Permedia® CO_2 Software

OVERVIEW

Carbon capture and storage is increasingly becoming a factor in the E&P regulatory environment. Companies need to prospect for storage sites, and then evaluate both the short-term risks and long-term fate of stored CO_2. Permedia® CO_2 software includes an industry-validated suite of tools customized for CO_2 applications, with workflows for both prospecting and injection and storage simulation. Whether modeling in complex fractured reservoirs (e.g., In Salah), highly heterogeneous storage sites (e.g., Sleipner), or on truly regional scales while honoring high resolution data (e.g., Weyburn), Permedia CO_2 software provides the best matches to observations, insights on storage site behavior, and helpful predictions of risk profile.

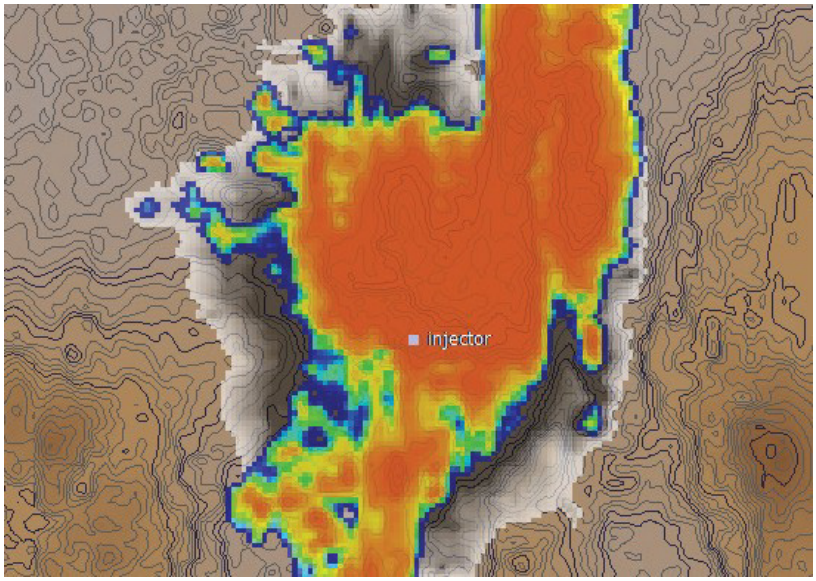

Figure 1: CO_2 injection simulation using CO_2 BOS.

BENEFITS

Workflows Customized for CO_2
Simulators typically applied to CO_2 applications are general purpose reservoir simulators requiring elaborate setup. Permedia CO_2 software couples robust reservoir, CO_2 migration and customized black oil simulators with an easy-to-use interface. These are integrated through a single wizard to help users set up simulation parameters and runs with easy-to-follow workflows.

Validated Against Major Sites
Permedia CO_2 software has been tested on the most well-known storage sites and best data sets available in the world today (e.g., Sleipner, In Salah, and Weyburn, as well as others).

KEY BENEFITS

- Workflows customized for CO_2 applications
- Validated against the most well-known storage sites and best data sets available
- End-to-end CO_2 workflow; prospecting, regional pressure modeling, plume modeling, and injection modeling
- Co-render and analyze data from multiple packages and across all length scales

KEY FEATURES

- Integrated suite of high-resolution modeling tools for CO_2 storage exploration, monitoring and prediction
- OpenWorks®, DecisionSpace® Geosciences and Neftex® Insights connectivity

"The Permedia® CO_2 Toolkit and related software is a professional-grade comprehensive application for addressing all aspects of CO_2 work in the subsurface, including enhanced oil recovery and saline storage. From characterizing prospective resources, to interactive PVT, and multiphase flow simulation – Permedia is a fit-to-purpose resource that should be of great value to diverse practitioners."

DR. TIP MECKEL, GULF COAST CARBON CENTER, THE UNIVERSITY OF TEXAS AT AUSTIN

FEATURES

Permedia CO_2 software is an integrated suite of high-resolution modeling tools for CO_2 storage exploration, monitoring and prediction. The software addresses key aspects of CO_2 storage workflows: formation storage prospecting, capacity estimation, well injectivity, formation pressurization, plume trapping, and dissolved CO_2 dispersal.

Use Permedia CO_2 software to:

- Understand the origins of CO_2 in a petroleum system
- Prospect for new storage sites
- Match storage monitoring data
- Predict the long-term fate and risks of a storage site in the post-operational phase

CO_2 Migration

A CO_2-adapted invasion percolation simulator for free-phase plume modeling. CO_2 Migration is built on the state-of-the-art Permedia Migration simulator, providing extremely high-resolution models of gravity-segregated plume distributions in heterogeneous reservoir settings.

CO_2 BOS

CO_2 BOS is a fast multi-threaded black oil simulator, developed to specifically handle CO_2 storage and solubility. Specially adapted for two-phase plume and brine modeling, CO_2 BOS is built on the Permedia Black Oil Simulator and addresses reservoir engineering workflows for CO_2 modeling in storage site settings. Specifically tuned to run CO_2 injection out-of-the-box, CO_2 BOS is fast, with built-in CO_2 injection scheduling, PVT, and solubility handling.

CO_2 Flow

CO_2 Flow is a high-resolution hydrodynamic solver for modeling CO_2 storage related pressure changes. With a well modeling scheme that handles CO_2 injection rates and injection interval pressures, CO_2 Flow offers a high-resolution regional simulation for testing the boundary conditions of high-resolution heterogeneous meshes for regional pressure models.

CO_2 Dashboard

CO_2 Dashboard is a CO_2-specific equation-of-state and PVT wizard for initializing simulations. Use CO_2 Dashboard to initialize model conditions: gas and brine phase density, compressibility, viscosity, solubility and interfacial tension. The wizard has been validated against several published works containing both theoretical and experimental data. Initial model conditions for these key properties can be automatically transferred from the Dashboard to the CO_2 simulators.

SYSTEM AND SOFTWARE

Operating System

- Red Hat® Enterprise Linux® 6/7, 64 bit
- Microsoft® Windows® 7 or later, 64 bit
- Microsoft® Windows® XP/Vista/7, 64 bit

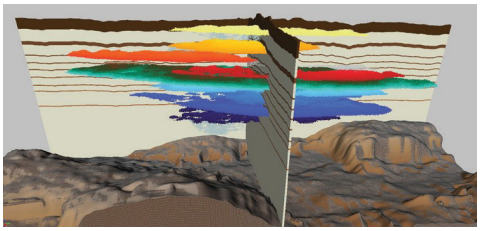

Figure 2: CO_2 plume simulated using CO_2 Migration

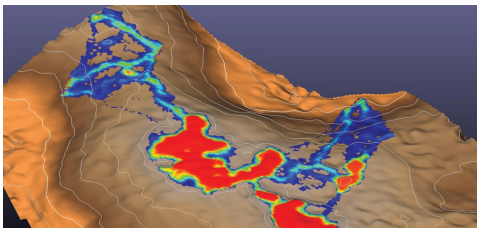

Figure 3: CO_2 migration under caprock

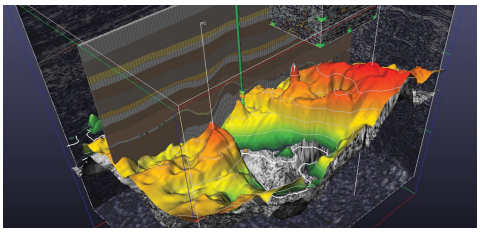

Figure 4: Co-render dozens of file types in 3D Viewer

Landmark offers solutions to help you deliver on your business strategies. For questions or to contact your Landmark representative, visit us at www.landmark.solutions