EART 206 - Great Papers in the Earth Sciences

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Lecture: M,W 2:30-4:05 E&MS Room D226
Office Hours: 1:30-2:30M & 9:30-10:30W (TB) E&MS A108, 3-5F (QW) E&MS A212 or by apptmt.
Website: Canvas

This course provides an opportunity for graduate students to explore the origins of a broad range of key issues in Earth Sciences by reading and leading discussions of classic papers that have been identified by the faculty. Most of the selected papers were key in the development of modern ideas in Earth Sciences. In many instances an early classic paper is paired with a more recent paper to emphasize subsequent evolution of the original ideas and to provide a modern perspective. In a few instances, a trend-setting idea was developed over a sequence of publications, and a review paper by the primary idea-developer is included. The instructor will lead discussions of a few of the classic papers and will provide contextual perspectives. The class also provides a chance for students to practice their critical thinking and hone their scientific presentation and discussion skills.

Grading in the class will be based on attendance, participation, and presentations that students will give on the papers. Students will choose the papers they will present at the first class meeting. Each presentation should lay out the logic and methods of the paper and cover the main conclusions. Historical context, on both the ideas and the lead authors, is relevant and welcome. A one-page summary of main points, impact and background on the paper should be distributed to the class before each presentation. In some cases, supplemental reading is supplied that will help presenters (and other class participants curious about the topic). Before making their presentations, students should feel free to touch base with the instructor or another faculty meeting to ensure that their thinking about the paper is on track. After the class at which the presentation is made, a copy of the presentation (electronic or paper) should be provided to QW.

All students are expected to read every assigned paper and to submit a question, comment or talking point for each paper to the Canvas discussion board for that day’s class. Reading the papers in advance is essential and instructors may ask questions (a.k.a., give pop quizzes at their discretion) to ensure that everyone is preparing for the presentations by reading the papers.

SYLLABUS

Meeting 1. M 1/6 Introduction and Logistics
Age of the Earth
Meeting 2. W 1/8


**Meeting 3. M 1/13**


**Meeting 4. W 1/15 Darwin and Evolution**


**Supplemental Reading**


**Meeting 5. W 1/22 Origin of the Moon and Solar System Dynamics**


**Meeting 6. M 1/27 Structure and Composition of the Earth**


**Meeting 7. W 1/29 Crust-Mantle-Core differentiation**


**Meeting 8. M 2/3 Hotspots and Plumes**

**Meeting 9. W 2/5 Seafloor Spreading, Reversals, Subduction and Global Tectonics**

**Meeting 10. M 2/10 Fluids in the Earth**

Supplemental Reading

**Meeting 11. W 2/12**

**Meeting 12. W 2/19 Atmospheres, Climate and Surface Processes**
1. Arrhenius, S. S., On the influence of carbonic acid in the air upon the temperature on the ground, *Phil. Mag.*, 41, 237-276, 1896. (QW)

**Meeting 13. M 2/24 Atmosphere and Ocean Evolution**
Meeting 14. W 2/26

Meeting 15. M 3/2

Meeting 16. W 3/4 Building and killing mountains

Hard Times on the Planet
Meeting 17. M 3/9

Meeting 18. W 3/11

Supplemental Reading
Meeting 19. Modern Atmospheres
Date: Either 3/16 at our normal time or during the “final exam” meeting time T
3/17 12pm-3;