STUDING PLANETARY SCIENCE THROUGH PLANETARY ANALOGS USING OPEN EDUCATIONAL RESOURCES. J. G. Olgin[1,3], O. P. de La O Fernandez[2], [1]El Paso Community College, 9570 Gateway N. Blvd, El Paso, TX 79924 (jolgin@epcc.edu), [2]El Paso Community College, 919 Hunter Dr., El Paso, TX 79915 (odelaofe@epcc.edu), [3]University of Texas at El Paso, 500 W. University, El Paso, TX 79968 (jolgin@utep.edu).

Introduction: Planetary analogs have allowed scientist to gain a better understanding of various planetary environments. Certain analogs, such as those conducted in the laboratory, are used to study and explain possible geo-processes that occur on other planetary bodies; such as understanding the atmospheric conditions for the formation of tholins on Titan [1] and determining additional thermal properties between terrestrial rock samples [2].

Specifically in the geosciences, planetary analogs have been used in the various academic settings to guide student's focus on the physical processes that shape surface and subsurface features [3], [4]. The Education Internship in the Physical Sciences (EIPS), an undergraduate internship program in collaboration with the University of Texas at El Paso (UTEP) and El Paso Community College (EPCC), has utilized planetary analogs for interns to gain experience applying their knowledge in geosciences. Intern projects included the use of remote sensing data to identify and study surface hydrology on Earth and Mars [5].

We present here a unique take on augmenting classroom curriculum by incorporating a combination of the following techniques to enhance the inclusion of planetary analogs. This modified curriculum will be introduced in introductory astronomy classes at EPCC. The focus topic will be understanding atmospheric dynamics of Earth and Mars (see figure 1):

Open Educational Resource (OER). Students in a physical science course (i.e. astronomy, geology) will use an OER for their class. This work will incorporate NASA's GLOBE Observer app, where students will take cloud and temperature observations during a set period to study atmospheric dynamics and temperature variations. Additionally, resources from NASA's planetary analogs website will be utilized [6].

Service Learning and Citizen Science. Students will be enrolled in the service learning program (SLP) at EPCC so that they can provide data for NASA and assist the science community to better understand atmospheric science.

Model Based Reasoning (MBR). Students will follow-up their observations by constructing concept maps to gain feedback and further in-depth comprehension of the topics by addressing questions related to the topic.

EIPS collaboration: Students will then apply their expertise at the end of the course toward EIPS projects in planetary science. Through this collaboration, EPCC students will have a nexus to continue with their careers at a four-year institution.

This presentation will focus on the groundwork needed for this curriculum augmentation, discussion and feedback of a pilot course that included these techniques, and future applications to help students pursue careers in STEM, specifically the planetary sciences.

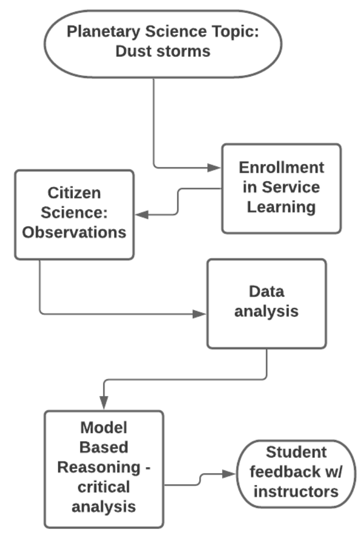

Figure 1: Flowchart outlining course development using planetary analogs .

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