Geophysical Research Abstracts
Vol. 12, EGU2010-2344, 2010
EGU General Assembly 2010

Methodological approach to field measurement of mercury vapor flux using portable devices in a mineralized volcanic realm: Rodalquilar (SE Spain)

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The measurement of mercury vapor flux is a technique that has been applied to the exploration of buried sulfide deposits. This is due to the general presence of mercury in sulfide ore deposits and the mobility of released mercury gas, that is able to ascend to the surface where can be detected and measured as an indication of the deep presence of such deposits. We tried this technique as a pilot study at the Rodalquilar Valley (Almería SE Spain), where alluvial and colluvial sedimentary deposits cover epithermal veins and strongly altered volcanic rocks. We used portable analytical devices including a LUMEX RA915+ mercury vapor analyzer and an Oxford X-MET3000TXS X Ray Fluorescence multielemental device. The pilot survey consisted in measurements of mercury emissions in the alluvial and colluvial soils, using an opaque flux chamber. The usage of opaque flux chambers minimizes the effect of different sun radiation. We also dug $\sim$ 1.5 cm (diameter) vertical holes in the sampling area to observe whether these channels allowed enhanced rates of mercury flux. The results put forward differential emissions, in particular with the measurements corresponding to 15 cm deep holes.