<u>Review on</u> "**In-situ estimation of subsurface hydro-geomechanical properties using the groundwater response to semi-diurnal Earth and atmospheric tides**"

by Gabriel C. Rau, Timothy C. McMillan, Martin S. Andersen and Wendy A. Timms

<u>Summary</u>

I thank the authors for performing major revisions in the structure and text of the manuscript that make it clearer and more pleasant to read. I also thank them for responding to all my remarks with clear answers. This paper is now undoubtedly worth publishing in HESS after the authors perform some minor corrections listed hereafter.

<u>Detailed remarks</u>

p. 5 line 99 equation (1): the definition of the tidal potential V is missing and should be connected to the incomplete sentence "where M2 is the tidal frequency"

p. 6 line 107: when computing theoretical tides, for instance with *predict.for* function within ETERNA software, a model is used for the Earth. This model can be elastic or anelastic. In the later case a phase is introduced in the tidal constituents. In your tidal prediction using *PyGTide*, global anelasticity of the Earth should be considered to have correct M2 and S2 theoretical phases. Please provide some additional information on the Earth's model used for the tidal predictions.

p. 10 line 202: "(e.g., -0.5°C in Figure 3b)" Please remove the "C" since this is degree not degree Celsius.

p. 10 lines 202-203: "Figure 2c,d show the solution space when considering the strain response as well as separation of hydraulic properties" This sentence seems unconnected to previous ones and to Fig. 3. Please clarify this remark by adding for instance "at leaky conditions".

p. 19 Figure 4: it is strange to see pressure in *m* instead of *Pa*. Maybe add in the legend something like "barometric pressures (in equivalent water heights in *m*)"

<u>References</u>: please correct references for repeated url or doi.