

Abstract

The south-west region of Mt. Etna is characterized by the presence of several sites with anomalous emissions of gases, mud and salty water. Those phenomena are called "Salinelle". Study area focused on one of them called "Salinelle di Paternò" situated in the city of Paternò.

Despite the "Salinelle" may look like a "typical mud volcano", the composition of the gases emitted at the "Salinelle" is mostly CO₂ (94%), which indicates that the origin of the emissions is magmatic. Our starting hypothesis is the presence of a fault connecting the "Salinelle" to the magmatic system of the Etna. The aim of this work is to determine if a fault is at the origin of the "Salinelle" phenomenon.

To better understand the clastic eruption taking place in "Salinelle di Paternò" an Electrical Resistivity Tomography campaign in 3D was done on the site. The information obtained with the ERT acquisition were completed with temperature and geochemical data.

The inversion of geoelectrical data pointed out a low-resistivity region highlighting the volume of reservoir, but do not confirm the presence of a fault. Temperature and gases measurements enabled us to build a geological model to explain the occurrence of hydrothermal volcanism in the city of Paternò.