GEOTHERMAL ENERGY

The Geothermal team continued their statewide collaborative efforts for the project on geothermal sites and prospects in Year 5 through novel approaches and collaboration. South of Jemez Pueblo in San Ysidro, the topography is challenging, so the team combined magnetotelluric (MT) and electromagnetic surveys by the NM Tech team with geochemical data previously collected by the UNM team to begin to reveal and map the geothermal systems of the area, all the way down to the mantle. This research also resulted in a successful IWG proposal to plan further research activities. The UNM team also completed a report and final presentation on the the dramatic degradation of surface water quality by geothermal inputs, especially at times of low river stage to landowners and stakeholders in the Rio Ojo watershed.

Another surprising development in 2017 was a meeting set up by geothermal experts from LANL and a company from Sweden who are pioneering new technologies to generate electricity in combination with small direct-use geothermal sites that have great potential in New Mexico. A successful pilot follow-up is now ongoing between the Swedish company, SFCC, and the Jemez Pueblo surrounding the Indian Well site that may lead to both a geothermal greenhouse and accompanying modest power generation.

Highlights:

Using NM EPSCoR funding, the Geothermal Energy team purchased and deployed a magnetotelluric (MT) system in northern and southern New Mexico. The team discovered that MT survey results can detect permeability variations within deep hydrothermal systems, allowing researchers to predict salinity, temperature, and resistivity patterns for different types of permeable rock.

Since underground hydrothermal systems remain hidden, the ability to visualize those systems through modeling can transform our knowledge of the Earth itself, including mapping blind systems to find groundwater paths, predicting the degree of difficulty of drilling by locating certain types of rock, and taking the temperature of hydrothermal systems to determine geothermal energy potential of a specific area.