Although it has been confirmed that Mars contains water in the gaseous and frozen states, little is known about liquid water and how it interacted with the Martian surface. This summer I am conducting research to further understand this interaction, specifically with the salt perchlorate. Perchlorate precipitates onto the surface as a result of atmospheric interactions between HCl and O_3. If the perchlorate (which is very hygroscopic) is exposed to water, it will be redistributed beneath the surface; a significant amount of subsurface perchlorate indicates that it has interacted with water. This summer I will be mapping Martian surface and subsurface perchlorate using ENVI software and images taken from the Phoenix Lander Mission. In order to determine if an area contains perchlorate, it must be at least three pixels away from shadow interference, have a relatively good spectral profile, and consist of more than one pixel. After analyzing images, I will compare them to one another to determine if a patch is consistent during different hours of the sol (Martian day).