OWSM: Oklahoma's Seismic Application and Next Step Development

www.rbdms.org

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RBDMS
Energy & Water Software | Data Solutions

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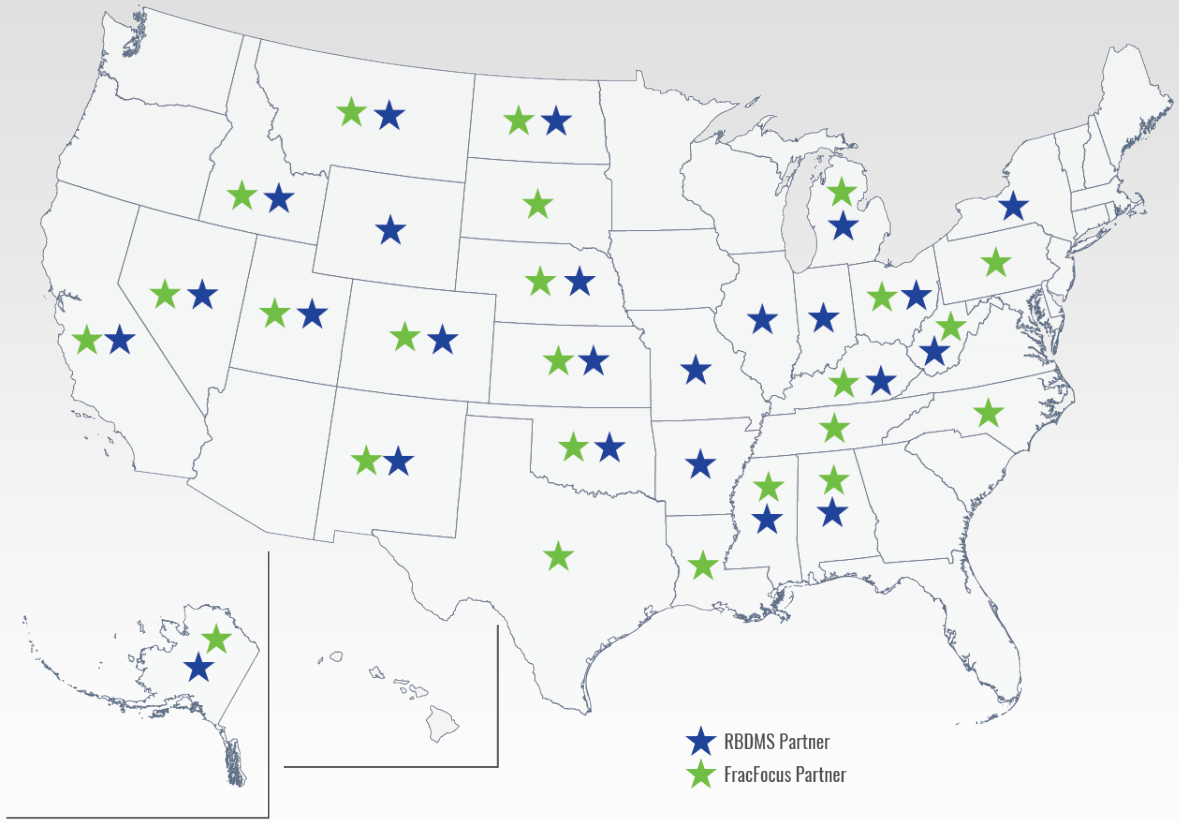
RBDMS

What is RBDMS?

- A suite of integrated software products that assists regulatory agencies in the effective regulation, oversight and management of oil, natural gas and underground injection control (UIC) facilities and activities.
- Developed by the GWPC in partnership with the U.S. Department of Energy.
- More than 25 years developing and improving new versions of RBDMS and related products.
- A System that is designed to meet the unique and evolving needs of regulator's and industry. Helping maintain a "social license" to operate.



PARTNER STATES

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Regulatory Responsibilities

RBDMS provides solutions that allow regulatory programs to more efficiently manage their mission critical activities and responsibilities. RBDMS products increase efficiency for regulatory programs thereby increasing industry production (faster permitting etc.), reduce data errors, and ensure environmental protection.

State Mission Critical Responsibilities	RBDMS Capabilities
Permitting	
Drilling & Completion	
Production	
Plugging & Abandonment	
Inspection & Compliance	
Facilities	
Environmental Protection Through Well Life Cycle	

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RBDMS Product Benefits

- Streamlines permitting processes, reporting, and oversight; thereby facilitating energy development and economic growth
- Increases efficiency and accuracy of industry data reported to the regulators
- Facilitates access to industry and regulatory data, thereby increasing transparency and public acceptance of oil & gas production
- Facilitates exchange of ideas, technology advances, and innovative data management solutions
- Helps agencies and industry reduce operating expenses while increasing efficiency

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The Products

Core
Primary information storage system for agency oil, gas & UIC data

Produced Water Tracker
Manages field observations and water sampling data

Seismic Monitoring
Queries extensive data from multiple databases about specific underground injection wells and earthquakes

eForms
eForm allows for electronic permitting and reporting between the industry and regulator

WellFinder Application
Free, publicly-available mobile application (iOS & Android) displaying neaby oil, gas, and injection well information

Field Inspection
(Coming Soon) – Allows agency field inspectors to make real-time critical decisions while performing a field inspection with industry representatives

Data Explorer
Provides an interactive mapping interface and robust data exploration options for all stakeholders

WellBore Analysis
A visual add-on that generates cross-section diagrams of a well

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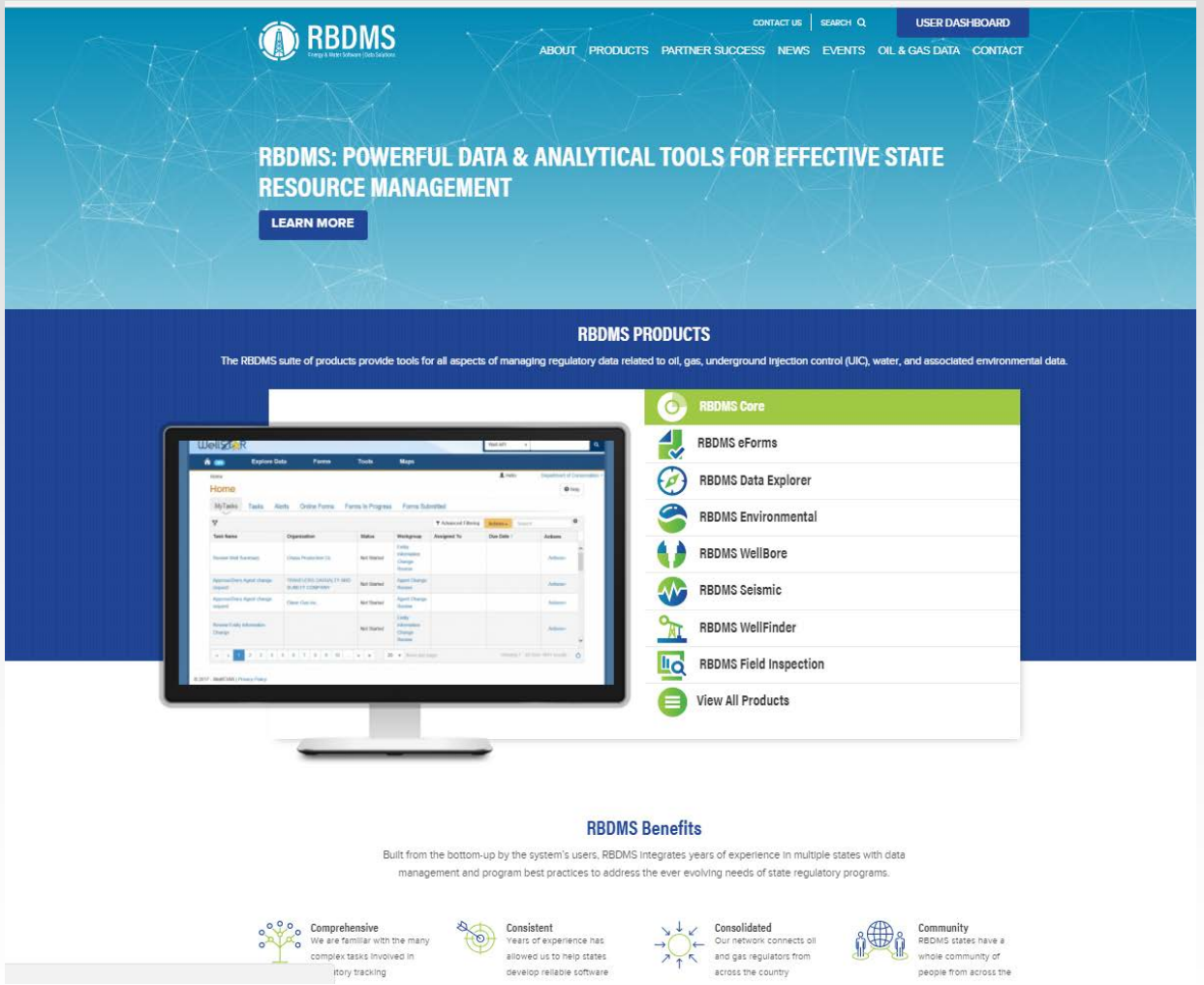

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Seismic Monitoring

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Seismic Application

Purpose

The Seismic Application queries data from multiple databases about specific underground injection wells and earthquakes. Helping to visualize well and earthquake data on a map, and allowing for quick analysis and regulatory action.

A Success Story: Seismic Application in Oklahoma

- **Tthe GWPC was asked to lead development of an application that would visualize data from injection wells and earthquakes on a map as well as isolate target wells and locations for analysis.**
- With the Seismic Application, Oklahoma Corporation Commission (OCC) staff have access to real-time data. **Work formerly taking 3 days now takes one staff member minutes, and serves as an essential tool for initial analysis of seismic concerns and timely response.**
- This helps to shape proactive and sound regulatory action if necessary, as well as to more easily verify operator compliance. This increases public confidence in Regulations.

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OWSM

- OWSM ➔ OCC Well & Seismic Monitoring Application
- Our Partners in Development

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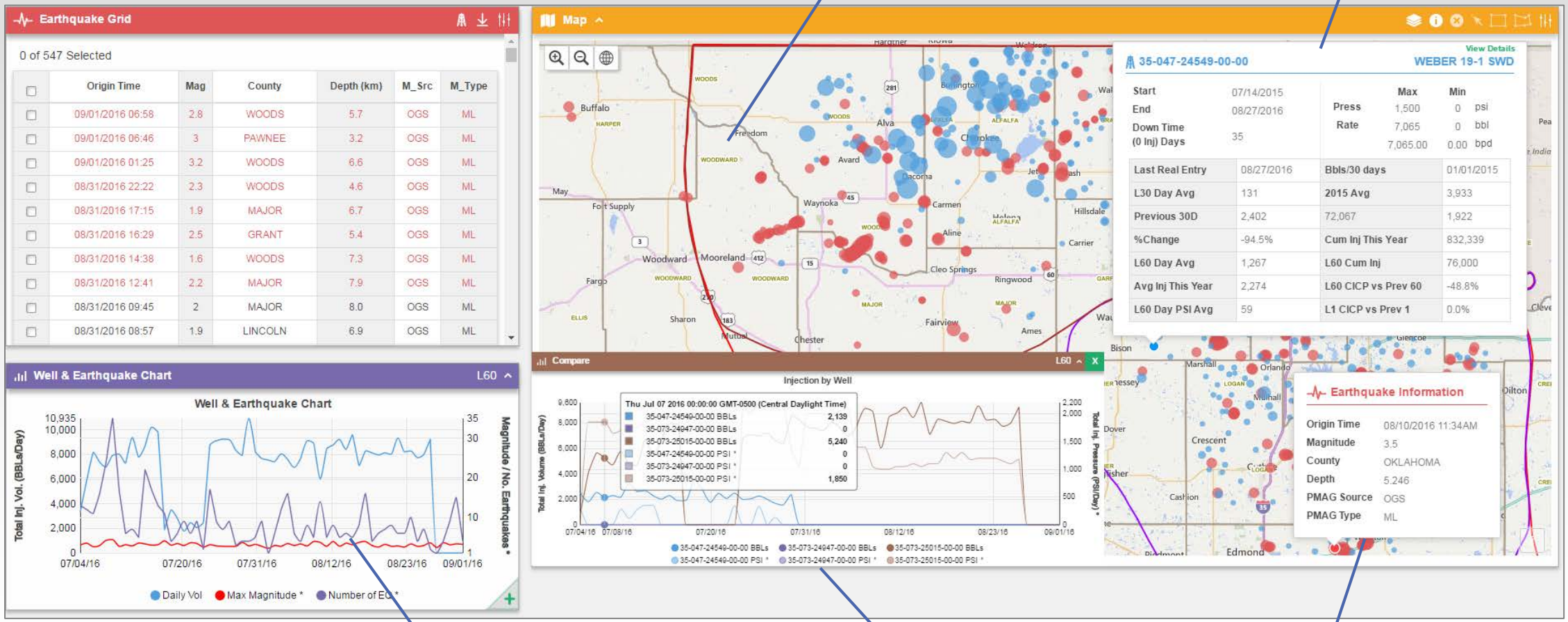
OK Seismic Application: Dashboard Features

Summary: Last 60 days*
547 Seismic Events

Graduated Symbols: Blue markers – Wells: Avg Daily Volume (60 days)
Red markers – EQ Events: Magnitude

Well Volume Detail



Volume and EQ Occurrence: Custom Regions

Volume Curve Comparison Charts: Custom Well Sets

EQ Event Detail

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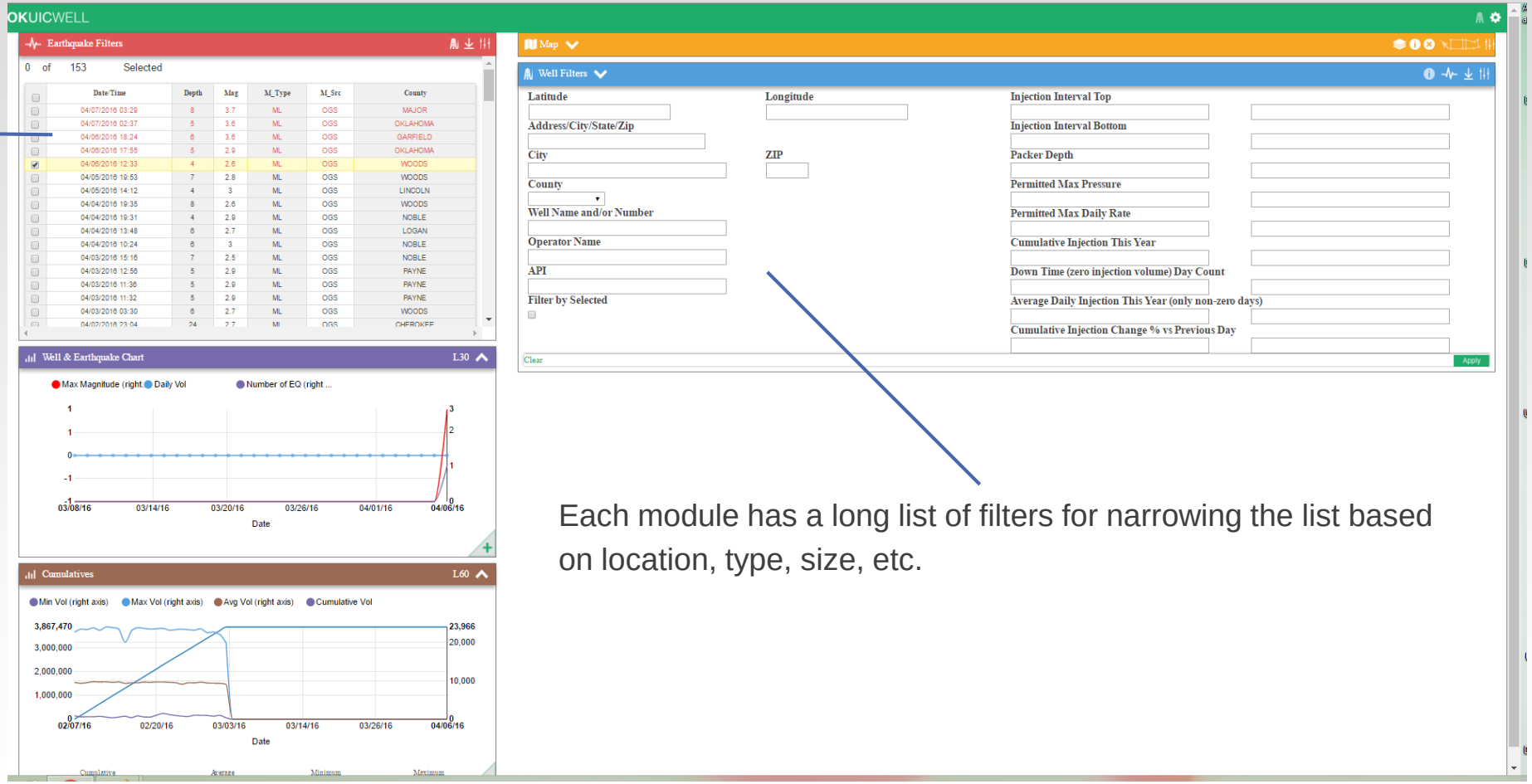
OK Seismic Application: Search Filters

Earthquakes listed in red text happened within 24 hours.

Data Feed

UIC Data via once a week report.

Seismic Data is updated every 20 minutes.



Each module has a long list of filters for narrowing the list based on location, type, size, etc.

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Future: Seismic App Workgroup

- Workgroup Recently Formed
- Assess Additions: Input to Increase Use/Robustness of System
- New Insight into Induced Seismicity
  - Confirm Yes/No on Induced
- Big Data
  - Not Necessarily but…
  - Intergradation from Multiple Sources
  - Looking for New Sources
  - Filter and Analysis Tools Applied
  - New Ways to Look at Data Available

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Final Thoughts

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Questions?

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