


National Geodetic Survey

Educational and Training Opportunities at NOAA's National Geodetic Survey



National Oceanic and Atmospheric Administration

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FIG, San Jose Costa Rica
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Overview

- **Part 1: Educational Lesson Plans and activities**
- **Part 2: Workshops and training**
- **Part 3: The COASTAL program**

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Education

- **Surveying is an aging profession in the USA, and there is a need to involve and expose younger people to the field**
- **GPS technology is an opportunity to grab peoples attention (and keep it)**
- **Teachers and students want to work with real data and "solve" real problems**

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The Geodesy Tutorial




<http://oceanservice.noaa.gov/education/kits/geodesy/welcome.html>

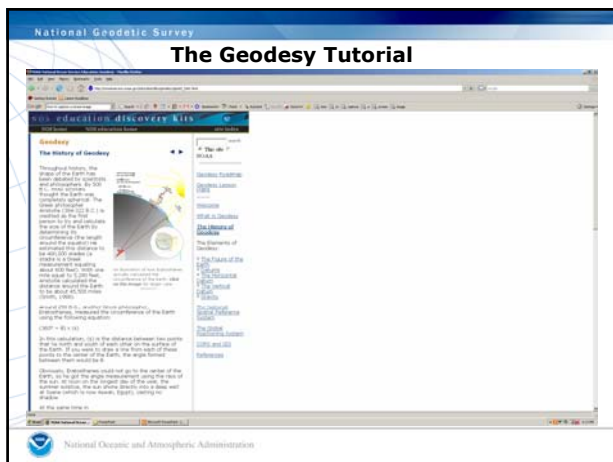
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The Geodesy Tutorial



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Geodesy Lesson Plans:
Meet Geodesy (20 pages, pdf, 256 Kb)
Focus: Introduction to geodesy (Earth Science)

- Students will be able to define geodesy.
- Students will be able to explain three ways in which geodesy is of practical importance.
- Students will be able to explain how a datum of reference points may be used to describe the location within the area covered by the datum.

http://oceanservice.noaa.gov/education/kits/geodesy/lessons/geodesy_meet.pdf

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Geodesy Lesson Plans:
I Know Where You Are! (15 pages, pdf, 180 Kb)
Focus: How The Global Positioning System Works

- Students will explain how global positioning satellites are used to determine the location of points on Earth's surface.
- Students will identify at least three practical uses for the Global Positioning System.
- Students will be able to identify the location of points on Earth's surface using methods similar to those used in the Global Positioning System.

http://oceanservice.noaa.gov/education/kits/geodesy/lessons/geodesy_where_you_are.pdf

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Geodesy Lesson Plans:
It's Not Your Fault (36 pages, pdf, 592 Kb)
Focus: Tectonic Plate Movement (Earth Science)

- Students will be able to compare and contrast movements on either side of the San Andreas Fault.
- Students will be able to calculate the amount of movement of a tectonic plate over a period of time.
- Students will be able to describe the processes involved in the occurrence of earthquakes along the San Andreas Fault.

http://oceanservice.noaa.gov/education/kits/geodesy/lessons/geodesy_tectonics.pdf

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Geodesy Lesson Plans:
All Shook Up (32 pages, pdf, 496 Kb)
Focus: Displacement of the Earth's crust due to seismic events (Earth Science)

- Students will be able to calculate the amount of displacement in horizontal and vertical direction due to an earthquake.

http://oceanservice.noaa.gov/education/kits/geodesy/lessons/geodesy_displacement.pdf

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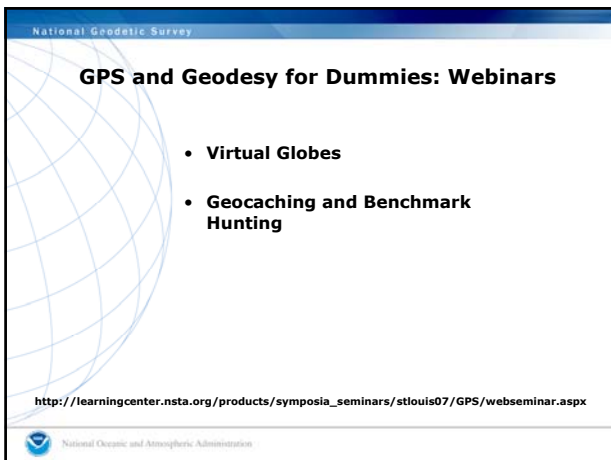
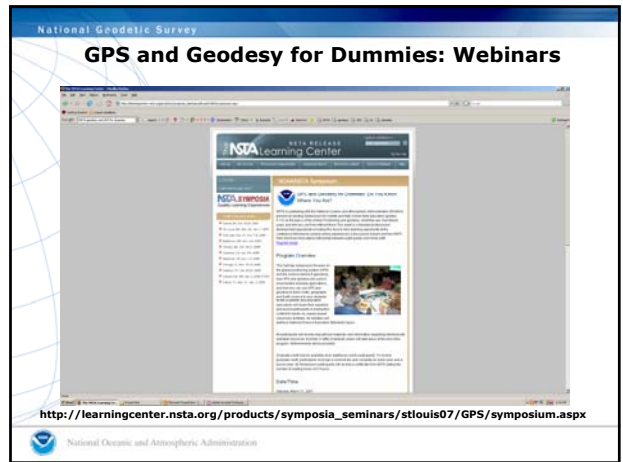
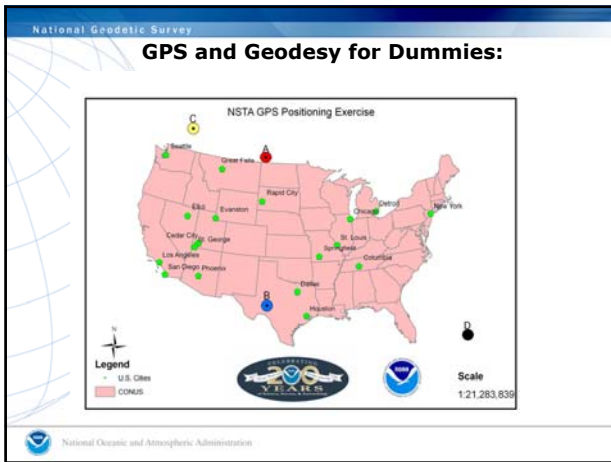
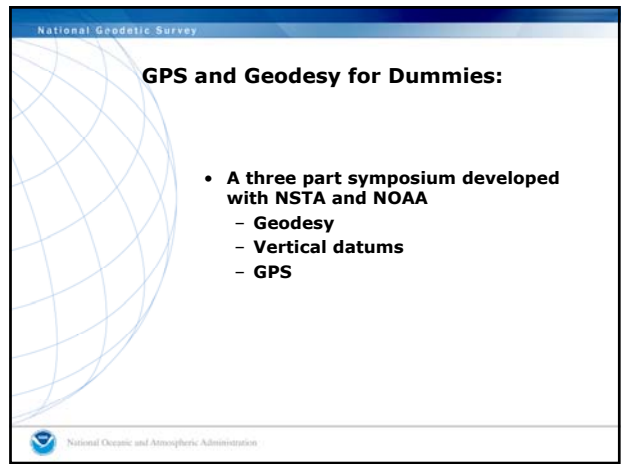
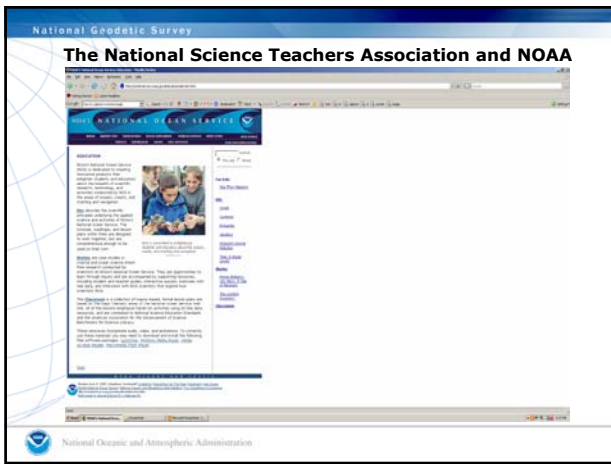
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Geodesy Lesson Plans:
How High Is That? (25 pages, pdf, 576 Kb)
Focus: Height Modernization/Vertical Positioning (Earth Science/Mathematics)

- Students will be able to describe the National Spatial Reference System, and discuss at least three practical uses for accurate spatial information.
- Students will discuss at least three examples in which vertical positioning data is used.
- Students will solve practical problems involving geographic positioning.

http://oceanservice.noaa.gov/education/kits/geodesy/lessons/geodesy_height_modernization.pdf

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NGS Workshops:

- GPS Data Collection
- GPS Processing (PAGES)
- Adjusting GPS projects using NGS ADJUST software
- Leveling
- Positioning Accuracy and Standards
- State Plane Coordinates and Datum Transformations
- Implementation of Height Modernization
- CORS Usage
- OPUS
- RTK/RTN
- Tidal and Geodetic Vertical Datums
- NAVD 88
- Fundamentals or Basics of Geodesy/Datums and Map Projections
- GPS-Derived Heights
- Development, Implementation and Future of NSRS
- Developing an Accurate GIS/LIS
- Submission of GPS Survey Projects to NGS
- NGS Products and Services
- Calibration Baselines
- Using GPS and Geodesy to teach math and science
- NGS Educational materials and professional workshops: what's out there

Digital Leveling workshop



Potential future workshops

- Gravity Collection
- Gravity Processing
- Discreet series of classes under the 'Height Modernization' heading, that may include technical information in addition to the federal grants process
- Future direction of workshops/classes may be guided by feedback from the County Scorecard (GPRA)

Corbin, Virginia



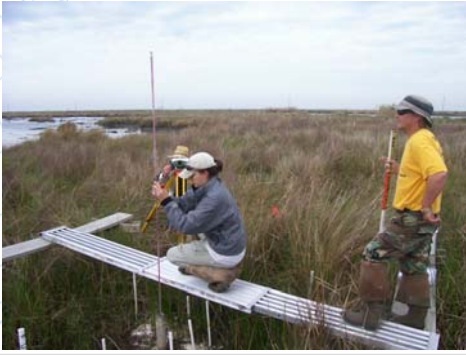
Classes most likely to be offered at the Corbin Training Center:

- Leveling
- Gravity Collection and Processing
- PAGES/ADJUST
- Training on specific equipment
- RTK
- Various aspects of height modernization, such as leveling, GPS collection and processing, and the federal grants process

The NOAA COASTAL Program



The NGS COASTAL Program



The NGS COASTAL Program



Conclusion and discussion

- **Lots of Educational products are available, free of charge**
- **Training opportunities should be increasing**
- **Geodesy and Surveying will play an increasingly large role in Coastal Management as climate change become a reality**