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Sino-Dutch soil moisture networks on the Tibetan Plateau and in the Netherlands

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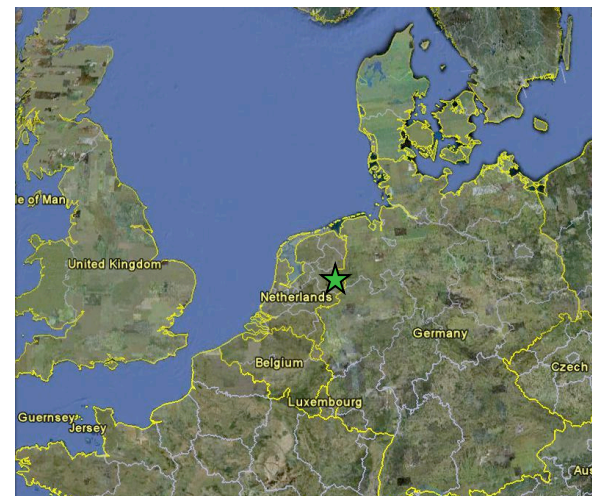
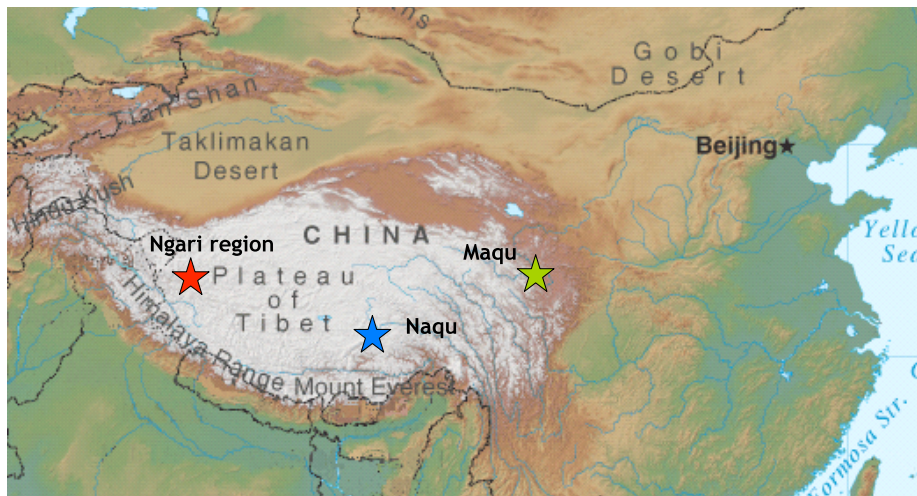
FACULTY OF GEO-INFORMATION SCIENCE AND EARTH OBSERVATION



Sites

Together ITP, CAREERI and ITC operate 3.5 soil moisture networks on the Tibetan Plateau and 1 in the Netherlands.

All sites are equipped with soil moisture and temperature measuring instrumentation (ECH₂O TM5) by Decagon installed at 5 levels, nominally at depths of 5, 10, 20, 40 and 80 cm,



Project and research focus

Projects:

- FP-7 CEOP-AEGIS (Twente and Maqu networks);
- ESA-NRSCC Dragon programme (Ngari network);
- Basic Research Development (so-called '973') Program of China.

Research focus:

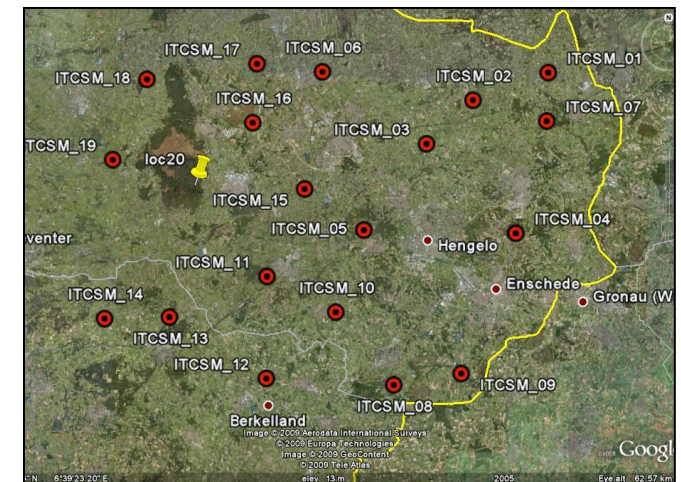
Measuring, remote sensing and modeling the land surface states (soil moisture, temperature, vegetation) and heat fluxes (latent, sensible);

- Soil moisture remote sensing (i.e. ASAR, ASCAT, AMSR, SMOS);
- Land surface modeling and data assimilation;

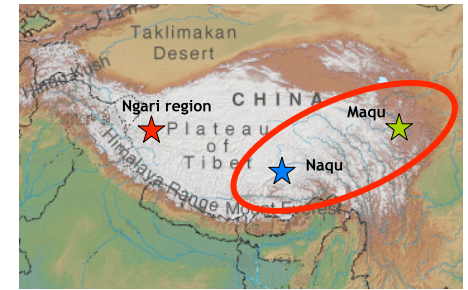
Site characteristics (Twente network, NL)

Agricultural Area:

- Number of stations: 20 stations (since 2008);
80 x 40 km box, UL: ~52.30 N, ~6.75 E
- Land covers: forests, heather, grasslands, corn (bare soil in winter);
- Mild winter (~ 4 °C) and summers (~ 25 °C), annual rainfall amount of 800 mm;
- Supporting hydrometeo. obs. are available from the authorities (e.g. waterboard, weather service KMNI).



Site characteristics (Tibetan networks)



Nagqu network (+ 4500 m), since 2006:

- Semi-arid (250 - 450 mm rain), affected by Asian Monsoon;
- 7 stations (ITC), + 40 stations (ITP): 1x1° box, UL: 32.0 N, 91.5 E;
- Grasslands and wetlands;
- GEWEX: CAMP, GAME/Tibet's
- ITP's: meso-scale network

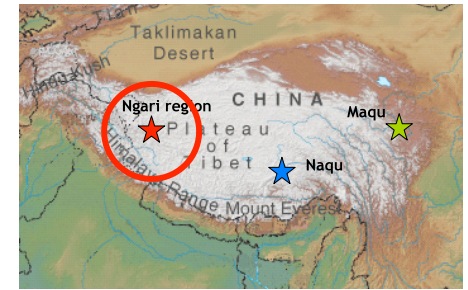


Maqu network (+ 3200 m), since 2008:

- Semi-arid (450 - 900 mm rain);
- 20 stations (CAREERI/ITC, *L.Dente*): 80 x 40km box, UL: 34.0 N, 101.5 E;
- CAREERI: PBL tower site
- Head waters of the Yellow river

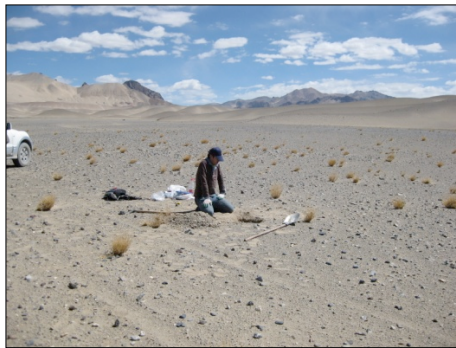


Site characteristics (Tibetan networks)



Ngari network (+ 4200 m), since 2010:

- Arid (100 - 250 mm rain)
- 16 station near Shiquanhe (Indus): 30 x 40 km, UL: 32.5 N, 79.8 E;
- 4 station near Pangang Tso Lake: 10 x 10 km, UL: 33.5 N, 79.8 E;
- Wet riverbed of the Indus and desert envirn.
- GEWEX: CAMP, GAME/Tibet's



Summary / other issues

The four soil moisture networks are all operational!

	Twente	Nagqu	Maqu	Ngari
<i>Data download</i>	Every 3 month	Each year	Every 3 / 6 months	Each year
<i>Calibration</i>	Lab.	Lab. / Gravimetric	Lab.	Lab. / Gravimetric

Scaling activities:

- SAR (ASAR WS) retrievals (150 m resolution)
- Temporal stability analysis + integration with model outputs

Expected contribution to SMAP:

- Extended Calibration/Validation for other environment (Tibetan Plateau)
- Contribute to product development (L2_SM radar/radiometer, L3/L4)

Thank you and questions ...

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