Hydrol. Earth Syst. Sci. Discuss., 4, S652–S653, 2007
www.hydrol-earth-syst-sci-discuss.net/4/S652/2007/

Hydrology and Earth System Sciences Discussions

Interactive comment on "Tracing and quantifying groundwater inflow into lakes usingradon-222" *by* T. Kluge et al.

T. Kluge et al.

Received and published: 1 August 2007

The method for Rn measurement recently described by Leaney et al. (2006) is certainly an interesting alternative to the one proposed in our manuscript. Researchers who have a state-of-the-art liquid scintillation counter available, will probably prefer that method. Researchers starting from scratch or those who are already using a RAD7, which is quite common in the field of Rn analysis, will likely find our method to be cheaper, even if maybe not simpler in terms of fieldwork.

The issue of the supported Rn, or the point that the excess Rn is the important quantity, has also been brought up by the reviewer M. Schubert. It is clear that more emphasis on this point will have to be put in a revised version. The few measurements of Ra that we performed in our pilot study were certainly not ideal, but sufficient to demonstrate the general feasibility of the method.

We agree that radiogenic 4He potentially is an interesting tracer for groundwater-lake interaction. Many lakes show small excesses of radiogenic 4He, which have been used to deduce He fluxes, but not groundwater inflow (a review was given by Kipfer, R., Aeschbach-Hertig, W., Peeters, F., and Stute, M., 2002. Noble gases in lakes and ground waters. In: Noble gases in geochemistry and cosmochemistry. Mineralogical Society of America, Geochemical Society, Washington, DC). One problem is that the concentration difference between groundwater and lake water may not be sufficiently large in the case of young groundwater. From previous studies, we have several data on He in wells in the vicinity of Willersinnweiher, and their He concentration is at most 50 % higher than in the lake. Thus, the detection of a small groundwater inflow by He is hardly feasible.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 4, 1519, 2007.