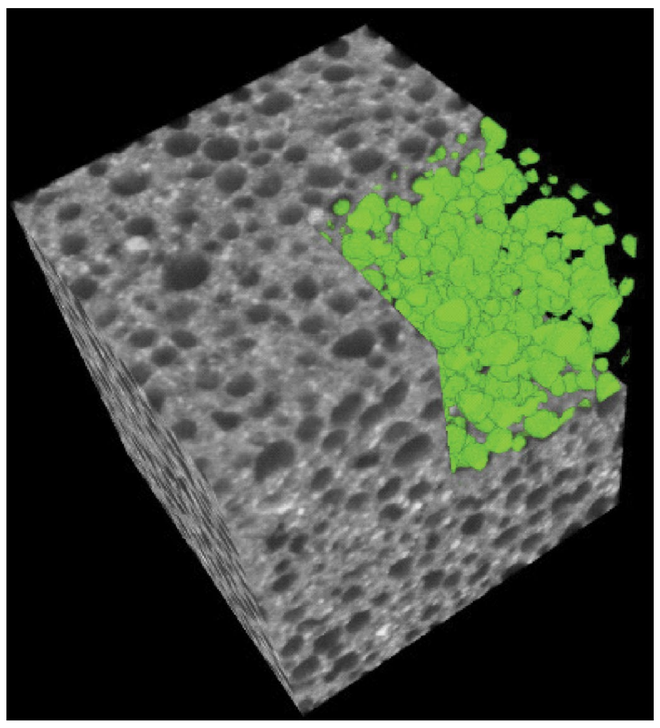
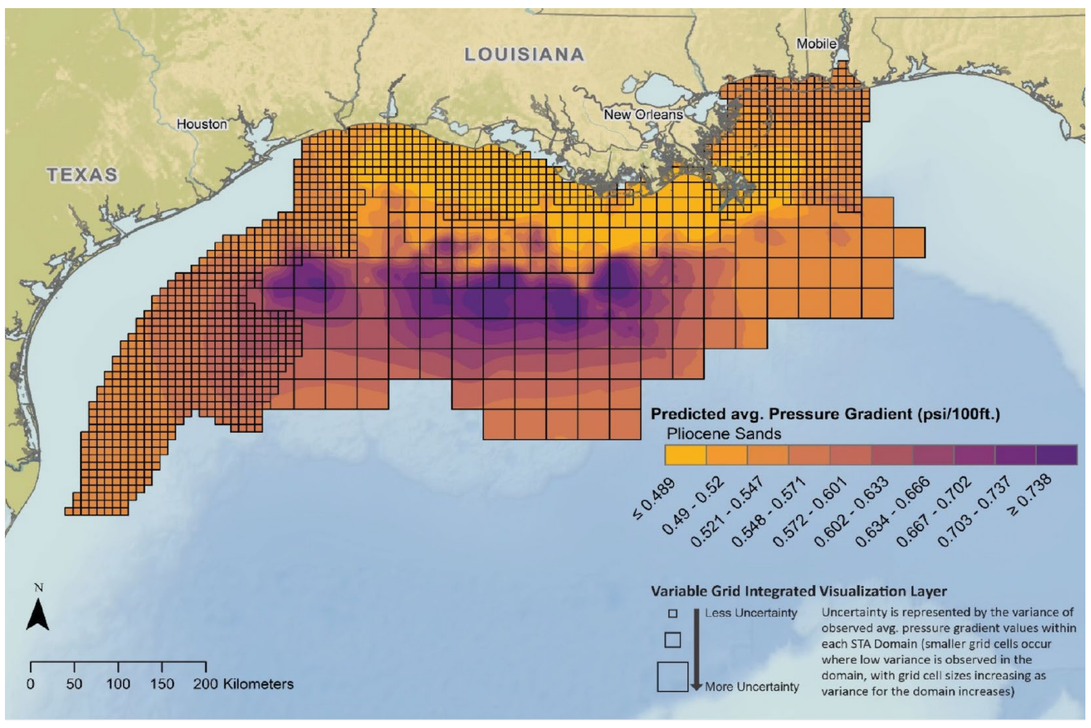
Award-Winning Offshore Research Expands To Innovate Safety for Onshore Energy Systems

Award-winning NETL research technologies and facilities developed to characterize and mitigate offshore energy risks are being applied to reduce risks and improve safety for onshore energy systems.



Research to improve characterization of foamed cements that have been used to develop sound cementing practices across all phases of the drilling operation's life cycle.



Application of tools from the Offshore Risk Modeling (ORM) to evaluate and improve prediction of subsurface characteristics, which are being leveraged now to improve predictions for onshore geologic systems including for carbon sequestration and characterizing unconventional rare earth elements resource potential.

Lessons learned from NETL's involvement in the federal response to the 2010 Deepwater Horizon oil spill spurred more than a decade of innovative, award-winning research at NETL. Results have provided critical data, tools, models and groundbreaking insights that have helped improve system-wide knowledge to prevent future spills and continue to be applied across other technology areas to reduce risks associated with energy development. Examples include:

- Established unique lab capabilities and equipment for assessing wellbore casings and cements and to evaluate performance in different subsurface environments. These efforts provide novel insights into improving use and performance of oil, gas, CO_2 injection and extraction wells both offshore and onshore
- Developed the 2019 R&D 100 Award winning ORM suite to evaluate and reduce the risk of energy production offshore, culminating in more than a dozen new datasets, science-driven models, and tools to help systematically characterize and reduce risks. Many of these tools remain in use and have been applied to characterize risks and hazards for onshore energy production and transport systems as well.
- Patented the award-winning early kick detection technology to prevent blowouts in both onshore and offshore production.
- Built the Severe Environment Corrosion and Erosion Research Facility and related laboratories for assessing materials performance in simulated environments at high temperatures and high pressures, which supported offshore research as well and provided insights for CO_2 storage.