Ra^{226}/Rn^{222} in groundwater of the Mountain Aquifer and Ein-Feshcha Spring: West Bank

RITA DIECK[1]*, AMER MARIE[2], AVNER VENGOSH[3] AND JAWAD HASAN[4]

[1]Al-Qud's University, Betany, PO Box 89, East Jerusalem, Palestine (*correspondence: ritad@bethlehem.edu)
[2]Al-Qud's University, Betany, PO Box 89, East Jerusalem, Palestine
[3]Division of Earth and Ocean Sciences, Box 90227, Duke University, Durham, NC27708 USA
[4]Al-Qud's University, Betany, Pobox 89, East Jerusalem, Palestine

The increase demand of water and the lack of resources in the West Bank had led to investigate the quality of water through radioactive elements. In our study Ra^{226} and Rn^{222} had been measured before and after the mixing process. This study investigates that the ratio Ra^{226} / Rn^{222} in the recharge area coming from the mountains of the West Bank is relatively high comparing with the ratio at Ein Feshcha in the East. This change in the ratio is due to the mixing between fresh water coming from the recharge area with old saline water at Ein Feshcha. Fresh water coming from the recharge area contains high oxygen content which will be oxidized by Fe and Mn that is found in old water at Ein Feshcha.Thus the oxidized form of iron and manganese will have high affinity of adsorption to Ra^{226} thus decreasing its concentration leading to the decrease in the ratio Ra^{226}/ Rn^{222}.

Greenhouse gas (CO_2, CH_4 and N_2O) emissions from Lake Rotsee (Switzerland) during autumn turnover

TORSTEN DIEM[1]*, WERNER EUGSTER[2], BEAT MÜLLER[1] AND CARSTEN J. SCHUBERT[1]

[1]Eawag, Seestr. 79, 6047 Kastanienbaum, Switzerland (*correspondence: torsten.diem@eawag.ch)
[2]Institute of Plant Science, ETH Zürich, Universitätstrasse 2, Zürich, Switzerland

The emissions of three greenhouse gases (CO_2, CH_4 and N_2O) were measured in Lake Rotsee (Switzerland) during 2008 fall turnover. Diffusive gas fluxes were measured every 2-3 days using floating chambers and methane flux was additionally measured during the entire period via direct eddy covariance flux measurements. Dissolved gas concentrations were monitored during the whole lake turnover period along with ebullition flux measurements.

The lake turned from a CO_2 sink before turnover into a source during and after mixing, as well as being both a small source of and sink for N_2O. Methane was emitted consistently (diffusive + ebullition) over the three month period (~1 g m^{-2}) with the largest part of the emissions resulting from two major mixing events. Methane concentrations in the epilimnion increased by a factor of 2-5 after these events, but methane oxidation, which was negligible during the stable stratification period, decreased the amount of methane escaping to the atmosphere. Bubble flux from late October to mid-November was constantly high and later settled to only episodic bursts. Average emissions were 110 ± 180 mg m^{-2} d^{-1} for the whole time period.