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Planetary exploration: What's our geoscience place in space?

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Abstract: The period around 1500 was a remarkable age of global exploration, discovery, and mapping. The early 2000s bear some similarities to that expansive time, but now on the scale of the Solar System. Much of exploration geophysics has been dedicated to probing the Earth's subsurface in the quest for energy and materials. Considerable prosperity has followed. Now, a burgeoning satellite, space station, and planetary exploration set of activities is fueling substantial engineering and scientific advancement along with considerable further understanding of our world and its neighborhood. A vibrant space economy is developing. Much of this work has geoscientific goals along with its economic objectives. Geophysical techniques are a key part of many space missions to the Moon, Mars, and beyond. Private and public space companies are also increasing in numbers, funding, and activity. We anticipate human habitation on other planetary bodies in the near future. Thus, as a profession of explorers and developers, there is a compelling opportunity for geophysics to expand its scope in planetary science and the next phase of human development. This talk summarizes some of the current space (that zone above about 100 km) activities, how applied geoscience is and can be involved, and some of the fascinating places where we're going.



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Rob is a Professor of Geophysics the University of Houston (UH), holds the Cullen Chair in Exploration Geophysics, and is Director of the Allied Geophysical Laboratories. His work spans borehole geophysics, elastic-wave seismology, ground-penetrating radar, and planetary geoscience. Rob is a licensed geoscientist in Alberta and Texas. He has published over 175 articles in geoscience journals and magazines and holds two patents. He has graduated 92 M.S. and Ph.D. students. Rob was the Society of Exploration Geophysicists' (SEG) Distinguished Educator and received the SEG Lifetime Membership Award. He also served as President of the Canadian SEG and received its Honorary Membership Award and Medal. He completed service as the 1st Vice President of the Geophysical Society of Houston and President (2018-19) of SEG. He was employed with Chevron's Oil Field Research Lab, California; ARCO in Dallas; Veritas Software, Calgary; and is President of the geophysics consulting company, Sonderra, LLC.