ACINN Graduate Seminar, Innsbruck University
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Atmospheric controls on stable isotopes of snow and ice in Antarctica

Elisabeth Schlosser

Institute of Atmospheric and Cryospheric Sciences, University of Innsbruck, Austria

The atmospheric influences on stable isotopes of snow and ice in Antarctica have been studied at our institute since more than 30 years. The relationship between stable water isotopes (oxygen and hydrogen) and air temperature is used to derive paleo temperatures from deep ice cores in Greenland and Antarctica. A spatial linear relationship between isotope ratio and air temperature was found empirically. However, the isotope ratio measured in the core is the result of a complex history of pre- and postdepositional processes.

Considerable progress in understanding these processes has been made during the last 20 years. Most recently, developments in measuring technologies have made it possible to study not only the rare isotope 17O, but also continuously measure the isotopic composition of water vapor. A new project at ACInn will use the new technologies to study the relationship between air temperature and stable isotopes at the German Antarctic wintering base Neumayer. In particular the interaction between atmosphere and the uppermost layers of the snow surface will be investigated.