



EINLADUNG

zum

VERA - SEMINAR

von

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Using atmospheric ^{14}C measurements to disentangle fossil fuel and biogenic CO_2 concentrations

The natural carbon cycle has been altered by mankind for many centuries, mainly via burning fossil fuels and land use change. About half of the anthropogenic emissions have been taken up by the natural carbon cycle and do thus not contribute to the additional greenhouse gas effect. A key question for future climate is how the carbon cycle will respond to global warming. Studying the natural carbon cycle benefits strongly from the ability to separate atmospheric CO_2 originating from the burning of fossil fuels from other CO_2 sources. Experimentally this can most directly be achieved by determining the ^{14}C content in atmospheric CO_2 .

The mission of the European Research infrastructure ICOS (Integrated Carbon Observation System) is to conduct long-term high-quality observations in the three major carbon-cycle reservoirs: ocean, terrestrial biosphere and atmosphere. The atmospheric measurement network currently consists of 33 stations from which 16 do monitor $^{14}\text{CO}_2$ in the atmosphere. Radiocarbon observations are conducted by a Central Radiocarbon Laboratory (CRL) to allow for the highest degree of compatibility between the ^{14}C data sets.

A second focus of the CRL is to develop new approaches to determine atmospheric ff CO_2 (fossil fuel CO_2) concentrations. Continuous ff CO_2 estimates are extremely valuable when aiming for quantifying fossil fuel emissions from countries, regions or even cities. Here, atmospheric ff CO_2 estimates provide a comprehensive and independent check to monitor promised emission reduction efforts. For this, we exploit the potential of different ff CO_2 surrogate tracers like CO , NO_x or O_2/N_2 . The talk will introduce the above mentioned different aspects of our work and will illustrate them with our latest findings.

Donnerstag, 04. April 2019, 16:30 Uhr

**1090 Wien, Währinger Str. 17, "Kavalierstrakt",
1. Stock, Victor-Franz-Hess Hörsaal**