Exploring Other World's by Exploring Our Own: Bringing Earth and Planetary Science to the Public

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Introduction

The Centre for Planetary Science and Exploration (CPSX) at The University of Western Ontario has initiated a program for high school students entitled "Exploring Other World's by Exploring Our Own". This hands-on learning experience introduces the concept of terrestrial analogues, which are places on Earth that approximate the geological and/or environmental and/or potential biological conditions on other planetary bodies. Terrestrial analogue activities focus on three main areas (Osinski et al. 2006): (1) comparative planetary geology, 2) astrobiology; and (3) exploration science, including instrument testing and development, astronaut training, etc. Analogue activities also provide important education and public outreach possibilities as they provide a linkage future space missions. Indeed, popular scientific websites and magazines concentrate heavily on the results of planetary research and exploration. For example, the website for NASA's Mars Exploration Rovers, Spirit and Opportunity, received over *6 billion* hits during the first month after they landed on the surface of the Red Planet in 2004. We plan to build on the public interest in space to make learning about Earth Science interesting and fun. Our goal is to provide a highly interactive inquiry-based learning experience. We will focus on addressing the needs of the Ontario Curriculum for Science, Grade 9, and specifically one of the four Big Ideas: "Earth and Space Science: The Study of the Universe". By studying the geology of terrestrial analogues, we not only increase our understanding of other planetary bodies: these studies also contribute to our understanding of fundamental scientific problems here on Earth.

Methods

The objectives of the "Exploring Other Worlds by Exploring Our Own" initiative are:

- To encourage young people to learn about the Earth and the Universe by engaging them in activities related to planetary science.
- To inspire students to consider a career in science by developing their interests in planetary science and exploration.
- To provide instruction and resources to science teachers to enable them to more easily and accurately teach planetary science and exploration topics.
- To provide training and teaching experience for graduate students using an inquiry-based problem-based methods.

Interaction with high school students will be via in-person and virtual (through partnership with Virtual Researcher On Call) school visits, evening events, and an annual Teacher Training Workshop. This initiative involves partnerships with the Thames Valley District School Board, VROC, the Canadian Space Agency, and the Royal Astronomical Society of Canada. This initiative will include more hands-on activities than the traditional lecture style talk. Sessions will involve students learning to use equipment and computer programs themselves, as well as hands-on demonstrations of earth and planetary science concepts. Teamwork is emphasized and mini-projects would allow students to work in small groups to design missions to Mars, Moon and analogue sites on Earth. The interaction of scientists and engineers working together would also be highlighted through experiential learning techniques.

References

Osinski, G.R., Léveillé, R., Berinstain, A., Lebeuf, M., Bamsey, M., 2006. Terrestrial analogues to Mars and the Moon: Canada's role. Geoscience Canada 33, 175-188.