Development of exploration technique using mercury and the application to active fault

Hidenori Iiai[1]; Koichi Nakagawa[2]

[1] Faculty of Science, Osaka City University; [2] Geosci., Osaka City Univ.

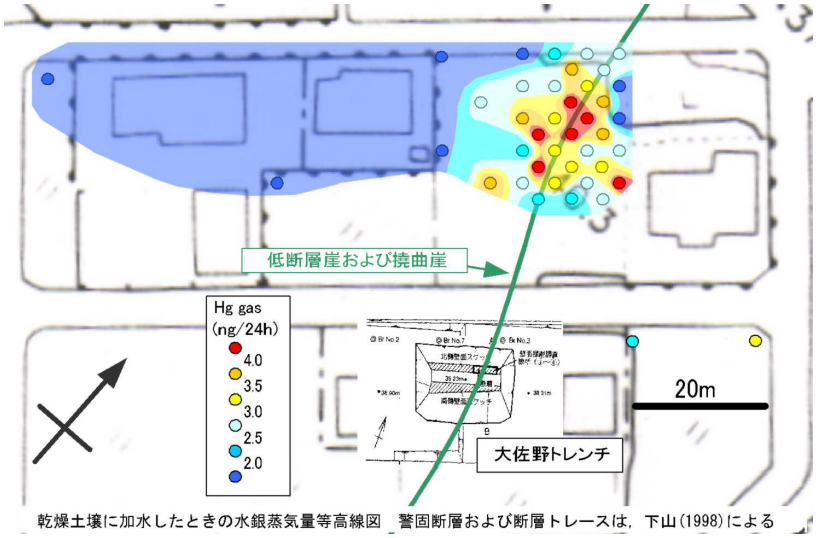
http://www.sci.osaka-cu.ac.jp/geos/geo4/index.html

The mercury exploration by means of volatile mercury has been made for the geothermal resources and mercury deposits. New technique was developed for survey of active fault. Experiments on the behavior of vaporized mercury were performed under many kinds of conditions in laboratory. Following some results were obtained.

1. Amount of measured volatile mercury in the topsoil sample exposed at field increases drastically by moistening with pure water.
2. Amount of the volatile mercury in same sample decreases rapidly with number of cycle of drying and moistening.
3. Drying process is necessary for soil to adsorb the volatile mercury efficaciously.

Therefore, the conditions satisfying a certain dried period and moistening enhance the sensitivity to detect the volatile mercury in soil exposed. It means that the volatile mercury contained to the top soils covering is suitable as sensor of the fissure reached to the deeps, suchlike the existence of terrestrial heat or active fault. The new technique based on the topsoil analysis was developed to survey of active fault

Comparative measurement of the volatile mercury surveys using present and conventional techniques performed at the active Kego Fault and the vicinity in north Fukuoka, Kyushu Island, Japan. As a result, the distinctive distribution pattern of volatile mercury corresponding to the fault trace was obtained by means of the present technique. Accordingly, the new technique presented was verified the validity for the survey of active fault.



乾燥土壌に加水したときの水銀蒸気量等高線図　警固断層および断層トレースは，下山(1998)による