Hasan and Su tried to get the permeability of deep hard rock by a geophysical approach. They used the CSAMT to get the resistivity of the subsurface for several 2D profiles and then built an empirical equation to describe the relationship between permeability and resistivity using 37 permeabilities from boreholes. Then they applied the equation to all 2D profiles and finally extrapolated 2D profiles to a 3D field. They argued that the advantage of their approach is that it is able to get the information of the deep subsurface to 1 km depth. They also said their approach is low-cost than borehole drilling. I am sorry I am not that encouraging to this work. I don't think this work is novel enough for publication in HESS, a top journal in hydrology and water resources. I suggest rejecting it for publication in other journals of geology. Following are my reasons:

1. Either component of this work is very old. The CSAMT can date back to 1970s. The relationship between the permeability and resistivity has also been largely studied so far. The inversion of permeability/hydraulic conductivity using geophysical approaches is so well-known.
2. Authors even didn't well discuss the previous studies of relationship between permeability and resistivity, such as the Archie equation and Kozeny-Carman equation.
3. A perfect equation (Fig. 3) was built using only 37 known permeabilities. It is hard to convince me the number of k values is enough to build an equation for a domain of 1.8 km*1.8 km*1km of high heterogeneity. It is hard to say this equation is still available for other positions and depths in the domain. As the authors also mentioned, the resistivity is determined by many other factors, not only the permeability.
4. The fitted line is too perfect to believe. I always saw the fitting as follows (very noisy):

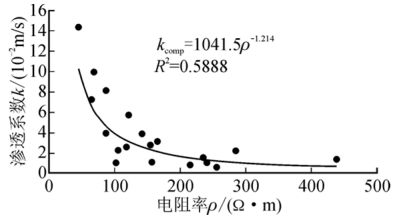
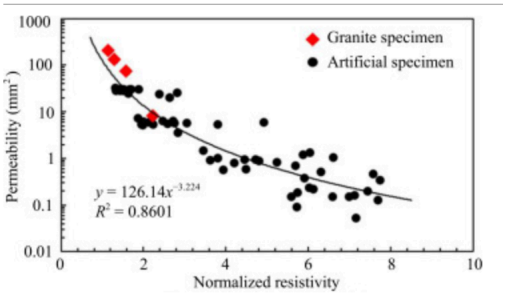


图 1　经验公式法求解的渗透系数与电阻率的关系

Fig. 1　Relationship between hydraulic conductivity and resistivity calculated by empirical formula method



5. I am not sure the resolution of the resistivity obtained by CSAMT and the permeability obtained by pumping test. Do the scales match well? i.e., what's the size of the pixel in the maps in Fig. 4? The k obtained by pumping test always represents the average hydraulic conductivity of an area, so do this range and your pixel size match?

6. Table 2, the same problem, even for the pumping test itself, the k values obtained are with large uncertainties, the deviations of one order of magnitude is not surprising. However, the differences of k values between the CSAMT and borehole drilling are less than 1 or 0.1, which is unbelievable.
7. I am not sure why very deep k is necessary. A latest study found that groundwater deep than 500 m is not an active component in terrestrial hydrologic cycle and the water there might be brine. You may say your work found there are a lot of sandy rocks in depth. However, given the large uncertainties of your approach, did you compare the findings with the results of local or national geologic survey? DOI:10.1038/s43247-023-00697-6
8. I found a work of the authors just published in scientific reports https://www.nature.com/articles/s41598-025-85626-7
   It is exactly the same workflow with this one. Many sentences are the same. I am not supportive for research of such a style in the community.
9. The strcuture of the manuscript is OK, however, the writing is still unsahped. Many sentences are duplicated, such as lines 306-308 which appear many times. I think once you clarified the strenghtes of your approaches in the introduction, you only need to describe you appraoch in methodology and it is redundent to say this again. Also line 218 "*About 1300 meters was the depth of investigation (DOI) in the CSAMT investigation.*", such an expression is awkward. Why not "*the depth of investigation (DOI) in the CSAMT investigation was about 1300 meters*".
10. What are you trying to get? Permeability or hydraulic conductivity? I don't think the unit of permeability is L/T.