

Geochemical Signatures of Patagonian Sources of Material to the Ocean and Atmosphere

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The project aim is to evaluate the hypothesis that southern South America or Patagonia is an important source of continental material to the Southern Hemisphere ocean and atmosphere during glacial cycles and glacial to interglacial transitions. South America is one of the most important sources of Aeolian mineral dust to Antarctica during glacial climates, and by implication, to the 'upwind' Southern Ocean. Such terrigenous-derived materials may play an important role in biogeochemical cycles. Although studies have defined broadly middle and high latitude South America as a source(s) of sediments entering the adjacent seas and of Aeolian dust, outstanding hypotheses and questions remain. For example, are there important latitudinal and temporal changes in the material that exits the land into the Southern Ocean and to the atmosphere, keeping in mind the major tectonic and lithologic changes that occur along the Andes? Present knowledge is incomplete to address the above hypotheses and questions. We will carry out geochemical tracer measurements on samples collected from known time periods and in various stratigraphic contexts in Patagonia. In general, documenting the variability in sources of continental materials in space and through time from southern South America is important for fingerprinting what is entering (and when) the adjacent oceans during major climate changes.