

## **Green ice cores : Hawaiian peats record glacial-interglacial dust cycles – Preliminary Results**

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### **Abstract**

Mineral atmospheric dust is an essential component of climate and earth system dynamics. These affect radiative forcing, precipitation, atmospheric chemistry and the fertilization of marine and terrestrial ecosystems. Atmospheric dust deposition is also an indicator for aridity and wind system change. Therefore, dust deposition records can be used to trace wind and precipitation dynamics. Environmental records (peat and ice cores) suggest large fluctuations in atmospheric dust over geological times. Peatlands which composed of mosses and plants decaying under waterlogged/anoxic conditions, store local and distal dust particles along time, and therefore constitute a powerful archive of dust-climate-human interactions over thousands of years and can therefore be seen as green ice caps. Nearly all the peat studies have been achieved on continental systems especially in the NH. Tropical insular peatlands have been overlooked despite their key location and their millennial carbon accumulation, their eco-specificities ecosystems facing a number of climate change issues and their primary production which are sensitive to variation in dust inputs. Peatlands located on those islands are therefore natural 'scientific buoys' to investigate continent-atmosphere-ocean interactions such dust and wind dynamics, iron fertilization and carbon sequestration through dust fertilization.

In this study we present preliminary geochemical results on an Hawaiian peatland dating back to 35kys. We use Sc/Ti concentration ratio to fingerprint local (Hawaiian volcanism, high ratio) to distal (Asian deserts low ratio) dust sources. We also contribute to the special coverage of dust record by providing a direct atmospheric record from a peatland in the middle of the Pacific Ocean, an area where, while numerous sea-floor-based data exist, land-based direct atmospheric records are inexistent. We also provide one of the rare dust records in peat that goes beyond the Holocene and covers glacial-interglacial cycles, therefore providing a nice alternative and proxy validation to remote ice records in geographical areas where the latter are not available.