EART 191B: Planetary Capstone
TuTh 1:30-3:05 E&MS D258

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Office hours: Tues & Thurs 3:05-4:05 or by appt.

Course Goals: To provide students with an opportunity to synthesize their knowledge across different planetary science disciplines by presenting a written and oral report on a cross-cutting topic. This year’s topic is Planetary Volcanism.

Textbook: Not required, although Lopes & Gregg, Volcanic Worlds, Springer-Praxis, 2010 is on reserve.

Approximate Grading Scheme:
25% Outline report (due week 4)
20% Final oral presentation (week 10)
55% Final written report (week 10)

Prerequisites:
EART160 is a prerequisite, and EART111 or MATH22.

Plagiarism:
In writing a review paper it is especially important to avoid plagiarism. I expect the reports to be written in the students’ own words; any duplication of more than 50% of a sentence appearing in a published abstract or paper should be identified via quote marks and appropriately referenced.

Disability:
If you qualify for classroom accommodations because of a disability, please get an Accommodation Authorization from the Disability Resource Center (DRC) and submit it to me in person outside of class (e.g. office hour) within the first two weeks of the quarter. Contact DRC at (831) 459-2089.

Course Outline

Week 1 (April 3): Introduction & report topics; reading a paper
Week 2 (April 10): Interiors (1); writing a paper
Week 3 (April 17): Interiors (2); oral presentations of topic paper
Week 4 (April 24): Surfaces (1); writing a review paper
Week 5 (May 1): Surfaces (2); oral presentations of topic
Week 6 (May 8): Surfaces (3); how papers get published

Week 7 (May 15): Atmospheres (1); TBD

Week 8 (May 22): Atmospheres (2); when things go wrong

Week 9 (May 29): NO CLASS (report writing)

Week 10 (June 5): Oral presentations

Suggested report topics:

Are there currently active volcanoes on Venus?

How important is volcanism for heat transfer on planetary bodies?

Does Io really have a magma ocean?

How different is volcanism on Venus to volcanism on Earth?

Are there “supervolcanoes” on Mars?

What is the history of volcanism on Mercury?

What is the evidence for cryovolcanism on Titan?

What is the evidence for cryovolcanism in the outer solar system?
Chapter 9 of Lopes and Gregg (though this was written before Enceladus!)

Was the climate of Mars influenced by volcanic activity?
Halevy & Head, Nature Geosci. 7, 865-868, 2014.

Was the climate of Earth influenced by volcanic activity?

Are mass extinctions on Earth caused by volcanic eruptions?
Bryan & Ferrari, GSA Bull. 125, 1053-1078, 2013