

SMRI

FALL MEETING, 15-18 OCTOBER, 2000

SAN ANTONIO, TEXAS, USA

**UNCONTROLLED LEACHING OF A SALT LAYER
IN AN OIL FIELD IN ALGERIA**

By Jean-Marc MORISSEAU
Géostock (France)

Abstract

In February 1978, in the Northern part of the Algerian Sahara, a well, drilled for oil production purpose, accidentally created a flow path from a deep artesian aquifer through a salt layer located above. The strong water flow which has been originated has induced an uncontrolled and continuous leaching of the salt, resulting progressively into a gigantic cave into the salt layer at several hundreds meters below ground level. In October 1986, a collapse suddenly occurred at surface, creating a crater with a diameter of about 250m and a depth of 75m.

Until now, the phenomenon has not been stopped and the water is still flowing from the aquifer, but it is thought that the leaching process has reduced significantly since the beginning.

A continuous monitoring of the site is performed with the assistance of Géostock on the following main aspects :

- seismic monitoring with the objective of observing the noise activity around the crater, which provides information regarding the evolution of the phenomenon
- hydrogeological monitoring of the water table and shallow aquifers in order to follow the brine dispersion at surface and assess the extension of the plume.

Periodical level measurements also provide information regarding the progress of the subsidence.

Studies and modelling were part of Géostock expertise in order to attempt to predict the long term evolution of the phenomenon and its consequences on the environment.