SESSION: Antarctic and sub-Antarctic earth science

MARS Themes:

Earth Systems Observations

Title:

Landscape and climate interactions in the sub-Antarctic: Past, present and future

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Abstract:

In the Southern Hemisphere, sub-Antarctic islands are the only sentinels of land in the vast Southern Ocean. The landscapes of sub-Antarctic islands provide the only terrestrial record of Quaternary glaciations and climate within thousands of kilometres of ocean and even though in the Southern Hemisphere, glacial chronologies provide valuable insights into interactions between glaciation and past climate changes, it is not well constrained on most sub-Antarctic islands. Furthermore, the capacity of the Southern Ocean to absorb anthropogenic CO2 is limited by an observed increase in the strength of the Southern Hemisphere Westerly Wind (SHW), which modulate both the upwelling and outgassing of CO2. This means that the ocean may no longer function as such an efficient net sink of CO2, driving up atmospheric greenhouse gases and accelerating rates of global warming. This presentation aims to provide a progress report on the current research on landscape and climate interactions in the sub-Antarctic by presenting the recent findings of Marion Island's glacial history, geological formation ages and contemporary climate and climate change. The current methodologies employed to reconstruct past changes in the strength and position of the SHW to assess the range of natural variability and evaluate how the SHW have modulated the CO2 sink in the past and influenced climate in the sub-Antarctic will also be specifically addressed.

Format:

Oral presentation

Keywords: (add ; between keywords)

Sub-Antarctic, climate change, glaciations