

# **MONITORING OF DEFORMATION PROCESSES BY MEANS OF OBSERVATION OF A VERTICAL COMPONENTS OF ELECTRICAL FIELD FOR MUD VOLCANOS**

*Garagash I., Gokhberg M., Kolosnitsyn N.*

*Institute of Physics of the Earth, B.Gruzinskaya, 10, 123995,  
GSP-5, Moscow, Russia*

Deformation of the earth crust cause variations of an electromagnetic field formed as a result of fluid flow in deformable saturated near-surface sediment rocks. For calibration of such measurements it is possible to use the analysis of porous pressure variations and their gradients associated with distribution of tidal deformations. The solution on variations of porous pressure and electrical field (due to electrokinetic effect), caused by tidal wave in saturated elastic Biot half-space is obtained. It is shown, that tidal variations of porous pressure and the electric field essentially depend on mechanical properties of medium, its permeability, porosity, and fluid viscosity. Therefore observation of the vertical electric field make it possible to determine mechanical parameters of deformational medium. The optimal depth, where all effects are maximal and measurements should be made is an order of ten meters. According to calculations, for typical values of parameters the tidal variations of porous pressure and the electrical field are marked and can be measured. The results of calculations are in agreement with measurements.