What Is MESDT?
- Mars Exploration Student Data Teams (MESDT) is a free nationwide planetary science centered research experience which immerses teams of high school and undergraduate students in an authentic STEM research and experiences.
- Students work with their teacher mentors and scientists from NASA's Compact Reconnaissance Imaging Spectrometer for Mars (CRISM) to analyze Martian mineral data and submit proposals to peers and science team members via distance learning technologies.

Objectives
- To expose students to new STEM skillsets and build student confidence to pursue STEM majors/careers.
- Skillset samples include: Planetary geology, spectroscopy, software skills, practice and confidence using multiple data sets and programs, critical thinking, teamwork, presentation/public speaking, problem solving and analysis.

Methods
- Distance Learning via Elluminate.
- Archived Webinar Tutorials: taught by CRISM team members during live sessions, archived for later review.
- Webinar topics include: Martian history, geology, spectroscopy, software including JCAT and CRISM Map, and student led presentations.
- Students communicate and are supported through an online bulletin board, monitored by the MESDT coordinator with Q&A help by CRISM science team members.
- Ten fold increase in team participation in 2012-2013 led to changes toward a more focused online pedagogical approach. This included an increased emphasis and utilization of student online communication forums and an increased number of material resources including guiding assignments to support the archived online tutorials.

Team Diversity
- Venue diversity: traditional classrooms public and private, distance learning, afterschool, community center/library clubs, astronomy clubs, etc.
- Geographic diversity: rural, suburban, urban.
- Student diversity: 12 of 18 schools reported gender and ethnicity information showing participants to be: 32% minority, 45% female, 55% male.

Competitive Travel Scholarship Allows Participation in Professional Meeting
- Designed to allow students to experience another aspect of planetary science, CRISM funded two competitive scholarship opportunities for students to travel to and present their work at the 2012 USGS Planetary Mappers Meeting in Flagstaff, AZ.
- This year’s scholarship awardees will attend and present their work at the 2013 USGS Planetary Mappers Meeting at the Smithsonian Institution in Washington, DC.

Results
Informal assessments in the form of teacher surveys and interviews show impact for:

Students
- Teachers and parents report MESDT influenced academically “at risk” students to pursue higher education goals;
- Increased overall student confidence in academic and personal pursuits;
- Increased enthusiasm for science, i.e. giving up spring break to work on MESDT projects;
- Contributed to increase in student scholarships and students choosing STEM careers;
- Led to student publications and conference participation at venues such as LPSC and USGS/NASA Planetary Mappers Meeting.

Community
- Teachers reported positive impact on community interest in STEM activities.
- One MESDT school noted they have become known as the “Planetary Research School” and have noticed an increase in enrollment with parents citing their desire for their children to have access to MESDT.
- Additional community support included fundraising for students to travel to science conferences, such as LPSC to present their work.

Teachers
- Informal assessments of participating teachers show teachers feel supported in the program and that pedagogical approach is effective, however attrition rate was approximately 60%. Main reason cited was lack of time.
- Possible future retention plan includes a “teacher mentor data team” to provide advance training for teacher mentors in effort to decrease teacher learning curve time during school year.

Acknowledgements
MESDT is funded through NASA’s Compact Reconnaissance Imaging Spectrometer for Mars (CRISM) instrument, and was created by Arizona State University’s Mars Education Program.

Contact Information: Brian Grigsby, MESDT Coordinator, bgrigsby@suhsd.net; Dawn Turney, CRISM E/PO lead, dawn.turney@jhuapl.edu