

Dear Jean-Marie and colleagues,

I would like to give you an update of the Mires implementation. Based on COSMO V5\_5a\_1, in October I have implemented the code from Alla to the unified (ICON) version of TERRA in the recent COSMO model. Thank you very much Inna and Alla for providing the revised version.

For the impact on the soil energy budget the Peters-Lidard et al. (1998) and Johansen (1975) parameterization of the soil heat conductivity has to be switched on with `itype_heatcond=3`. An additional switch exists for the mires with `itype_mire=1` to activate the parameterization.

For first tests, a standalone run from Uli Schättler was used. It is based on a `vv=12` hrs forecast in COSMO-D2 from 2017-07-25 12 UTC. I have produced some meteograms to check the behavior of the different versions (REF= plain V5\_5a\_1, MIRE\_OFF = V5\_5a\_1 with MIRE code and `itype_mire=0`, MIRE\_ON = V5\_5a\_1 with MIRE code and `itype_mire=1`).

I expected an identical behavior of REF and MIRE\_OFF and this seems to be the case. For MIRE\_ON a clear signal is seen for the peat point in Spreewald (soil moisture `W_SO` and soil temperature `T_SO`), but also small changes for the non-peat gridpoint Lindenberg after some hours. I think this is due to the impact of the mire points on the atmospheric circulation.

Furthermore a numerical experiment is running with data assimilation started in November for an actual period against a reference experiment.

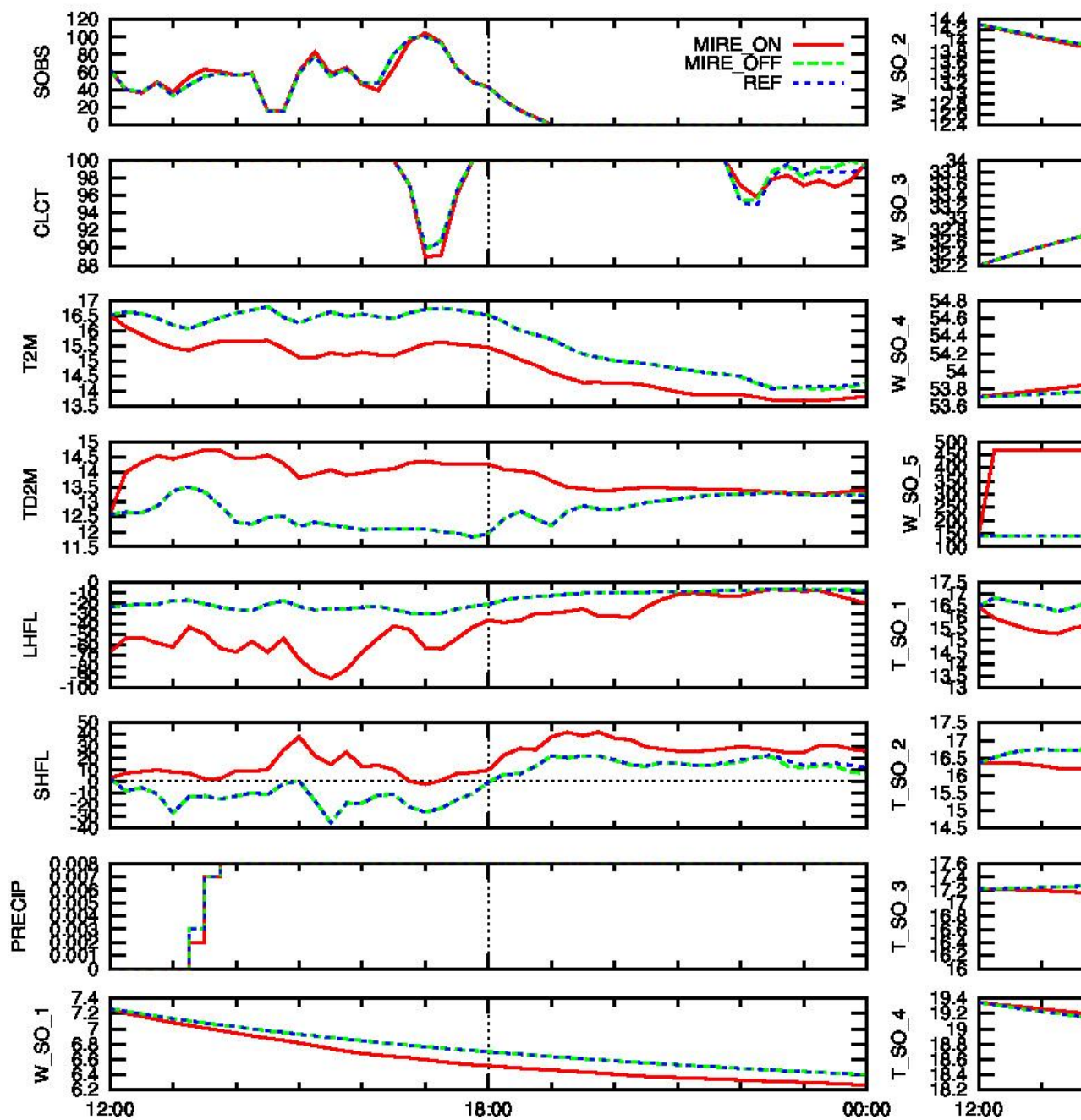
Please find below the figures of the meteograms and do not hesitate to ask in case of questions.

Kind regards  
Jürgen

I used the following variables in the meteograms:

- SOBS solar budget
- CLCT total cloud cover
- T2M 2m-temperature
- TD2M 2m-dewpoint temperature
- LHFL latent flux
- SHFL sensible flux
- PRECIP precipitation
- `W_SO` in level 1 to 5
- `T_SO` in level 1 to 4

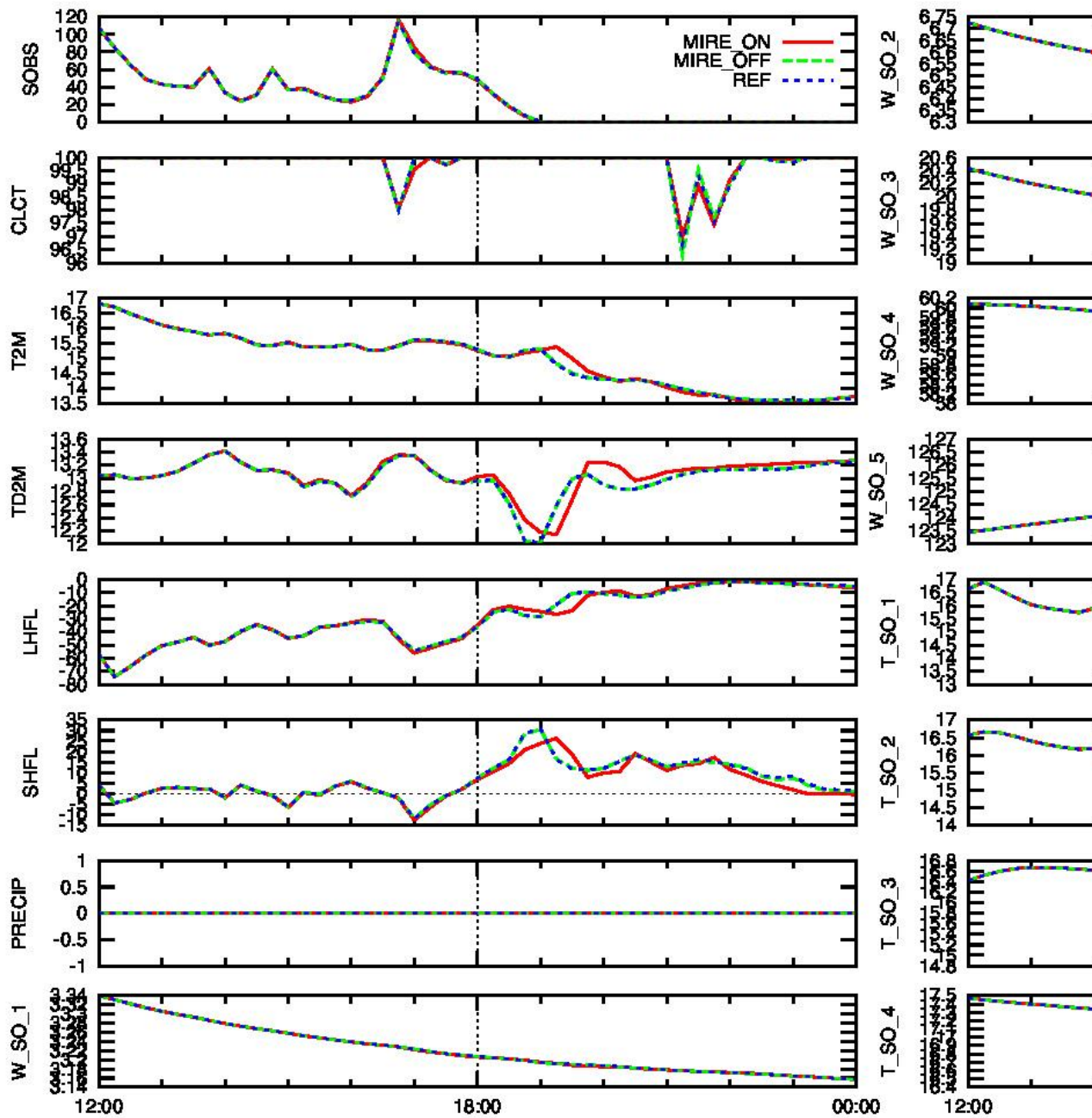
## Peat point - Spreewald



Spreewald: Lat=52.00°N, Lon=13.90°E, H=48 m. Indices 496 419  
 Spreewald: Lat=52.00°N, Lon=13.90°E, H=48 m. Indices 496 419  
 Spreewald: Lat=52.00°N, Lon=13.90°E, H=48 m. Indices 496 419

Start of time axis at 2017-07-25 12:00 UTC

## Non-Peat point - Lindenberg-Obs



Lindenberg Obs: Lat=52.23°N, Lon=14.15°E, H=102 m. Indices 503 431  
 Lindenberg Obs: Lat=52.23°N, Lon=14.15°E, H=102 m. Indices 503 431  
 Lindenberg Obs: Lat=52.23°N, Lon=14.15°E, H=102 m. Indices 503 431

Start of time axis at 2017-07-25 12:00 UTC

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