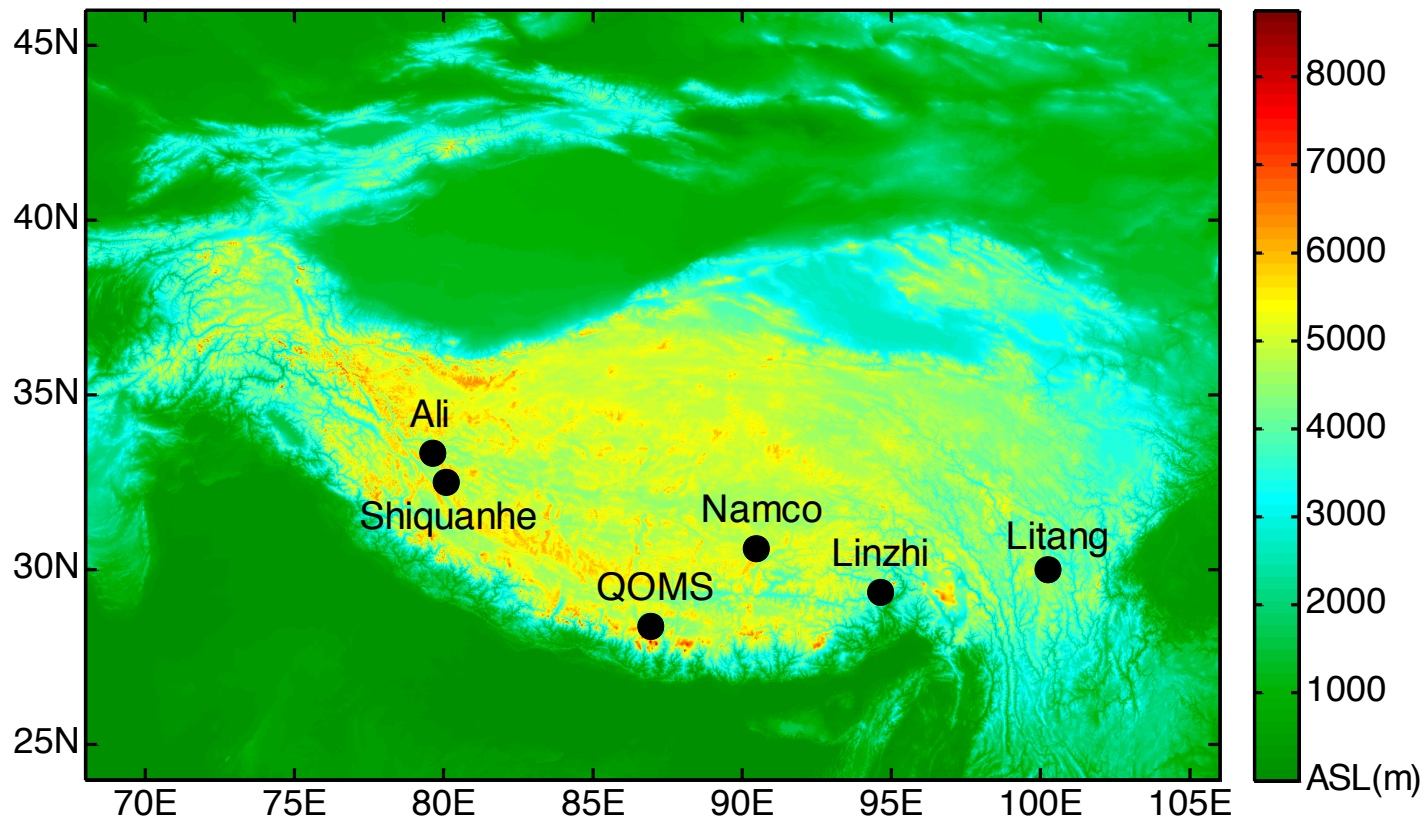


Effective aerodynamic roughness length and zero-plane displacement height



**Radio-sonde data ,Wind Profiler
data and turbulent data**

Radio-sonde and Wind profiler and RASS



Effective aerodynamic roughness length and zero-plane displacement height
(Han and Ma et al., 2015, QJRMS)

Station	z_{0m}^{eff} (m)	d_0 (m)
QOMS(15)	62.6 ± 12.3	470.3 ± 48.0
NAMOS(8)	1.7 ± 1.1	19.4 ± 11.9
Linzhi(14)	86.0 ± 6.6	516.1 ± 39.7
Ali(11)	1.9 ± 1.1	8.1 ± 5.5
Shiquanhe(12)	10.2 ± 4.3	81.9 ± 34.5
Litang(9)	6.0 ± 1.1	60.7 ± 11.1

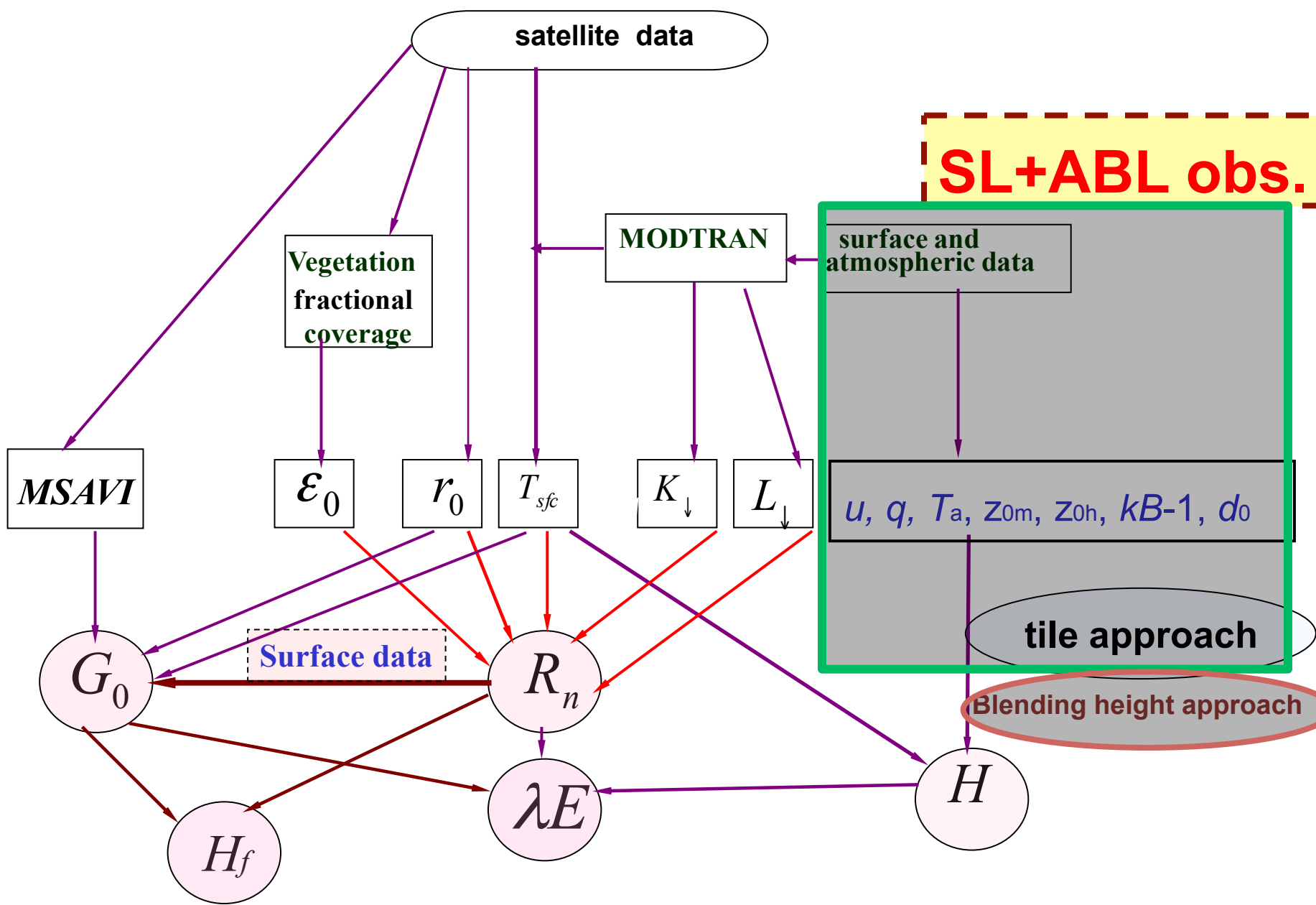
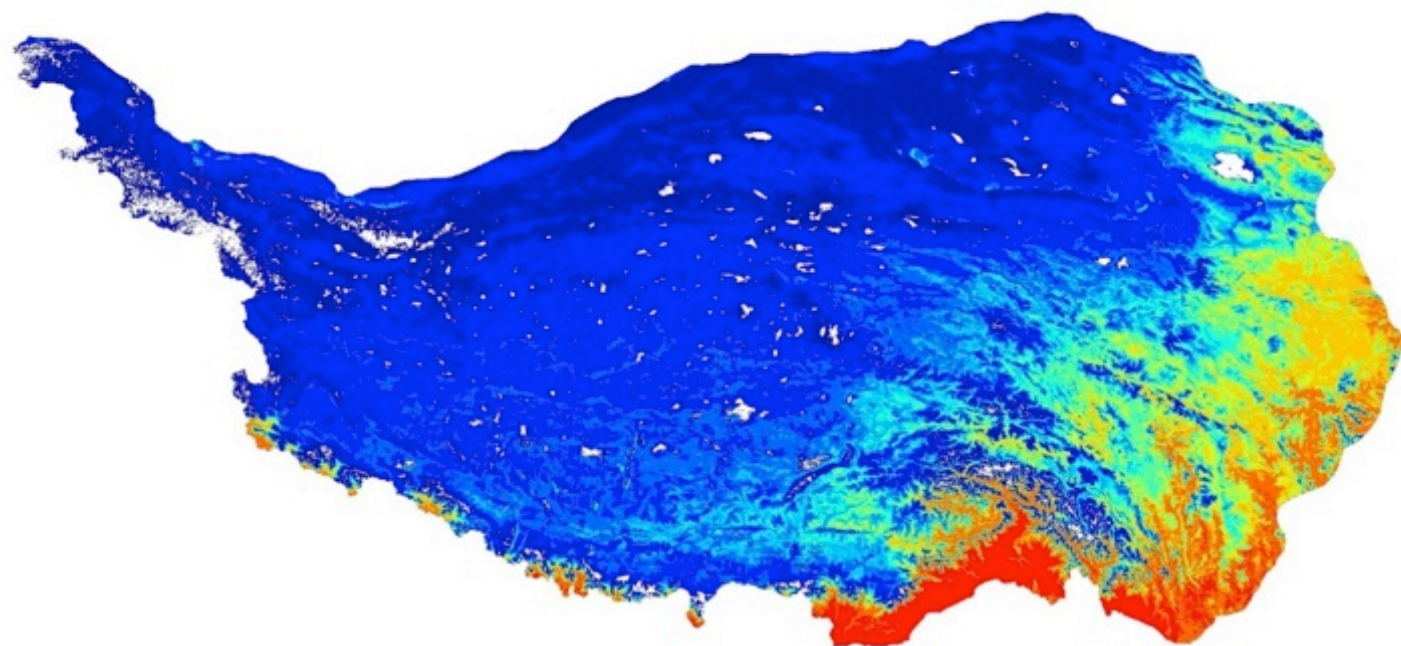
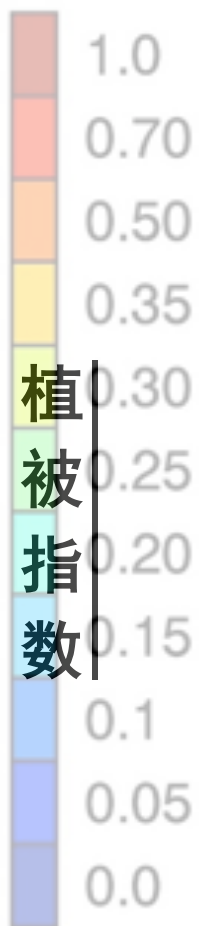


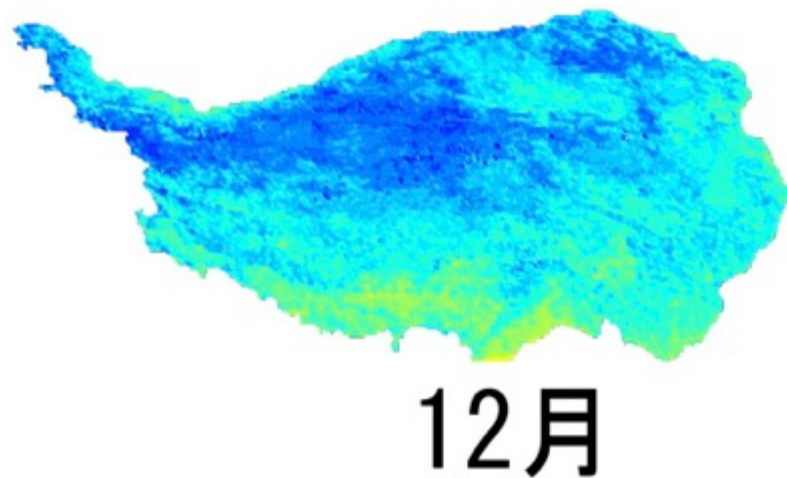
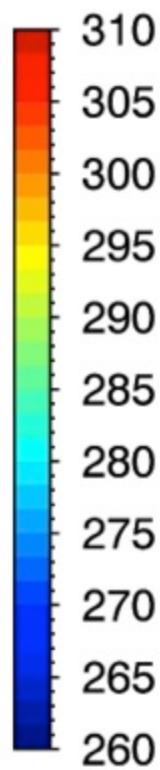
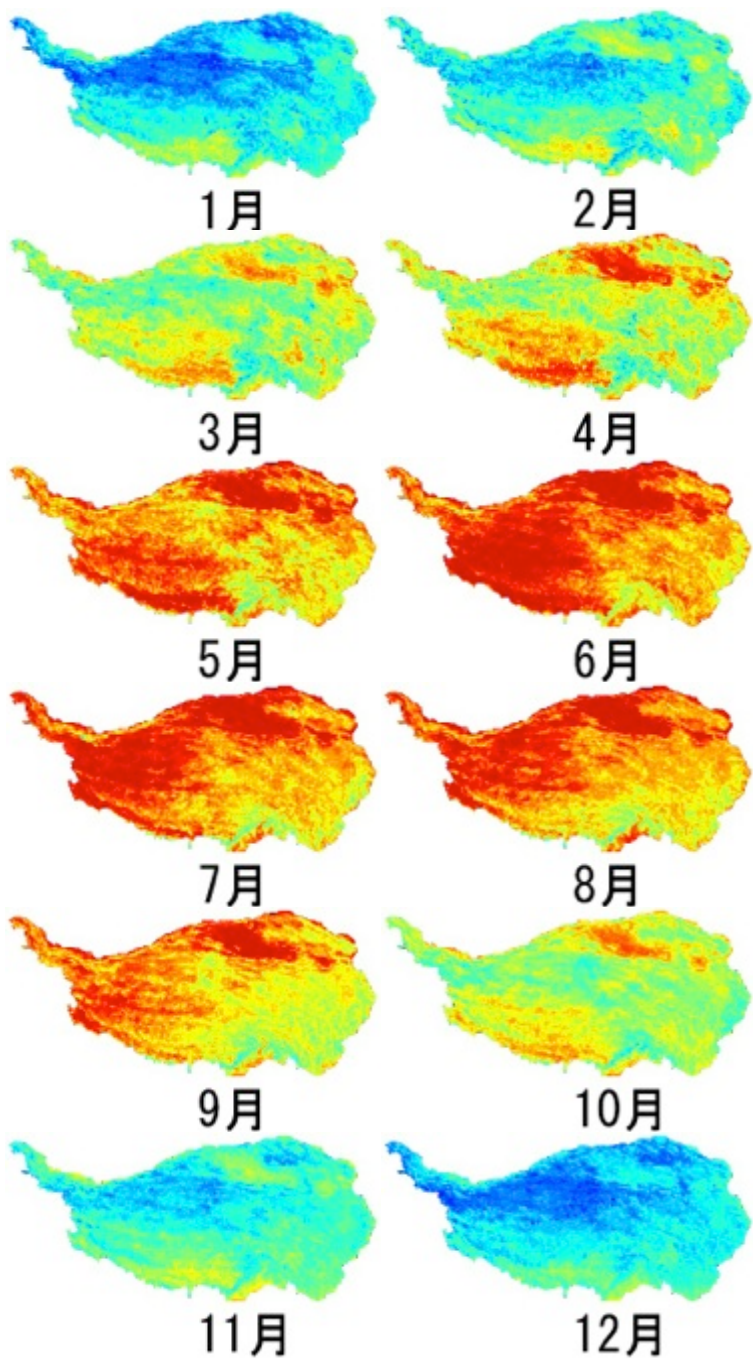
Fig.1 Diagram of parameterization procedure by MODIS data with field observations (Ma et al., 2011, AAS; Ma et al., 2014, ACP)

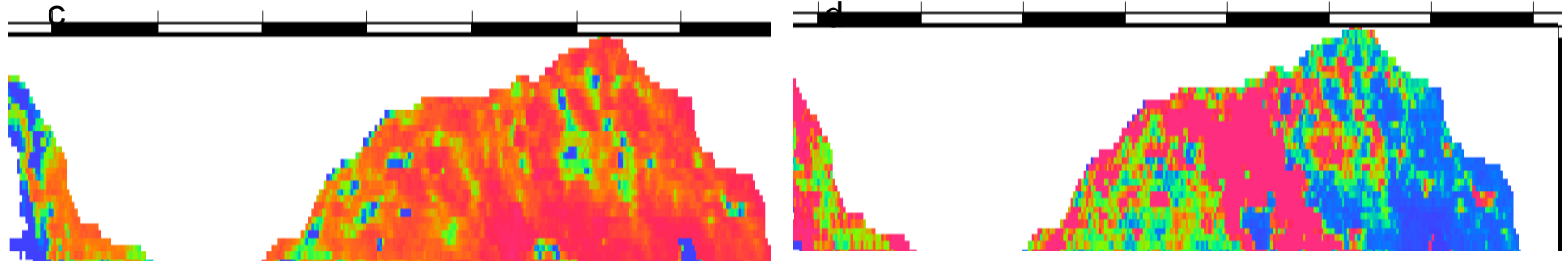
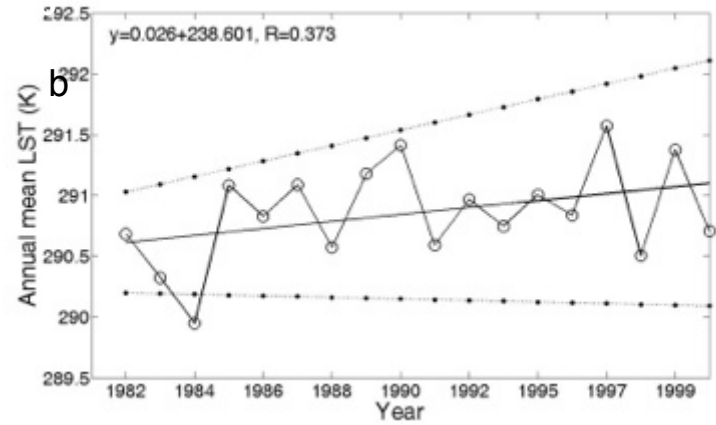
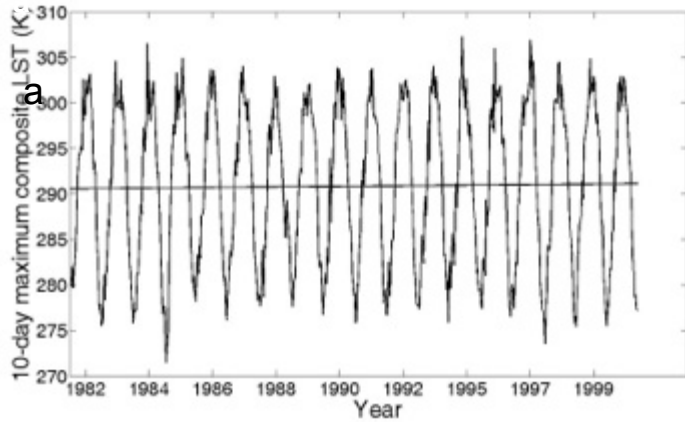
NDVI



12月

Surface temperature

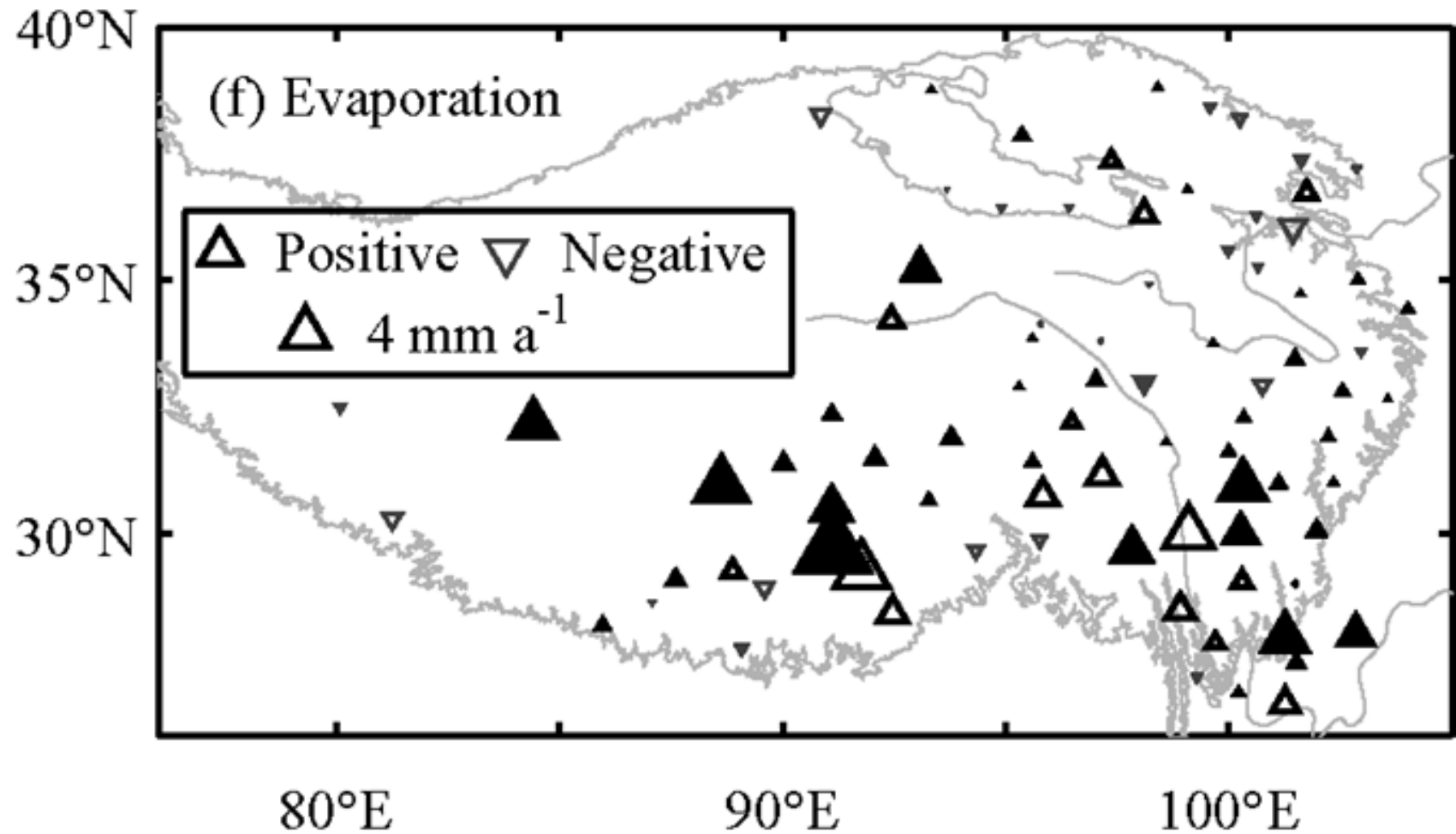




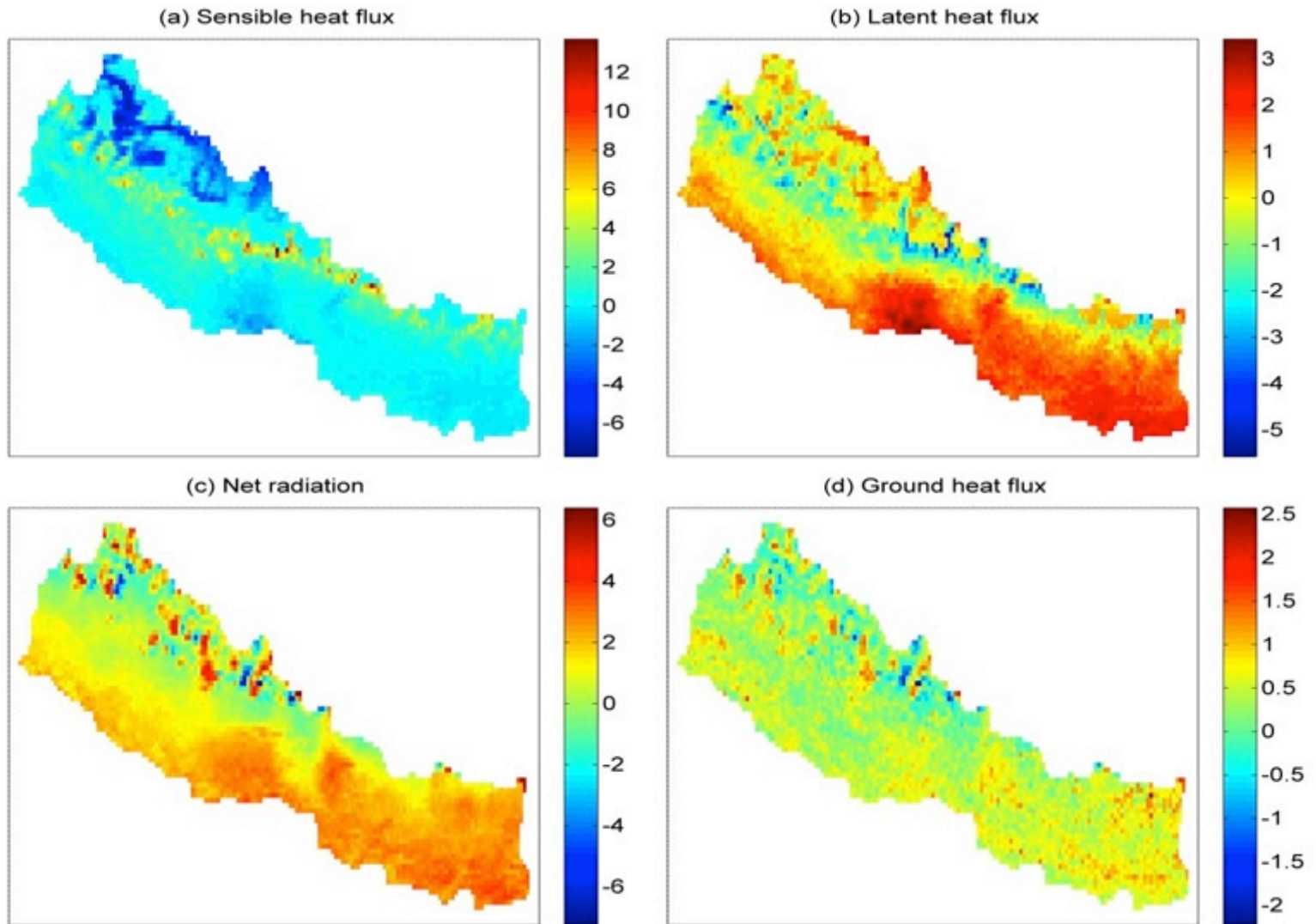
0.26C /10y increasing (1980-2000)

Big variance in the northwest Tibetan Plateau.

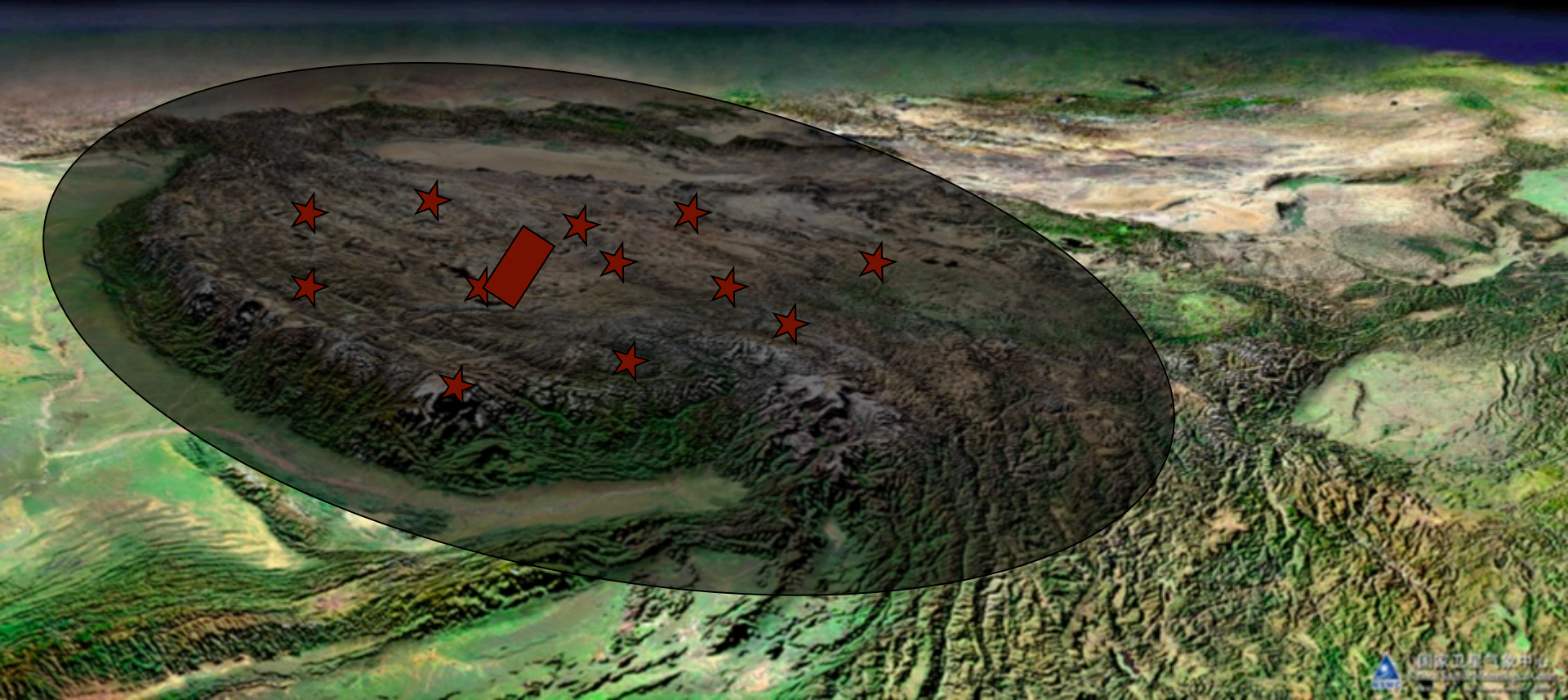
(Han and Ma et al, 2017,IJOC)



The variations of land surface heat fluxes for 11 years (2003–2013)



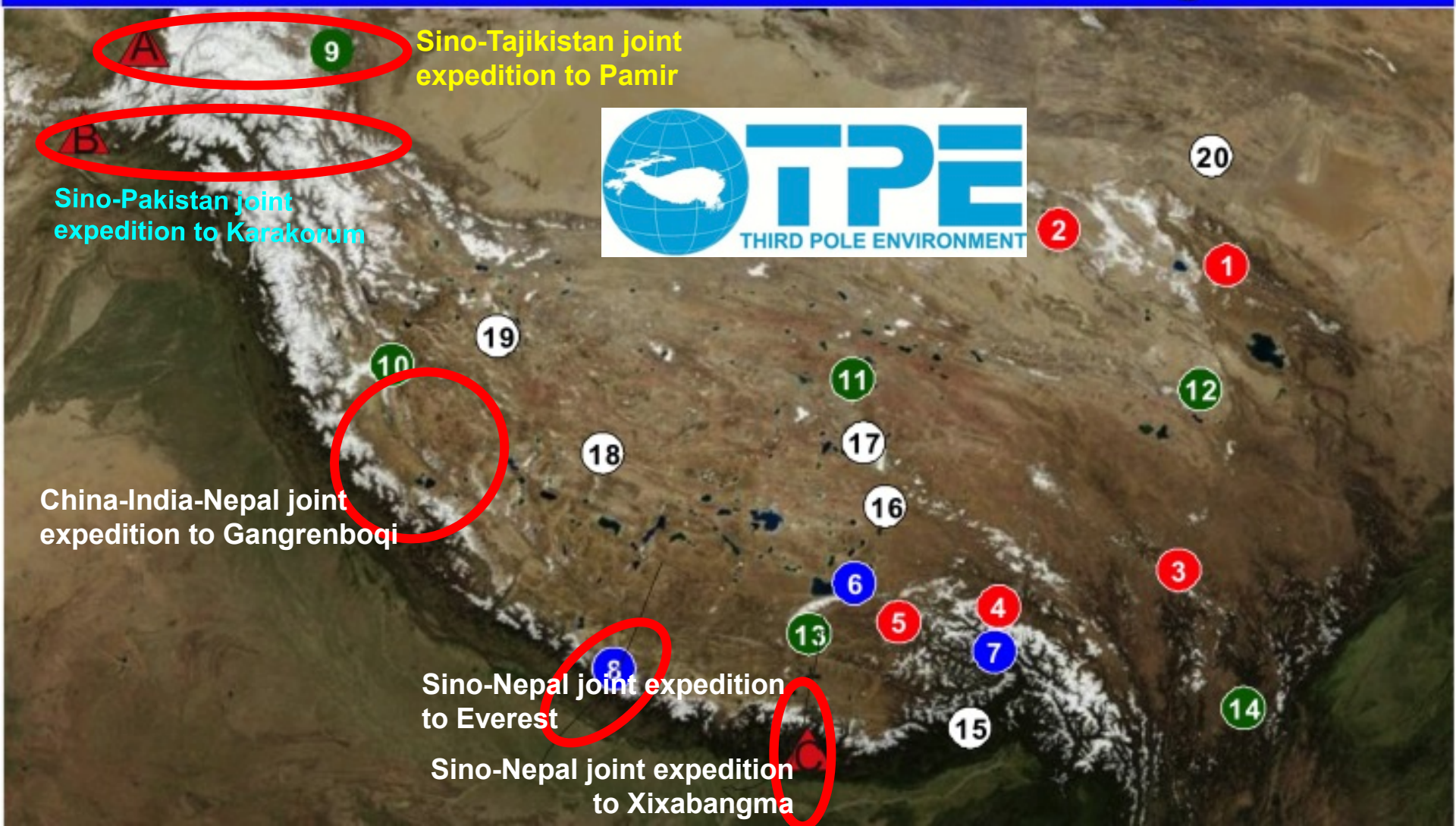
(Pukar and Ma et al., 2015, JGR)

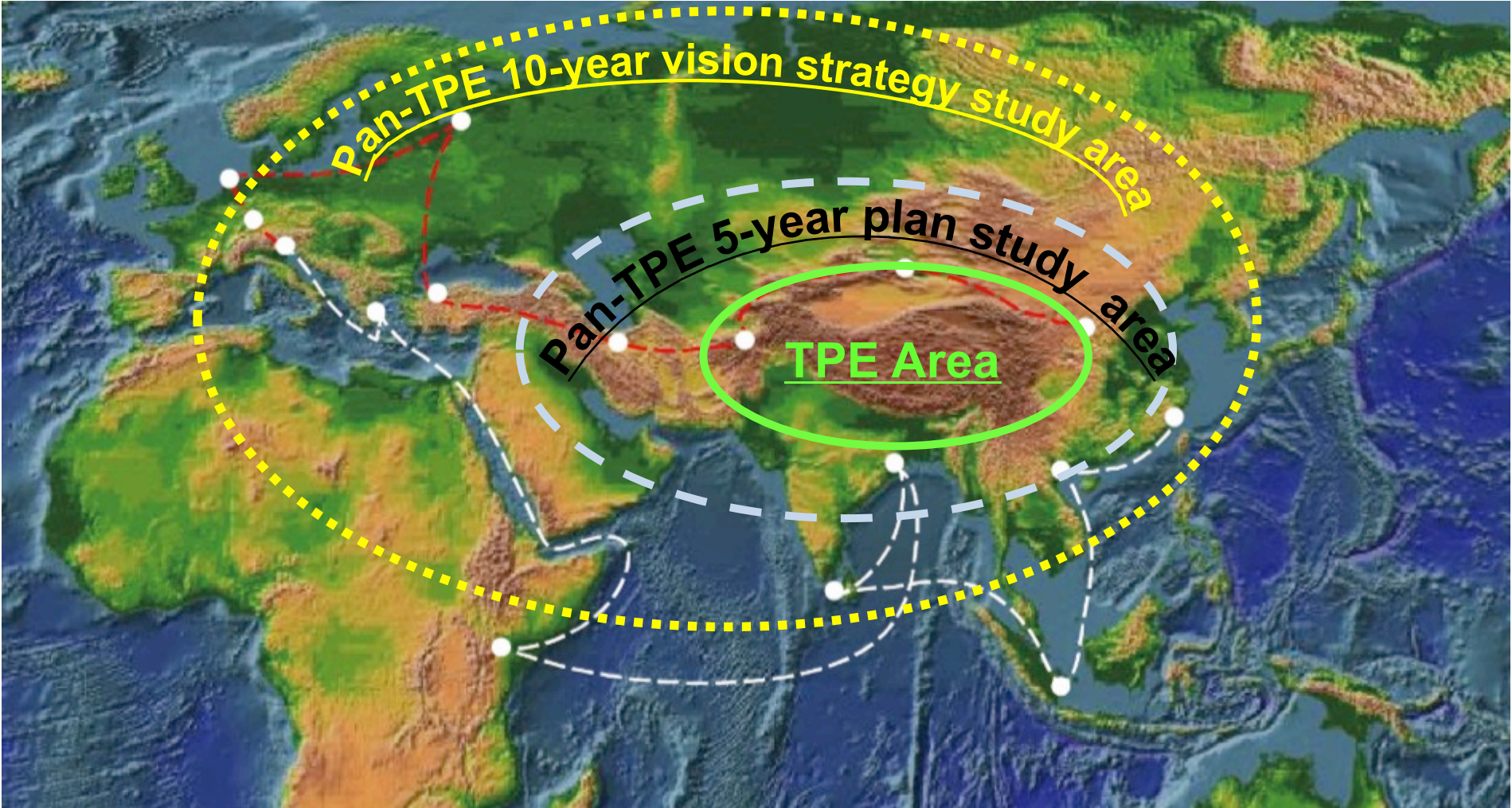


Future work:

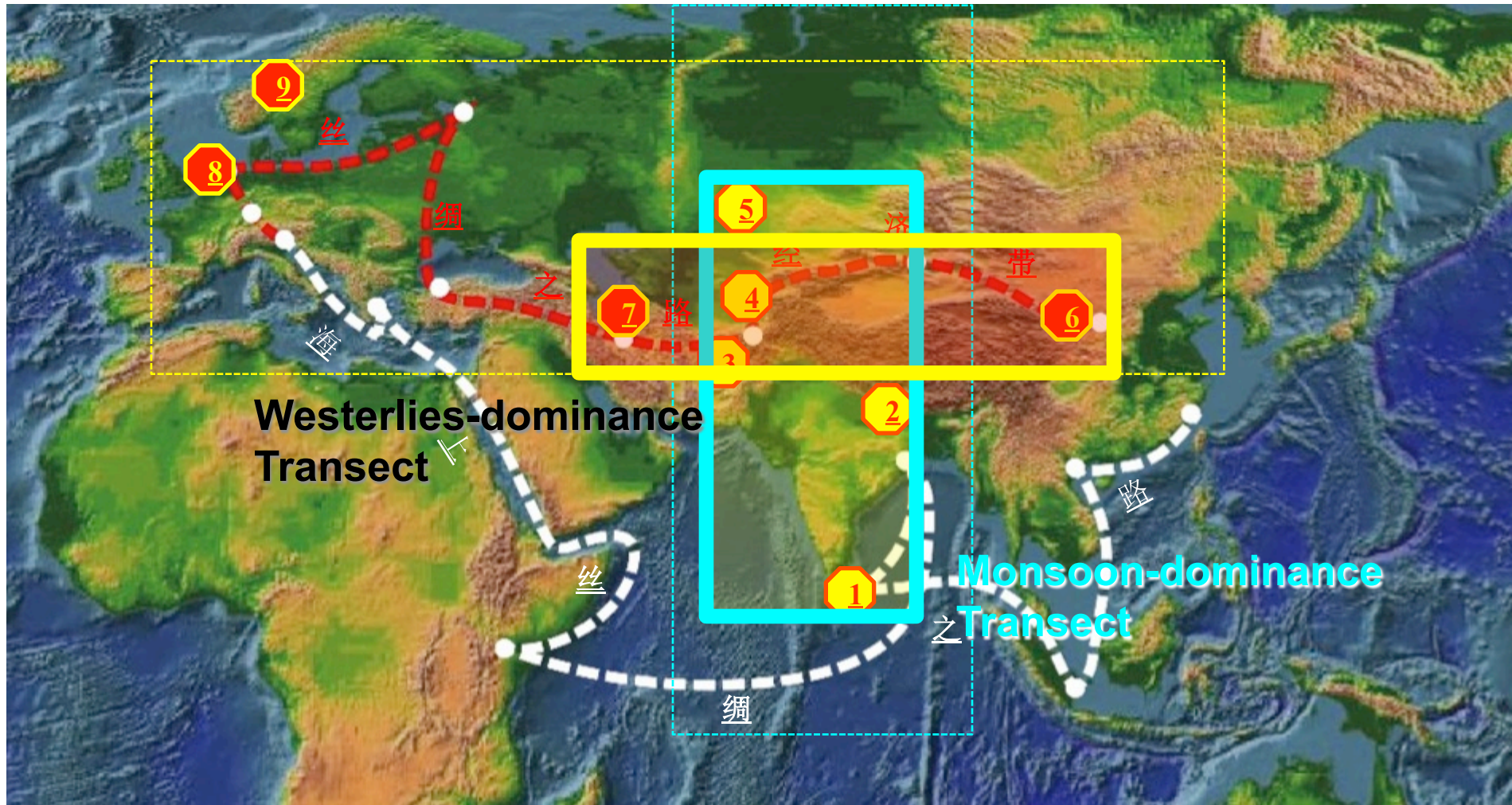
How to entire Third Pole region (Tibetan plateau and nearby surrounding region) and Pan-third pole region ...??

- | | | | | |
|-----------------|---------------------|----------------|--------------|---------------------------------|
| 1 Haibei | 2 Northern Plateau | 3 Mt Gongga | 4 Nyinchi | A Sino-Tajikistan joint station |
| 5 Lhasa | 6 NAMORS | 7 SETS | 8 QOMS | B Sino-Pakistan joint station |
| 9 Mutztag Ata | 10 NAWORS | 11 Beiluhe | 12 Maqin | C Sino-Nepal joint station |
| 13 Yazhog Yumco | 14 Yulong Glacier | 15 Metog | 16 Naqqu | 21 Waliguan |
| 17 Mt Tangglha | 18 Qangtang Plateau | 19 Tianshuihai | 20 Mt Qilian | |





Pan-TPE: Regional longitudinal and latitudinal transects



- | | | | | | | | | | |
|----------|------------------|----------|------------------|----------|-----------------|----------|-------------------|----------|-------------------|
| 1 | Sri lanka | 2 | Kathmandu | 3 | Pakistan | 4 | Tajikistan | 5 | Kazakhstan |
| 6 | Lanzhou | 7 | Iran | 8 | Germany | 9 | Sweden | | |



Lumle

TU, Kathmandu

Simara

Tarahara

Image Landsat
US Dept of State Geographer

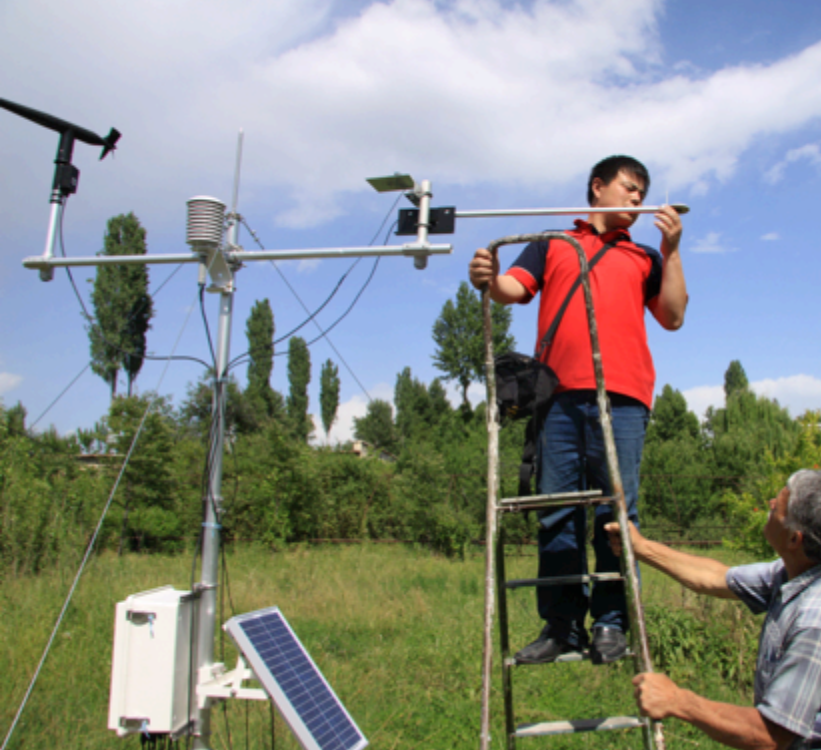
Imagery Date: 4/10/2013 lat 28.3





Pakistan



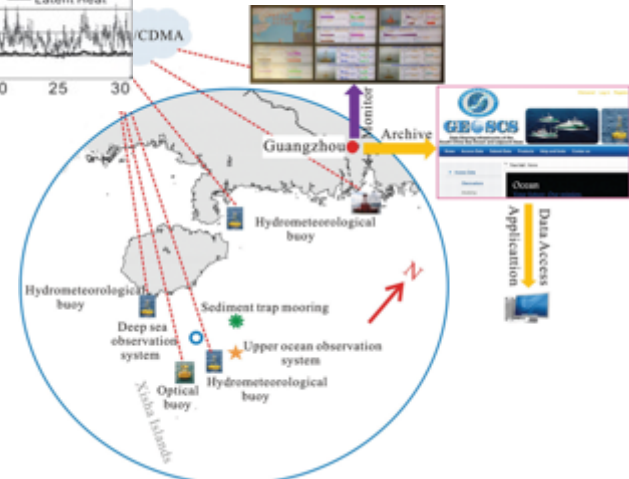
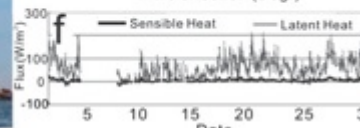
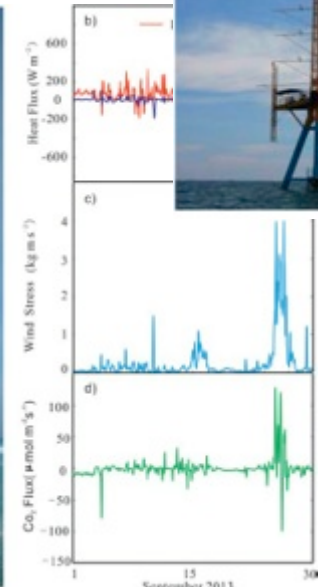
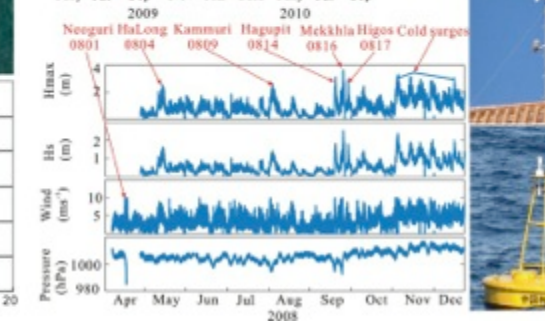
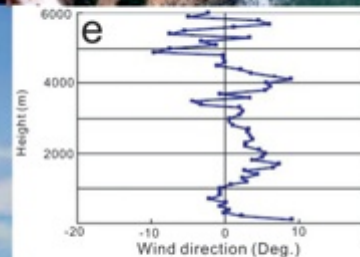
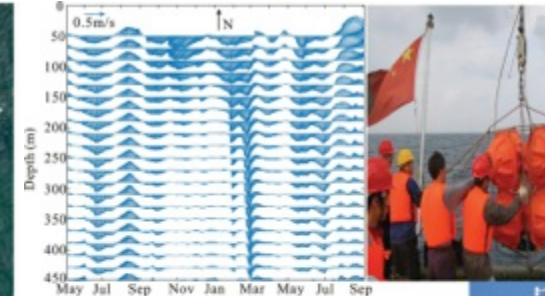
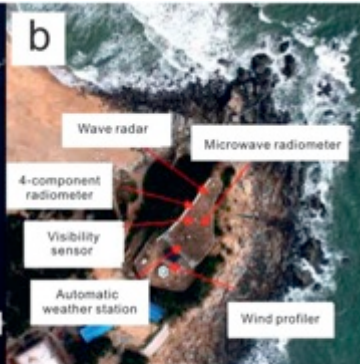
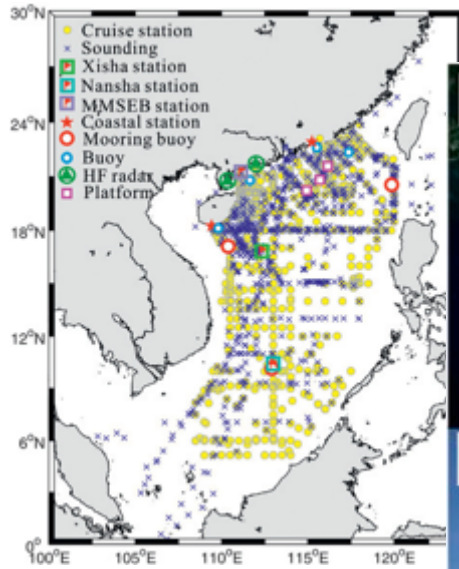


Tajikistan stations

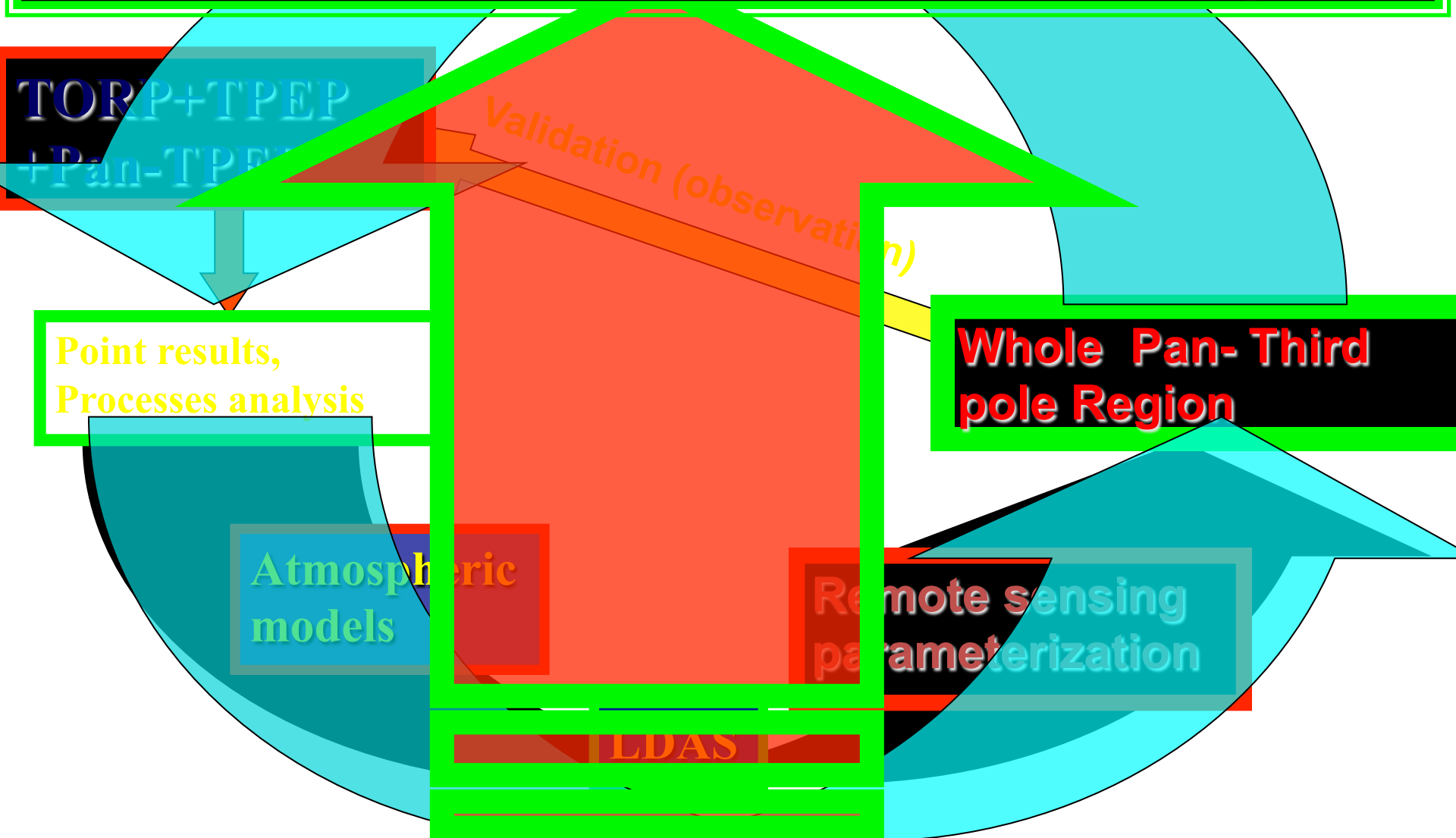
Station	Country	Lon(E)/Lat(N)	Elevation (m)	Ecosystem Type	Start year
Kalabalik	Kazakhstan	62°06'07/53°50'52	195	grassland	2012
Shchuchinsk	Kazakhstan	70°13'10/52°56'52	400	forest	2012
Atyrau	Kazakhstan	51°56'52/47° 9'54	20	desert	2012
Kyzylorda	Kazakhstan	60°59'7/46°1'54	55	wetland	2012
Almaty	Kazakhstan	76°13'6/44°38'25	500	oasis	2012
Kyzyl-Suu	Kyrgyzstan	78°12'00/42°11'29	2540	mountain ecosystem	2012
Kondara	Kyrgyzstan	68°49'51/38°53'37"	1411	mountain ecosystem	2013
Danghara	Tajikistan	69°19'/38°05'	600	cropland	2014
Zangiota	Uzbekistan	69°07.74'/41°10.61'	370	oasis cropland	2012



A MESOSCALE HYDROLOGICAL AND MARINE METEOROLOGICAL OBSERVATION NETWORK IN THE SCS



Interactions between the monsoon and westerlies over the Pan-Third pole region and its relationship to the climate change



Thank you!

ymma@itpcas.ac.cn

