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Composition of Rheasilvia Basin on Asteroid Vesta.

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Abstract Text:

The focus of the present study is the compositional analysis of small-scale surface features within the Rheasilvia basin on asteroid Vesta. We are using data acquired by the Visible and InfraRed mapping Spectrometer (VIR) on the Dawn mission. Nominal spatial resolution of the data set considered in this study is 70m/px.

The portion of Rheasilvia basin below 65°S has a howarditic composition, with the higher concentration of diogenitic versus eucritic material in the region between 45° and 225°E-lon. However, there are several locations, such as craters Tarpeia and Severina and Parentatio Rupes, with lithologic characteristics different from the surroundings regions. Tarpeia crater has a eucritic patch in the west side of the crater, the bottom part of the wall and part of the floor. Severina, located in a region of Mg-rich pyroxene, has some diogenitic units on the walls of the crater. Also the Parentatio Rupes has an obvious diogenitic unit. These units extend for 10-20km, and their location, especially in the case of the two craters, suggests they formed before the cratering events and also before the Rheasilvia impact event. The origin of these units is still unclear; however, their characteristics and locations suggests heterogeneity in the composition of the ancient Vestan crust in this particular location of the surface.

Acknowledgements: The authors gratefully acknowledge the contribution of the Dawn Instruments and Operations Teams. This work is supported by NASA through the Dawn project and by an Italian Space Agency grant. The VIR spectrometer is funded by ASI. It was built by Selex-Galileo, Florence, Italy and is now managed by INAF - Istituto di Astrofisica e Planetologia Spaziali, Rome, Italy.

Session Selection: Solar System Small Bodies: Relics of Formation & New Worlds to Explore

Title: Composition of Rheasilvia Basin on Asteroid Vesta.
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Preferred Presentation Format: Assigned by Program Committee (Oral or Poster)

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