

Overview of NASA FINESSE (Field Investigations to Enable Solar System Science and Exploration) Science and Exploration Results

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NASA's FINESSE (Field Investigations to Enable Solar System Science and Exploration) project is focused on a science and exploration field-based research program to generate strategic knowledge in preparation for human and robotic exploration of other planetary bodies including our moon, Mars' moons Phobos and Deimos, and near-Earth asteroids. Scientific study focuses on planetary volcanism (e.g., the formation of volcanoes, evolution of magma chambers and the formation of multiple lava flow types, as well as the evolution and entrapment of volatile chemicals) and impact cratering (impact rock modification, cratering mechanics, and the chronologic record). FINESSE conducts multiple terrestrial field campaigns (Craters of the Moon National Monument and Preserve in Idaho for volcanics, and West Clearwater Impact Structure in Canada for impact studies) to study such features as analogs relevant to our moon, Phobos, Deimos, and asteroids. Here we present the science and exploration results from two deployments to Idaho (2014, 2015) and our first deployment to Canada (2014). FINESSE was selected as a research team by NASA's Solar System Exploration Research Virtual Institute (SSERVI). SSERVI is a joint effort by NASA's Science Mission Directorate (SMD) and Human Exploration and Operations Mission Directorate (HEOMD).