1125-P5-2879   **Michelle L Ghrist***, HQ USAFA/DFMS, 2354 Fairchild Hall, Suite 6D2, USAF Academy, CO 80840. *Exploring the Solar System through Differential Equations and Vector Calculus.* Preliminary report.

I discuss a recently developed project that uses mathematics to compare Earth, Saturn, and Titan. One part of this project involves modeling projectile motion and air resistance; students are asked to develop and discuss several models of air resistance (to include researching various factors that affect drag) and then solve one particular system of first-order equations both analytically and numerically. The other part of the project requires students to model planetary surfaces and orbital trajectories via parameterizations and then use those parametrizations to estimate various physical quantities such as surface area, heat flux, and work. This project was implemented in an Engineering Mathematics course this semester; various parts could easily be incorporated into a Differential Equations and/or Multivariable Calculus course. (Received September 20, 2016)