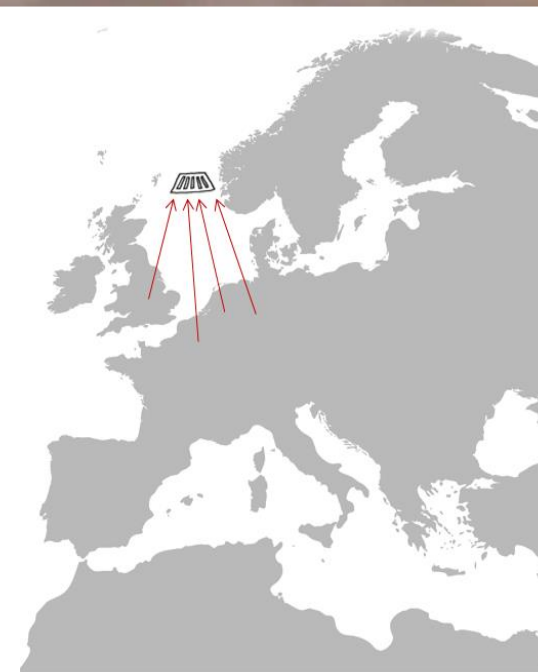


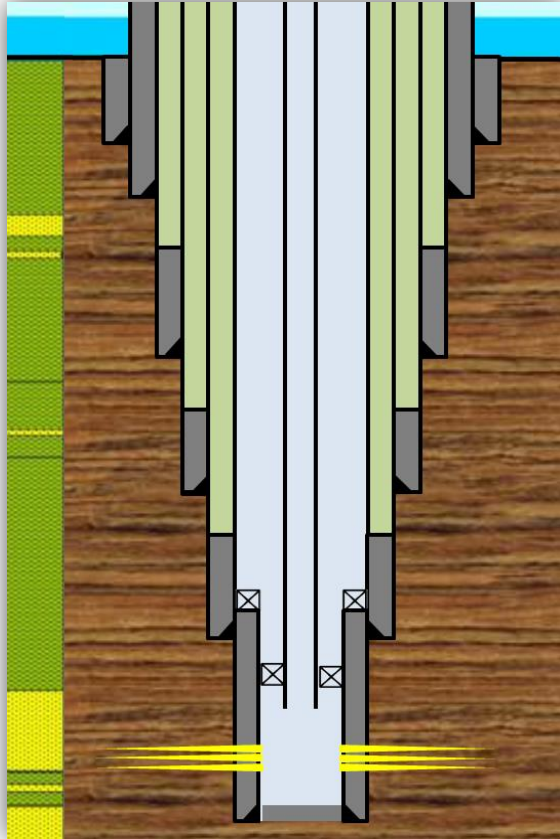
CO₂ storage side event, 27.02.19

WELL INTEGRITY

Andreas Berntsen
SINTEF Industry, Dpt. Petroleum



Well integrity



Research on this topic was initiated in BIGCCS in 2012

NORSOK D-010r3

"... the application of technical, operational and organizational solutions to reduce the risk of uncontrolled release of formation fluids throughout the entire life cycle of the well ...".

Drilling, cementing, completion

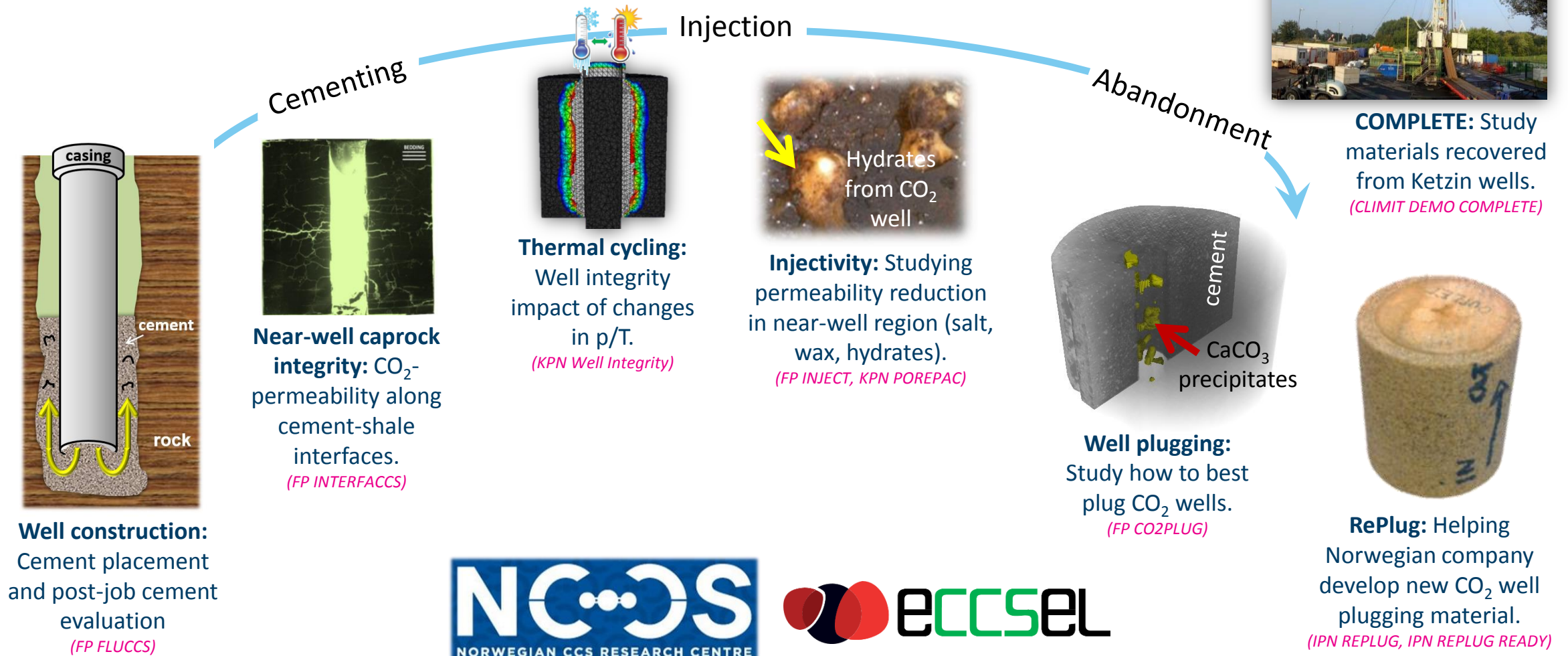


Production/injection

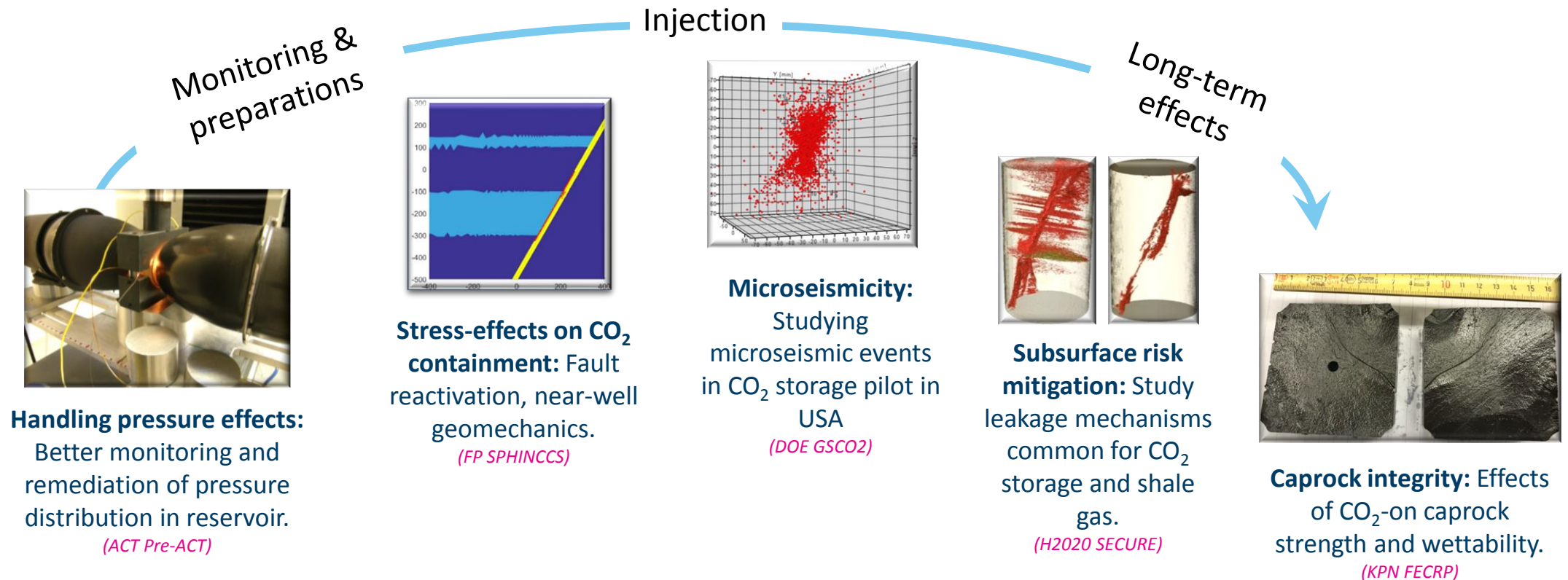


Plugging and abandonment

Well integrity related spin-offs



Good coupling to "family" of geomechanical projects



Long-term research

US-Norway collaboration has been key to success



Susan Carroll (LLNL)
during one of her visits
to Trondheim

*(LLNL collaboration in KPN Well
Integrity, NCCS, POREPAC,
SPHINCSS)*



LLNL during virtual participation to the
"NCCS Day" in Trondheim



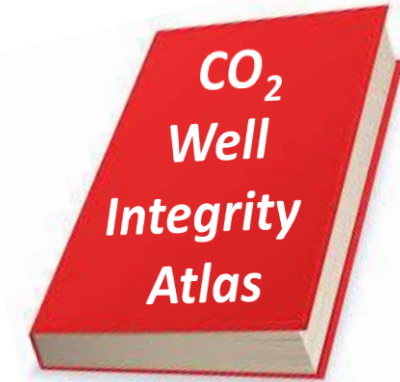
Bill Carey (LANL)
meeting with SINTEF at
Mission Innovation

*(LANL collaboration in
INTERFACCS)*

New: CO₂ Well Integrity Atlas

- Perform large scientific survey and interview operators
- Describe issues reported from CO₂ storage projects
 - Field based assessment to understand them
 - Prevent similar occurrences from happening
 - Define future R&D/technology needs

Atlas will not expose commercial operators, will be focusing on well integrity topics



Dr. Susan Carroll



Dr. Nicolas Huerta

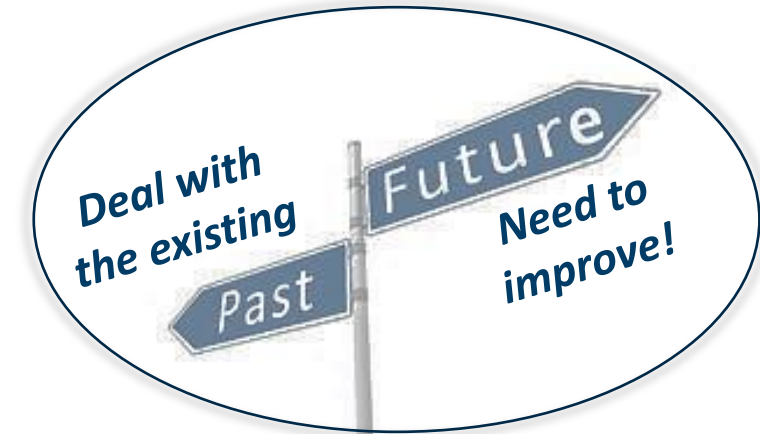


Dr. Malin Torsæter



Most important topics for future R&D

- Collect field data on CCS-related well integrity issues (ongoing in Atlas) and compare with laboratory work
 - Understand downhole situation and parameters affecting well integrity
 - Understand how to establish, demonstrate and forecast well integrity
- **Well integrity diagnostics** – esp. plugged & abandoned wells
 - Improved in-well logging and log interpretation
 - Non-invasive logging/monitoring of well integrity
- **Remediation of problems** – esp. plugged & abandoned wells
 - Reliable and cost-efficient methods for dealing with "problem wells"



(Inter)national collaboration is crucial!