

## Assessing the Hydration State under the Western US using Magnetotellurics

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265 McCone Hall UC Berkeley Campus

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**Abstract:** Hydrogen equivalent compounds (i.e. water) within the deep Earth are known to affect a range of human and scientific relevant geologic phenomena. They are also known to affect the electrical conductivity of both solids and fluids. In this talk, I describe how natural-source electromagnetic fields when paired with temperature constraints can be used to constrain the predominant phase type and amounts of this “water” within the crust-upper mantle system. I apply this methodology to large swaths of Western North America, revealing clear spatial patterns in deep Earth hydration. In general, western regions of the continent appear wetter than eastern ones. However, the distribution of water is in general heterogeneous; even regions thought geologically “dead” appear to locally host deep aqueous fluids.



Kevin Mendoza is a new postdoctoral appointee at Sandia National labs where he focuses on EM modeling. He obtained his PhD in Geophysics, from the University of Utah with a special emphasis on utilization of the magnetotelluric method. He has numerous research interests, including fusing mineral physics with geophysical inverse problems, application of machine learning and data science to tomography, mineral systems, geothermal, and deep Earth volatile cycling. He is also a strong supporter of education and outreach efforts; During his graduate studies he acted as president of inclusive Earth and taught hundreds of students, earning him two departmental awards and the National Association of Geoscience Teachers Outstanding TA award in 2022. He is enthusiastic advocate for open-source science, with a long record of contributions to geoscience code repositories.

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