

Surveying with UNAVCO GPS equipment Course dates: April 6-9, 2004



Course Description:

This is a hands-on course designed for Principal Investigators, scientists and graduate students who use UNAVCO GPS equipment for surveying purposes.

The course covers all phases of a survey project using GPS survey equipment. An overview of the GPS system and basic survey principles will be covered. Students will conduct a full GPS survey from start to finish including planning, field work, post-processing, trouble shooting and network adjustment. A practical, hands-on approach to field and office sessions will be applied every day.

There will also be a chance to learn about Real Time Kinematic GPS surveying (RTK) which can be beneficial for some survey applications. RTK surveying provides positions of 1-2 cm accuracy in real time, allowing for rapid data collection. RTK also has the ability to stake out points on the ground and requires no post-processing.

Consider this course if you plan to use UNAVCO GPS equipment during your 2004 field season.

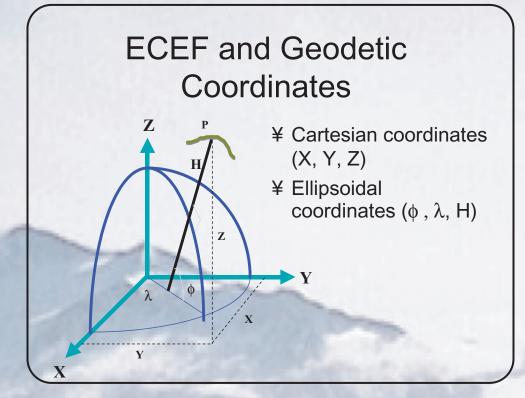
Class size limited to 16. The course is offered at no cost. Participants must cover travel

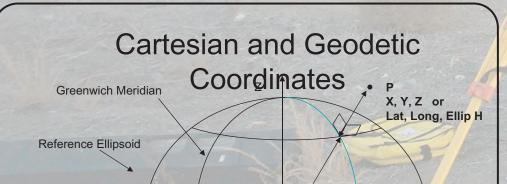
Contact Jim Greenberg for details Phone: (303) - 381 - 7482 email: greenberg@unavco.org

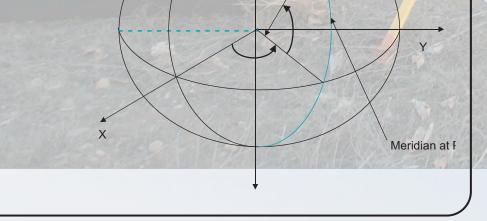
# **Course Highlights**

### Day one

Office session How GPS works – satellites and coordinate systems Data collection methods







Introduction to Trimble's Geomatics Office software (TGO) Field session

Static data collection

## Day Two

Office session Static data processing Least squares network adjustment Applying a geoid model Field session

Surveying a GPS network Campaign survey monumentation

### **Day Three**

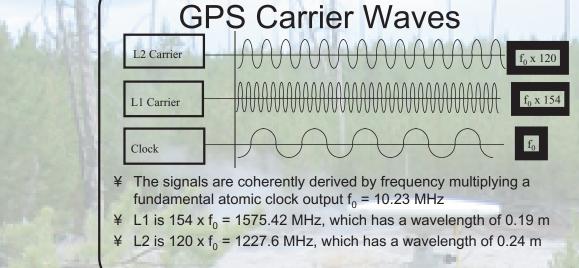
Office session

Kinematic data processing Least squares network adjustment (continued) Field session

Kinematic data collection (using Trimble's TSC1) Post processed kinematic Surveying (PPK)

#### **Day Four (Optional)**

Office session



N = 34 ft DE = B.M  $\dot{O}A\dot{O}$ - B.M.  $\dot{O}B\dot{O}$ = ORTHOMETRIC 84 ft - 74 ft = 10 ft ELLIPSOID 50 ft - 41 ft = 9 ft

**Reference** Surfaces

metric Height = h

lipsoid Height = H H = 41

3 M QAÓ elevation 8

Open forum for discussing project specific requirements Field session

#### Open forum data collection practice session

