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Interactive comment on “Does temperature affect the accuracy of vented pressure transducer in fine-scale water level measurement?” by Z. Liu and C. W. Higgins

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I can see the need for a paper such as this if there has not been significant work done on the influence of temperature on pressure measurements. I find the methodology somewhat confused as I would have relied more on laboratory work to ensure that all of the variables are correctly isolated and that it becomes possible to isolate the causes of temperature variability in pressure readings especially as the found changes differ from sensor to sensor.

The way this paper has been set out there are just too many variables all interacting to

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come up with an outcome apart from yes temperature does an an effect, if you want to know how you remove this then I don't see how you can do this given that you have density changes in the water itself, thermal impacts of venting, thermal impacts of strain gauges, snow and icing, evaporation, atmospheric pressure and so on all interacting at the same time. Some of these can be controlled in the laboratory to just isolate the components of the sensor design that contribute to sensor based inaccuracies due to temperature so I would have focused on this first and then backed this up with field work. The field environment is too complex unless you try and model each component which would be worthwhile and then have an actual versus temperature corrected pressure reading given all of the know variables.

So my issue is that the work doesn't lead to a useful outcome, that is either a better design or a way of correcting for temperature in pressure sensors. The work may also only apply to the brand of sensors tested and so the issue of other sensors remains. It is useful to look at temperature related issues with pressure sensors but I wold have liked it to be more strongly linked to an outcome. So if you just wanted to answer the question does temperature impact vented pressure transducers then simple lab experiments would have better demonstrated this and this was done to a point in theory but not really in practice. If you want to ask how can you correct for temperature effects either by design or correction then this paper doesn't help much.

There are some English issues that also need to be addressed, for example line 27 on page 546 and others.

Interactive comment on Geosci. Instrum. Method. Data Syst. Discuss., 4, 533, 2014.

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