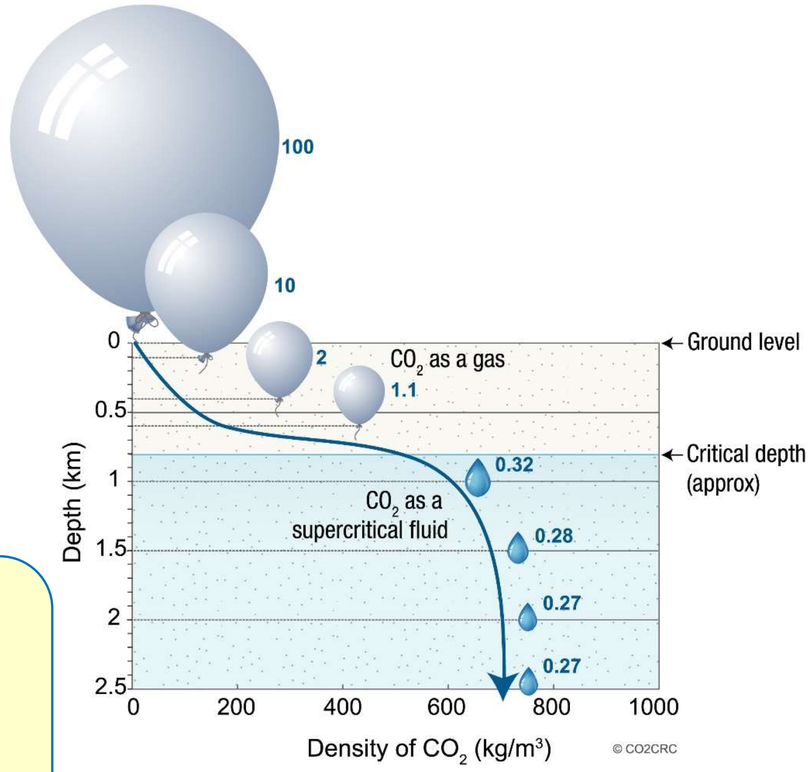
CO_2 at depth

- CO_2 is stored at depths >800m to ensure that CO_2 is in a dense form
- This is also important for storage security, because storage seals become more effective with depth
- CO_2 properties are highly variable, f(P,T)

At standard conditions (ISA) (1.013 Bar & 15°C)

- 1 m^3 of CO_2 has a mass of 1.87 kg
- 1bscf = 28.32 x10^6 m^3
- Mass of 1bscf = 52959.5 tonnes
- Mass of 1MMscf = 52.96 tonnes
- So a single well injecting 20 MMscf per day is injecting about 1000 tonnes of CO_2 per day



Simplified CO_2 density versus depth diagram (from CO2CRC)

NB. Gas engineers tend to work in standard cubic feet (scf) while CO_2 projects prefer to report mass

Rock properties versus depth

- Conceptual sketch showing a shallow stratigraphic sequence representative of the North Sea basin.
- Typically a Miocene CO_2 storage target formations could be capped by a Pliocene mudstone sequences forming the main containment system.
- The role of shallow glacial channel and dewatering features in the Pleistocene may be a key issue for assuring storage containment.
- Reference porosity curves are shown based on (1) Sclater & Christie, 1980, and (2) Marcussen et al., 2010.
- The actual porosity and permeability of the shallow basin sequence is variable and uncertain and needs to be determined via site investigation