



# Globalization and Mobilization of Earth Science Education With GeoBrain Geospatial Web Service Technology

<http://geobrain.laits.gmu.edu>



## Introduction

Earth science education needs to prepare students as globally-trained geoscience workforce by providing students world-view training or experiences with global context, which requires both computing- and data-intensive geospatial learning and research environment capable of providing global geo-information. GeoBrain, an open geospatial web services system, aims to establish such an environment.



Multi-Protocol  
Geoinformation Client  
(MPGC)



Data discovery and access



NEHEA is an open and free alliance for promoting and facilitating the wider use of NASA EOS data in teaching and research at higher education institutes around the world through the data-intensive Earth system learning and modeling environment provided by GeoBrain. NEHEA welcomes Earth Science Educators around the world to join as associate members via

[http://geobrain.laits.gmu.edu/join\\_nehea.html](http://geobrain.laits.gmu.edu/join_nehea.html)

NASA EOS Higher Education Alliance (NEHEA)

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## GeoBrain Capabilities

1. Personalized, on-demand data access and services to Petabytes of NASA EOSDIS data.
2. Online data analyses.
3. Geospatial-processing modeling.
4. Geospatial knowledge sharing.

## Available Geospatial Web Services

- OGC Data Discovery and Access Services
  - Web Coverage Service (WCS)
  - Web Map Service (WMS)
  - Catalog Service for Web (CS/W)
- Chainable Geospatial Processing Services
  - OGC Web Coordinate Transformation Service (WCTS)
  - OGC Web Image Classification Service (WICS)
  - Web Image Cutting Service (IMCS)
  - Web Image Mosaicing Service (WIMS)
  - 200+ Geospatial Web Services converted from GRASS functions.
- A BPEL Workflow Engine -- BPELPower

## Available Data Products

- Global Landsat TM datasets for years 1990 and 2000 (~17 Tb)
- Sample EOS Data Products (~3 Tb)
- NASA EOSDIS online data products at data pools (~200 Tb)
- EOSDIS near-line archives to be available soon.
- All GeoBrain Services can be applied to those data.

## How to Use GeoBrain in Research and Teaching

1. As an unlimited global geo-data source.
2. As an on-line data analysis system.
3. As an on-line platform for geospatial processing modeling.
4. As a platform for sharing geospatial knowledge.

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