Resource Sustainability Computer-based User Research Tool Demonstrations

The NETL Research & Innovation Center (RIC) researchers are proud to present a number of computer-based tool demonstrations Tuesday evening (October 25) at the Resource Sustainability Project Review Meeting. Separate from the poster session, attendees are encouraged to see first-hand this user-friendly research.

Tool Name	Description	Presenter	Related Presentation (if applicable)	Related Poster (if applicable)
AIIM - Advanced Infrastructure Integrity Modeling Tool	AIIM utilizes a multi-model framework that integrates big data, machine learning, and advanced models to provide critical insights into offshore energy infrastructure integrity to help inform safe use and repurposing strategies, as well as support risk prevention.	Lucy Romeo	Thursday, Oct 27 11:45AM "Smart Models to Optimize Use or Reuse of Production and Transport Infrastructure." Lucy Romeo and Jennifer Bauer	N/A
CORD Platform and Database	The Carbon Ore Resources Database (CORD) is a working collection of 399 data files associated with carbon ore (including REE/CM) resources in the United States. The collection includes spatial/non-spatial, filtered, processed, and secondary data files with original data acquisition efforts focused on domestic coal resources. The tool/platform is a web application that enables exploration and use of the database from any web browser. Devin Justman, Michael Sabbatino, Scott N. Montross, Scott Pantaleone, Andrew Bean, Kelly Rose, Burt Thomas, Carbon Ore Resources Database (CORD), 8/26/2021, https://edx.netl.doe.gov/dataset/cord, DOI: 10.18141/1813861	Kelly Rose, Devin Justman and/or Burt Thomas	N/A	N/A
OGA - Ocean and Geohazard Analysis Toolbox	The Ocean & Geohazard Analysis (OGA) software tool is designed to provide insights into a wide range of offshore hazards that can threaten offshore activities, spanning from the seafloor to metocean environment. Drawing from a diverse set of approaches and data sources, the OGA tool utilizes artificial intelligence, machine learning, and probabilistic approaches to analyze offshore hazards selected by the user and produce predictions for regions and time frames where those hazards are more likely to occur.	Jennifer Bauer	Thursday, Oct 27, 11:15AM "Ocean & Geohazard Analysis" Rodrigo Duran, MacKenzie Mark-Moser	FWP-1022409-Task 11 "Integrated Geologic and Techno-Economic Assessment of Offshore Saline Systems for Deepwater and Ultra-Deepwater Reuse Potential"
PARETO – DOE's Produced Water Optimization Framework	PARETO is a free and open-source decision-support application that can help organizations better manage, treat, and – where possible – beneficially reuse produced water from oil and gas operations	Miguel Zamarripa	Tuesday, Oct. 25, 3:30PM "Project PARETO – DOE's Produced WaterOptimization Initiative" Markus Drouven	N/A

REE/CM Geologic Sample Characterization	A set of recommendations on methods and formats for systematic characterization of geologic derived samples (including byproducts) to quantify and assess REE/CMs in samples has been published. The worksheet supporting this data collection, a recent journal publication, and an integrated database hosted via NETL's Energy Data eXchange (EDX) will be demonstrated. Montross, et al., On a unified core characterization methodology to support the **systematic assessment of rare earth element and critical mineral bearing** unconventional carbon ores and sedimentary strata. Minerals 2022, 12, *in press/accepted*	Scott Montross, Kelly Rose	Thursday, Oct 27, 8:30AM "Developing a Geo-Data Science Method for Assessing Rare-Earth Occurrences from Unconventional Geologic Sources" Christy Pecyna	N/A
RokBase	Beta online platform to access digital core information from unconventional field laboratories, and other subsurface resources	Dustin Crandall	Tuesday, Oct 25, 5:00pm "Digital Library for DOE Field Laboratories" Dustin Crandall	FWP-1022415, Task 22 "Digital Library for DOE Field Laboratories"
STA - Subsurface Trend Analysis Tool	The Subsurface Trend Analysis (STA) Tool uses science-based methods and data to improve the forecast of subsurface reservoir properties, even for areas with no preexisting, measured data. STA utilizes a spatio-temporal, AI/ML enhanced workflow to organize and visualize disparate big data and knowledge resources, facilitate multi-dimensional statistical analyses and validation, and characterize	MacKenzie Mark-Moser	Thursday Oct 27, 10:45AM "Geohazards and Subsurface Uncertainty Smart Modeling" MacKenzie Mark-Moser	N/A
The NEWTS Database (alpha version)	The National Effluent Water Treatment and Speciation Database is a new tool being developed by NETL to help communities and industries understand the chemistry of energy effluent waste water resources across the United States. This National level dataset is a web application designed to output chemical species information and location and flow information in formats that are compatible with industry standard software for water treatment. NEWTS consists of publicly available data that is often difficult to access by community and industry members (such as State regulatory reports). As NEWTS grows, the goal is to develop a tool that helps connect users and producers of energy effluent water to identify industrial re-use opportunities and to help communities understand both the value of these waste resources and the opportunities to address environmental challenges presented by the water.	Burt Thomas	Tuesday, Oct 25, 2:15PM "Water Management for Power Systems: NEWTS database" Laura Pretzman	N/A

Unconventional REE/CM Assessment Method alpha tool	This tool enables the Creason et al. method that uses geoscience, data science and AI methods to expedite evaluation and prediction of REE/CM occurrences in unconventional geologic sources. This demo will review the tool that is in development and expected out in spring 2023. The method is discussed in Creason, et al., (in review). ***A Geo-Data Science Method for Assessing Unconventional Rare-Earth Occurrences in Sedimentary Systems.*** *Natural* Resources Research.	Kelly Rose, Devin Justman, Gabe Creason	Thursday, Oct 27, 8:30AM "Developing a Geo-Data Science Method for Assessing Rare-Earth Occurrences from Unconventional Geologic Sources" Christy Pecyna	N/A