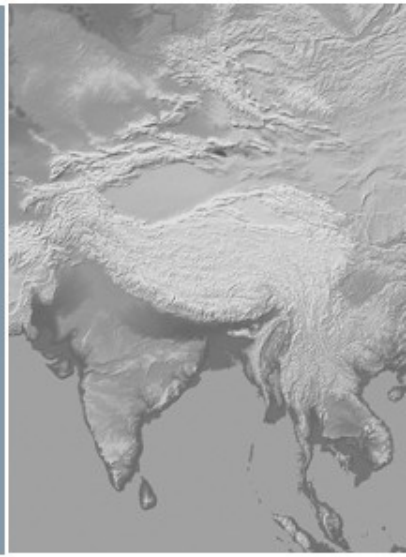
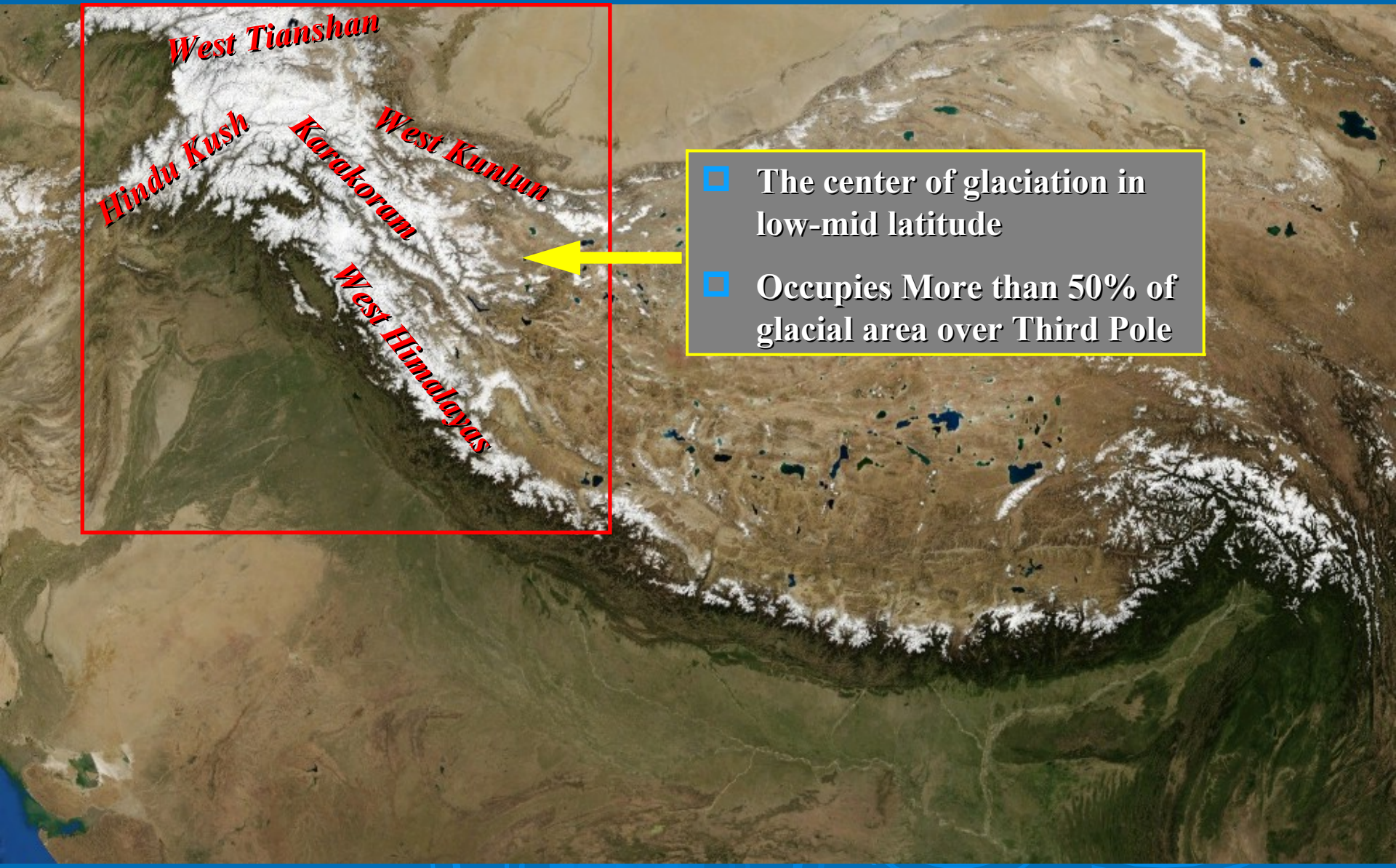
Cryospheric and Related Observations over Pamir and West Tibet



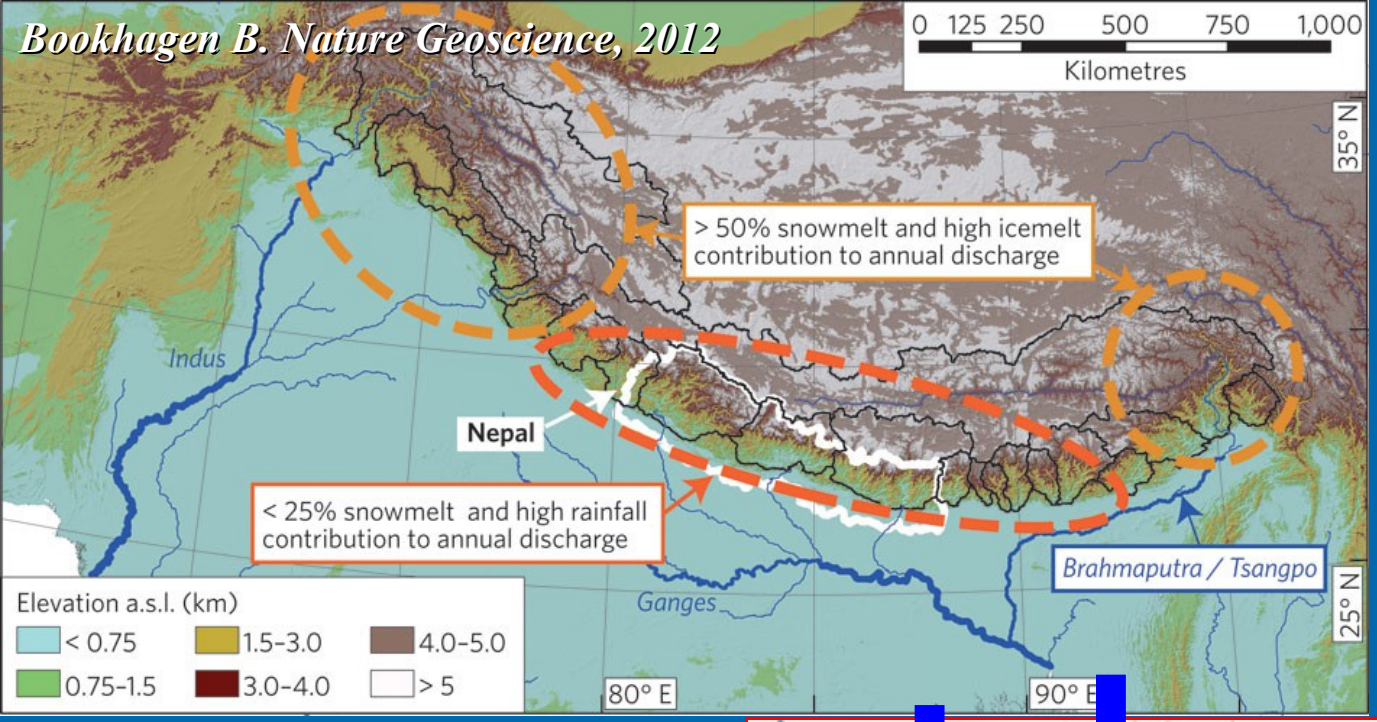
Baiqing Xu & Lide Tian

Institute of Tibetan Plateau Research, CAS

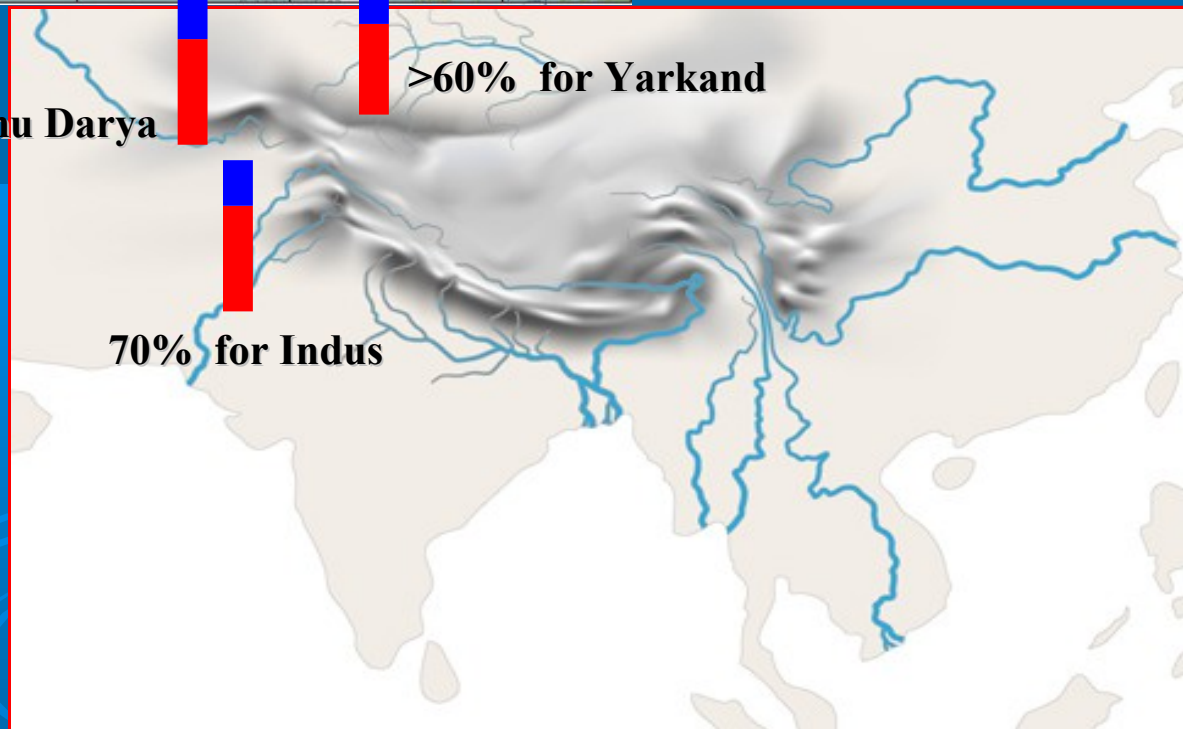
Observational Region and Glacier Development

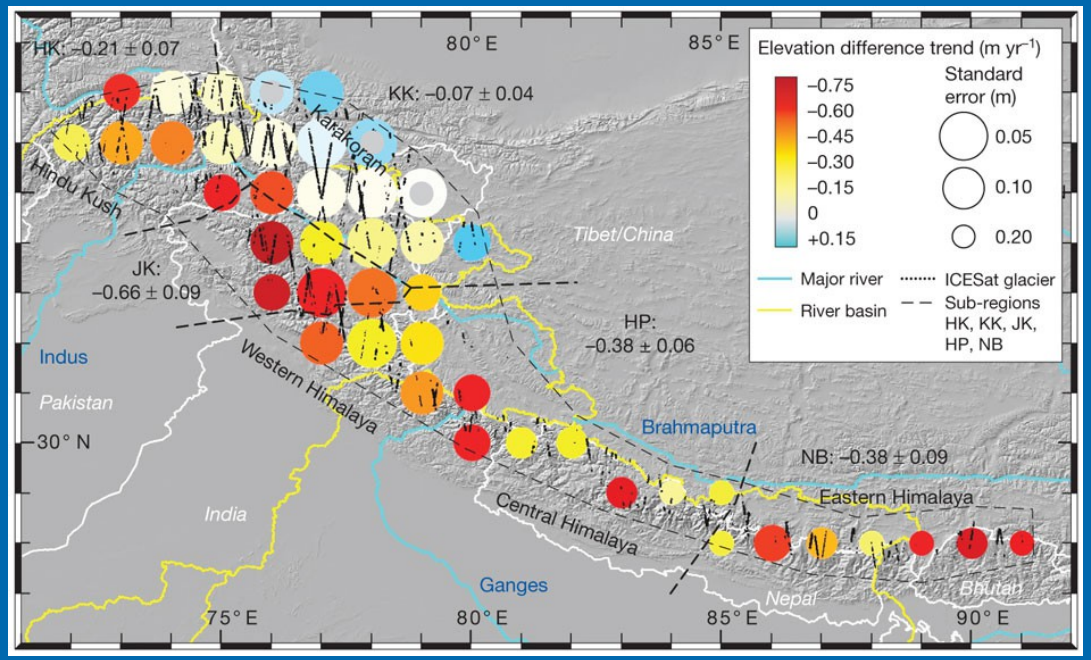


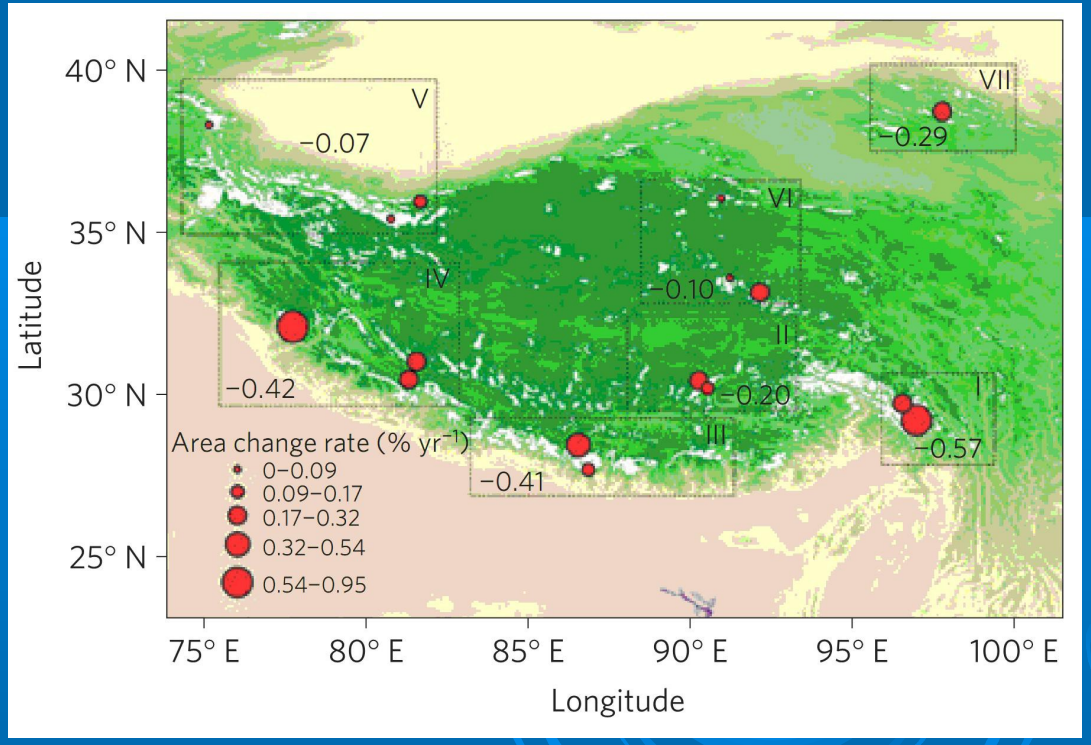
- The center of glaciation in low-mid latitude
- Occupies More than 50% of glacial area over Third Pole



Snow and Ice melt is critical important water resource for arid central Asia





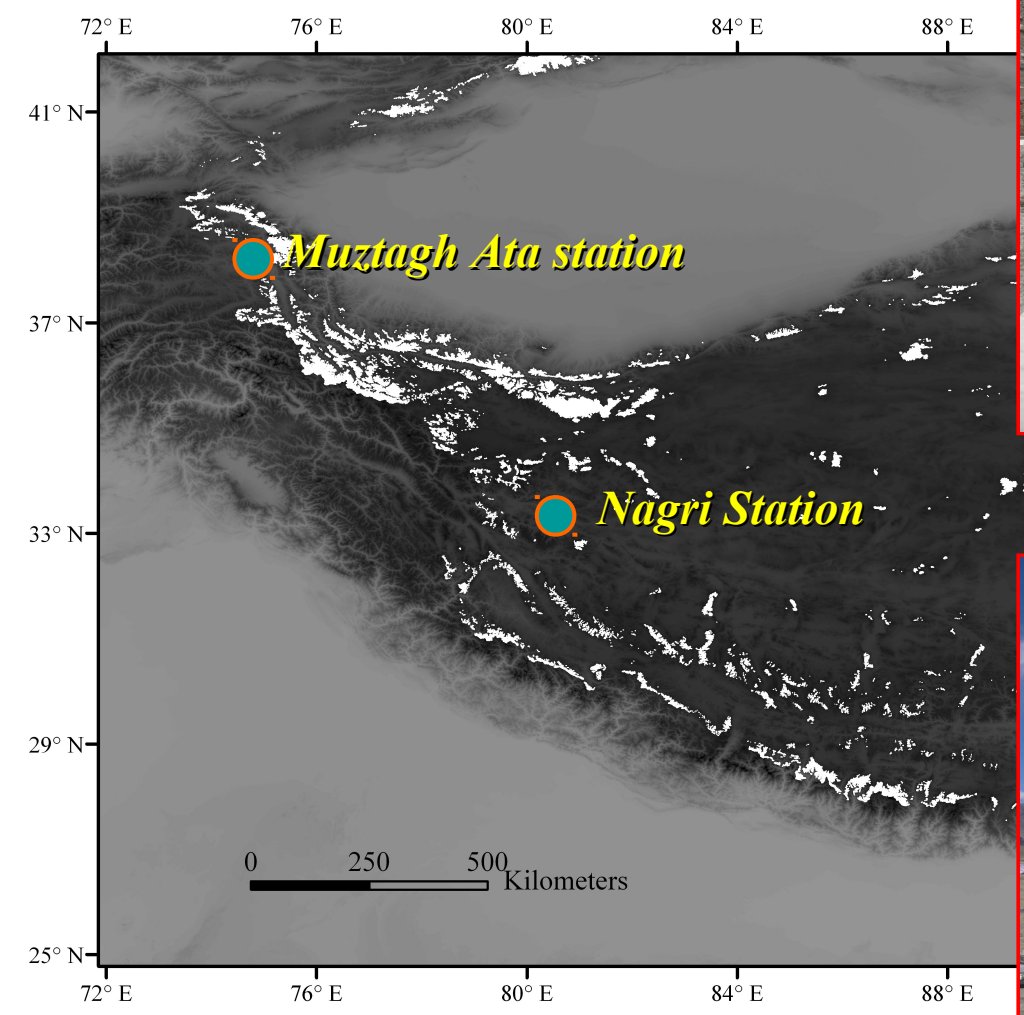


Glacier mass loss

Andreas Kääb et al., Nature, 2012

Glacier area change

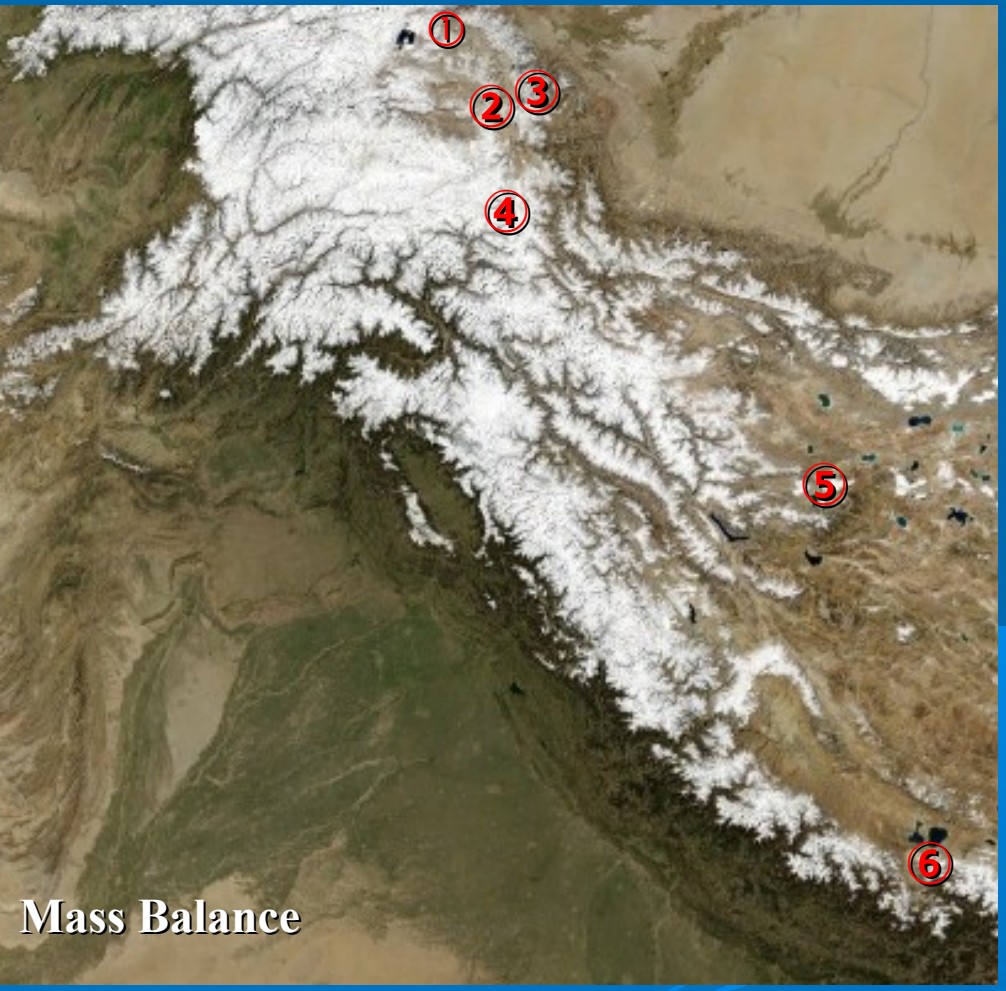
Yao et al., Nature Climate Change, 2012


72° E
76° E
80° E
84° E
88° E
41° N
37° N
33° N
29° N
25° N
Muztagh Ata station
Nagri Station
0
250
500
Kilometers

Muztagh Ata station (2002-

Nagri Station (2008-

Glacier Monitoring



① Mugi glacier (2010-

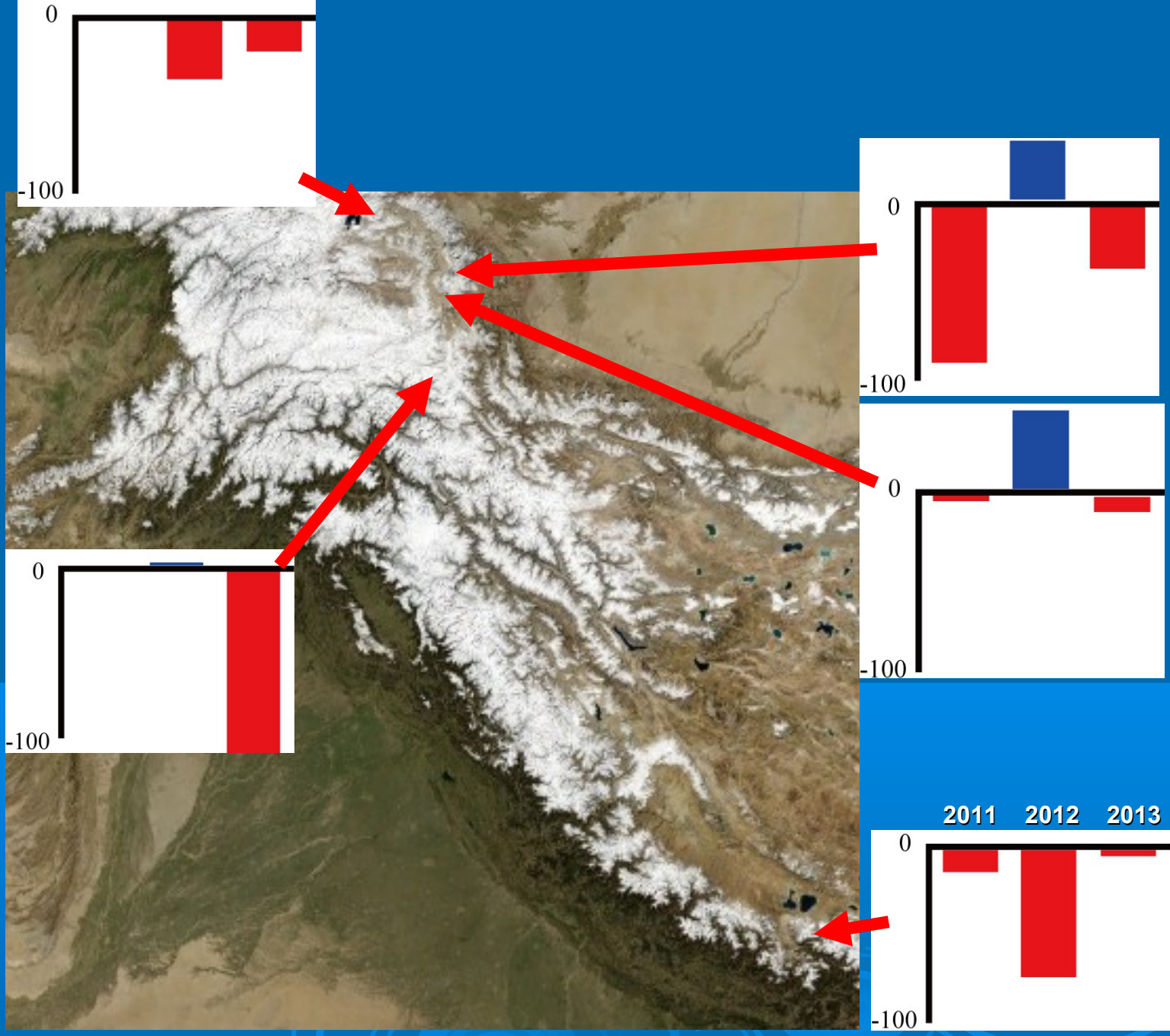
② Muztagh Ata No.15 glacier (2002-

③ Kangxiwa glacier (2009-

④ Kunjirapu glacier (2010-

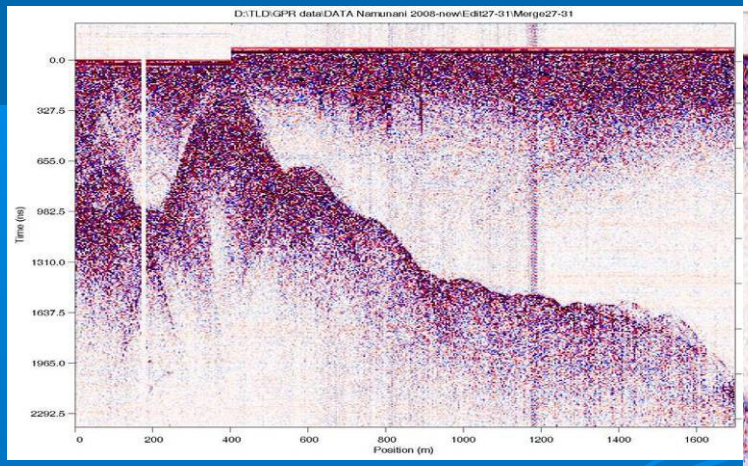
⑤ Xiongcaigangri glacier (2012-

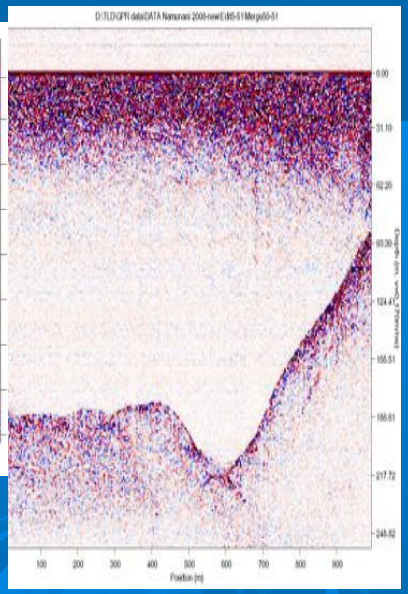
⑥ Namunayi glacier (2006-

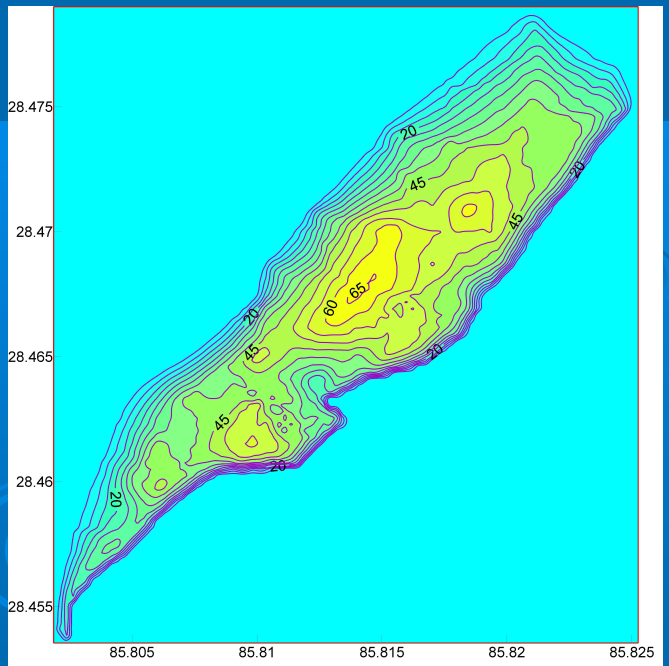

0
-100
0
-100
0
-100
0
-100
2011
2012
2013
0
-100

D-GPS measurement for glacier area and surface elevation change

Ground Penetrating Radar and GPS measurement of Glacier depth

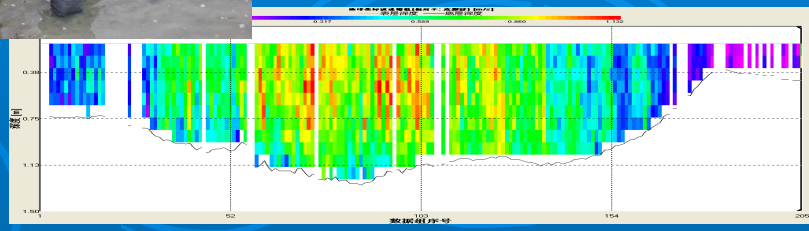


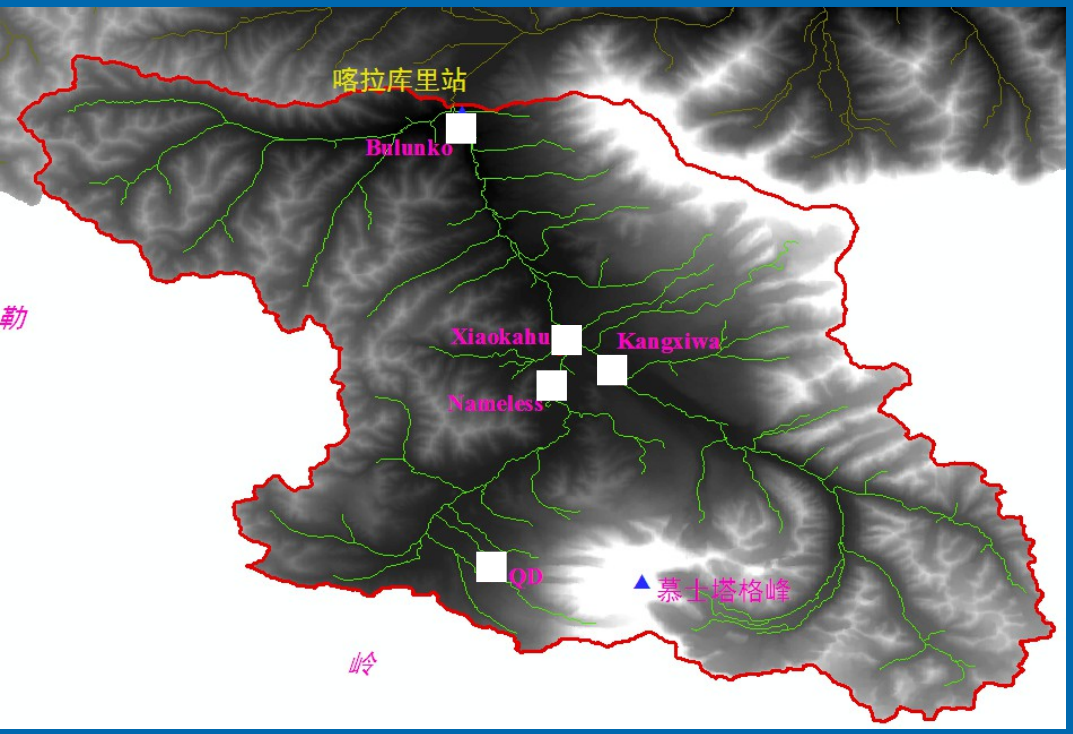




Hydrology Monitoring

- Lake level and water temperature monitoring by HOBO water lever logger
- River water level and temperature monitoring by HOBO water lever logger
- River water runoff by ADCO and conventional methods




喀拉库里站
Bulunko
Xiaokahu
Kangxiwa
Nameless
QD
慕士塔格峰
勒
岭

09/12/2010

10/02/2010

Magazangbu River water level change

Magazangbu river discharge

2.5

Snow melt

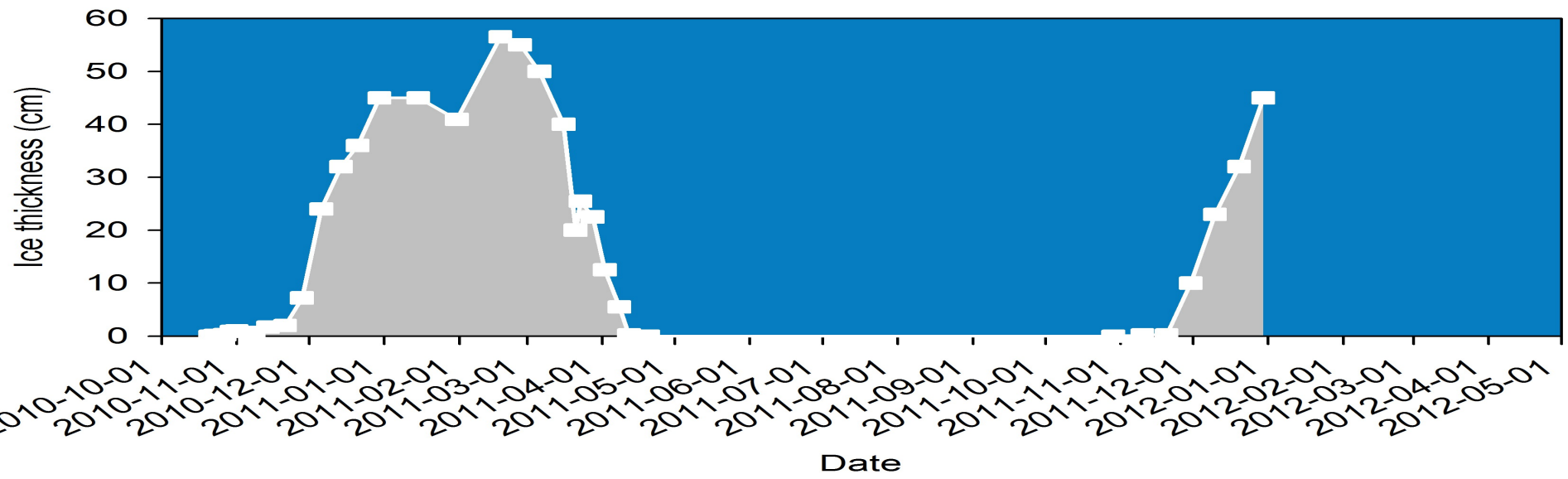
Ice melt

Different in water level between Non-glacier and glacier fed river

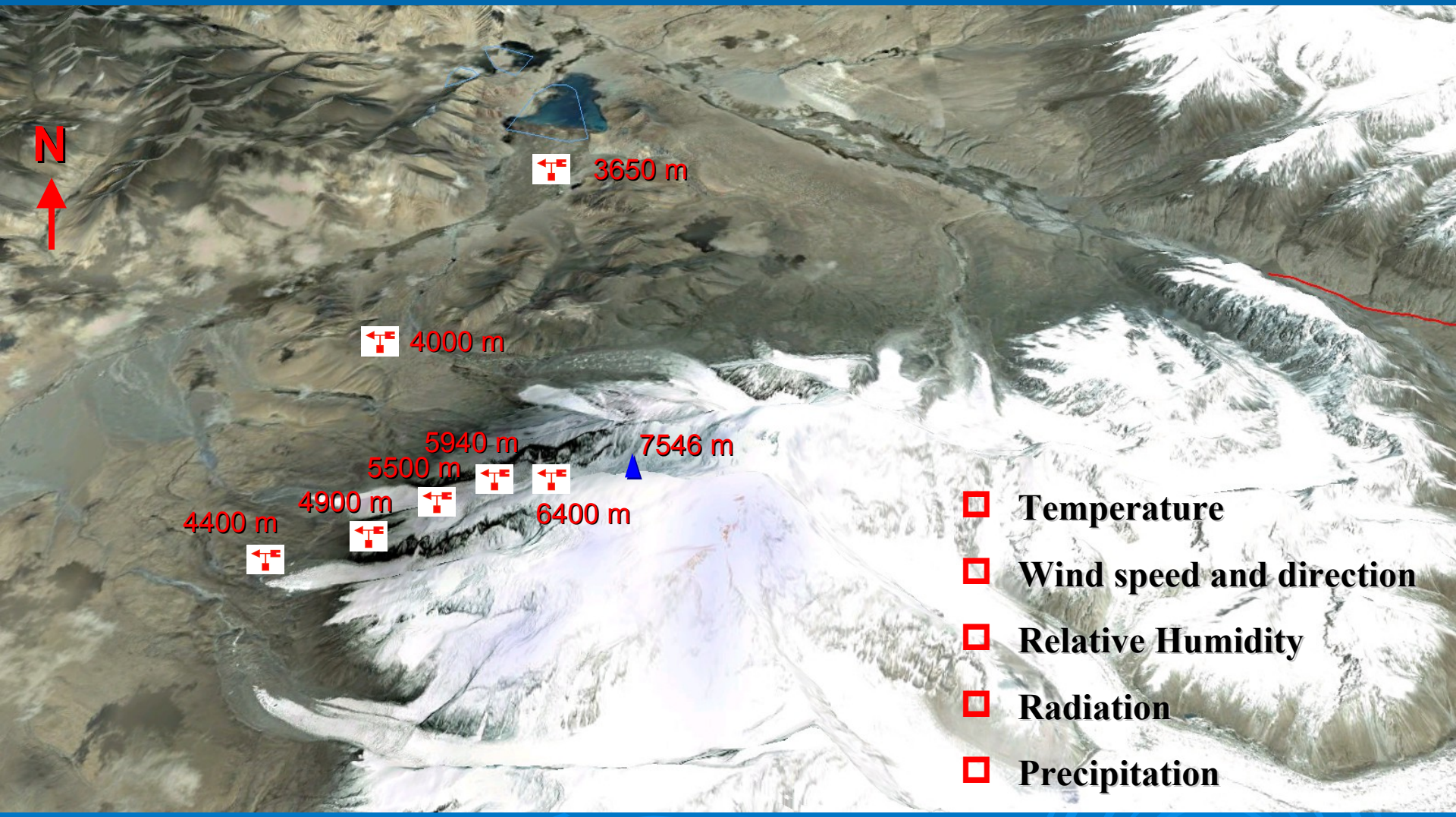
Lake water level and temperature (Karakul lake)

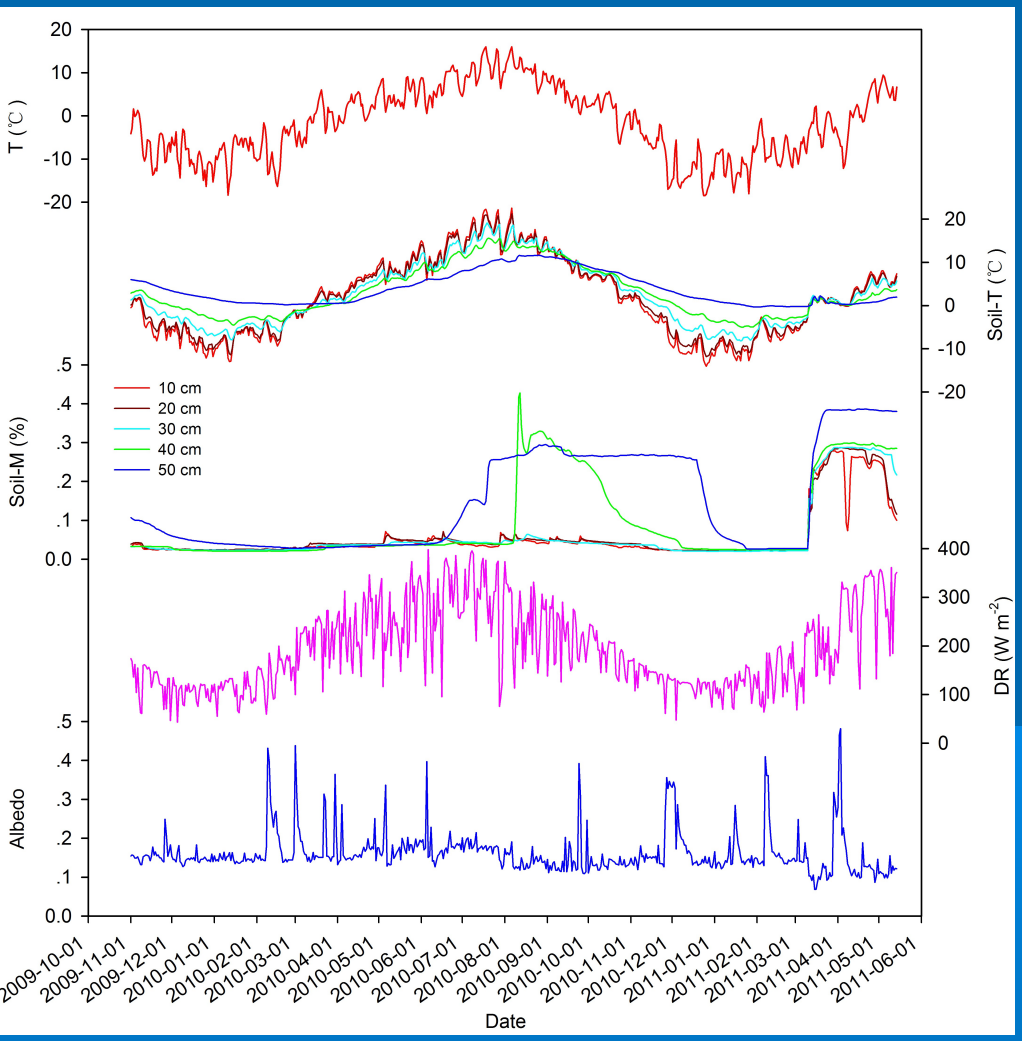
6.5

Ice thickness of Karakul lake



AWS Gradient Observation





AWS record at 3650 m asl

Monthly precipitation vs altitude (9-2013)

谢谢！