After 3 days of rest and the withdrawal was made at a rate of 0.6 kg/s. For the simulations a radially symmetrical push-pull sequence of carbon dioxide injection, resting and withdrawal of formation water can be useful tool for analysis of scale effects in dissolution trapping from the response of a push-pull experiment.

The figures show the generation rate of scCO$_2$ (left) and dissolved CO$_2$ (middle) with time, as well as the cumulative production of CO$_2$ mass with time (right). The table below shows distribution between mobile phase, residual trapping and dissolution trapping at the end of rest for the different resting time cases.

<table>
<thead>
<tr>
<th>Case</th>
<th>Mobile phase [kg]</th>
<th>Residual [kg]</th>
<th>Dissolved [kg]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Push-pull 1 (0 days)</td>
<td>99953</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Push-pull 2 (5 days)</td>
<td>99953</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Push-pull 3 (15 days)</td>
<td>99953</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

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1) Abstract
During geological storage of carbon dioxide in deep saline aquifers part of the stored carbon dioxide dissolves in the brine. This dissolution trapping is one of the key trapping mechanisms of CO$_2$ and its understanding important when making predictions of the performance of the storage. Dissolution occurs in the carbon dioxide and brine interfaces, i.e. interfacial contact with the edges of the brine phase carbon dioxide plumes and the residual brine left inside the plume after the push stage. In this modeling study the scale effects of dissolution trapping for CO$_2$ in a deep saline aquifer and the use of a push-pull CO$_2$ injection-withdrawal test in quantifying field scale dissolution trapping at the end of resting time for the different resting time cases.

2) Concept, method & simulations
A push-pull test consists of two stages. First, a push stage during which supercritical carbon dioxide is injected into the formation, then a pull stage during which formation fluid is withdrawn. The second stage need not be initiated immediately after the first, a waiting period of varying duration may be applied. Different push-pull test sequences with multiple push-pull stages in a series could be used for analysis of the dissolution trapping.

3) Results
The series of figures show the evolution of the CO$_2$ plume and dissolved CO$_2$ in the liquid phase during withdrawal for the 6 days of rest case.

4) Conclusions
A sequence of push-pull tests at the site shown in the right could be used to investigate the difference between multiple push-pull sequences and dissolved + residual trapping with resting time. The figures above shows the estimated residual CO$_2$ distribution from integration of generation graphs. These show good agreement with the calculated values in the other table.