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Net Biome Productivity of different land use at the sites of the Tharandt cluster

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Within the Tharandt cluster there are 5 flux monitoring sites including 3 CARBOEUROPE main sites. The CARBOEUROPE sites cover typical land use of the region (spruce [monitored since 1996], grassland [since 2003], cropland [since 2004]). For all sites estimates of the Net Biome Productivity (NBP) and its uncertainty have been derived using Net Ecosystem Productivity (NEP) based on the EC measurements and C exports and imports on an annual basis.
The crop site is a small C sink (NEP of 30-110gCm-2a-1) only. The annual NEP values are dependent on the cultivated crop species (winter or summer crop). Including C export (harvest) and C import (manure spreading) lead to a considerable C source of 270-540gCm-2a-1. Organic fertilisation (C import) has a strong impact on NBP values expressed in a reduced annual net carbon source. Also, the largest interannual differences of NBP values are found at this site - mainly induced by the existence and the amount of a carbon import due to organic fertilisation. Management practices affect the NBP in a sensitive way at this crop site. Each crop shows a higher C export due to harvest than the annual NEP. To validate the calculated C equivalent using harvested grain biomass modelled NPP values are available.
Uncertainty ranges of C export, C import and NBP as well as the grassland and spruce NBP (for comparison) are also stated.
In general, land use and management strongly affect the annual NBP of non-forested ecosystems especially. So, this is the second main driver of the C budget besides the interannual variability in meteorological conditions and water availability with its influence on NEP, GPP and TER.