Geophysical Research Abstracts
Vol. 14, EGU2012-13558-1, 2012
EGU General Assembly 2012

Modelling results for subsurface oil contaminant and their utility for site characterization and monitoring

T. Ghinda, T. Ardeleanu, C. Maria, C. Stanescu, and G. Pietrareanu
National Research-Development Institute for Environmental Protection, Bucharest, Romania (tghi2008@yahoo.com)

Ground water near a former oil installation flows through a subsurface volume with old contamination with crude oil from an event that occurred about 17 years ago.
The site and contaminant-related processes are studied within the FP7 project SoilCAM.
The slow process of contaminant transport by ground water depends on the highly variable water level in the site.
Specific conditions of the region near Trecate (between Turin and Milan) were taken into account in a transient model for calculation of ground water level.
The contaminant transport model is based on the simulation of ground water level fluctuations in the contaminated site, allowing to consider ground water action on the contaminant at various depths.
Processes taken into account for calculations include: contaminant concentration increase in ground water while it flows through contaminated soil layers, contaminant transport, sorption, degradation of the contaminant during its transport by water. A model type with non-equilibrium transfer of the contaminant from subsurface contaminated volume to ground water was used.
Contaminant degradation is influenced by specific concentrations of existing substances in ground water.
Refined modelling of the degradation processes allows for detailed analysis of specific aspects regarding degradation and chemical changes due to the contaminant presence in ground water.
Modelling results are based on much information obtained by various other methods and give consistent images of ground water flow and degradation processes in the whole area, contributing to site and plume characterization and monitoring.
The distributions of calculated concentrations give information for interpretation of geophysical measurements.