

***Interactive comment on* “From oil field to geothermal reservoir: First assessment for geothermal utilization of two regionally extensive Devonian carbonate aquifers in Alberta, Canada” by Leandra M. Weydt et al.**

**Anonymous Referee #1**

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The presented dataset of thermo- and petrophysical properties of Upper Devonian carbonates from of the Alberta Basin is used to assess the geothermal potential of two main aquifer systems. The recent interest in the development of geothermal energy from deep sedimentary basins world-wide makes this study relevant to the international community and the topic is within the scope of SE. The paper is well structured, the abstract clearly reflects the methods, findings and results, scientific methods and assumptions are valid and clearly outlined, figures and tables are relevant and of good quality, interpretations and conclusions are plausible. Cited references are appropriate

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and up to date.

However, besides the thermo- and petrophysical properties, the heat flow of the basin has to be taken into account to assess the economic feasibility. In the conclusions I would like to see this point addressed – alternatively the authors might add an outlook where they list the next steps to localize the most promising area with regard to depth and temperature including the available information from published data. Eventually, it is the economically recoverable heat (ERH) which increases the feasibility and this should be clearly stated at the end of the paper. The dataset clearly shows that the aquifer systems under discussion have to be operated as transitional system and thus need stimulation. Again, a point to be considered for economic operation. Since the target formations seem to be homogenous and mostly dolomitized, ultimately the depth of the reservoir with the relevant temperatures is crucial.

Please, check the reference list for consistency (also fonts). Can you please add the coordinates of the outcrop and well locations in Table 1.

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Interactive comment on Solid Earth Discuss., <https://doi.org/10.5194/se-2017-129>, 2017.

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