Priority Task - TERRA Stand Alone (TSA)

- Subtask 1:
  bring TSA code up to date with COSMO version & coding standards ✓
- Subtask 2:
  Review and possible revision of TSA transfer scheme (Louis) to updated COSMO transfer scheme ✗
- Subtask 3:
  Estimating Spin-Up Time of TSA:
  Preliminary Results Only ✓
- Subtask 4:
  Verification of TSA and COSMO-TERRA Vs. observations:
  Preliminary Results Only ✓

- Total: 0.25 of 0.45 FTE's

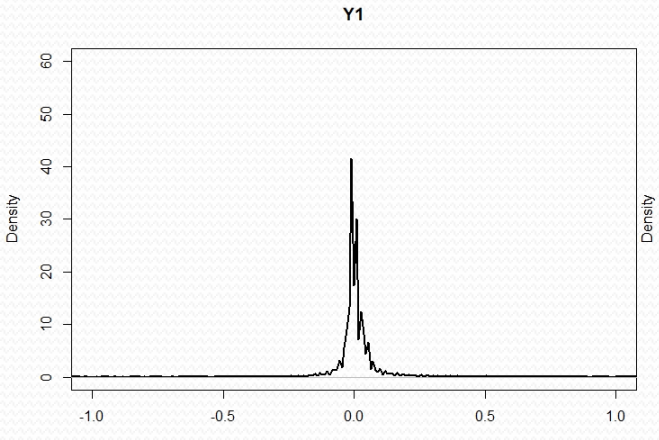
Subtask 1 - Bring TSA code up to date with COSMO version & coding standards

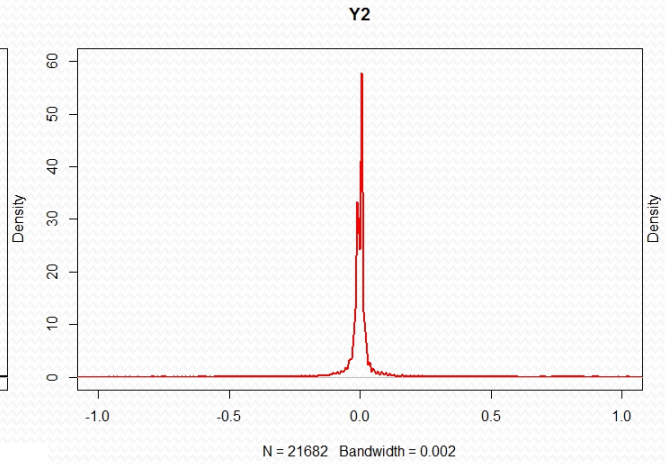
- Technical revision of TSA code according to coding standards (GOTOs, loop structure, declarations, elimination of repititions, etc)
- Applying TSA requirements to latest COSMO version (5.3). Mainly: qv as 4 dimensional parameter and not tracer.
- Adding and omitting modules required for v.5.3.

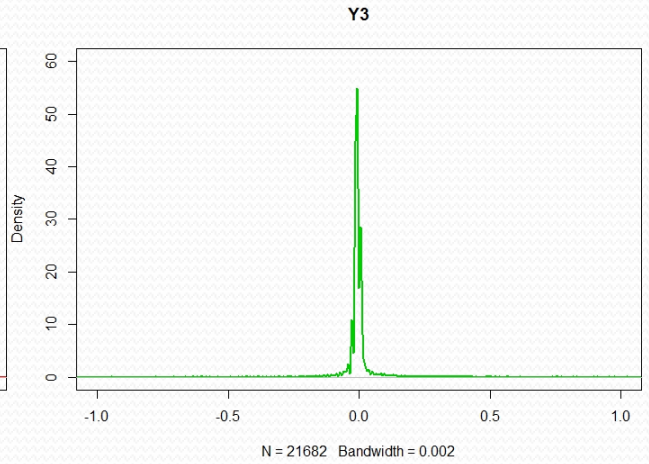
Subtask 3 - Estimating Spin-Up Time of TSA:

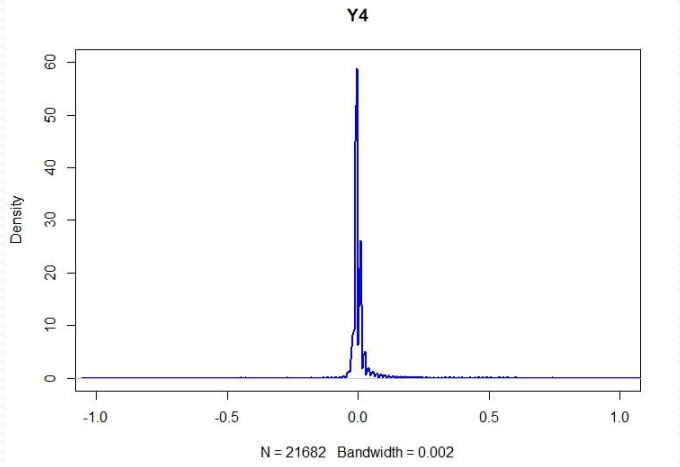
PDFs of Temp Difference from 5 years run

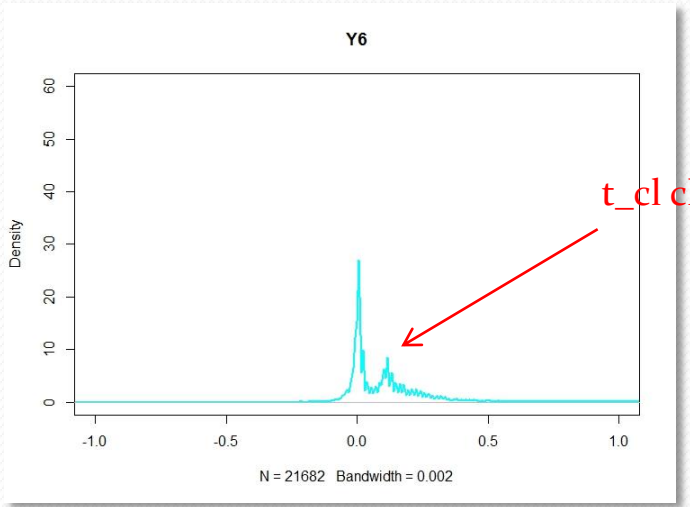
Showing results for soil type = Sandy-Loam, Depth = 18 cm









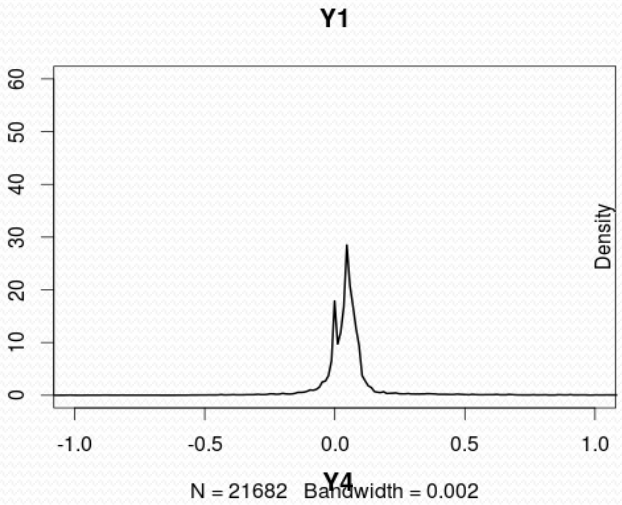


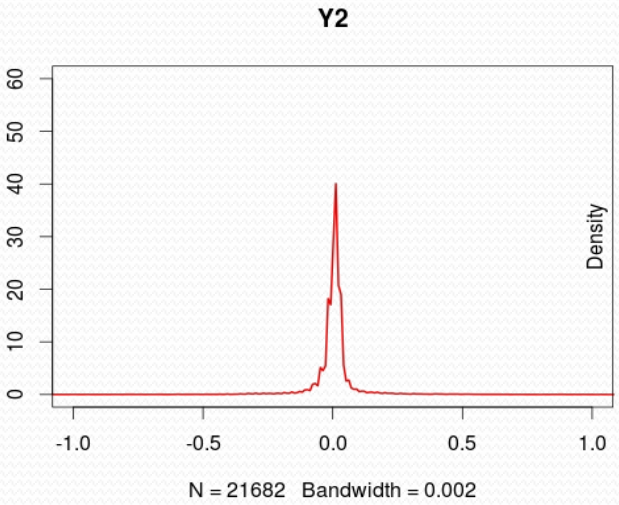
t_cl change (2009)?

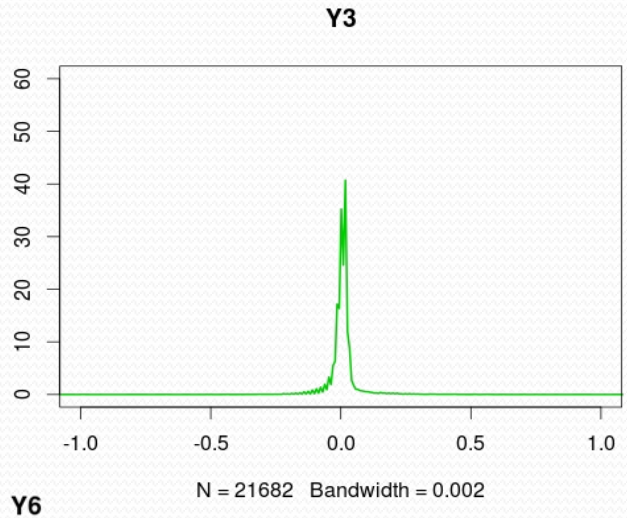
Subtask 3 - Estimating Spin-Up Time of TSA:

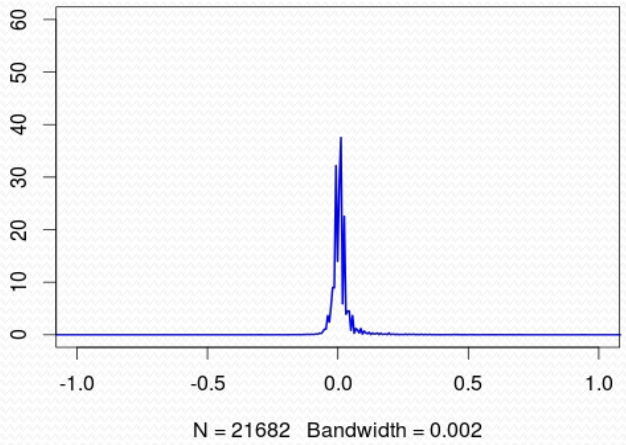
PDFs of Temp Difference from 5 years run

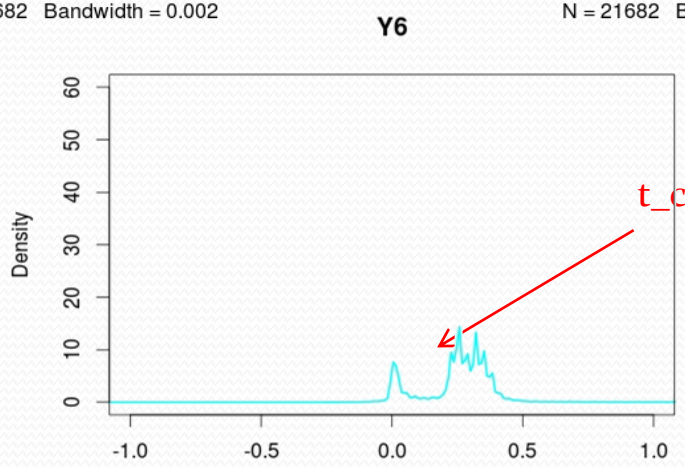
Showing results for soil type = Sandy-Loam, Depth = 54 cm











Subtask 4 - Verification of TSA Vs. observations:

- For now Verification was conducted only with 4 stations of SwissSmex project

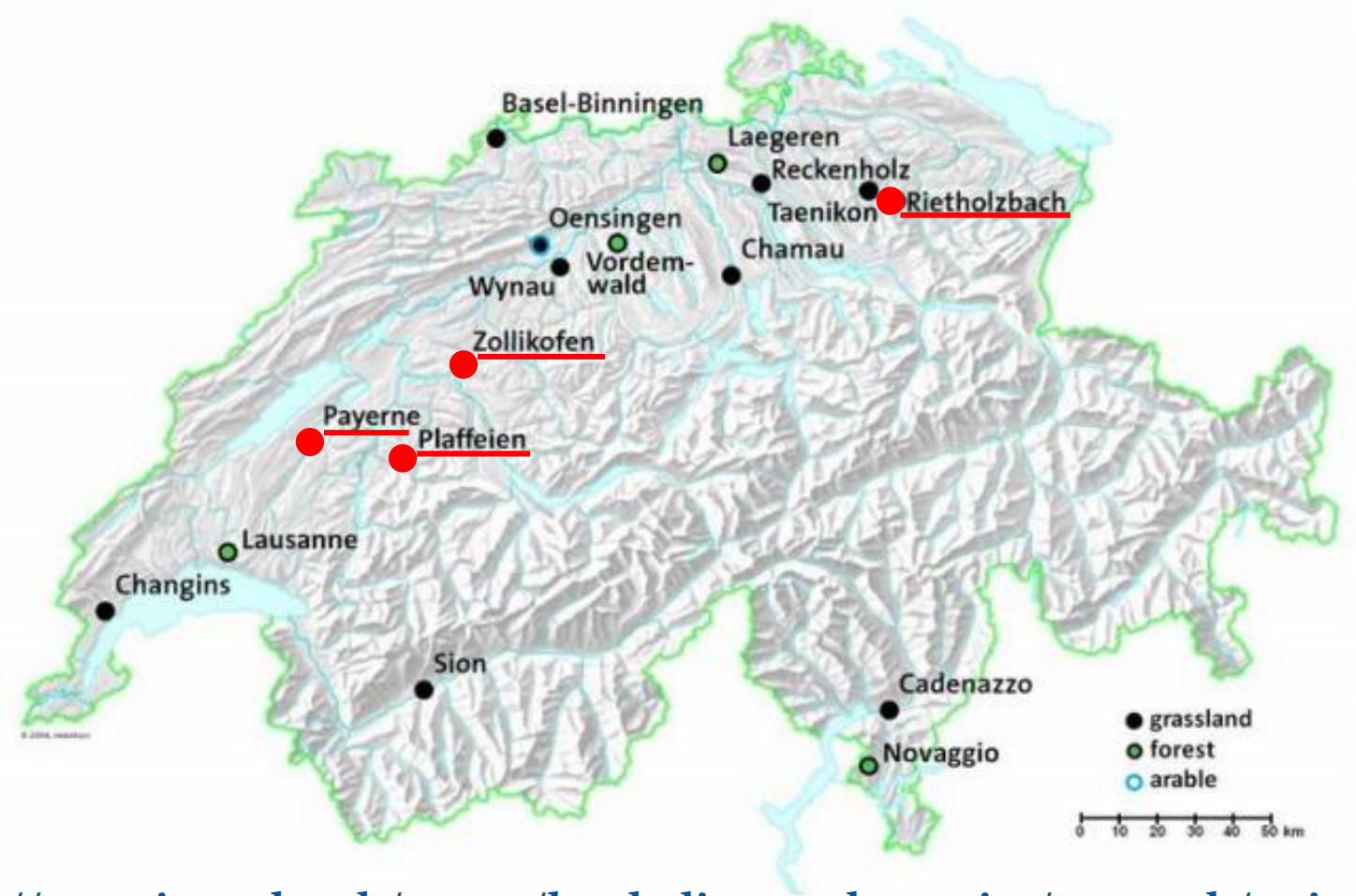
- Difficulties:
  - mismatch of levels: (shown depths are the only good agreement between depths)
    obs levels (cm): 5, 10, 30, 50, 80, 120 (not always all depths)
    model levels(cm): 1, 2, 6, 18, 54, 162, 243
  - WC difficult to translate from cumulative gravimetric water content (model) to volumetric layer water content (obs).
  - OBS data from 2 sensors in same location can deviate much

- Features:
  - in general – good correlation
  - pronounced negative bias
  - temp of model reaching negative values too often in comparison to OBS
  - oddities regarding 0 deg C in model (phase change?)

- Features shown here are similar in all stations, no difference between behavior of daily mean, 00Z, 12Z, etc.

- To be conducted: comparison to COSMO TERRA, comparison to other measurements: SwissSmex, Lindenberg, SMAP (soil moisture satellite)

Subtask 4 - Verification of TSA Vs. observations: SwissSmex Stations:



http://www.iac.ethz.ch/group/land-climate-dynamics/research/swisssmex

Subtask 4 - Verification of TSA Vs. observations: