



CarboScope decadal inversions of NEE over Europe at regional scale

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With an increasing network of atmospheric stations that produce a constant data stream, top-down inverse transport modelling of GHGs in a quasi-operational way becomes feasible. The CarboScope regional inversion system embeds the regional inversion, within a global inversion using the two-step approach. The regional inversion consists of mesoscale transport from STILT, prior fluxes from the diagnostic VPRM biosphere model, and anthropogenic emissions from a combination of EDGAR v4.3 with the annually updated BP statistic report.

The protocol of the EUROCOM inversion intercomparison project was applied, which used observations from the decade period 2006-2015 for 33 stations. The domain covers most of Europe (33 – 73N, 15W – 35E) with a spatial resolution of 0.25 degree for fluxes and 0.5 degree for flux corrections inferred by the inversion. With the launch of the operational phase of ICOS RI (Integrated Carbon Observation System Research Infrastructure) for the last years more observations are available also on new ICOS atmospheric sites. Additional to the decade 2006-2015 used in the EUROCOM protocol we extend the NEE inversion over Europe for the years 2016 and 2017 with observations from ICOS RI and especially ICOS-D, the German contribution to the ICOS research infrastructure. Results for the full period of 2006-2017 are presented with posterior uncertainties on annual and monthly temporal scale.