

The GROundWater Data Analyzing System (GROWDAS) of wide applicability utilizing QMS for monitoring the dissolved gas

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The fault is a path of fluids from the underground (e.g., Rose et al., 1979). Quantification of flux of fluids is necessary for examinations a chemical change and its extent around the fault zone according to the earthquake or the fault activity. There is few monitoring system of wide applicability suppressing the initial and running costs, although the estimation of the flux at many points with various geologic setting seems to be effective and straightforward.

The gas chromatography is a traditional method for gas monitoring along fault zones (e.g., Sugisaki, 1978). But the exchange of carrier gas cylinder at regular intervals is necessary for the method. One of the alternatives is a quadrupole mass spectrometer. However, vapor accompanied with the free gas extracted from groundwater obstructed precise measurement of gas concentrations by means of mass spectroscopy. We tried automatic gas-purification giving a priority to drying the gas sample extracted from groundwater from the active Atotsugawa fault zone, Central Japan.

We will introduce the improved device and data measured every hour. An uninhabited, continuous observation in various geologic setting with the GROWDAS will be able to become a durable and low cost technique to understand the variety of chemical characteristics of fault zones.

Rose, A. W., H. E. Hawkes, and J. S. Webb (1979), *Geochemistry in Mineral Exploration*, Second Edition, 657 pp., Academic Press, London.

Sugisaki, R. (1978), Changing He/Ar and N₂/Ar ratios of fault air may be earthquake precursors, *Nature*, 275, 209-211.