

Integrated pre-feasibility study for CO_2 geological storage offshore WA and BC

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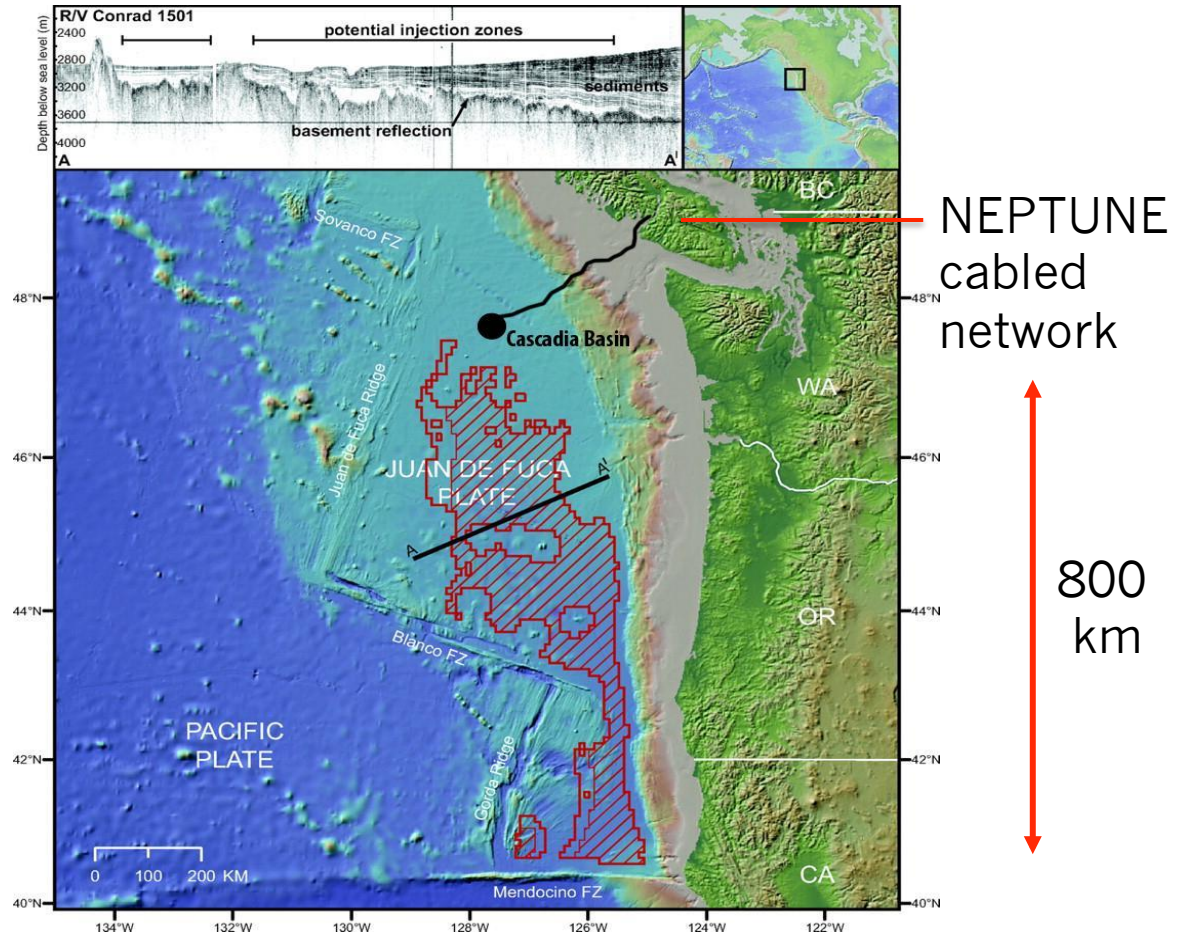


CO₂ storage in sub-seafloor basalt

Technical/non-technical assessment for safe and permanent storage of **50 MMT** CO₂ over reservoir lifetime

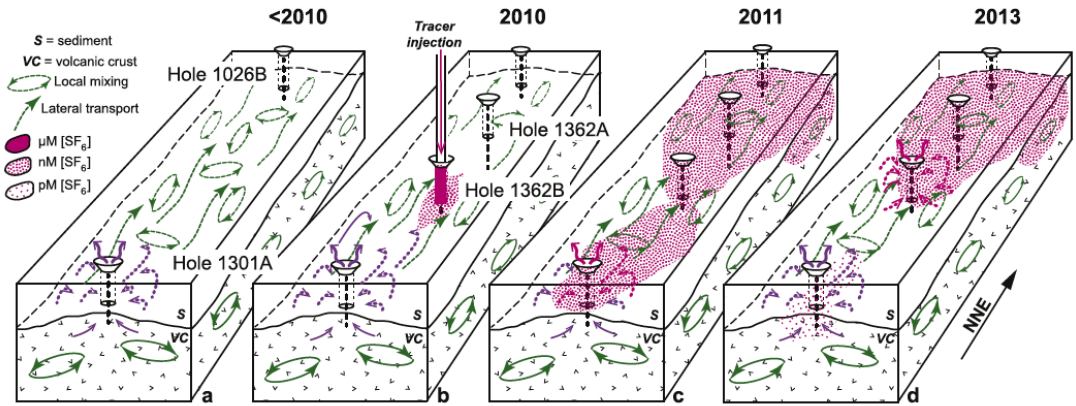
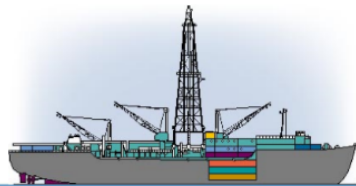
CO₂ injected below sediments may be stored through **physical**, solubility, and mineral trapping mechanisms –

CarbFIX and Wallula projects show **mineralization occurs quickly** (a few years)

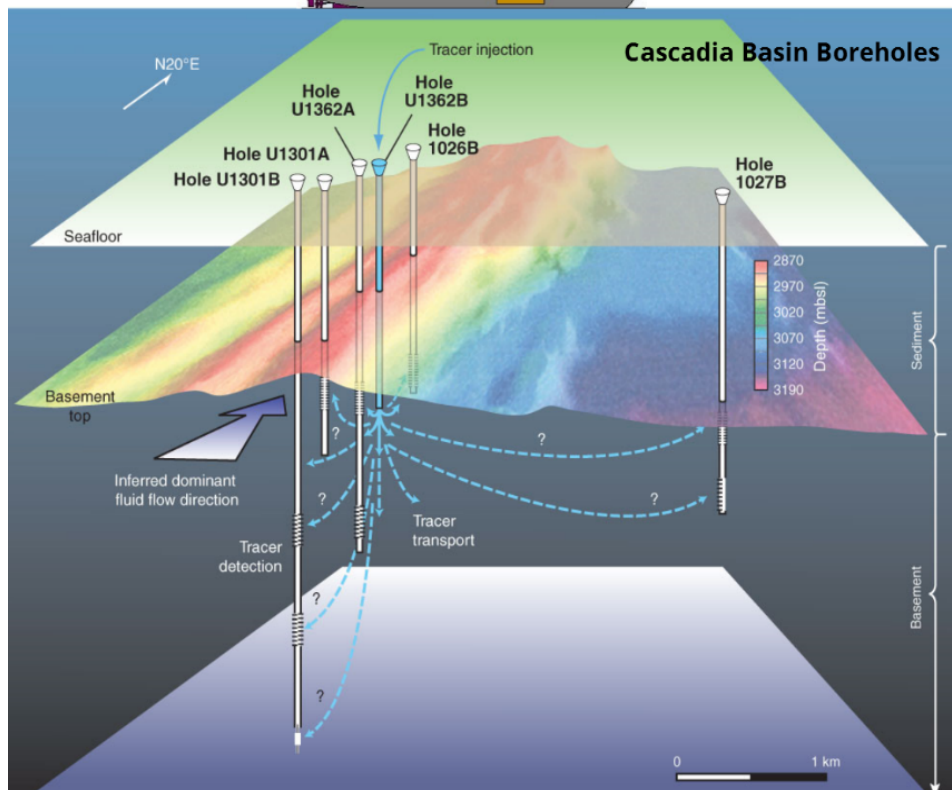


(after Goldberg et al., 2008)

Existing physical data in the Cascadia Basin

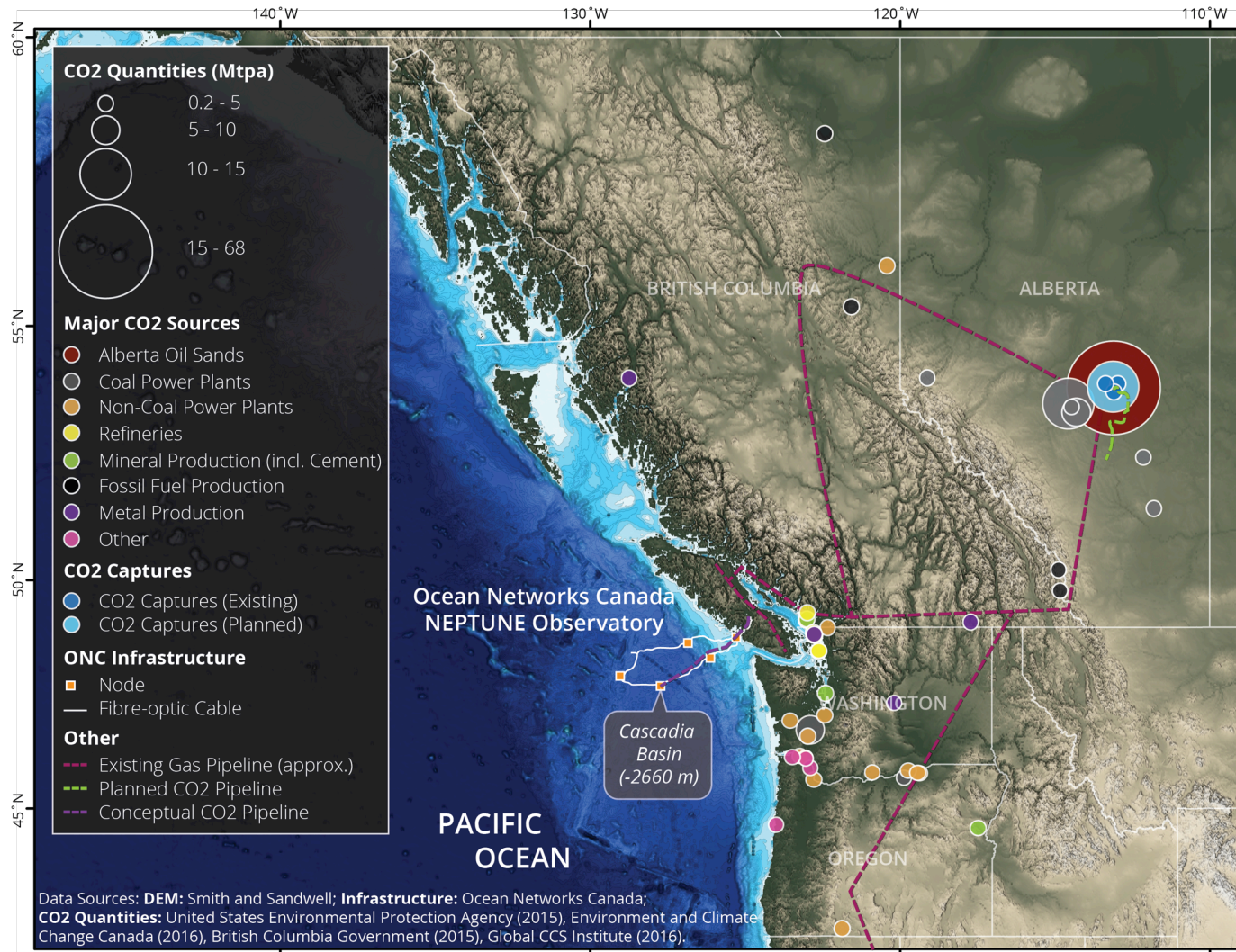


(Neira et al, 2013)



- Several existing well completions and instrumentation at IODP sites along buried basement ridge
- Multi-year tracer experiments through basalt ocean crust indicate focused northward fluid flow
- Extensive core and measurement data in public archives
- Active cabled network (NEPTUNE) for observation and monitoring

Potential CO₂ sources near Cascadia area



(from M. Scherwath, Ocean Networks Canada, 2016)

CarbonSAFE preliminary results

- Large potential sources of anthropogenic CO_2 exist in the region
- Existing regulations appear to restrict CO_2 transport across national boundaries (e.g., between US and Canada)
- Compiled hydrological data indicate basalt injectivity is high but likely anisotropic
- Laboratory studies of CO_2 -basalt-water mixtures indicate large variability in reaction rates
- Real-time injection monitoring is feasible using NEPTUNE