

## Electromagnetic Sounding of Planetary Bodies

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### SUMMARY

Electromagnetic (EM) sounding is a powerful tool to investigate planetary interiors. Especially for planets other than the Earth, information on the subsurface is sparse and it is important to reflect on the potential of existing and upcoming data sets. Multiple missions have recently collected magnetic field data in the vicinity of planetary bodies and this has led to an emergence of planetary EM studies that warrant a review of the field. While these studies rely on the same principles as terrestrial studies, the sparsity of data and different magnetic field environments require adaption of methods and rethinking of common approaches. As such, I will provide an overview on EM studies and opportunities for our solar system bodies with a focus on mission data, some of the outstanding questions EM might help us to address and the external magnetic field environments. Because any available studies depend on the availability of data, I will introduce missions that have provided magnetic field data so far and upcoming missions that will provide them. The external magnetic field environment and planetary orbital characteristics determine the inducing field and periodicities of interest that give rise to induced signals. In a walk through our Solar System, questions range from the availability of oceans for moons around the outer planets with implications for the search for life, to more detailed understanding of the interior structure of individual planetary bodies. With an understanding of the topic, readers will be able to contribute to important and most fundamental questions, a step towards characterizing and understanding the diversity of and ultimately beyond our Solar System.

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