

Permedia™

CO2 Software

Petroleum Systems Software

KEY FEATURES

Workflows customized for CO2 applications

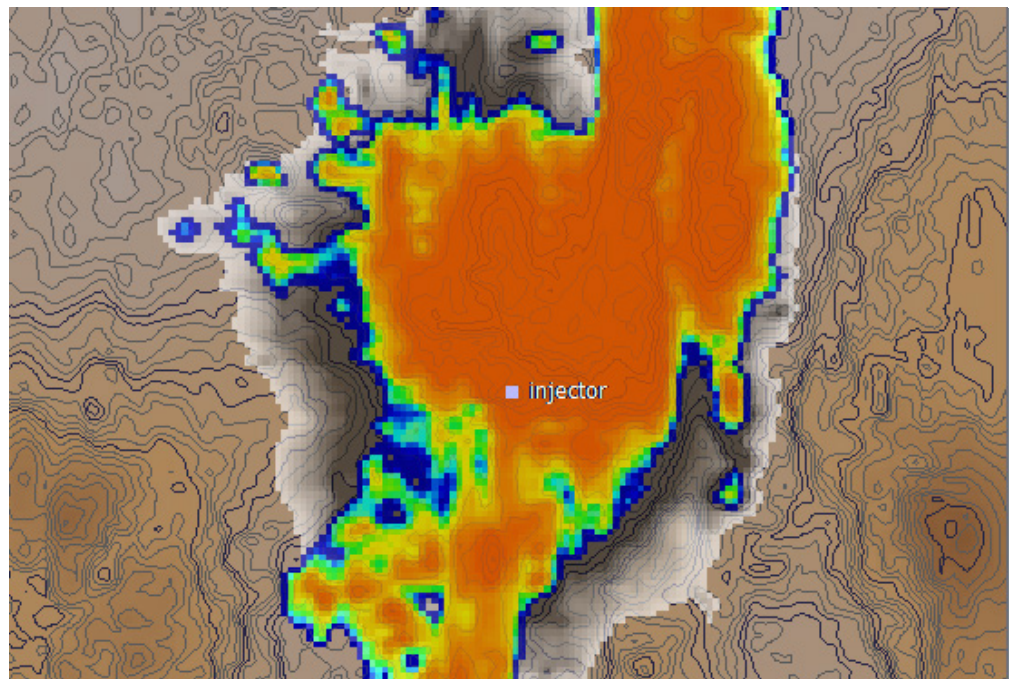
Validated against the most well-known storage sites and best data sets available

End-to-end CO2 workflow; prospecting, regional pressure modeling, plume modeling, and injection modeling

Co-render and analyze data from multiple packages and across all length scales

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 CO2. Permedia™ CO2 software includes an industry-validated suite of tools customized for CO2 applications, with workflows for both prospecting and injection and storage simulation.



CO2 injection simulation using CO2 BOS

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 CO2 software provides the best matches to observations, insights on storage site behavior, and helpful predictions of risk profile.

BENEFITS

Workflows Customized for CO2

Simulators typically applied to CO2 applications are general purpose reservoir simulators requiring elaborate setup. Permedia CO2 software couples robust reservoir, CO2 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

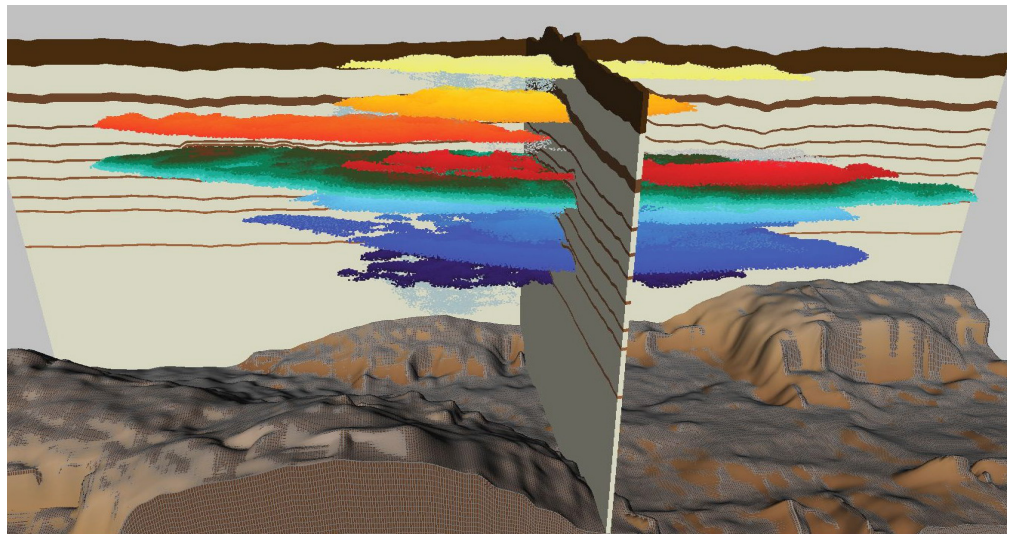
Permedia CO2 software has been tested on the most well-known storage sites and best data sets available in the world today (e.g., Sleipner, In Salah, and Weyburn, as well as others).

FEATURES

Permedia CO2 software is an integrated suite of high-resolution modeling tools for CO2 storage exploration, monitoring and prediction. The software addresses key aspects of CO2 storage workflows: formation storage prospecting, capacity estimation, well injectivity, formation pressurization, plume trapping, and dissolved CO2 dispersal.

Use Permedia CO2 software to:

- Understand the origins of CO2 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



CO2 plume simulated using CO2 Migration

CO2 Migration

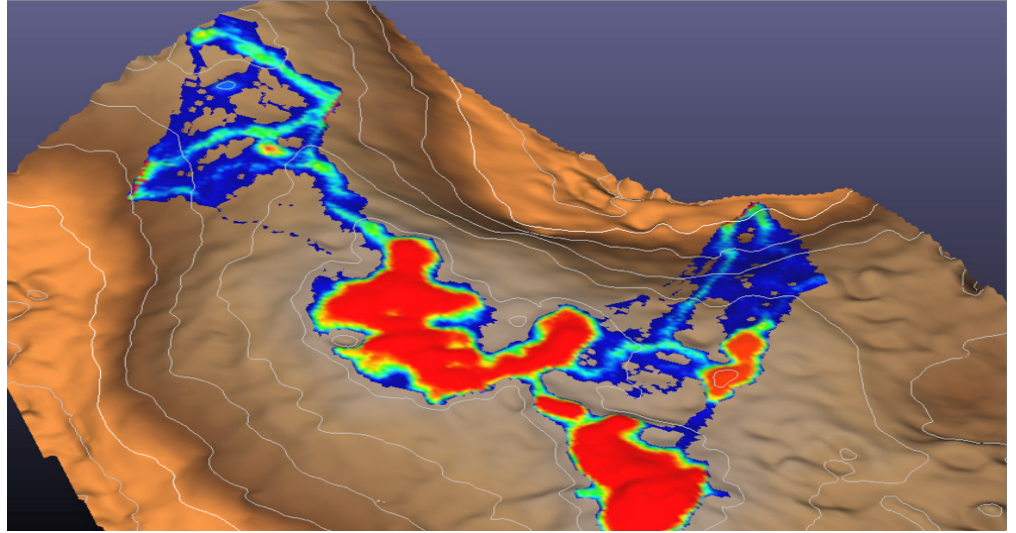
A CO2-adapted free-water level / invasion percolation simulator for free-phase plume modeling, CO2 Migration is built on the state-of-the-art Permedia Migration simulator, providing extremely high-resolution models of gravity-segregated plume distributions in heterogeneous reservoir settings.

CO2 BOS

CO2 BOS is a fast multi-threaded black oil simulator, developed to specifically handle CO2 storage and solubility. Specially adapted for two-phase plume and brine modeling, CO2 BOS is built on the Permedia Black Oil Simulator and addresses reservoir engineering workflows for CO2 modeling in storage site settings. Specifically tuned to run CO2 injection out-of-the-box, CO2 BOS is fast, with built-in CO2 injection scheduling, PVT, and solubility handling.

CO₂ Flow

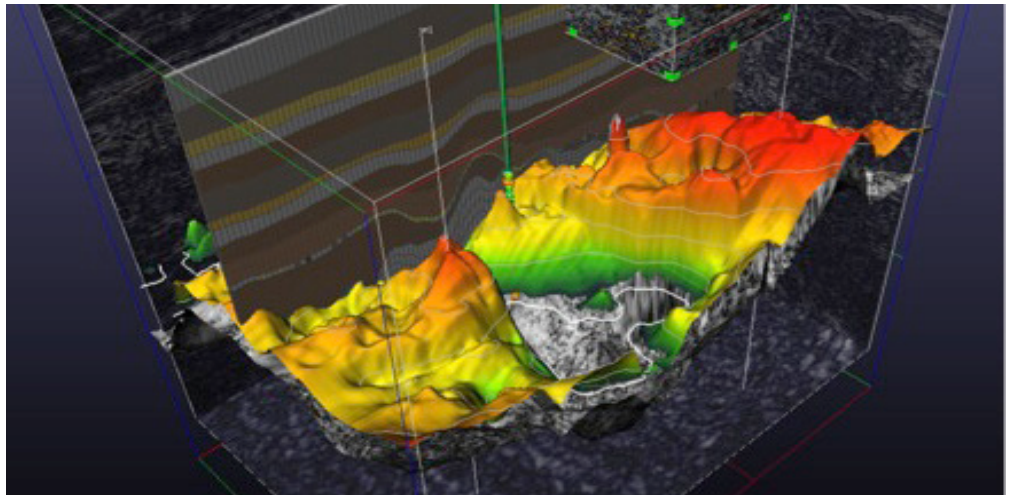
CO₂ Flow is a high-resolution hydrodynamic solver for modeling CO₂ storage related pressure changes. With a well modeling scheme that handles CO₂ injection rates and injection interval pressures, CO₂ Flow offers a high-resolution regional simulation for testing the boundary conditions of high-resolution heterogeneous meshes for regional pressure models.



CO₂ migration under caprock

CO₂ Dashboard

CO₂ Dashboard is a CO₂-specific equation-of-state and PVT wizard for initializing simulations. Use CO₂ 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 CO₂ simulators.



Co-render dozens of file types in 3D Viewer

SEE YOUR DATA IN CONTEXT

Permedia CO2 software includes a complete set of analysis and visualization tools, including a full OpenGL-accelerated 3D visualization environment, a suite of mapping analysis tools, a Well Viewer for analyzing well data, as well as powerful reporting tools for querying and analyzing data. Co-render and analyze data from multiple packages to get a whole new perspective on the complex plumbing of petroleum systems.

DATA SUPPORT

Use Permedia software seamlessly with your existing tools. Now compatible with Landmark's OpenWorks® database, the software reads files created by virtually every major package, including Eclipse, Irap™, and GOCAD applications, as well as industry-standard seismic, map, and well files:

- Reservoir modeling tools support Eclipse and Irap meshes
- Add faults using data derived from Badley's TrapTester, or GOCAD surfaces
- Geostatistical data - reads GSLib volumes
- Seismic surveys - supports SEG Y data from a variety of sources, and reads VoxelGeo volumes
- Cultural data - co-render cultural data from Landmark's Z-Map Plus™, GOCAD, Irap, and Temis applications
- Well data - reads all industry-standard well formats (Irap ASCII well file, GOCAD wells, LAS well file), supports well markers and zones, and writes to GOCAD well format
- Mapping - reads all industry-standard mapping formats (Beicip, Z-MAP 2D Regular Grids, Generic 2D Regular Grid, Irap Grids, Grass 2D Raster Map, CPS-3 2D Regular Grid), and writes to Z-Map Plus, Beicip and Irap formats
- Native GOCAD support - provides native support for most standard GOCAD objects
- Migration simulation results can be output to several volume and map formats, including Z-Map Plus and GOCAD formats

System and Software

OPERATING SYSTEMS

Red Hat® Enterprise Linux® 4/5, 64 bit

Windows® XP/Vista/7, 64 bit

“You have accomplished in 15 minutes what takes us four days to do.”

FEEDBACK FROM TECHNICAL EVALUATION, MAJOR NOC

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