UTAH FORGE NEWSLETTER

AT THE CORE

Word from the PI

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Technical Discoveries

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Outreach News

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Announcements

The geoscience of Utah FORGE sets the geological scene to DOE's flagship geothermal field laboratory that has been established to make significant advances in EGS technologies. The Geoscience of Utah FORGE webinar covers the basin architecture, rock types, fault/fracture patterns, thermal structure, fluid flow, geochemistry, and the datasets and resources that are available from the Utah FORGE website.

Watch Here

Utah FORGE is now on LinkedIn! Follow Utah FORGE to receive most recent news and stories about our geothermal and outreach activities.

Visit Our Page

Word from the PI

In May, the first funding solicitation for research at the Utah FORGE site, totaling $46 million, was released. The response was overwhelming, with 164 concept papers submitted! These papers cover five topics comprising the development of new tools for zonal isolation during injection, stress characterization of the reservoir, monitoring and mapping of the fracture-controlled fluid flow network that will form the reservoir, advancement of stimulation technologies, and integrated experimental and modeling studies. There were many excellent proposals, more than can be funded. Nevertheless, seventy project teams were encouraged to prepare full proposals for review and funding. New solicitations will be released in the coming years, providing the opportunity for many more researchers to participate in the FORGE program.

This fall, Utah FORGE will move into a new phase that will begin full deployment of the underground geothermal laboratory. Much of the important infrastructure is now in place. An electric distribution line has been installed to power seismic monitoring instruments and an operations office and temporary living quarters for drilling crews are in the works. Drilling of the first of two deep, deviated wells, 16A(78)-32, will begin in several months. This well will serve as the injection well for the injection-production well pair that will form the heart of the laboratory. A key design feature is the long deviated leg at a 65o angle from vertical over a horizontal distance of approximately 3,380 ft. Few geothermal wells are deviated more than 30 to 40o from vertical, or are this long; thus the drilling program will be FORGEing new ground. The hard, hot and abrasive granite at depth will make drilling challenging, and reaching our objectives will require experienced drillers, engineers and the application of drilling techniques developed by the oil and gas industry.

We encourage you to follow our progress, learn about the FORGE team, and engage in the FORGE project through Twitter, Facebook, LinkedIn and our website.

Technical Discoveries

The Modeling and Simulation team is led by Rob Podgorney at Idaho National Lab, and it plays a critical role in the mission of Utah FORGE. Through quantitative and numerical analysis using state of the art methods, visualization software and computational facilities, the team oversees the development and updating of a wide range of activities that are key to locating and designing new wells, reservoir stimulation, and implementation of the R&D program.

Major accomplishments to date include the development of a detailed 3D geological model, a reference native state model that covers important physical attributes within and surrounding the reservoir, a reference discrete fracture network, and preliminary simulation models. Links to all of this work and reports can be found on the Modeling and Simulation page.
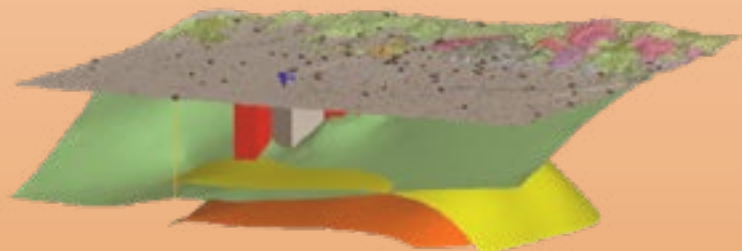
Starting in April, the Modeling and Simulation team has been conducting monthly online forums, with first one being presented by Rob Podgorney, which covered an introduction and overview of the Utah FORGE project. In May, Aleta Finnila of Golder, described the discrete fracture network, and in June, injection Testing and Stress Measurements, were presented by Pengju Xing and John McLennan. Upcoming forums will cover a variety of topic relevant to Utah FORGE and EGS, with the July Forum focusing on coupled well and reservoir thermal hydraulics. Anyone who is interested can sign up and participate. Links to the forums can be found on the Modeling and Simulation Forum page.

Modeling and Simulation Forum

This is intended to be an open Forum to present modeling and simulation, both completed and planned activities being conducted by the Utah FORGE Team. Register prior to the forum dates to attend the Modeling and Simulation Forum! Recordings of the past Forums are available here.
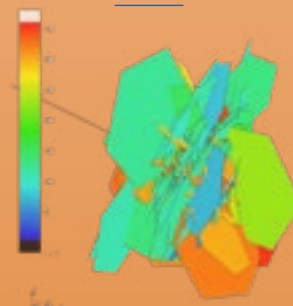
Upcoming Forum Dates
July 15 - "Coupled Simulations of Well and Reservoir Thermal Hydraulics"
by Rob Podgorney and David Andrs (INL)
August 19 - Information TBD
September 16 - Information TBD

Outreach News

Congratulations Dr. Kristen Rahilly!

Kristen recently received her PhD from the Department of Earth and Planetary Sciences at the University of New Mexico, which was supervised by Professor Tobias Fischer. Her thesis entitled "Diffuse Flux and Carbon Isotope Composition of Carbon Dioxide Emitted from Valles Caldera, Yellowstone Caldera, and Southwestern Utah Geothermal Site" includes a survey of soil gas CO2 flux across the Utah FORGE site and the nearby Roosevelt Hot Springs, the results of which are already published in Utah Geological Survey Publication 169.

She is now headed to Columbia University where she is taking up a new post-doc at Lamont-Doherty Earth Observatory. Congratulations to Kristen for an outstanding piece of work and for contributing to the understanding of the Utah FORGE site.

Solicitations

All Concept Papers submitted for the Solicitation 2020-1 have been reviewed and encourage/discourage responses have been sent out to applicants. Full applications are due 2 pm MT, August 10, 2020, and FAQs are being updated weekly via the Utah FORGE InfoReady page. Check out the newly launched data dashboard for updated information about ongoing activities and the provisional plan for the first deep well at Utah FORGE.

FORGE Solicitations Webpage
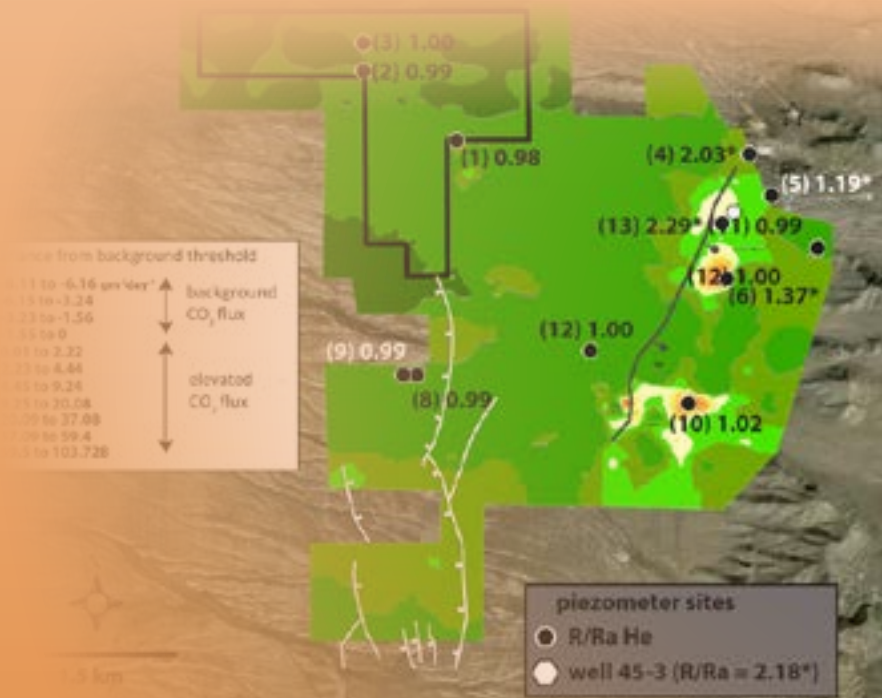
Did You Know?

Did you know that the direct use of geothermal energy can be used to raise alligators?

The direct use of geothermal energy can apply to almost any activity that requires heating (and cooling) for industrial, residential and agricultural purposes. The heat is transferred by hot ground water in the temperature range of 20-120°C (70-250°F) which is produced from shallow wells and then distributed through surface pipework. One very popular direct use application of geothermal energy is for bathing in natural hot springs. Spas all over the world use naturally produced hot water for recreational and therapeutic purposes. In Utah, the Crystal Hot Springs offers warm and mineral-rich baths which attracts numerous visitors throughout the year.

Another direct use application is space heating that may serve a single, stand-alone structure, or more commonly multiple buildings, which are linked by a pipeline that supplies hot water. For regions that are subject to cold winters, this is a cost effective means of heating without contributing to atmospheric pollution. District heating has been in use since the late 1890s when the city of Boise, Idaho started using geothermal energy to heat buildings. District heating is also popular in China, Iceland, France, Germany, Hungary and New Zealand. In the state of Utah, the prison at the Point of the Mountain uses district heating for 330,000 sq. ft. of prison space, saving thousands of dollars over conventional heating systems.

This type of geothermal energy is even used to heat greenhouses to grow plants. The Milgro complex in Newcastle, Utah is one of the largest producers of poinsettias and chrysanthemums in the USA; it uses geothermally heated greenhouses to grow its flowers. This type of energy is also used to heat ponds for aquaculture and fish farming. The warm springs near Grantsville, Utah are filled with warm, mineral-rich water that supports a variety of fish and are also an attraction for scuba-diving activities. Fish breeders in Idaho farm a range of species, including ones requiring geothermally heated ponds, which famously once included alligators!

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Data Archive

The seismic data collected from well 78-32 during the 2019 stimulation campaign (Phase 2C) are hosted by the Center for High Performance Computing (CHPC) at the University of Utah. The scripts for accessing the 15TB of data are available from the Geothermal Data Repository (GDR). These comprise the datasets from the 12-string geophone array acquired by Schlumberger and the DAS Carina fiber acquired by Silixa.

View Data

utahforge.com

Partner Spotlight

Geothermal Resource Group (GRG) is a geothermal resource and engineering consulting company that has been a partner in the FORGE Utah project since the beginning, providing technical and design advice, and planning and supervision in the drilling of all deep wells, including 58-32, 68-32 and 78-32. They are currently working on the design of the first deep deviated well, which will commence later this year.

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Upcoming Events

July 13 - 17
PIVOT 2020

Austin,
Texas

September 29 - 30
Utah Stem Fest 2020

Salt Lake City, Utah

[Virtual]

October 18 - 23
2020 Annual GRC Meeting

Reno, Nevada

[Virtual]

October 26
Utah Governor's Economy & Energy Summit

Salt Lake City, Utah