



Atmospheric measurements from the Ochsenkopf Tall Tower: a multi-species approach to studying the carbon cycle

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Ochsenkopf (OXK) is a tall tower site for continuous high-precision measurements of atmospheric O₂, CO₂, CH₄, CO, N₂O and SF₆, and was established as part of the CarboEurope-Atmosphere and CHIOTTO observation network. The tower is located at the summit (1022 m, 50°01'N, 11°48'E) of the Fichtelgebirge mountain range in northern Bavaria, a region where agriculture and forestry are the predominant land usages.

Air is sampled from 3 heights, 163, 90 and 23 m above ground level, and is analysed using a fuel-cell technique for O₂ (Sable Systems, model Oxzilla FC-II), a LICOR-6252 for CO₂, and a Gas Chromatograph (Agilent 6890) for CH₄, CO, N₂O and SF₆. With a record of over 1 year, we present the diurnal and seasonal trends in O₂ and CO₂ as well as changes in the O₂:CO₂ [mol/mol] ratio. Changes in O₂:CO₂ on short to long timescales can be used to study the changing influence of fossil fuel burning, terrestrial eco-system and ocean-atmosphere exchanges on the atmospheric concentrations. In addition, we will present trends in CH₄, CO and N₂O and the effectiveness of using CO and SF₆ as tracers for anthropogenic sources of CO₂.