

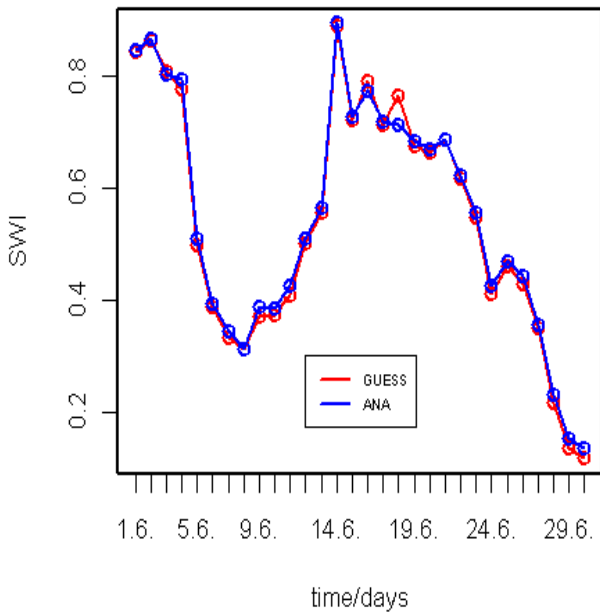
Soil Wetness Index (SWI) analysis for June 2010

Florian Meier, Vienna 2010

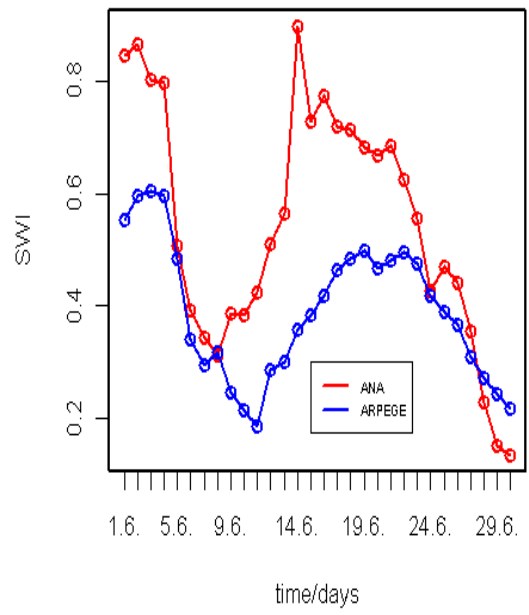
Initiated by the LACE assimilation working days in Ljubljana in autumn 2010, several LACE countries decided to calculate the SWI for a common period (June 2010) for their individual assimilation systems. The reason for these studies was a finding of the Croatian meteorologists, that sometimes, their soil assimilation system seemed to lead to a systematic moistening of the ALADIN model soil layers, compared to the reference version without assimilation. So, we calculated time series of the soil wetness index (SWI) for several LACE capitals using a „R“ software routine combined with the Rfa library to read FA files. The formula used, is the same as that, applied by the other LACE countries. SWI was calculated for the FA-files of „first guess“ (red) and „analysis“ (blue), that means before and after soil assimilation (figures on the left). The values for the cities were got by nearest neighbored grid point values.

In addition, the SWI of the Arpège coupling files, valid at analysis time for the same cities was calculated (right figures, blue curves). For some smoothing, daily means of the four assimilation steps 00, 06, 12 and 18 UTC were used. The differences between guesses and analyses are overall quite small. That means, the moisture increments by soil assimilation are small as well, which should be expected in case of a good first guess quality. Moistening, but also drying occurred and there seems to be no systematic tendency in the increments. Generally, the values for Arpège coupling files are systematically smaller, especially in the mid of June. However this effect is not of the same size in all considered cities. For example in Prague the difference is relatively small compared to Bucharest. The systematic difference between analyses and coupling files might be somehow related to the different resolution of the Arpège and ALADIN-Austria.

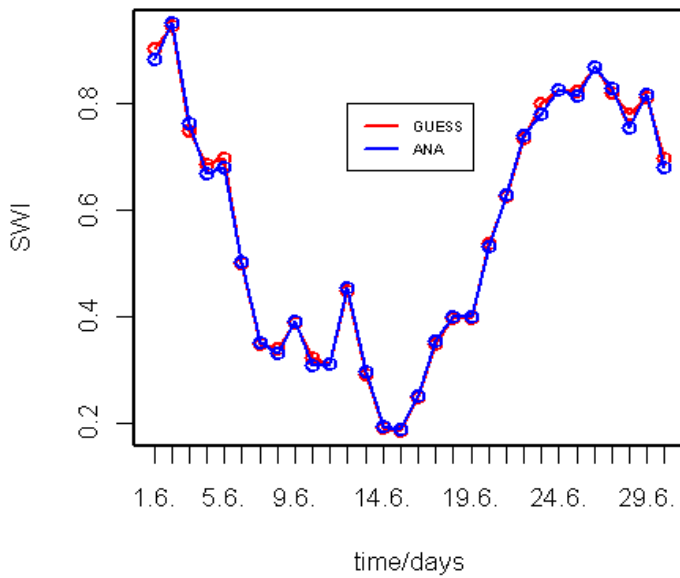
SWI at Bratislava June 2010



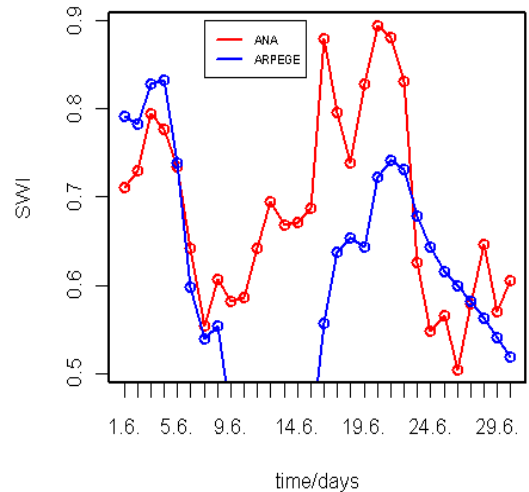
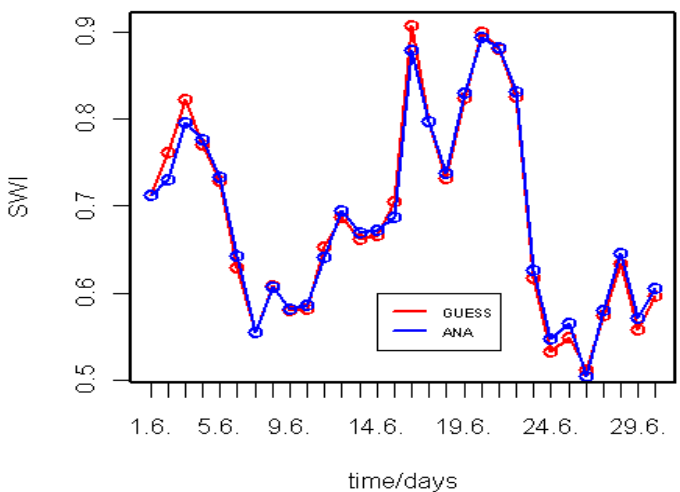
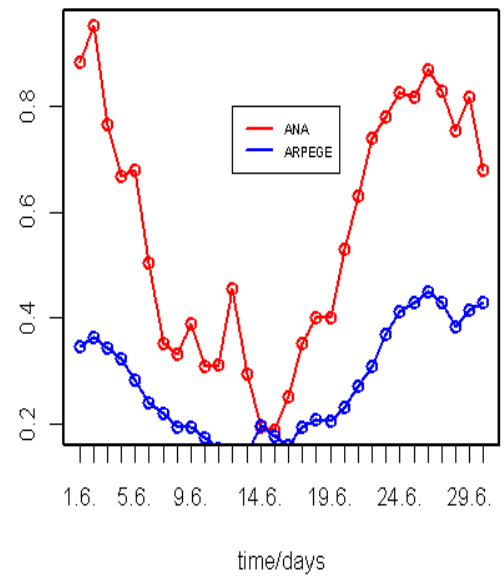
SWI at Bratislava June 2010



SWI at Bucharest June 2010

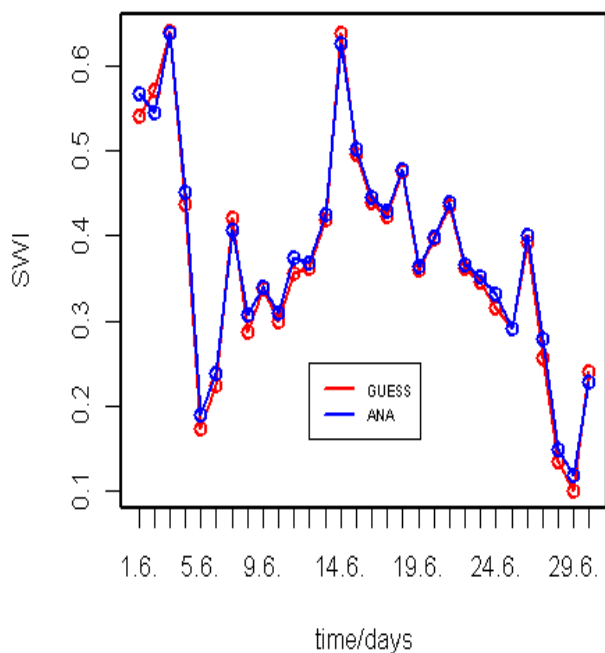


SWI at Bucharest June 2010

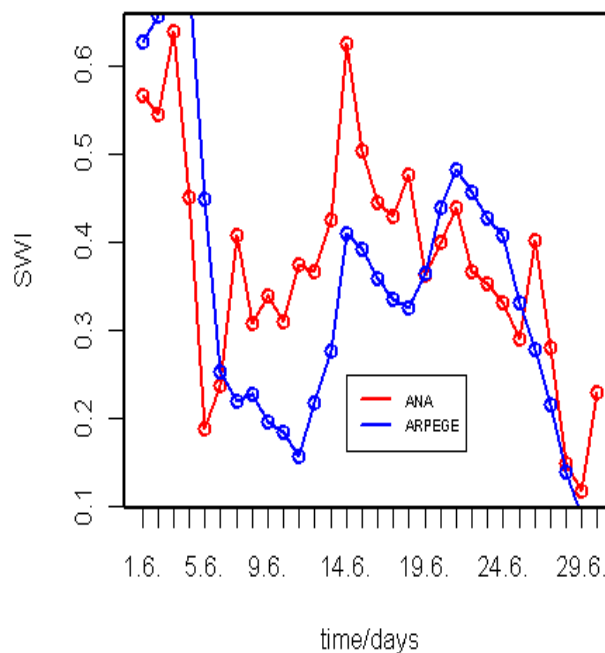


Soil wetness index for June 2010 (mean of 00, 06, 12, 18 UTC runs). Data for first guess files and short cutoff analyses (left) and short cutoff analyses versus arpege coupling files (right). Values for grid points nearest to the capitals of different LACE countries.

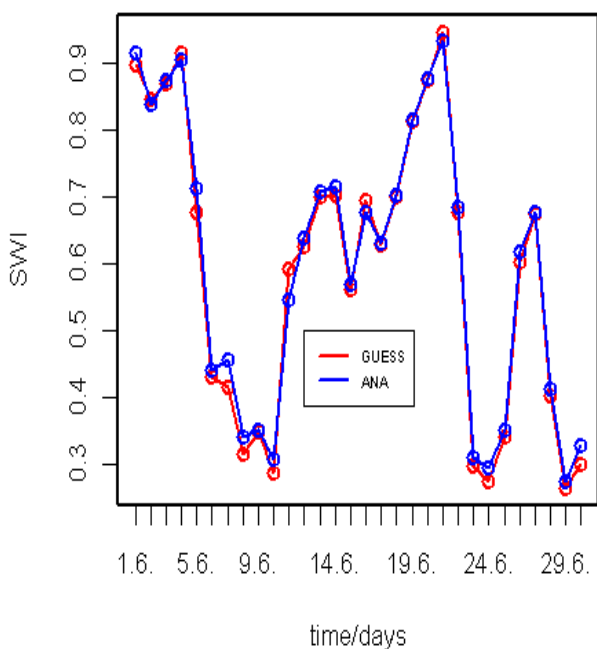
SWI at Prague June 2010



SWI at Prague June 2010



SWI at Zagreb June 2010



SWI at Zagreb June 2010

