Paleo record of ^{17}O-excess in ground water

This is a collaborative study of Boaz Luz with Martin Stute and we plan to conduct a preliminary research on $\delta^{17}O$ and $\delta^{18}O$ from archived samples of ground waters. From our recent work we know that there is an excess of ^{17}O in meteoric water and that its magnitude negatively correlates with humidity in the source oceanic regions. Our study of the Antarctic Vostok ice-core shows that during the ice ages ^{17}O-excess was less than in interglacials. This change indicates higher humidity in the glacial Southern Ocean. In the present study we plan to extend the observations to lower latitudes. To do this we will measure ^{17}O-excess in ground waters from confined aquifers in South Africa and New Mexico. Based on the results of the pilot study we plan to submit a proposal to NSF in which we will request funding for extending the coverage in order to obtain a global picture. We expect the results will provide new observational constraints for testing models dealing with global hydrology and climate.