International Session (Oral) | Symbol A (Atmospheric, Ocean, and Environmental Sciences) | A-GE Geological & Soil Environment

[A-GE03_30AM2]Subsurface Mass Transport and Environmental Assessment

Convener:*Yasushi Mori(Graduate School of Environmental and Life Science, Okayama University), Hirotaka Saito(Department of Ecoregion Science, Tokyo University of Agriculture and Technology), Ken Kawamoto(Graduate School of Science and Engineering, Saitama University), Shoichiro Hamamoto(Department of Biological and Environmental Engineering, The University of Tokyo), Ming Zhang(Institute for Geo-Resources and Environment, National Institute of Advanced Industrial Science and Technology), Chair:Yasushi Mori(Graduate School of Environmental and Life Science, Okayama University), Ming Zhang(Institute for Geo-Resources and Environment, National Institute of Advanced Industrial Science and Technology)

Wed. Apr 30, 2014 11:00 AM - 12:44 PM 213 (2F)

This session covers the topics on mass transport, waterand energy cycles in geoenvironment. Subjects related to laboratoryand field measurements, theoretical analysis, and numerical modelingwill be discussed. Presentations on geo-pollution, remediation,geological disposal of hazardous wastes, ground source heatutilization, mass transport in vadose zone, soil-water monitoring, andenvironmental assessment are encouraged.

12:20 PM - 12:35 PM

[AGE03-P08_PG]Enhancing Radioactive Fallout Removal from the Surface Soils by using artficial macropore transport system

3-min talk in an oral session

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Keywords:Macropore, Degraded Soils, Radioactive Substance

Fukushima nuclear power plant damaged by the East Japan Great Earthquake caused radioactive fallout around the Tohokuregion. Because radioactive fallout was positively charged,it was reported to be absorbed to soil surface. Surface soil scraper and deep plowing would be,therefore effective for the removal of radioactive materials. However,these techniques were available for flat and wide area like school yard or farm land.in many orchards,fruit absorbed radioactive Cesium, which indicated radioactive fallout did not immediately absorb to soil surface but stayed as exchangeable ion for a while and was absorbed by plant root. therefore the technique for sloped land is also needed for better management for radioactive fallout.we applied artificial macropores to effectively remove radioactive fallout from the surface soil. artificial macropore filled with bamboo fiber was made in siol(Field:d=1 length=50cm,Lab:d=0.6cm,length=20cm). Zeolite was placed at the bottom of the macropores(Field:50cm,Lab:20cm)to absorb transported Cesium.Four treatments were prepared for field experiments,such as macropore with ammounium sulfate,no macropore and no macropore with ammonium sulfate. In the lab experiments, Potassium was used for safety reason and a 400mm artficial rainfall was applied for one month. Results showed artificial macropore effectively transported radioactive Cesium/Potassium to deeper profile. In the lab experiment, artificial ,macropore successfully delivered

Potassium to deeper profile while no radioactive Cesium was observed from the drainage water.