12.221 Field Geophysics

Instructors
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01/03/05 12.221 IAP Class 1

Aims of IAP 2005

• Field camp location north of Blythe California near Vidal. Approximate location latitude 34.06 N, Longitude 245.46 E (-114.54 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.
• Group will generate a final report from camp and each member of the class will be responsible for specific parts of the report (details to be decided after return from camp).
• Working as a team is acceptable but contributions of each member in the final report should be clearly specified.

Items needed for camp

• **Valid picture ID (Drivers License or passport)**
• Tent, Sleeping bag (35 deg nighttime temperatures), ground sheet
• Sturdy boots
• Sturdy water bottle
• Hat for sun protection
• Flashlight (extra batteries)
• Sun block, skin moisturizer
• Field notebook, pens, calculator
• Clothing for 7days (layering). Daytime temperatures will be in 60-70.
• Laptop computer and/or camera (optional)
• See Web page for complete list
Flight Itinerary

- Depart Logan Airport: United 525/605 6:00 AM, Friday Jan 7, to Palm Springs via Chicago. Arrive Palm Springs 12:07 PM. Drive directly to field camp.
- Meet in parking lot between Biology (68) and Stata (32) at 4:00 am Friday morning
- Return: United 6726/1216 8:29 AM Friday Jan 14, to Boston via Denver. Arrive Logan airport 6:13 pm

Class schedule this week

- Tues: 10:30 am 54-313 Introduction to Gravity
- Wed: 10:30 am 54-320 Introduction to GPS
  - Reading list:
    - http://www.scec.org
- Thur: 10:30 am 54-313: Examine existing data in the region
- Friday: Depart for field camp
- Meet 10:30 am Thur Jan 20-Thur Jan 27 following camp. Room 54-320 except Tues Jan 25. Final oral presentations on Thur Jan 27.
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.
• More details starting on Tuesday’s class.