



EGUsphere, referee comment RC1
<https://doi.org/10.5194/egusphere-2022-24-RC1>, 2022
© Author(s) 2022. This work is distributed under
the Creative Commons Attribution 4.0 License.

Comment on egusphere-2022-24

James Clark (Referee)

Referee comment on "Developing a low-cost frequency-domain electromagnetic induction instrument" by Gavin Wilson et al., EGU sphere,
<https://doi.org/10.5194/egusphere-2022-24-RC1>, 2022

There is already open source software available for the interpretation of various geophysical data, but the development of the necessary inexpensive geophysical instrumentation has lagged behind. But interest in developing low-cost geophysical instruments is growing. The need for low-cost instruments is apparent to anyone who has traveled in the economically deprived developing world where water is lacking. Additional uses of these instruments is in civil engineering applications such as road construction, dam building and hazard mitigation. Although the excellent commercial instruments are rugged and very user friendly the cost often puts them outside of the budgets of many potential users worldwide.

Another use of low-cost instruments is in academia, especially in small schools that do not have the resources that are available to larger institutions. In these academic settings the goal is teaching and providing a laboratory experience rather than lengthy use of an instrument in the field under harsh conditions. There is also very important pedagogical reasons for introducing geophysical instruments that are relatively simple and even able to be built in a laboratory setting. Expensive commercial instruments that may be used only once or twice a year for a laboratory cannot be justified, but one that costs only a few hundred dollars is readily fit into a budget.

Although there have been some attempts to describe inexpensive instruments such as DC resistivity, seismic and magnetics this paper fills an important gap in opening up the field of electromagnetics to the low-cost family of instruments.

This paper is significant in that it describes the method, electronics, testing and field validation of the instrument so that anyone unfamiliar with electromagnetic instruments could understand how to build and use it.

James Clark, Professor Emeritus, Wheaton College, Wheaton Illinois, USA