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Implications of Uncertainties in Quake Locations on Mars' Seismicity-Geology Correlation ARVIN KARPIAH, CATHERINE JOHNSON, Univ of British Columbia — Quakes are not exclusive to Earth. Moonquakes have been observed and surface imaging of faults, together with thermal models for Mars' evolution suggests that it is very likely that Mars has seismic events too. However, there have been no in-situ measurements of marsquakes. Images and elevation maps of the martian surface by different satellite missions have revealed faults in some detail but no evidence for plate tectonics, suggesting that marsquakes might be governed by local and regional-scale tectonism and/or volcanism. Several studies have been done to estimate present day seismicity on Mars. Catalogues of martian fault locations and ages, together with measured seismicity levels on the Moon and in intraplate regions on Earth, have been used to estimate bounds on martian seismicity levels. These estimates suggest that Mars might be seismically active today. NASA's InSight mission is a project underway to deploy a modern seismometer and a heat probe on Mars to study the structure of Mars's deep interior. This would be the first ground based seismic measurement on Mars. We built probability distribution functions for likely marsquake locations based on fault data, InSight's seismometer location and anticipated measurement uncertainties. We use this probability function and surface geology maps of Mars to quantitatively assess correlations that might be inferred between seismic events and the different geological features on Mars.

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