

12.221 Field Geophysics

Instructors

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Aims of IAP 2004

- Field camp location near Blythe California. Approximate location latitude 33.75 N, Longitude 245.3 E (-114.7 W)
- Two main objectives
 - Relative motions of GPS monuments in the region
 - Development of sub-surface structure model based on gravity measurements

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Class Conduct

- Course is pass/fail grading
- Grade will be based on field camp participation and the final project/Oral presentation.
- Final Paper should be ~10 double spaced pages long. Paper will present analysis of data collected at field camp.
- Working in teams is acceptable but final report must be each students individual work.

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Items needed for camp

- **Valid picture ID (Drivers License or passport)**
- Tent, Sleeping bag (40 deg nighttime temperatures), ground sheet
- Sturdy boots
- Sturdy water bottle
- Hat for sun protection
- Flashlight
- Sun block moisturizer
- Field notebook, pens, calculator
- Clothing for 7days (layering). Daytime temperatures will be in mid-70s.
- See Web page for complete list
- Laptop computer and/or camera (optional)

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Flight Itinerary

- Depart Logan Airport: Delta 565/3949 6:50 AM, Friday Jan 9, to Palm Springs via Salt Lake City. Arrive Palm Springs 12:06 PM. Drive directly to field camp.
- Meet in 54-611 at 5:00 am Friday morning
- Return: Delta 652/463 9:00 AM Friday Jan 16, to Boston via Atlanta. Arrive Logan airport 7:40 pm

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Class schedule this week

- Tues: 10:00 am 54-322 Introduction to GPS
 - Reading list:
 - Herring, Geodetic Applications of GPS, *Proc. IEEE*, 87, 92-110, 1999.
 - McClusky et al., Present Day Kinematics of the ECSZ, *Geophys. Res. Lett*, 28, 3369-3372, 2001
 - <http://www.scec.org>
- Wed: 10:00 am 54-322 Introduction to gravimeters
- Thur: 10:00 am 54-322: Examine existing data in the region
- Friday: Depart for field camp
- Meet Wed-Friday of week following camp

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Topics to be covered

- Applications of the global positioning system:
We will use
 - “Kinematic” GPS to do ~10 mm positioning of a moving antenna (gravity)
 - “Static” GPS to do sub-mm positioning (tectonics)
- Gravity measurements for inferring sub-surface characteristics
- Modeling of gravity by analytical/numerical integration.

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Your Activities for today

- In addition to reading the two papers cited earlier:
 - Find out what you can about GPS data and results obtained in near Blythe California
 - Prepare a 1-page summary for submission tomorrow. (Summary should also be emailed with links included).

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