
Peat bogs from Amsterdam Island (South Indian Ocean): Preliminary results on Holocene environmental changes.

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Abstract

Peat bogs can produce high-resolution records of environmental and climatic changes. Because almost exclusively constituted of organic matter, peat bogs provide low uncertainty chronologies (¹⁴C, ²¹⁰Pb, ¹³⁷Cs, ²⁴¹Am) that allow recovering high-quality paleo-information over the Holocene and beyond. Although they have been abundantly used to monitor past atmospheric pollution, less attention has been given to pre-anthropogenic signals, especially in the Southern Hemisphere and in the sub-Antarctic.

This paper presents preliminary geochemical data together with short-lived radioisotopes and radiocarbon dating results on a peat core from Amsterdam Island, French Austral Territories. Located in the middle of the Indian Ocean (37° 50' 742" S, 77° 32' 898" E) and at the crossroads of African, Australian and southern American dust trajectories, Amsterdam Island is a volcanic island displaying *Sphagnum* peatlands at its top.

For the very first time, we will present chronological and geochemical results on a *Sphagnum*-dominated peat core taken on this island. Macrofossils from 8 samples (above-ground plant only) were dated by radiocarbon AMS method and revealed a steady peat accumulation rate starting around 7000 cal BP (at 4.5m depth). ²¹⁰Pb, ²⁴¹Am, ¹³⁷Cs measurements and inorganic geochemistry (lithogenics, REE) complement our dataset and give the first insights of dust origin in the middle of the Indian Ocean. Five high mineral inputs with values up to 1.13 g.m⁻².yr⁻¹ are standing out of the background values (ca 0.1 g.m⁻².yr⁻¹). In a first attempt to decipher the sources of mineral inputs, Rare Earth elements spidergrams will be used to peat data to local rocks. Our long-term goal is to investigate the paleodust fluxes and signatures in such remote locations in order to extend our knowledge of the dust-climate-environment interplays.