Geophysical Fields - GEOS 602 - Spring 2008 (M-W-F 10:30-11:30 am)
Instructor: Doug Christensen
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Course Topics
- Gravity, gravitational field of earth, gravity measurements and interpretation
- Magnetics, magnetic field of earth, paleomagnetics, magnetic measurements and interpretation
- Heat in the earth, heat flow, conduction and convection

Textbook: Geodynamics by Turcotte and Schubert

Grading Scheme: Grades will be based on homework assignments (~10 Problem Sets, roughly every week)

1/25/2008  Introduction

Week 1  Newtonian Attraction
- Potential Theory

Week 2  Attraction of Special Mass Distributions
- Spherical Harmonic Analysis
- Figure of the Earth

Week 3  The Geoid
- Gravity Surveys
- Gravity Anomalies

Week 4  Isostasy
- Gravity Features of the Earth
- Earth Tides

Week 5  No Class - Doug out of town

Week 6  Magnetic Vector Fields and Potential
- The Geomagnetic Field
- Spatial and Temporal Variations

Week 7  Spring Break

Week 8  Magnetic Fields of Special Distributions
- Rock Magnetism
- Paleomagnetism

Week 9  Global Tectonics and Geomagnetism
- Marine Magnetic Anomalies
- Extraterrestrial Magnetic Fields

Week 10  Thermodynamics and Energy Conservation
- The Geothermal Flux

Week 11  Thermal State of the Earth's Interior
- Temperature Profiles in the Earth, Earth Materials and Ice Sheets

Week 12  Thermal History of the Earth
- Temporal Variations
- Stefan's Problem and Phase Changes

Week 13  Heat Sources and Conduction
- Convection