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Single well push-pull CO_2 injection experiment for evaluating in-situ residual trapping at Heletz, Israel

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The Heletz sands is a depleted oil reservoir at 1.6 km depth with saline water at its edges. In the saline part of the reservoir a CO_2 injection experiment site has been developed for the purpose of scientifically motivated injection experiments, especially in the context of EU FP7 projects MUSTANG and TRUST.

This presentation describes the single-well CO_2 injection experiment carried out in September 2016, with the objective of determining field scale values of key CO_2 trapping mechanisms, the residual and dissolution trapping. The sequence consisted in creating a residually trapped CO_2 zone as well as reference hydraulic and heater tests prior and after the establishment of the zone, in order to determine the in-situ residual trapping. Monitoring included down-hole pressure and temperature measurement, distributed temperature sensing along the well via an optical fiber (DTS), U-tube sampling and tracers. We here present the experimental sequence, the monitoring and sampling system, the key results as well as the first interpretations.