

SPINCCS and NCCS
NETL Carbon Storage
 Reservoir, Caprock and Well Integrity
 2017

BigCCS
NETL Carbon Storage
 Wellbore Integrity
 SINTEF
 2013 - 2016

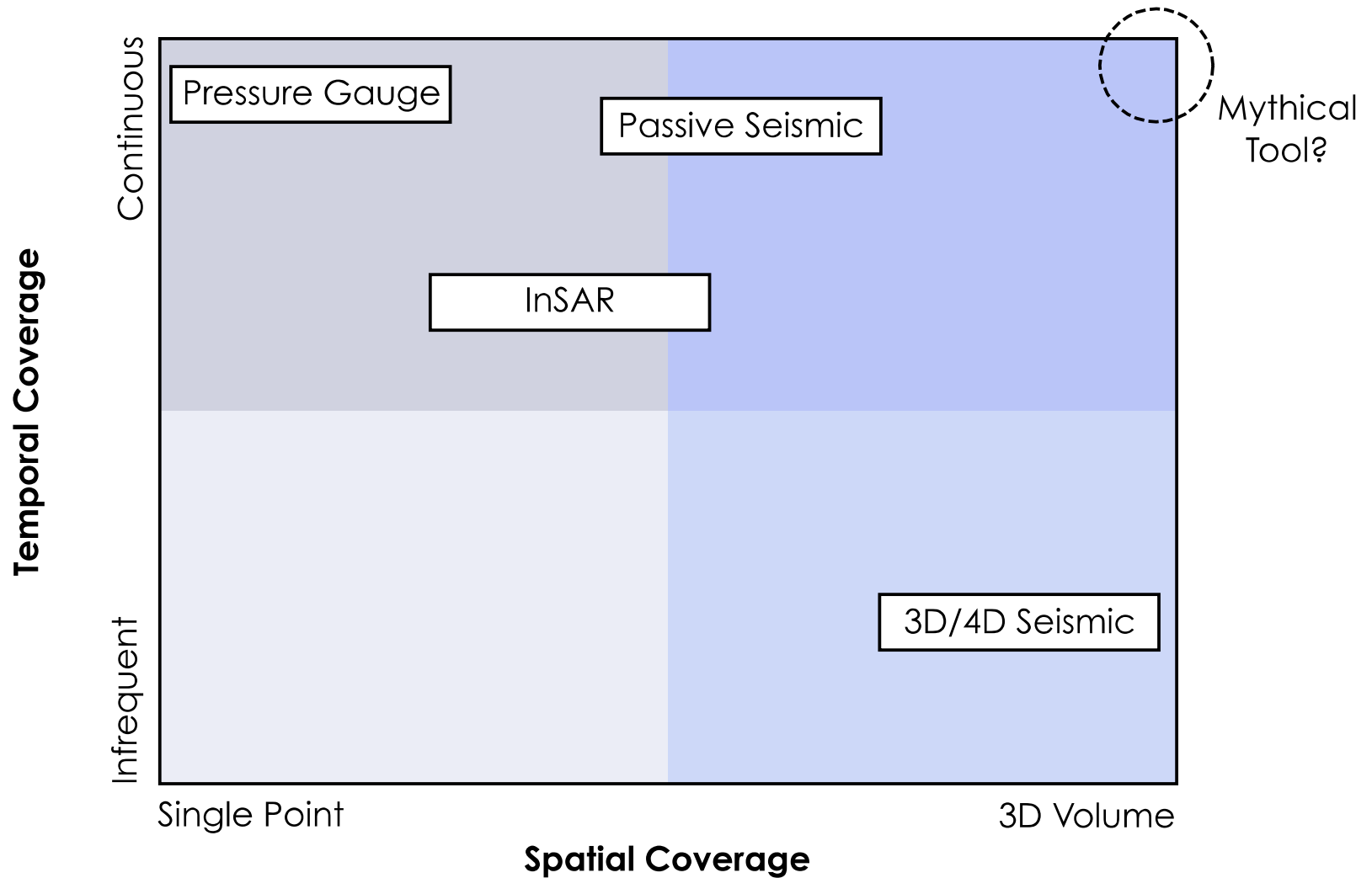
Snøhvit
NETL Carbon Storage
 Reservoir Integrity
 Pressure Reservoir Management
 Statoil
 2010 - Present

In Salah
NETL Carbon Storage
 Reservoir Integrity
 Statoil-JIP
 2005 - 2011

Lawrence Livermore National Laboratory has collaborated with Norwegian research groups on geologic carbon storage since early 2000

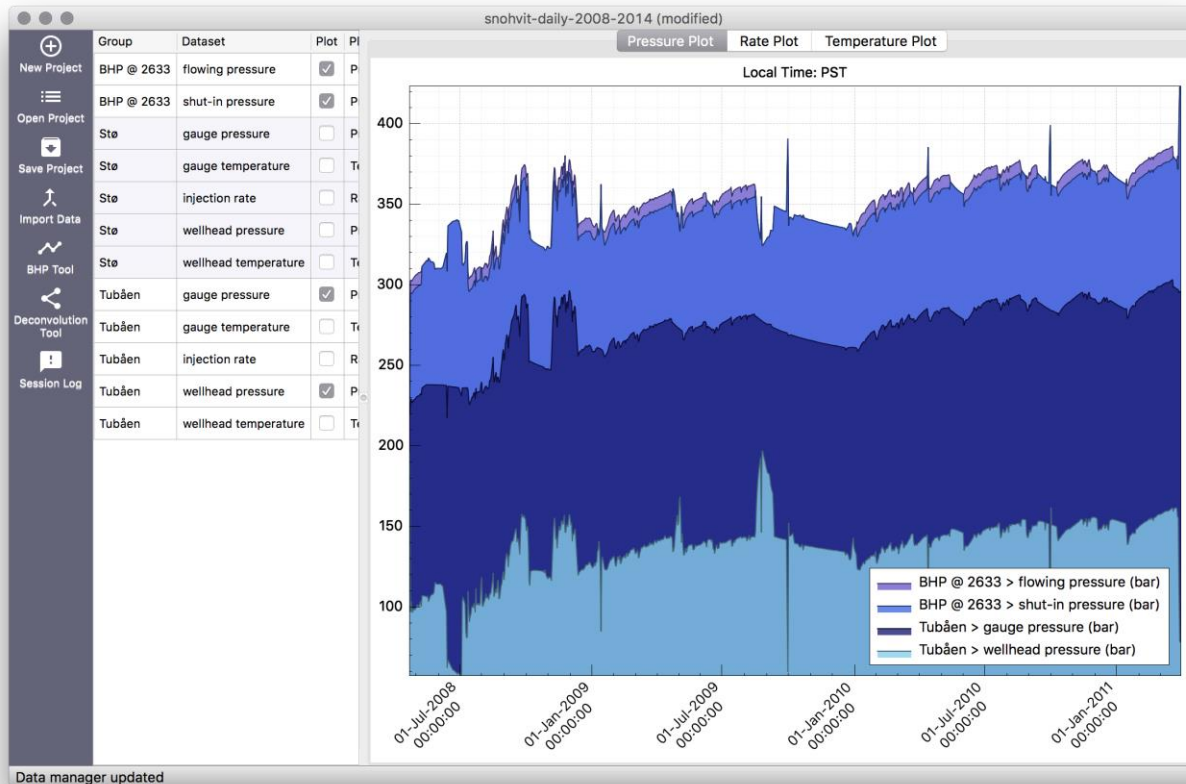
This work was performed under the auspices of the U.S. Department of Energy by Lawrence Livermore National Laboratory under contract DE-AC52-07NA27344. Lawrence Livermore National Security, LLC

Fundamental question: How to design a monitoring program to adequately balance effectiveness vs. cost?



Cypress Pressure Analysis Toolkit

Develop an **open-source software toolkit** to support the development and deployment of novel techniques for analyzing **well gauge data**.



- Data visualization and manipulation tools
- Bottomhole pressure estimation algorithms
- Welltest algorithms
- Pressure forecasting
- Fracture-pressure identification algorithms

Lawrence Livermore: Joshua White

Statoil: Anne-Kari Furre, Gonzalo Gutierrez, Philip Ringrose

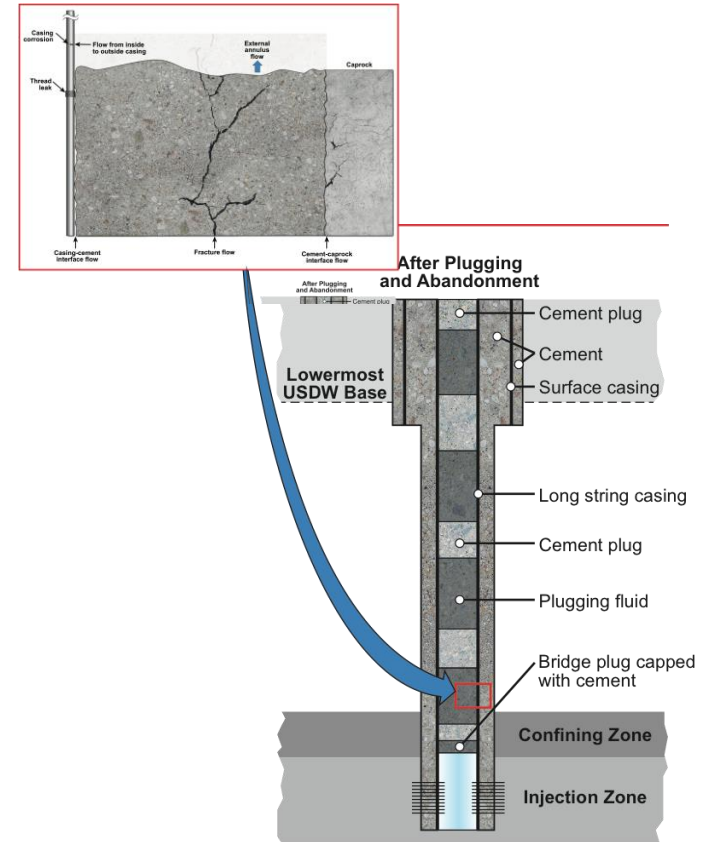
Well Integrity Atlas – A US – Norwegian Collaboration

United States -- Susan Carroll, LLNL; Nick Huerta, NETL
Norway - Malin Torsater, Pierre Cerasi, SINTEF

The Atlas would provide a field based assessment to better understand past incidents, to prevent them from happening in the future, to define for future research needs for successful commercialization of geologic CO₂ storage.

Tasks

1. Document completion, injection, abandonment issues.
2. Document risk assessment of legacy wells
3. Document monitoring methods needed to support accounting methodologies to avoid carbon tax or receive carbon credits
4. Summarize published, written comment and survey results in a single document to outline documented problems experienced in CO₂ wells, when/why they happened and how they were dealt with operationally.



Acknowledgements

- Funding, data, and expertise:
 - DOE Carbon Storage Program
 - In Salah Joint Industry Project
 - Statoil



- Many, many colleagues:
 - DOE National Lab Complex
 - NORSAR and NGI
 - University of Liverpool
 - US Geologic Survey

