

2008 Fall Meeting
Search ResultsCite abstracts as **Author(s) (2008), Title, *Eos Trans. AGU*, 89(53), Fall Meet. Suppl., Abstract xxxxx-xx**

Your query was:

manning and sc=hydrology

HR: 11:20h

AN: H32A-05

TI: Identifying Recharge Location Using Noble Gas Recharge Temperatures, Pajarito Plateau, New Mexico

AU: * Manning, A H

EM: amanning@usgs.govAF: *U.S. Geological Survey, P.O. Box 25046, Mail Stop 964, Denver, CO 80225, United States*

AU: Dale, M

EM: mdale@lanl.govAF: *New Mexico Environment Dept., DOE Oversight Bureau 134 State Road 4, Suite A, White Rock, NM 87544, United States*

AB: The solubility of noble gases in water is temperature dependent. Noble gas concentrations in ground water can therefore be used to determine the temperature at the water table at the recharge location (recharge temperature). The Pajarito Plateau in Northern New Mexico is an example of a hydrogeologic setting where noble gas recharge temperatures provide valuable information about recharge location which could be utilized in numerical model calibration. Previous studies have identified two potentially significant components of recharge to the regional aquifer underlying the plateau: (1) infiltration of precipitation in the Jemez Mountains adjacent to the plateau (mountain-block recharge); and (2) infiltration of stream water in the bottoms of canyons that traverse the plateau (plateau recharge). However, results regarding the relative importance of these two components are conflicting and uncertain. Their relative magnitude is of particular concern because Los Alamos National Laboratory is located on the plateau, and the susceptibility of the regional aquifer to lab-generated wastes depends directly upon the amount of plateau recharge. The Pajarito Plateau is an ideal location for applying noble gas recharge thermometry; mountain-block recharge should have cool recharge temperatures (<12°C) due to the shallow water table in the mountains, whereas plateau recharge should have distinctly warmer recharge temperatures (18 to 21°C) due to water table depths of 200 to 300m on the plateau. Noble gas samples were collected from wells screened in the regional aquifer across the plateau. Those analyzed to date from wells screened in the upper 30m of the aquifer yield recharge temperatures of 18 to 23°C. Exceptions are two wells located within 2km of the mountain front, which have recharge temperatures of 12 and 13°C. The one sample analyzed to date from a well screened deeper in the aquifer (125m below the water table) yields a recharge temperature of 11°C. Preliminary results therefore suggest that plateau recharge comprises nearly all of the water in the upper 30m of the regional aquifer throughout much of the plateau. However, the cooler recharge temperatures

closer to the mountains and at depth indicate that mountain-block recharge may still constitute most of the total recharge to the aquifer; plateau recharge may be limited to a thin layer along the top of the aquifer at distances >2km from the mountain front.

DE: 1829 Groundwater hydrology

DE: 1832 Groundwater transport

DE: 1846 Model calibration (3333)

DE: 1876 Water budgets

DE: 1895 Instruments and techniques: monitoring

SC: Hydrology [H]

MN: 2008 Fall Meeting

[New Search](#)

[AGU Home](#)