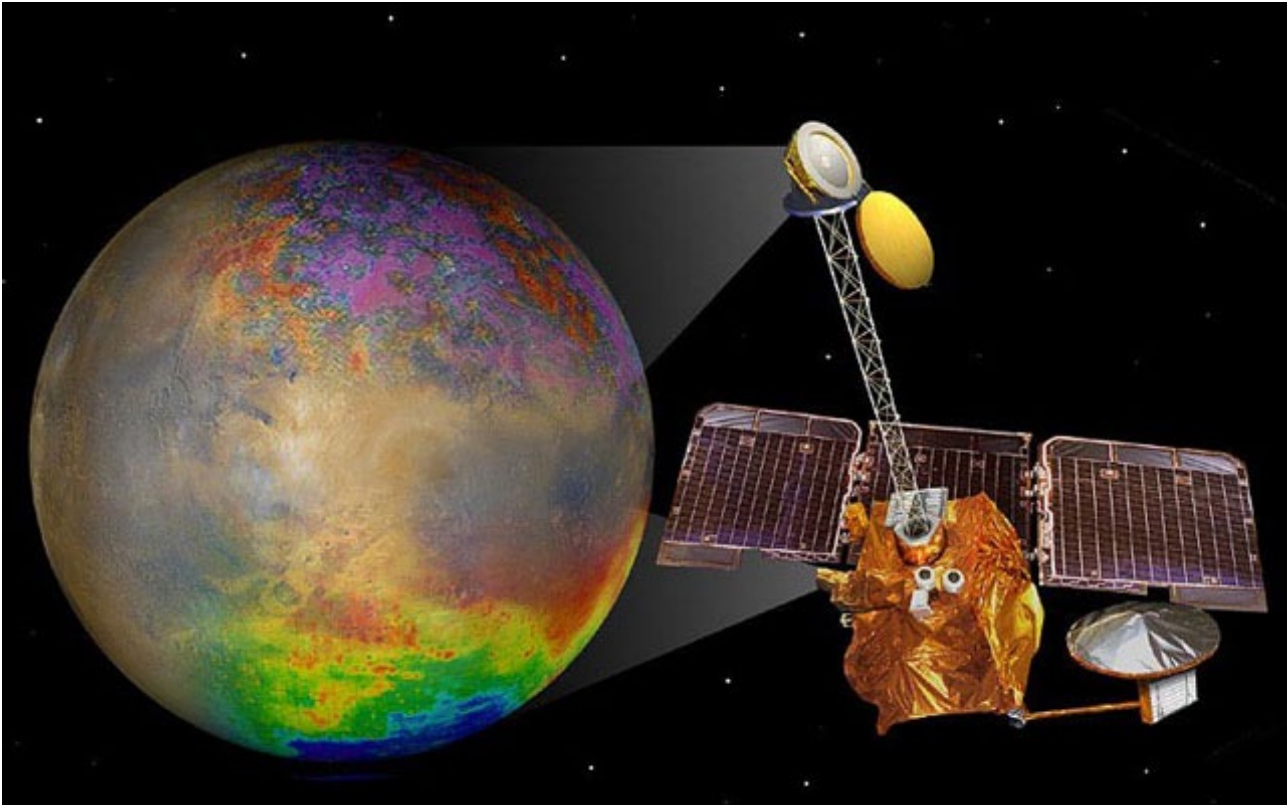# SEG - Seismology and Geodynamics
Master Thesis

Determining the crustal structure of Mars

The main aim of this project is to construct models of the Martian crust using a variety of data and methods that originate from petrological studies of Martian meteorites and gamma-ray spectrometer data gathered by Mars Odyssey.

From these data, global maps of the major-element composition of Mars will be constructed that will be converted to global maps of physical properties (P-, S-wave speeds, and density) throughout the crust using thermo-dynamic modeling methods.

This Master thesis project will develop models that will be needed for the upcoming Mars Insight mission, which intends to land a seismometer on the surface of Mars for the purpose of investigating its internal structure.

However, it is important to establish, prior to deployment, the effect of crustal heterogeneity, that is likely to arise from topography and 3D crustal structure, on seismic waveforms. For this purpose, we will compute full seismic waveforms in the synthetic 3D models of the Martian crust and assess to the extent to which heterogeneity is expected to play a role.

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