
- 5. Partners profile, which includes profile of institutions active in the Indus Basin and ;
- **6. Partners Discussion Board**

Data base is updated with arrival of new information

Apprehensions

- India and China has recently signed a MoU on Brahmaputra Hydro-inforrmatics. They have declared the Area as restricted and data as classified.
- River flow data is very sensitive. It should be limited within the UIB network. Data on water (hydrological data) should not be shared without the permission of primary source, as it is also a sensitive issue.
- In last year conclusion meeting of UIB there were objections from Planning Commission Pakistan about asymmetric behaviour on data collection and dissemination among ICIMOD members. India is not allowing ICIMOD members to visit freely IHK and put stations and collect data whereas it is so easy in Pakistan.
- I myself designed a US$ 2 Million Grant Project under SAWI for data collection and dissemination from UIB but that was rejected by Indian members of World Bank on the ground that this is a disputed area and WB investment cannot be made in this area. Can we share the data from the disputed areas under such environment?
- It is proposed that ICIMOD while carrying out Joint UIB studies should take relevant department in collaboration. Recently study on Hydrologic response of UIB under Climate Change has been completed by Water Immerzeel, PMD and ICIMOD without informing WAPDA.

Conclusions & Way Forward

- Metadata to be available on the Portal for each willing organization. The real data to reside with the parent organization. Data can be shared on case to case basis.
- Data generated on Joint activity under UIB Programme to be shared among the UIB partners
- Funding to be arranged for strengthening existing UIB hydro-climatic network with. This should also include operation and maintenance of the stations after its installation.
- Establishment of data (met, hydrological, socio-economic etc) repository on lines of AWCI's (DIAS) Data Integration and Analysis System, Japan
- Short-term Training Programs
  - Setting-up data collection stations, instrumentation, data collection methods and procedures
  - Data processing (screening, quality checks)

Thank You !