

## ***Interactive comment on “Qualitative and quantitative changes in detrital reservoir rocks caused by CO<sub>2</sub>-brine-rock interactions during first injection phases (Utrillas sandstones, Northern Spain)” by E. Berrezueta et al.***

**Anonymous Referee #1**

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The article titled: Qualitative and quantitative changes in detrital reservoir rocks caused by CO<sub>2</sub>-brine-rock interactions during first injection phases (Utrillas sandstones, Northern Spain) present results obtained in short-term experiment of CO<sub>2</sub>-brine-rock interaction for geological injection and storage needs.

The article have some information perhaps useful for examination of such phenomena as CO<sub>2</sub>-water-rock changes. Of course it have some new information therefore in my opinion it should be published in Solid Earth journal but after some changes and considerations mentioned below:

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The authors describe very short experiments and they observe some changes caused by CO<sub>2</sub>-brine-rock interaction however they didn't mention about number of testing samples. If the obtained results constitute some average values ??? In my opinion it is difficult to conclude based on such short experiments that presented so insignificant changes that are caused by experiments. Authors mentioned that testing samples before and after the experiments are not exactly the same samples. Therefore in the conclusion or discussion it will be worth mentioned that some changes result from inhomogeneous testing materials before and after the experiments (see similar test and conclusion in: Wdowin et al. 2014 Supplementary Studies of Textural and Mineralogical Changes in Reservoir and Caprocks from Selected Potential Sites Suitable for Underground CO<sub>2</sub> Storage. The Arabian Journal for Science and Engineering 39, (1), 295-309 as well as Tarkowski et al. 2011. Petrophysical and Mineralogical Research on the Influence of CO<sub>2</sub> Injection on Mesozoic Reservoir and Caprocks from the Polish Lowlands. Oil & Gas Science and Technology – Rev. IFP Energies nouvelles 66(1), 137-150).

Besides authors mentioned that the experiments are similar to carried out by Wdowin et al 2015 and Tarkowski et al 2015 so I think helpful for such interpretation will be mentioned above references where these authors carried out short-term experiments.

Additional for some interpretation useful will be other works for example:

Fischer, S., Liebscher, A., Wandrey, M., the CO<sub>2</sub>SINK group. 2010. CO<sub>2</sub>-brine-rock interaction – First results of long-term exposure experiments at in situ P–T conditions of the Ketzin CO<sub>2</sub> reservoir. Chem. Erde – Geochemistry 70, S3, 155–164.

Fisher, S., Liebscher, A., De Lucia, M., Hecht, L., the Ketzin Team. 2013. Reactivity of sandstone and siltstone samples from the Ketzin pilot CO<sub>2</sub> storage site – Laboratory experiments and reactive geochemical modeling. Envi. Earth Sci. 70, 3687 – 3708.

In the text I have observed some incorrect English nomenclature that are not so good for describing some phenomena i.e.

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page 9 line 15 The rock is mainly grain supported... I suggest to write in such way: The rock is composed mainly by grain skeleton supported ...???

In the text please use SI unit i.e. not "L" but "dm<sup>3</sup>"

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Interactive comment on Solid Earth Discuss., 7, 2243, 2015.

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