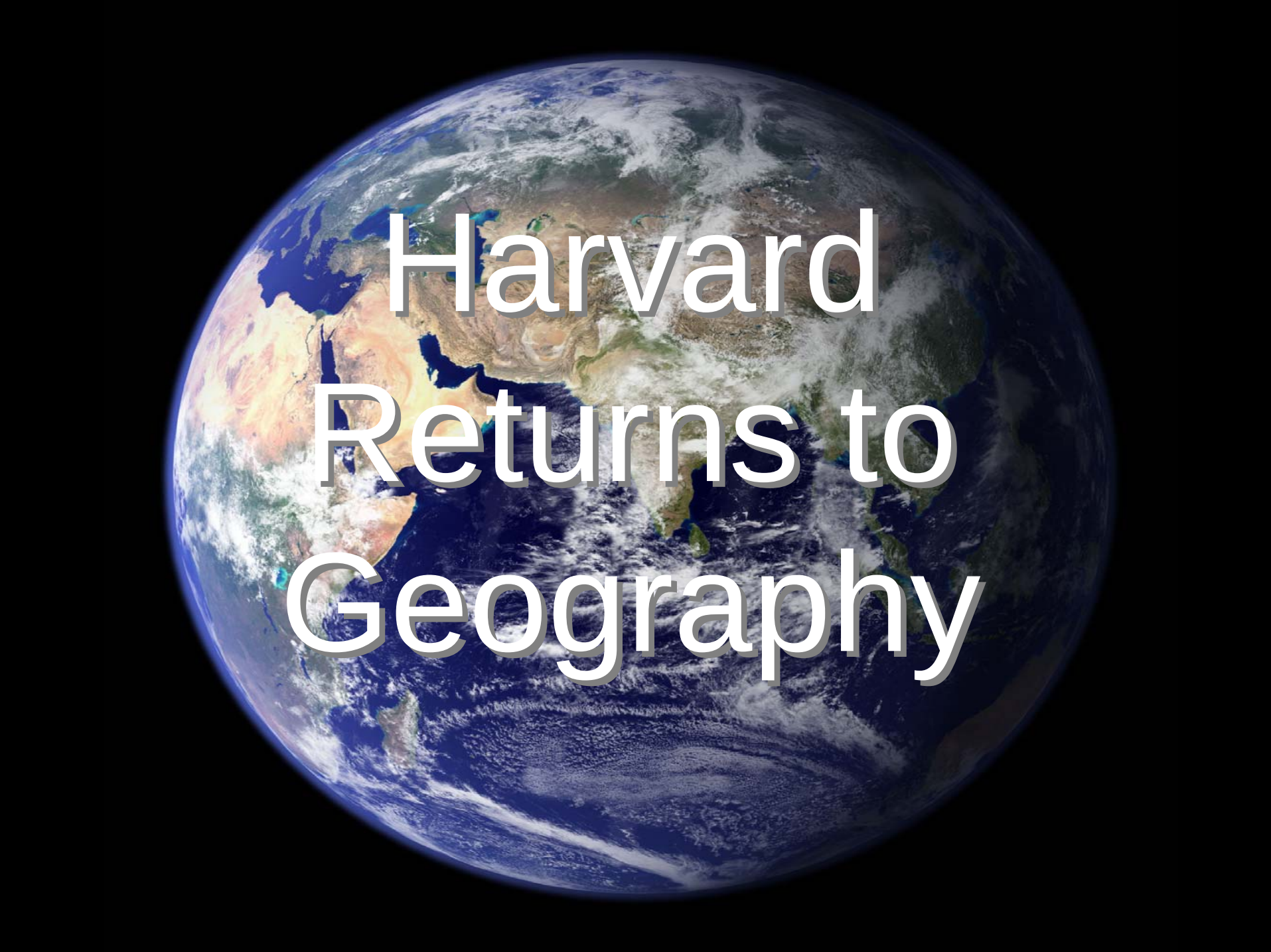
Harvard
Returns to
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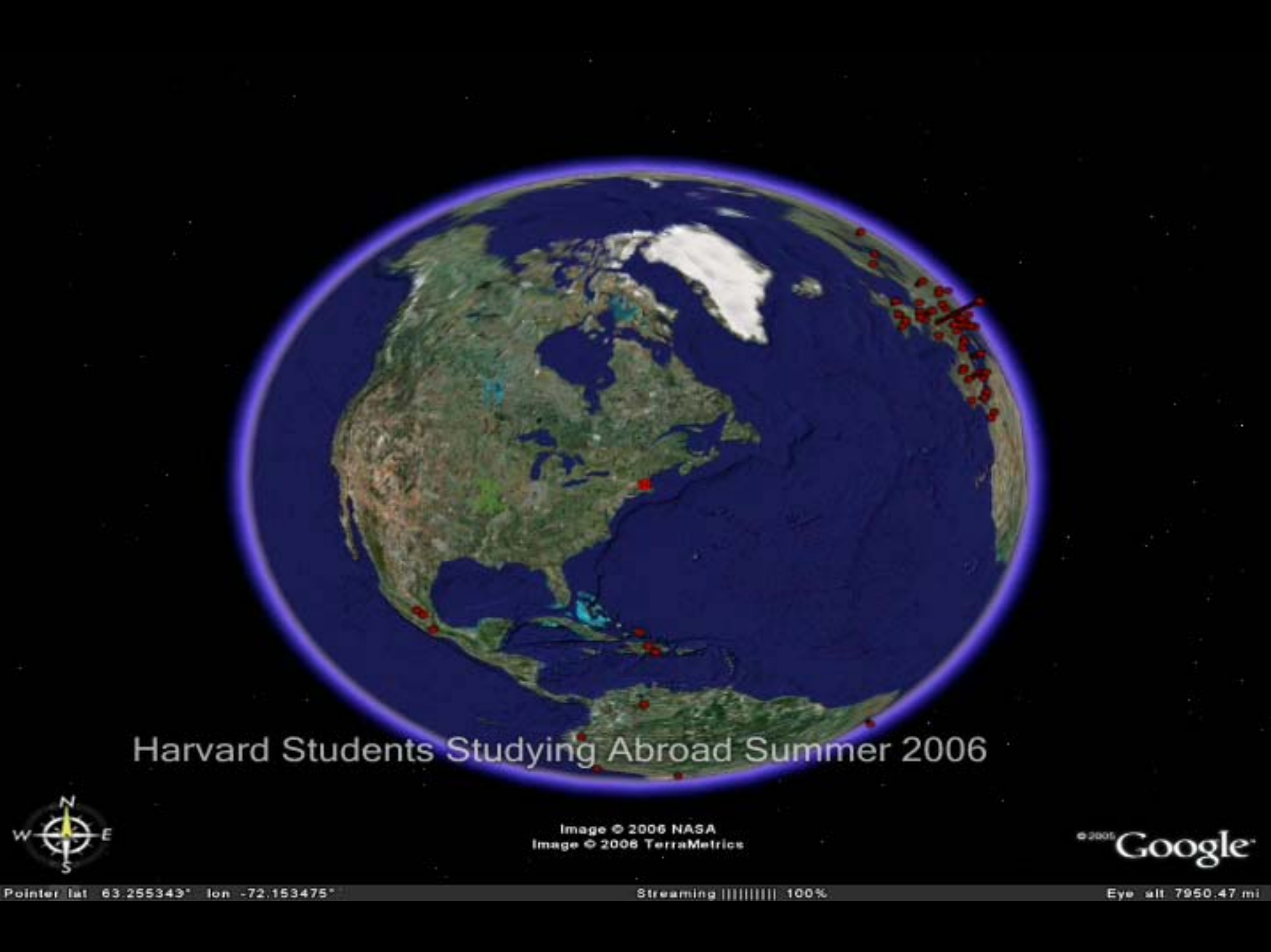
Harvard Students Studying Abroad Summer 2006
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Image © 2006 NASA
Image © 2006 TerraMetrics
©2005 Google
Pointer lat 63.255343° lon -72.153475°
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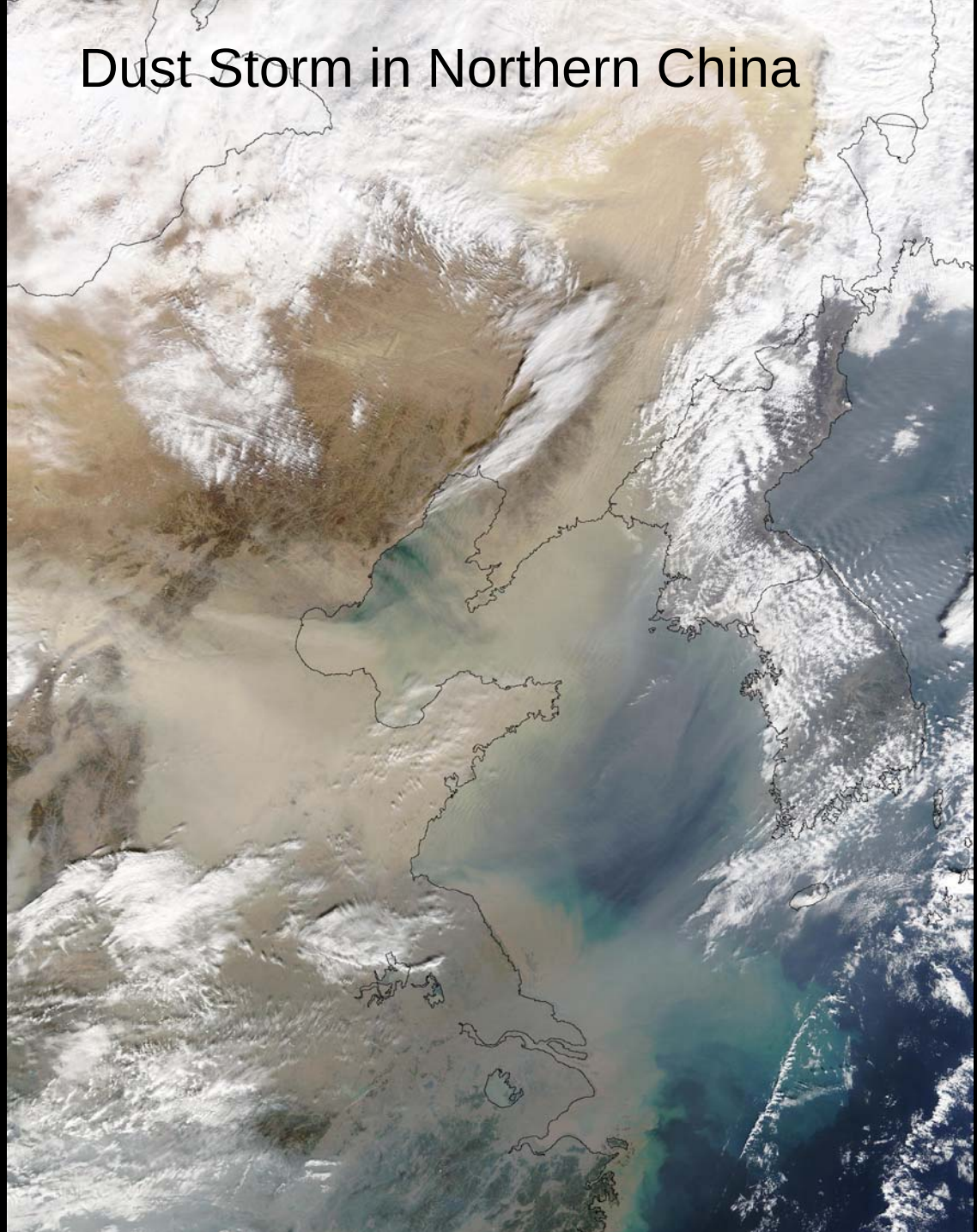
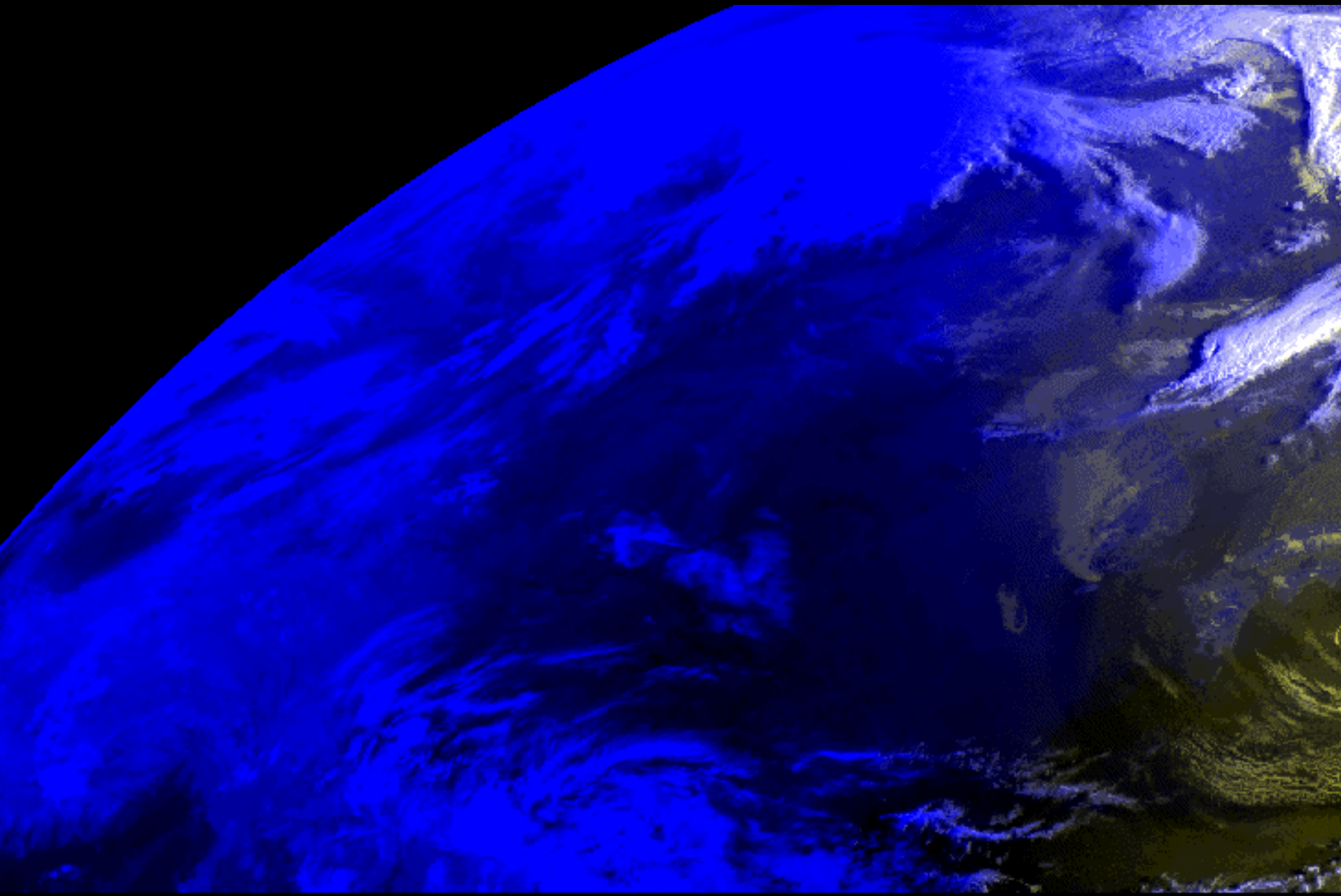
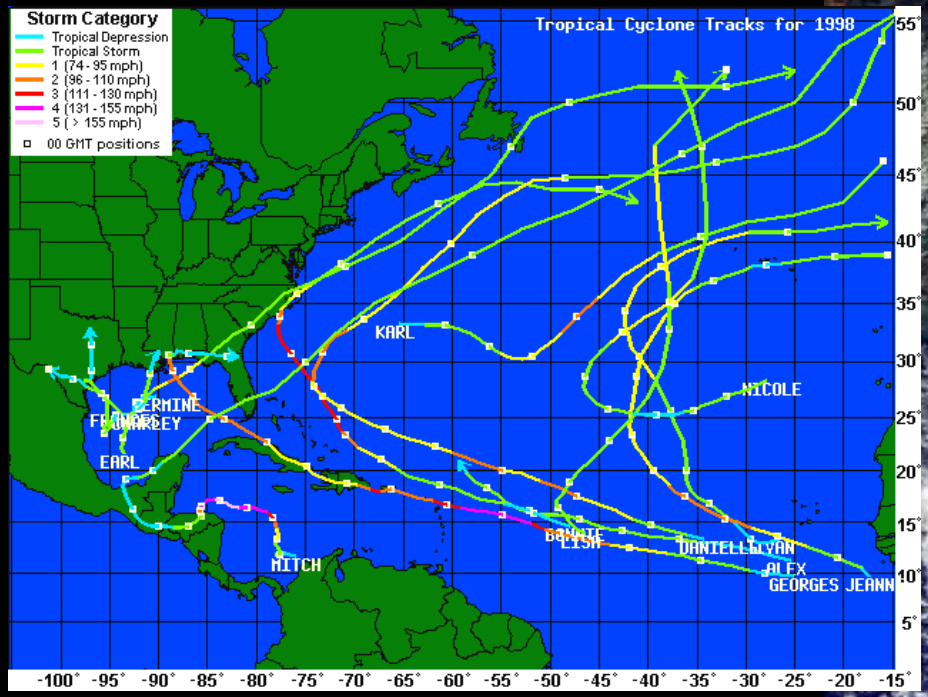
Eye alt 7950.47 mi

Dust Storm in Northern China

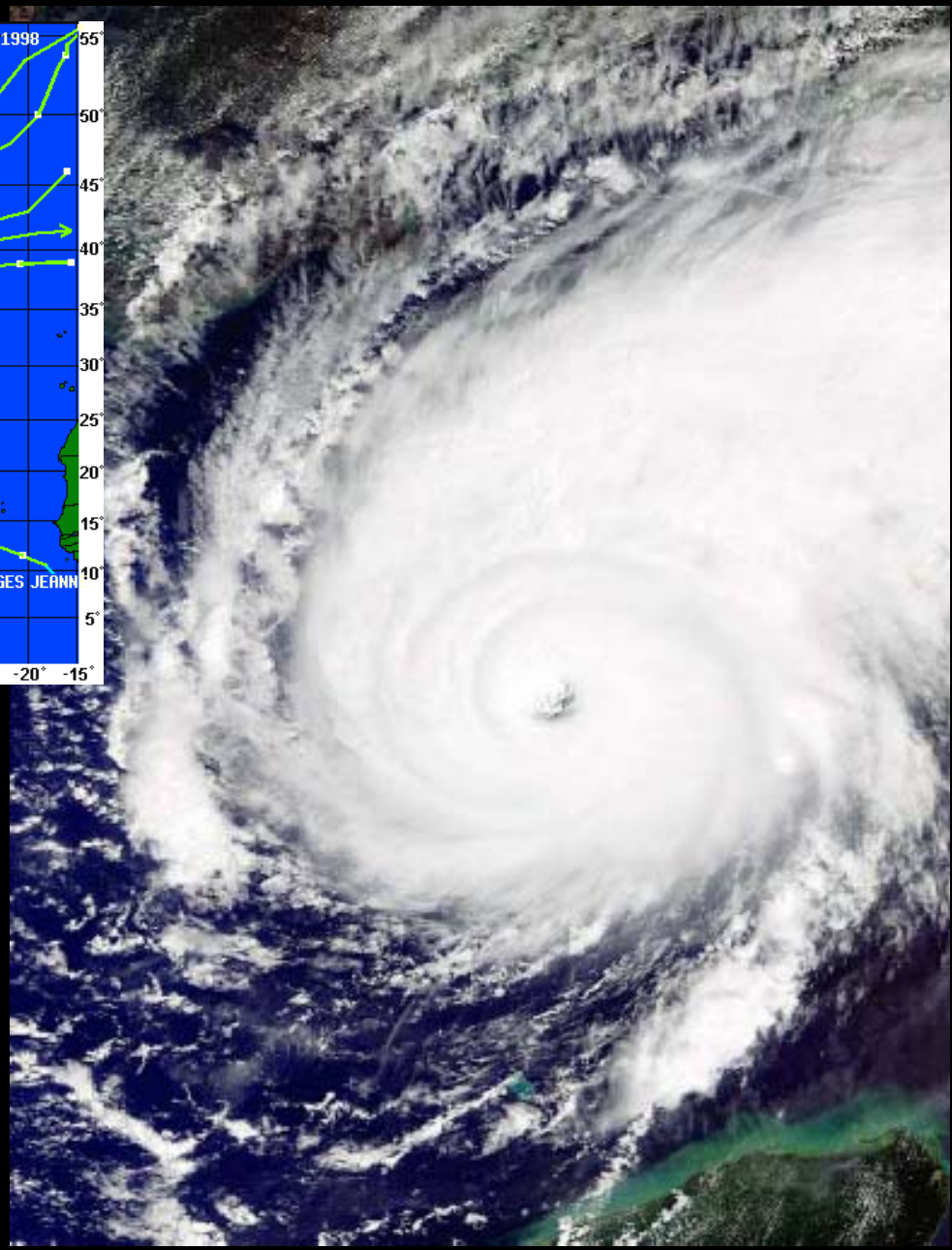






1998 Tropical Cyclone Tracks

Source:
http://camex.msfc.nasa.gov/camex4/hurricane_tracks/1998-hurricane-tracks.gif



Hurricane Rita

Image courtesy of NASA

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GENETIC MARKERS
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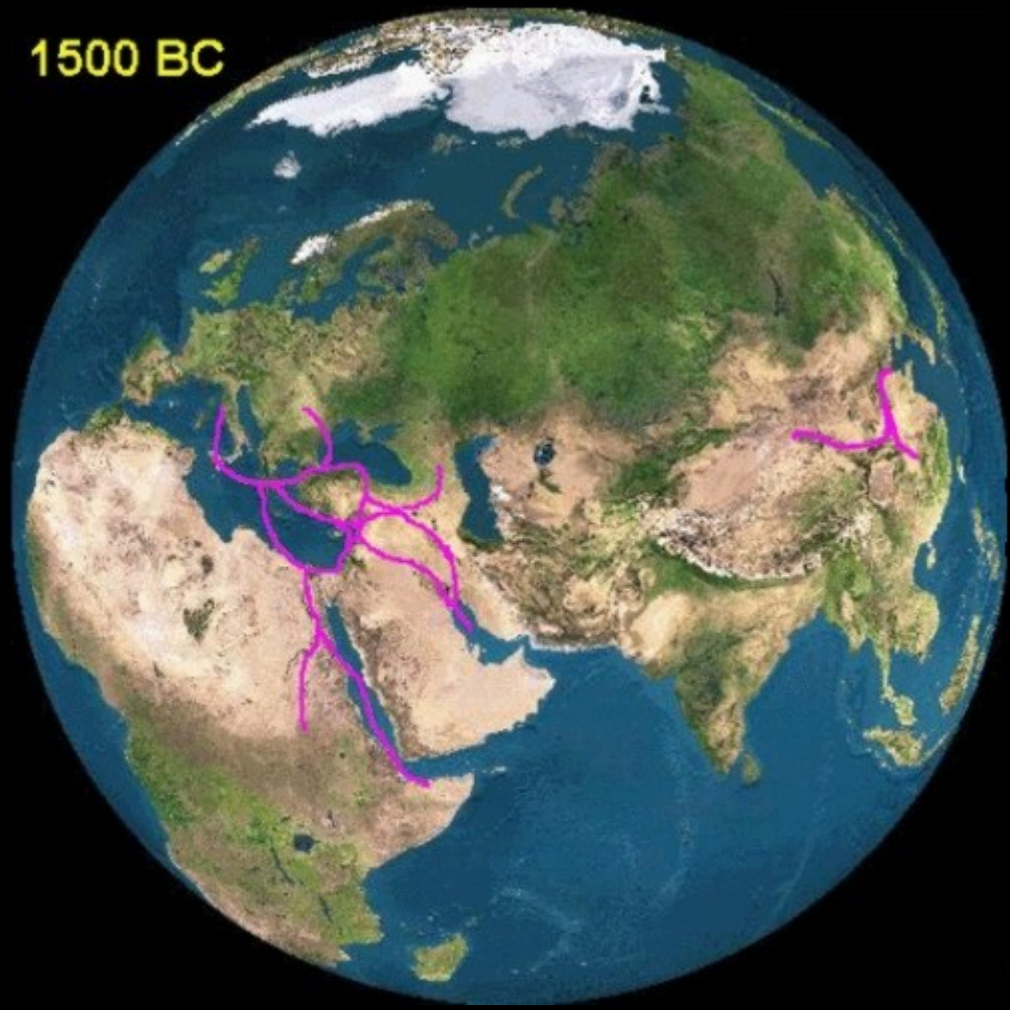
THE GROWTH OF GLOBAL TRADE

Source: http://www.archatlas.dept.shef.ac.uk/Trade/Trade.htm

THE GROWTH OF GLOBAL TRADE

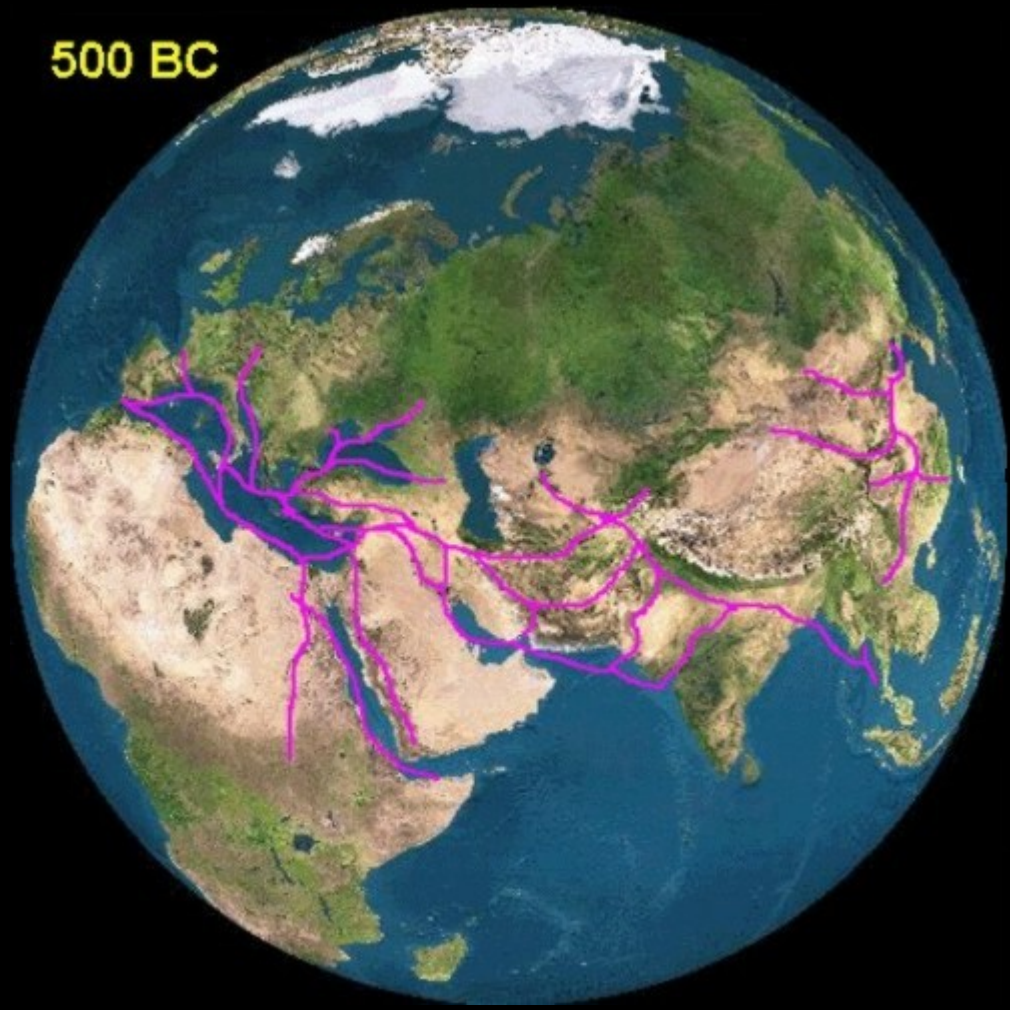
Source: http://www.archatlas.dept.shef.ac.uk/Trade/Trade.htm

THE GROWTH OF GLOBAL TRADE



Source: http://www.archatlas.dept.shef.ac.uk/Trade/Trade.htm

THE GROWTH OF GLOBAL TRADE



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THE GROWTH OF GLOBAL TRADE

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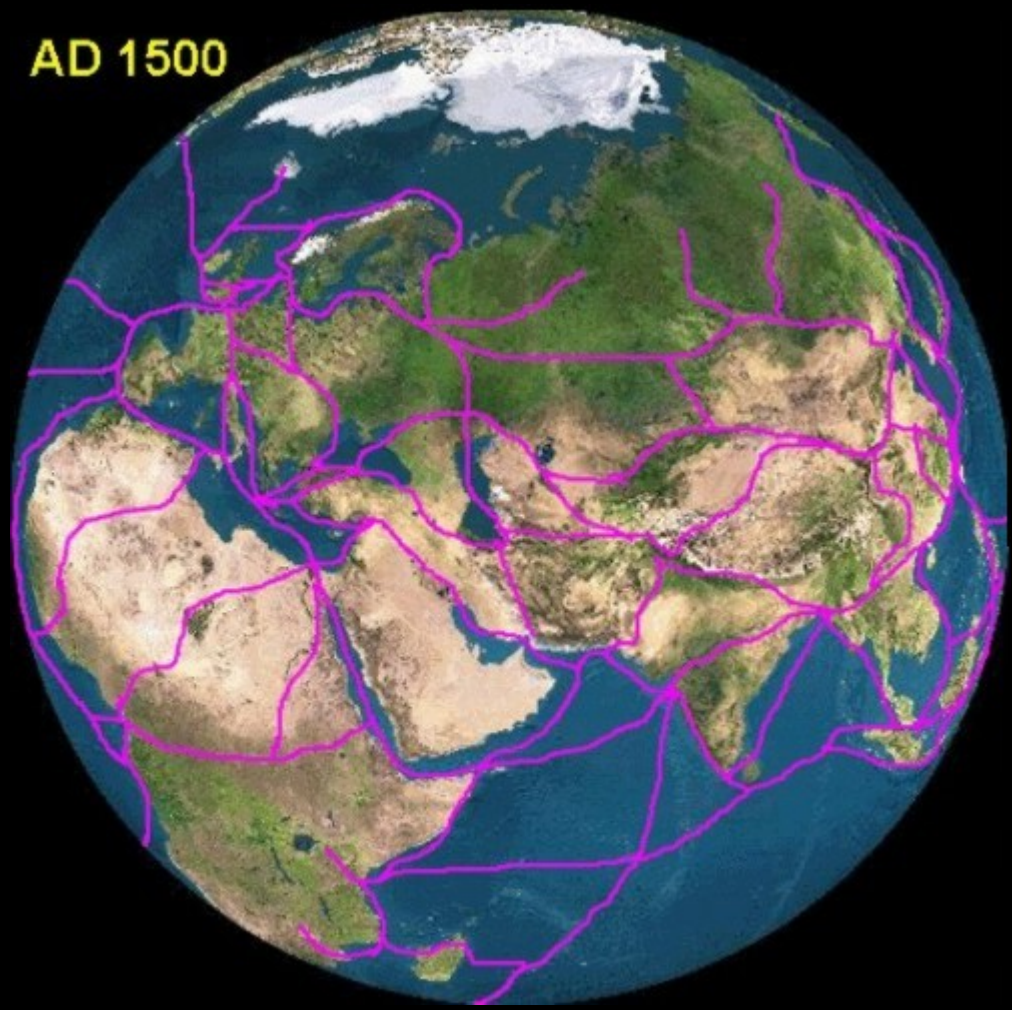
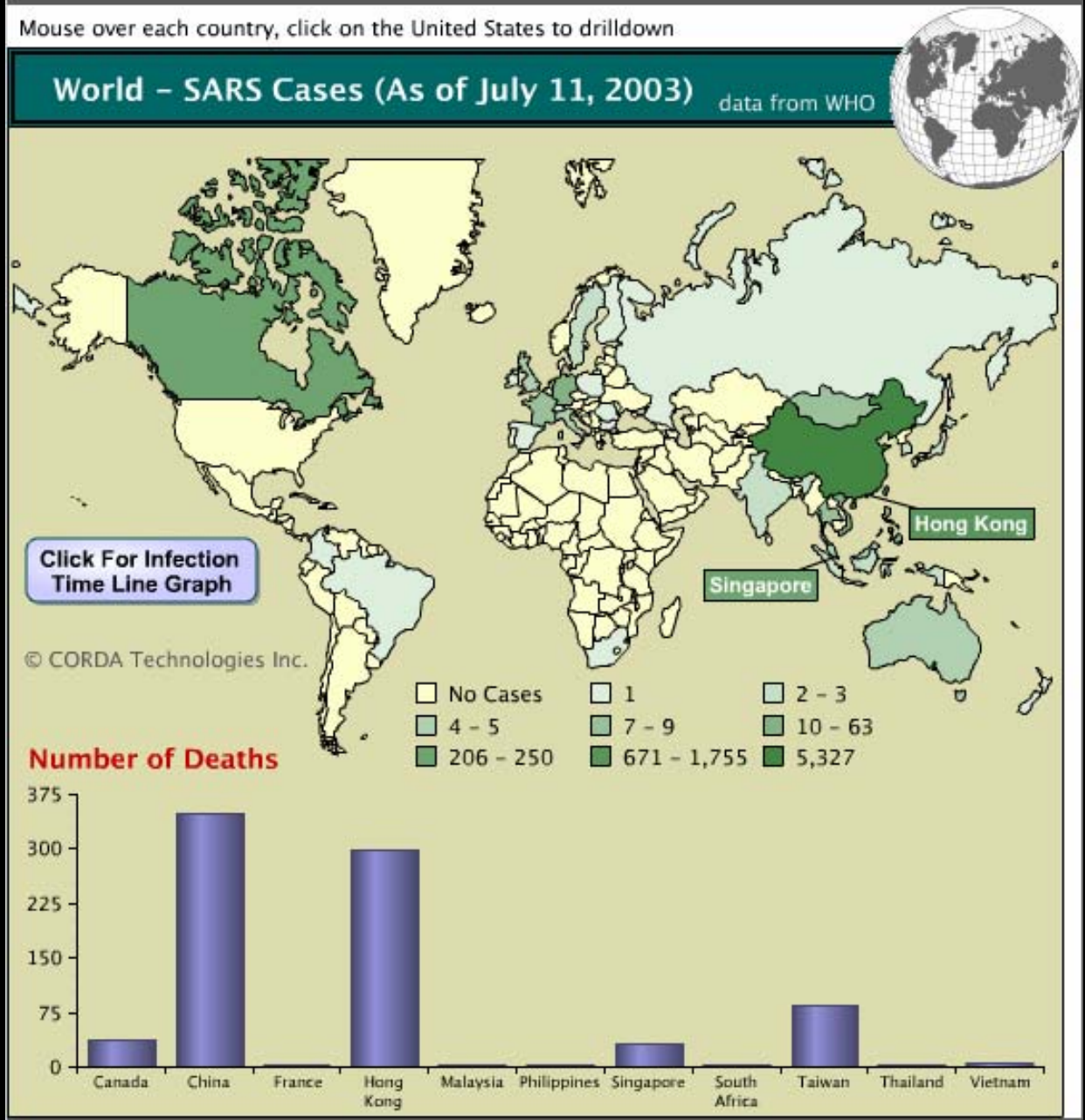


Source: http://www.archatlas.dept.shef.ac.uk/Trade/Trade.htm

World SARS Map



**** Data collected through July 2003 ****

Source: http://www.google.com/search?hl=en&q=SARS+map

Sea level rise:
0 meter

Source: http://resumbrae.com/archive/warming/east.html

Sea level rise:
1 meter

Source: http://resumbrae.com/archive/warming/east.html

Sea level rise:
3 meter

Source: http://resumbrae.com/archive/warming/east.html

Sea level rise:
10 meter

Source: http://resumbrae.com/archive/warming/east.html

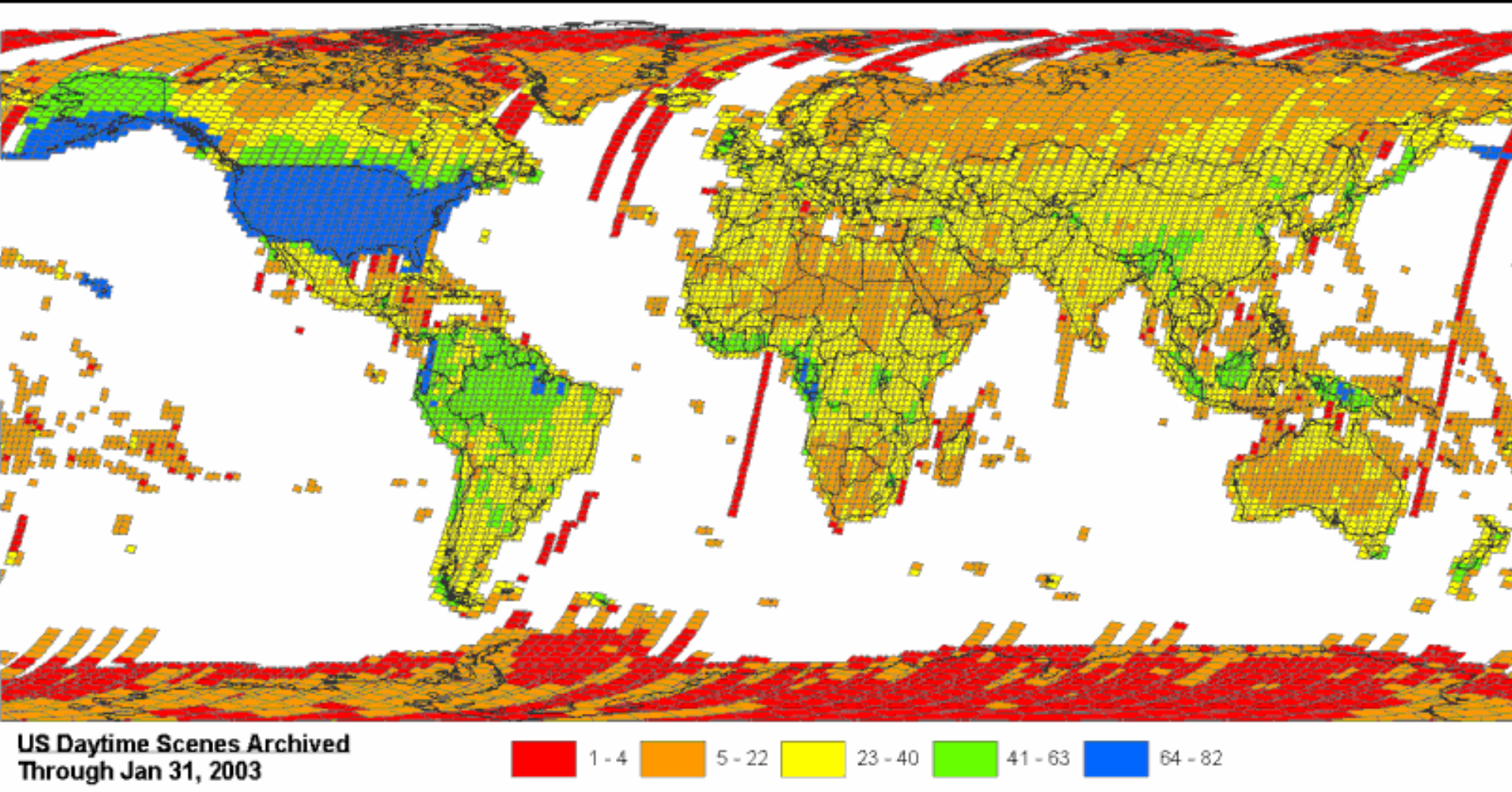
Sea level rise:
30 meter

Source: http://resumbrae.com/archive/warming/east.html

Sea level rise:
100 meter

Source: http://resumbrae.com/archive/warming/east.html

Imaged scenes in the U.S. archive for each of the 16,898 unique daytime path/row combinations as of January 31, 2003



Source: http://ltpwww.gsfc.nasa.gov/IAS/handbook/handbook_htmls/chapter5/htmls/acquisitions_13103.html

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Trimble LL500
Laser Level

Lowrance iWay
500C In Car GPS

Magellan
RoadMate 800

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Garmin
GPSMAP
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TomTom GO 700
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Trimble Ag GPS
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GIS for the Gulf

GIS for the Gulf is a collaborative activity between the US Geological Survey, the Department of Homeland Security, and the National Geospatial-Intelligence Agency, in response to hurricanes Katrina and Rita. Find other useful information on the Hurricane Community Pages

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(Interactive Map)

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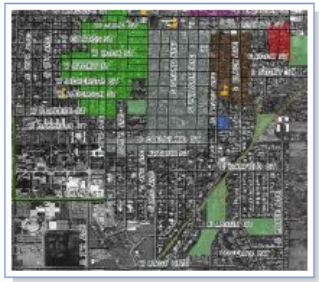
Featured Map

City of Bozeman



View this Map

Other Cool Maps

By Jon Henderson, **City of Bozeman Montana**
Contact Information: jhenderson@bozeman.net, (406) 582-2250

The city of Bozeman has implemented a GIS to record and maintain where assets exist on a map along with any information that may be associated with each feature. These digital layers can be tied to existing databases such as billing information, street conditions, and fire hydrant flow data.

Quick Start

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Massachusetts Geographic Information System

MASS GIS

Commonwealth of Massachusetts | Executive Office of Environmental Affairs

MassGIS is the Commonwealth's Office of Geographic and Environmental Information

GIS Events

Massachusetts Geographic Information Council

New England GIS Conference
May 9 & 10, 2006, Danvers, MA

GIS Day 2005 Recap

What's New

April GISette Newsletter
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Estimated Delivery Schedule for 2005 Ortho Imagery
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Massachusetts' Master Service Agreement with ESRI

Parcel Grant Program Update
Updated 3/10/2006

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Mapping the Record of American Democracy (ROAD) 1984-1990

HARVARD - MIT DATA CENTER
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Center for Geographic Analysis
Harvard University

data.fas.harvard.edu/ROAD/

The ROAD Project Invented the "MCD-Group": The Smallest Scale Geographic Unit at which Precinct Boundaries and Census Boundaries Coincide

In most counties, eligible citizens in a geographically contiguous area are assigned to a single voting booth to cast their ballot. We refer to the geographical description of the unit of analysis as a precinct, although in some states it is called an election district, and occasionally several voting booths exist within one precinct. The number of precincts nationwide is approximately 170,000, with some variation over time. More detailed official electoral data than precinct returns cannot be created for the entire nation unless the laws governing the secret ballot are revoked.

To permit analysis of this electoral data in conjunction with publicly-available census data, the ROAD project devised the **MCD-Group**, a geographic unit composed of Census Bureau defined Minor Civil Divisions (MCDs). Individual MCDs correspond roughly to towns and cities. There are 25,973 of these MCD-groups in the U.S. outside of California and an additional 21,200 within California, and completely tile the U.S. land mass. For each of these units, the ROAD collection provides all electoral data aggregated from the precinct level, as well as **3,725 variables** from the U.S. Census long form. This is the smallest level of aggregation at which publicly-available census data and electoral data can be made to coincide.

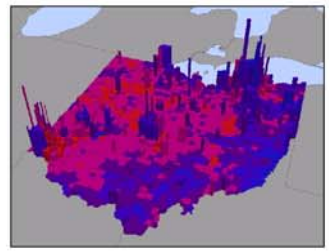
Making Maps Using the Virtual Data Center: The Challenge of Creating GIS Data Files from the ROAD Collection of Over 3,500 Variables

GIS Software limits the number of fields, or variables, in a single file. In ArcGIS 9.1, the limit is 255 fields. To use GIS software to analyze the 3,500+ variables in the ROAD collection, researchers must select a subset of fields and join them with the MCD-Group boundary files. In collaboration with the Harvard-MIT Data Center, the Center for Geographic Analysis has automated this process through the development of an ArcObjects application that allows researchers to select a subset of ROAD variables and generate a corresponding GIS data file (shapefile). The application reads the data from files stored in the Virtual Data Center.

Geographic Analysis of ROAD Data: Investigating Spatial Patterns and Analysis of the Correlates of Voting Behavior

One of the most significant contributions of the ROAD project is that it provides appropriate data for examining the relationship between the local environment and actual political behavior. While, political scientists have recognized that local context affects political behavior, the kind of detailed information need to test hypotheses regarding this relationship has heretofore been unavailable. An analysis of this type using the ROAD project files might consider a variety of electoral variables, including voter turnout, the vote for various candidates, registration rates, and partisan differentials in voting or registration. The explanatory variables in such an analysis would consists of census variables, including education levels, racial composition, and urbanicity.

Establishing a means for researchers to create GIS data files from the ROAD data collection is the first step towards supporting detailed geographic analysis of ROAD data. The Center for Geographic Analysis is working with political scientists in the Institute for Quantitative Social Science to develop tools and techniques for manipulation and investigation of ROAD data in GIS and spatial statistics software. Shown here are a few examples of thematic maps that were generated from ROAD data.



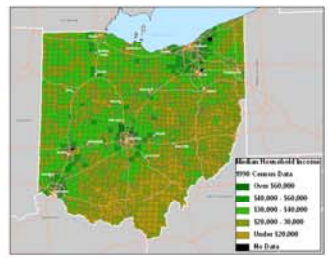


Figure 1. ROAD Data in SPSS File Format
Statistical analysis software such as SPSS allows for large numbers of fields, or variables. All 3509 fields from the Ohio ROAD data set can be viewed at one time.

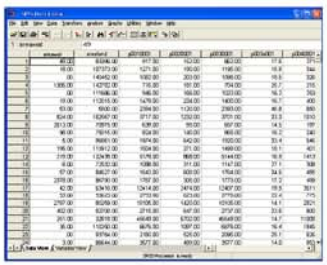


Figure 2. Selecting ROAD Variables for GIS Analysis and Mapping
The application developed by the CGA allows researchers to browse and select up to 255 fields from the thousands of census and electoral variables in the ROAD collection. The application ouputs a shapefile with the proper variable names and geographic boundaries.

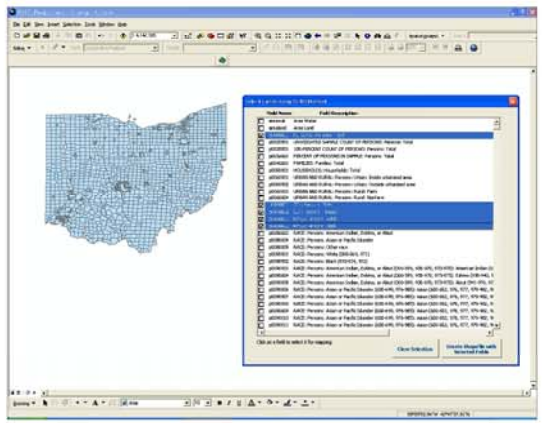
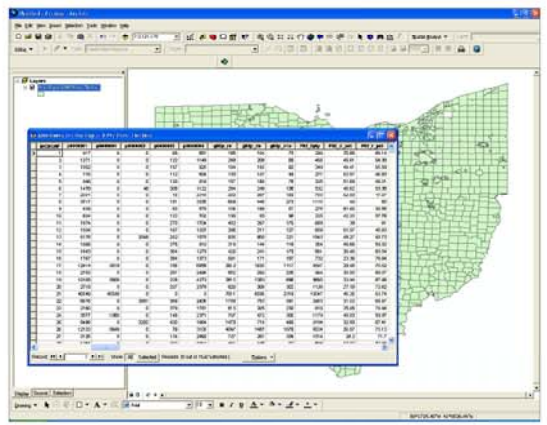


Figure 3. Performing Geographic Analysis of ROAD Data
The ROAD data collection is primarily count data from the 1990 Census and elections. In order to perform effective geographic analysis, additional fields for normalization and percentage calculation must be created.



2006 National Geographic-Roper Survey of Geographic Literacy

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NATIONAL GEOGRAPHIC Education Foundation

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WHAT WE FOUND

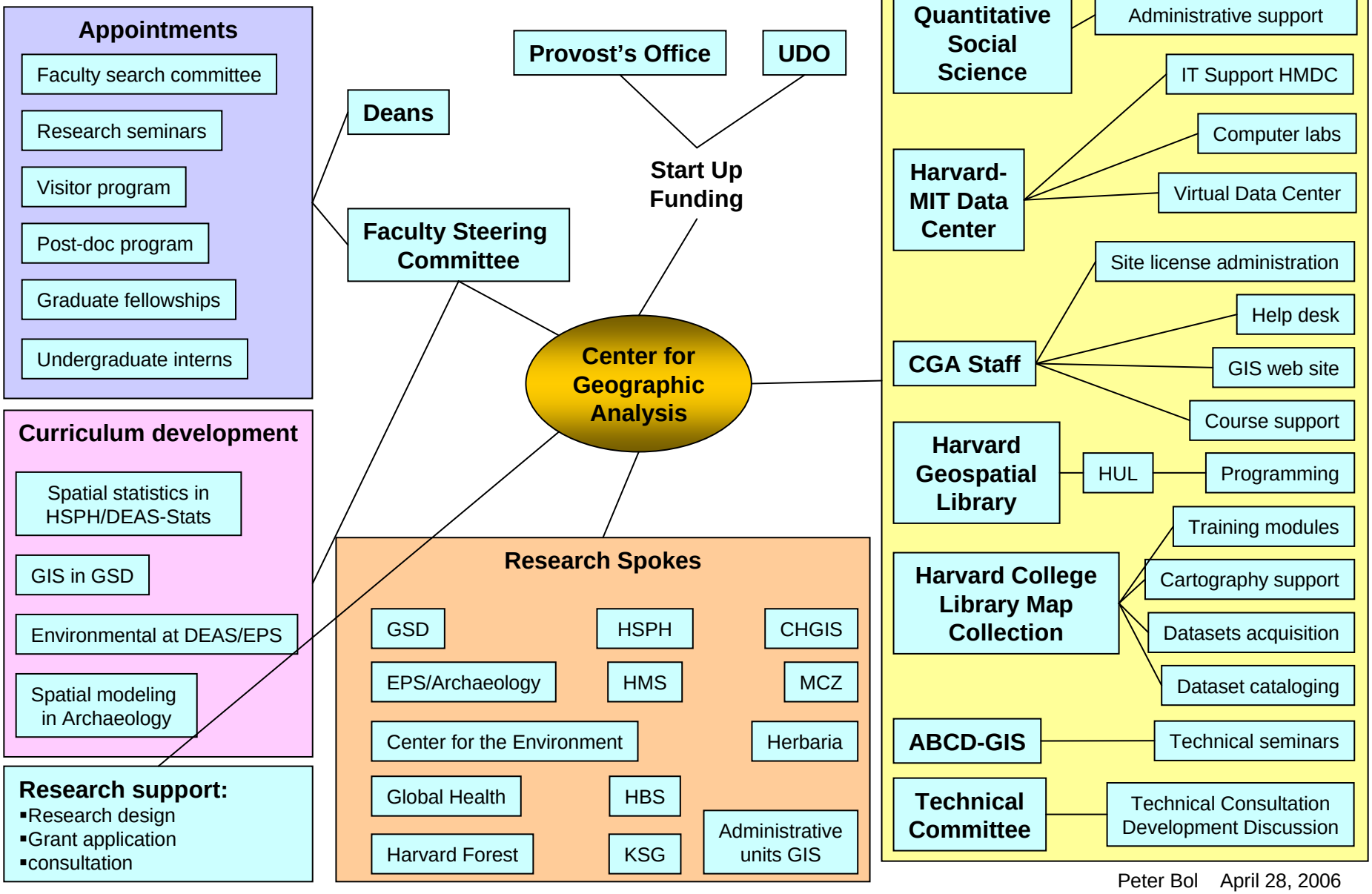
Americans are far from alone in the world, but from the perspective of many young Americans, we might as well be. Most young adults between the ages of 18 and 24 demonstrate a **limited understanding of the world**, and they place insufficient importance on the basic geographic skills that might enhance their knowledge.

Download the complete survey and report (PDF)

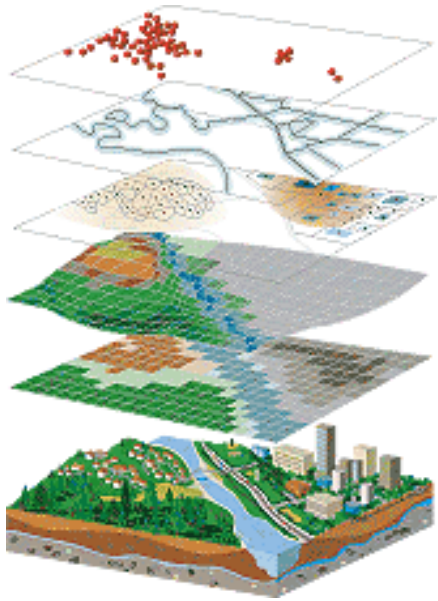
Young Americans answer about half (54 percent) of all the survey questions correctly. But by and large, majorities of young adults fail at a range of questions testing their basic geographic literacy.

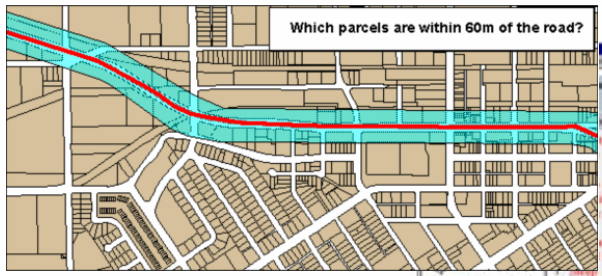
- Only 37% of young Americans can find Iraq on a map—though U.S. troops have been there since 2003.
- 6 in 10 young Americans don't speak a foreign language fluently.
- 20% of young Americans think Sudan is in Asia. (It's the largest country in Africa.)
- 48% of young Americans believe the majority population in India is Muslim. (It's Hindu—by a landslide.)
- Half of young Americans can't find New York on a map.

Center for Geographic Analysis
in the Institute for Quantitative Social Science



Peter Bol April 28, 2006

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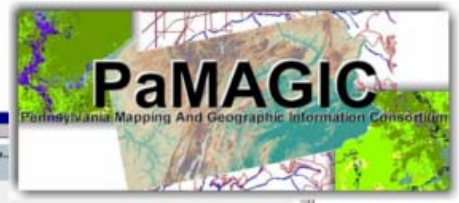
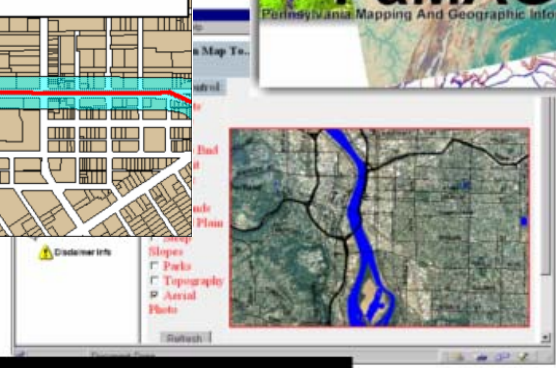

PaMAGIC
Pennsylvania Mapping And Geographic Information Consortium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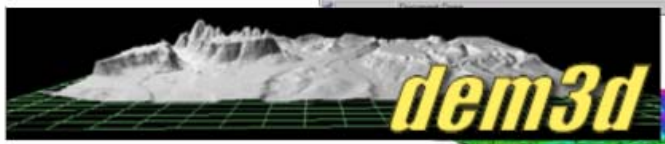
Parks
Topography
Aerial
Photo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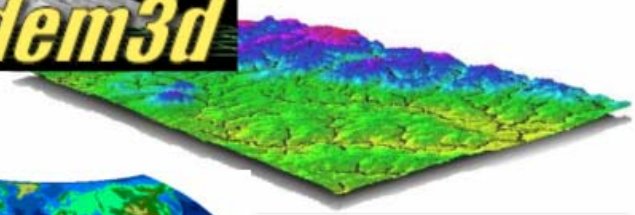

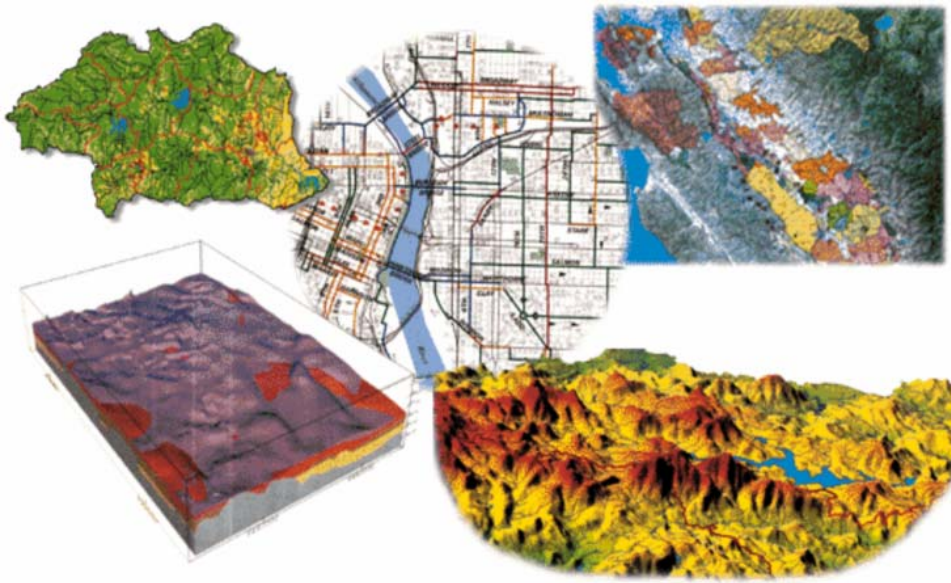

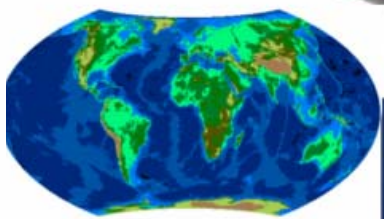

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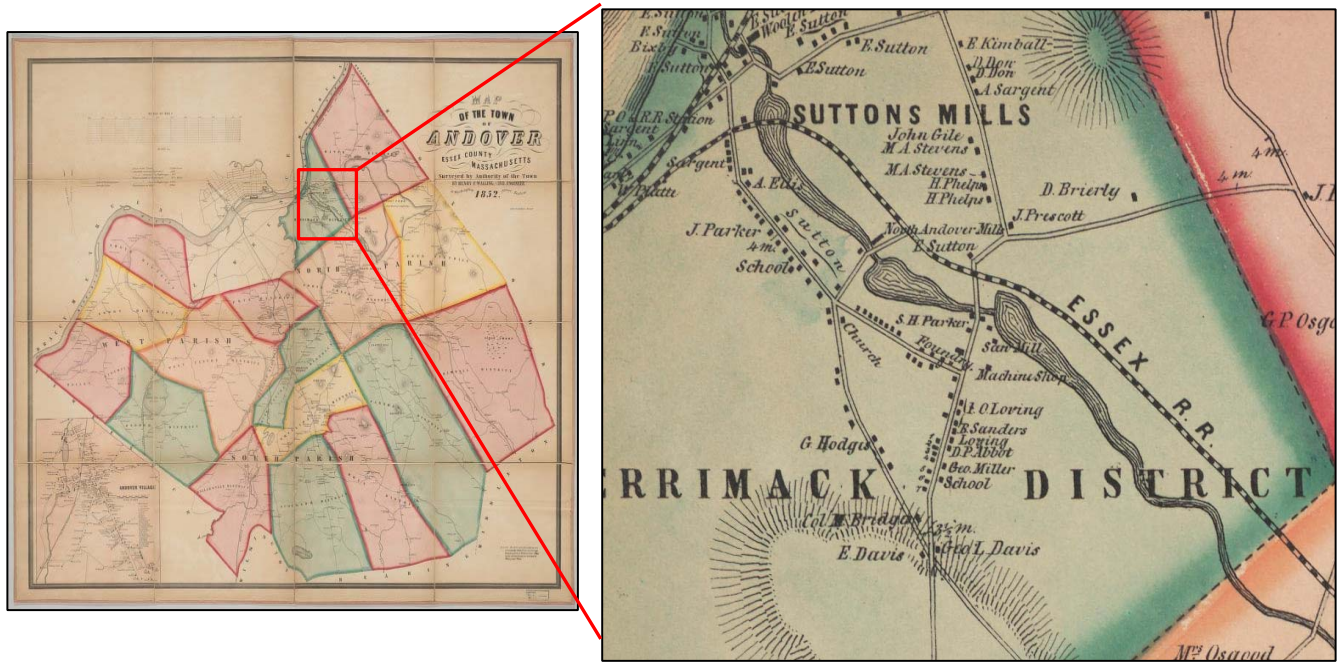
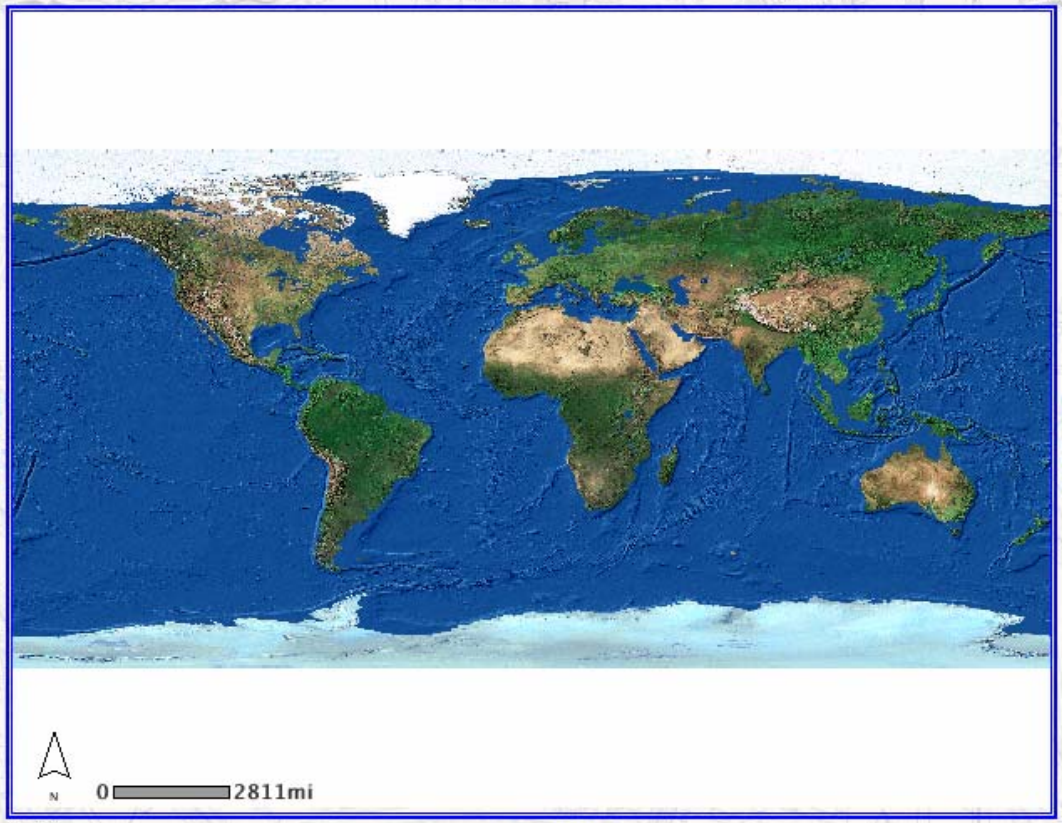
Harvard College Library Map Collection

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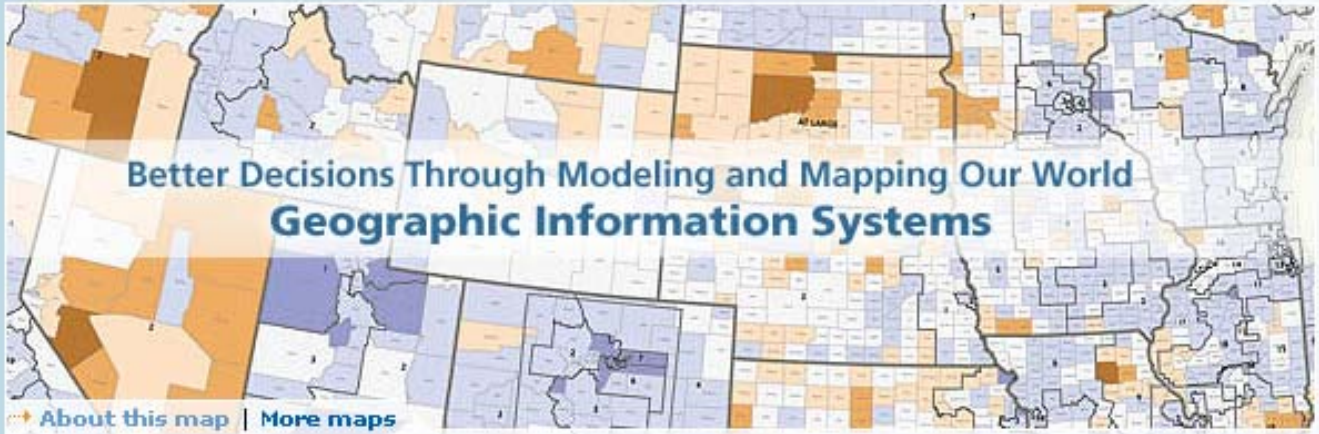
The Harvard Geospatial Library
HELP QUIT
Click on map to: Zoom in Zoom Out Re-Center Identify
Use keyword searches
NORTH
X: 180
Y: 90
Search this area
Map Legend
Check box to turn on/off and set identifiable layers
Layer
NorthArrow
scalebar
1992 COUNTRY BORDERS
WORLD IMAGE
Refresh
Move a layer up/down:
NONE
Select a base map:
World Image & Data (HGL)
WEST
EAST
N
0
2811mi
X: -180
Y: -90
SOUTH
[1] [2] [3] [4] [5] [6] [7] [8] [Full Map View]
Find a Place
Search for GIS Data:
Use Keyword Index
none
Use Place Name Index
none
Search Keyword in Metadata
Search Keyword in Data Set Title
Ignore the map while searching
Search for data overlapping this map extent
Search for data that is completely within this map extent
Go
Reset



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New Users
Education
Business
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GIS.com

What's New at ESRI

ArcView Desktop GIS for Mapping, Data Integration, and Analysis
ArcView can help you understand the spatial relationships in your data and allow you to make better decisions and solve problems faster. Request an evaluation CD.

Server GIS Seminar Series—June 2006
Attend a free half-day seminar in your state and learn how you can integrate GIS into your business processes to give you a geographic advantage. Register for a free pass.

XML ESRI RSS News Feed

ESRI Events

- 26th ESRI International User Conference
  August 7–11, 2006 · San Diego, CA

  Connect, learn, and share at the largest gathering of GIS users in the world.

  —ESRI Survey and GIS Summit
  August 5–8, 2006 · San Diego, CA

  —ESRI Education User Conference
  August 5–8, 2006 · San Diego, CA

  Register and sign up to participate:
  - Plenary
  - Map Gallery
  - Software Applications Fair

HARVARD - MIT DATA CENTER

Where social science and information technology meet.

Informatics: Data | Information Technology | Statistical Computing | Support | Search: GO

HIGHLIGHTS

- HMDC Expands Computer Labs!
- Go to Virtual Data Center (VDC)
- Learn About Our Fellowships
- System Announcements
- System Status
- What's New?

SUPPORTED GROUPS

- The Institute for Quantitative Social Science
- Government Department Affiliates
- Harvard Affiliates
- Kennedy School of Government
- MIT Affiliates
- Henry A. Murray Research Archive
- Weatherhead Center for International Affairs
- General Public
- Robert Wood Johnson: Scholars in Health Policy Research Program

A Member of

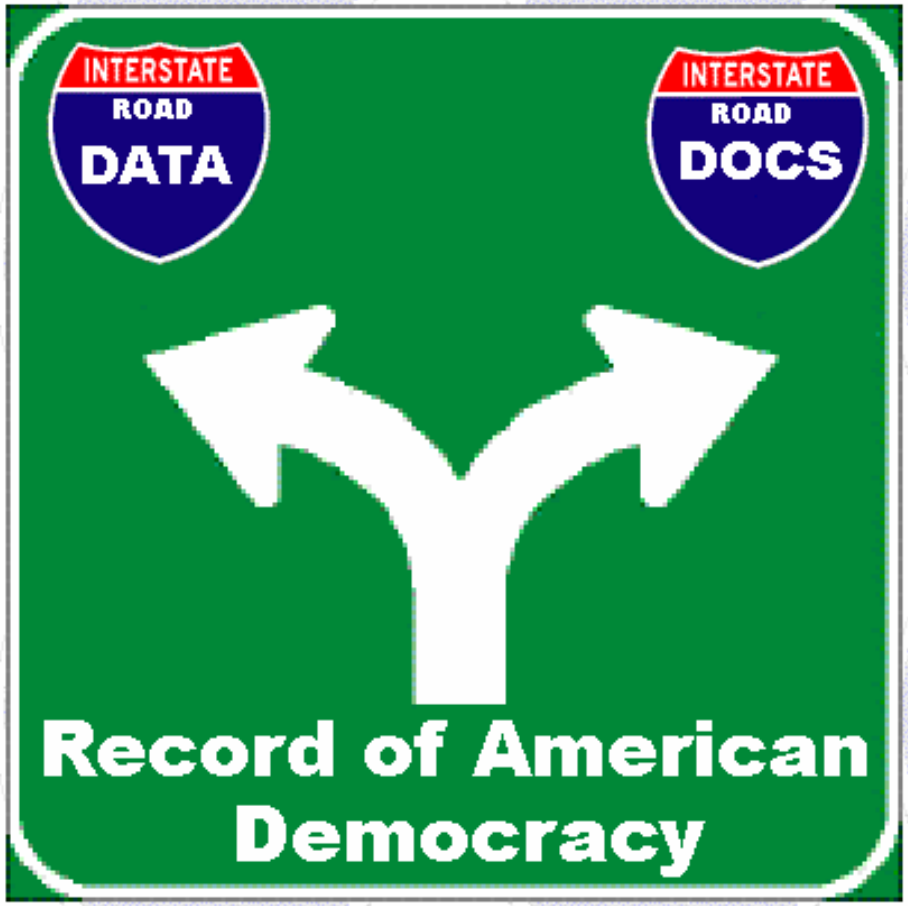
The Institute for Quantitative Social Science at Harvard University

HARVARD - MIT DATA CENTER

HMDC is the principal distributor of quantitative social science data from major international data consortia for Harvard and MIT, and a leader in research in digital libraries and statistical methodology. HMDC also provides computer support to several of Harvard's social science departments, research centers, and schools, and maintains a popular fellowship program for visiting graduate students.

The Record of American Democracy, 1984-1990 (ROAD)

[Named "Best Political Science Research Website" by the American Political Science Association (CMS), 1999]



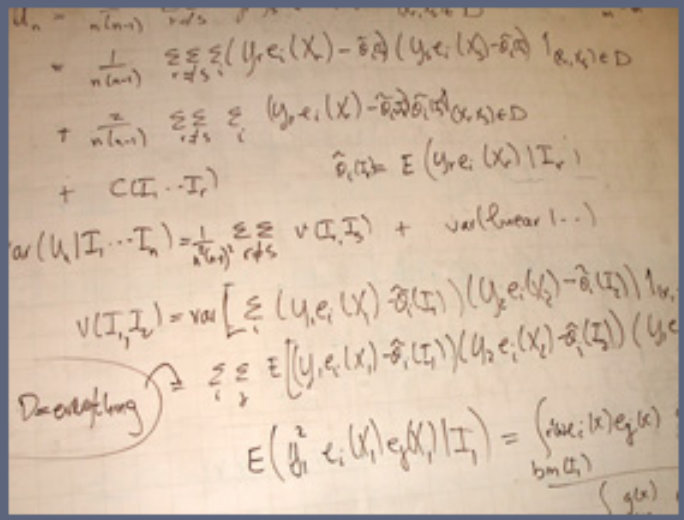
Gary King and Bradley Palmquist

With Contributions From Project Leaders: Greg Adams, Micah Altman, Kenneth Benoit, Claudine Gay, Jeffrey B. Lewis, Russ Mayer, and Eric Reinhardt

The Institute
for Quantitative Social Science
at Harvard University

Scientific Programs | **Technology Platforms** | **Educational Opportunities** | **People** | **Funding** | **Facilities** | **News/Events**

RESEARCH IN PROGRESS



Whiteboard and Endless Statistics

The whiteboard that covers hundreds of feet of the curved hallway at IQSS is not always covered with equations — but lately, it usually is. And most of them are in the haphazard hand of James M. Robins, M.D., a faculty associate at IQSS and a professor of epidemiology and biostatistics at the School of Public Health... > more

NEWS & PUBLICATIONS

IQSS Launches Geography Center

On May 5 the Institute for Quantitative Social Science will publicly launch its newest partner in technology, the Center for Geographic Analysis.
> more

CALENDAR

The Institute's Mission

Our scientific mission is: (1) to create, and make widely accessible, statistical and analytical tools for the social and health sciences; and (2) to use these tools for understanding and solving major problems that affect society and the well-being of human populations.

The organizational mission is: (1) to foster interdisciplinary, often large-scale, and highly collaborative projects that cannot readily be accomplished within the traditional setting of individual departments; and (2) to build a scientific culture where faculty, students, and staff work side by side, not only to solve their own disciplinary problems, but also to seek out problems in unrelated or applied areas amenable to the same approach. > more

Contact Us

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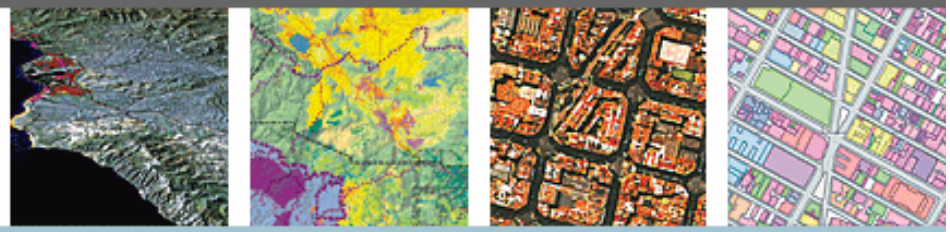
Political Economy and Government Ph.D. Program | RWJ Scholars in Health Policy Post-Doctoral Program | Eric M. Mindich Conferences

Center for Geographic Analysis
Harvard University



HOME

Center for Geographic Analysis

The Center for Geographic Analysis at Harvard University was founded in 2006. As a technology platform in the Institute for Quantitative Social Science, the Center focuses on research and education in the field of spatial analysis and geographic information. The Center works across the university to strengthen geographic information systems infrastructure and services.

Building on the foundation already created by the Harvard Geospatial Library and the Harvard Map Collection, the Center for Geographic Analysis supports a wide range of scholarly research projects that apply spatial analysis. The Center has permanent professional staff who can guide and support complex projects across Harvard.

Address:
1737 Cambridge, 3rd Floor
Cambridge, MA 02138

Email:
contact@cga.harvard.edu

CGA Services

- Supporting research and teaching that relies on geographic analysis.
- Administering Harvard-wide GIS infrastructure, including GIS software site licenses.
- Collecting and disseminating spatial datasets from scattered sources.
- Forging interoperability between many distributed Harvard systems, including the Harvard-MIT Data Center, the Harvard Geospatial Library, and others.
- Enabling collaboration in the Harvard community through centralized access to GIS resources.

For more details, please go to CGA Services.

What's New?

GIS Workshops
SPACE Workshops
ESRI Business GeoInfo Summit Academic Workshop

GIS Courses and Seminars
Introduction to GIS workshop

CGA News & Announcements

Call for Posters: Harvard Returns to Geography Poster Session

May 5, 2006
5 to 6 pm
CGIS South Building

Share your work with the GIS community at the Harvard Returns to Geography Poster Session. Students, faculty and researchers representing the spectrum of geographic analysis techniques will be at the event to trade ideas and expertise. All members of the Harvard Community are invited to join the forum by submitting a poster summarizing their completed or ongoing GIS projects. **The due date for poster submission is April 28th, 2006.**

Poster Submission Guidelines

- All interested participants should submit the following information to Guoping Huang (ghuang@cga.harvard.edu) by April 14th, 2006
- Author name and school affiliation

Geographic Information Systems (+/-)

Topographic Modeling in 3D (+/-)

The GSD Metropolitan Model Collaborative

Visualization

Having All of these models in a large, scaleable database schema allow us to use database logic to retrieve logically consistent views of the city based on past, present and future conditions. Any numer of different thematic views may be drawn upon -- including commercial or emergency management themes.

- **The present context of Gund Hall**
- **The 1999 context of Gund Hall**
- **Gund Hall Proposed Scheme A** (Thanks to Ignacio Paliza.)
- **View from the 5th floor of Scheme A**

Current Issue:
March 16, 2006

News
News, events, features

Science/Research
Latest scientific findings

Profiles
The people behind the university

Community
Harvard and neighbor communities

Sports
Scores, highlights, upcoming games

On Campus
Newsmakers, notes, students, police log

Arts

HARVARD GAZETTE ARCHIVES

Jason Ur: 'If you press your nose against a Monet, all you see is a blur. If you take a few steps back, you see lilies, you see bridges. For this reason, remote sensing data is really irreplaceable.' (Staff photos Kris Snibbe/Harvard News Office)

Investigating canals across time, from space

Ur takes a step back to see ancient networks

RIMA IZEM COLLOQUIUM

Monday, March 13, 2006

TALK: 4:00 PM - Science Center B-10

RECEPTION: 5:15 PM - Science Center, 7th Floor

"Spatial Analysis of Unemployment Rates in Germany"

Rima Izem
Harvard University
Department of Statistics

ABSTRACT

Spatial models of unemployment rates in Germany will be presented in this talk. The case of Germany is particularly interesting because of the sharp break in unemployment rates at the former East-West border. Our goal is to explain the stubbornly low labor productivity in former East Germany using economically sound models. The spatial economic models we propose model the effect of individual skills, counties infrastructure and individuals commuting behavior on labor. They also allow for correlation, in unemployment rates, between neighboring counties. We motivate and illustrate these models with few simulations and present some preliminary results for Germany. This project is a joint work with Prof. Nicola Fuchs-Schuendeln in the Economics Department at Harvard.

Louise Ryan
Professor of Biostatistics
Department of Biostatistics

Contact Information

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Building II
4th Floor, Room 423
655 Huntington Avenue

HARVARD SCHOOL OF PUBLIC HEALTH

Christopher Paciorek
Assistant Professor of Biostatistics
Department of Biostatistics

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Boston, MA 02115-6009

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Computational Techniques for Spatial Logistic Regression with Large Datasets

Christopher J. Paciorek, *Harvard School of Public Health*
Louise Ryan, *Harvard School of Public Health and Dana-Farber Cancer Institute*

Download the Paper | Forward to a colleague

Abstract:

In epidemiological work, outcomes are frequently non-normal, sample sizes may be large, and effects are often small. To relate health outcomes to geographic risk factors, fast and powerful methods for fitting spatial models, particularly for non-normal data, are required. We focus on binary outcomes, with the risk surface a smooth function of space. We compare penalized likelihood models, including the penalized quasi-likelihood (PQL) approach, and Bayesian models based on fit, speed, and ease of implementation.

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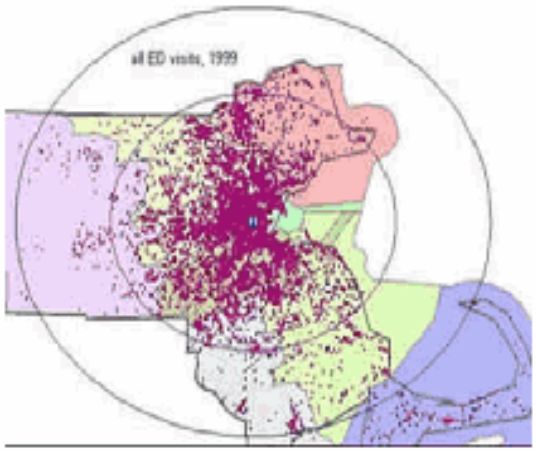

Welcome

We apply tools from medical informatics, computer science, mathematics epidemiology, and biostatistics, forging new approaches to medicine and public health. Two of our main projects:

AEGIS (***A***utomated ***E***pidemiologic ***G***eotemporal ***I***ntegrated ***S***urveillance) system performs automated, real-time surveillance for outbreaks and tracks epidemics. It is the real time populatoin health monitoring system for the Massachusetts Department of Public Health.

PING is the world's first personally controlled record system, enabling a patient to own a complete, secure, copy of her medical record, integrating health information across sites of care and over time.

AEGIS
Real time surveillance >

PING
Personally controlled health records >

CHIP
Home Page >

News

11/2005 Dr. Reis to advise Hong Kong HPA on biosurveillance
11/2005 PING goes live at the Hewlett Packard Corporation
10/2005 AEGIS shows that attendence in ERs inversely correlated with popularity of Red Sox games
10/2005 Dr. Brownstein uses AEGIS to show that preschoolers drive influenza epidemics, influences thoughts about vaccine policy

HOME
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WORLD MUSIC

NATIONAL GEOGRAPHIC MAGAZINE
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Most Popular

1. Gospel of Judas
2. Photo of the Day

Daily News Stories and Photos

- Brits Healthier Than Americans, Study Says
- East Coast Bald Eagle Fights Not Nationwide
- Video: Goa, India's Cultural Crossroads
- Can African Lions and People Live in Peace?
- Photos: Selected 2006 "Red List" Species

Read All News

National Geographic Magazine
This Month's Issue: Fall of the Wild, and The Judas Gospel.
Click to See Inside

National Geographic Channel
On Tonight: *Geo-Challenge* and *Inside Katrina*.
Daily Schedule

Featured Video

WATCH

- Video: Lifelike Robot
- TV: *Inside Katrina*

Photo of the Day

ENLARGE

- Gallery: Chernobyl
- Wallpapers

Explore Music

From National Geographic

Music of the World
Experience the traditional and not-so-traditional sounds of cultures from around the world.

- Regions: Discover Music by Country
- Genres: Tango, African Pop, and More
- Watch & Listen: Music Videos and Playlists
- About World Music

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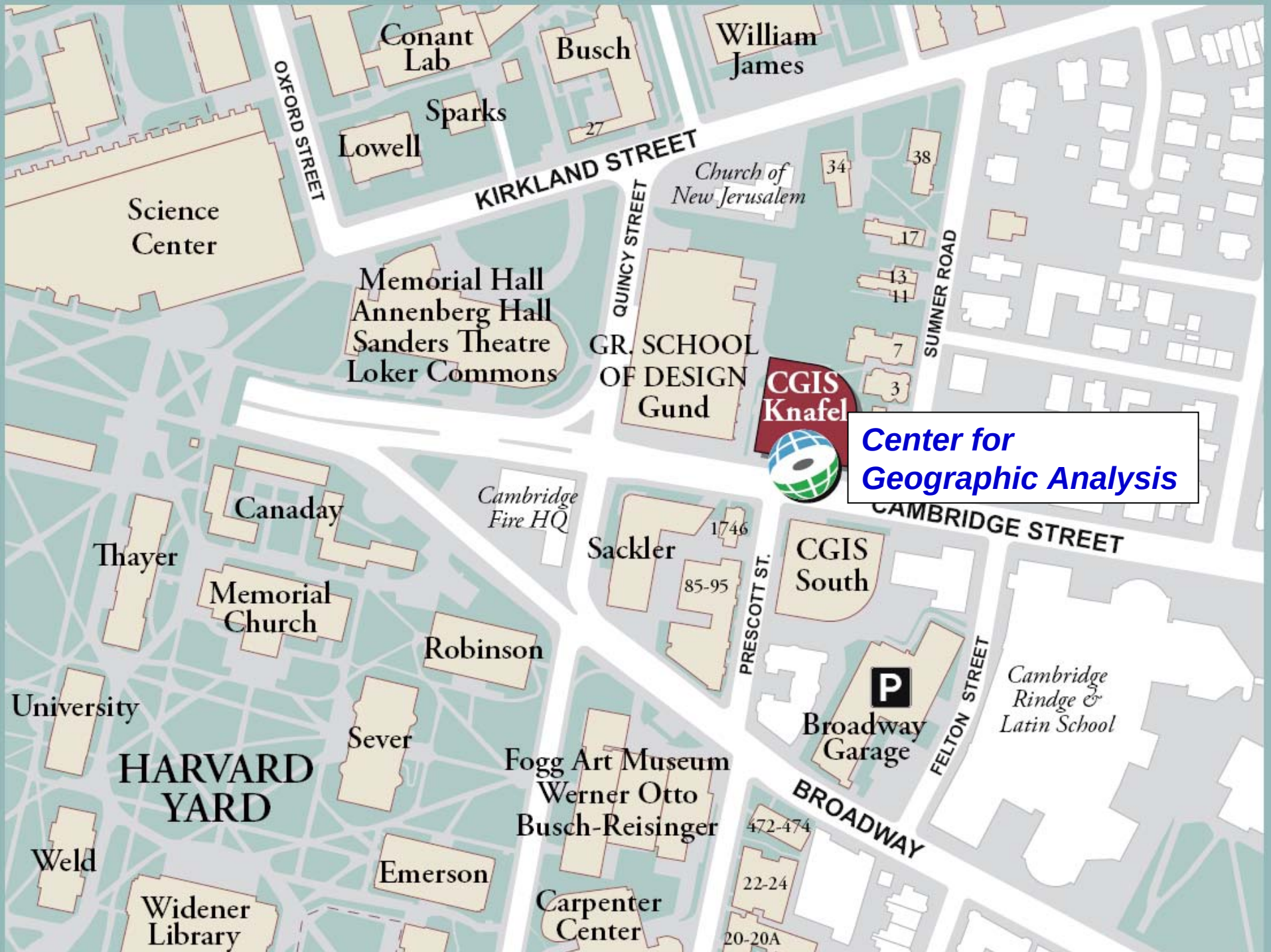
Conant Lab
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Sparks
Lowell
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OXFORD STREET
KIRKLAND STREET
Science Center
Church of New Jerusalem
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QUINCY STREET
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13
11
SUMNER ROAD
Memorial Hall
Annenberg Hall
Sanders Theatre
Loker Commons
GR. SCHOOL OF DESIGN
Gund
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3
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Center for Geographic Analysis
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Cambridge Fire HQ
Canaday
Thayer
Sackler
1746
85-95
CGIS South
PRESCOTT ST.
Memorial Church
Robinson
University
Sever
HARVARD YARD
Fogg Art Museum
Werner Otto
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FELTON STREET
Cambridge Rindge & Latin School
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Weld
Emerson
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Widener Library
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Geospatial Analysis Across the Disciplines

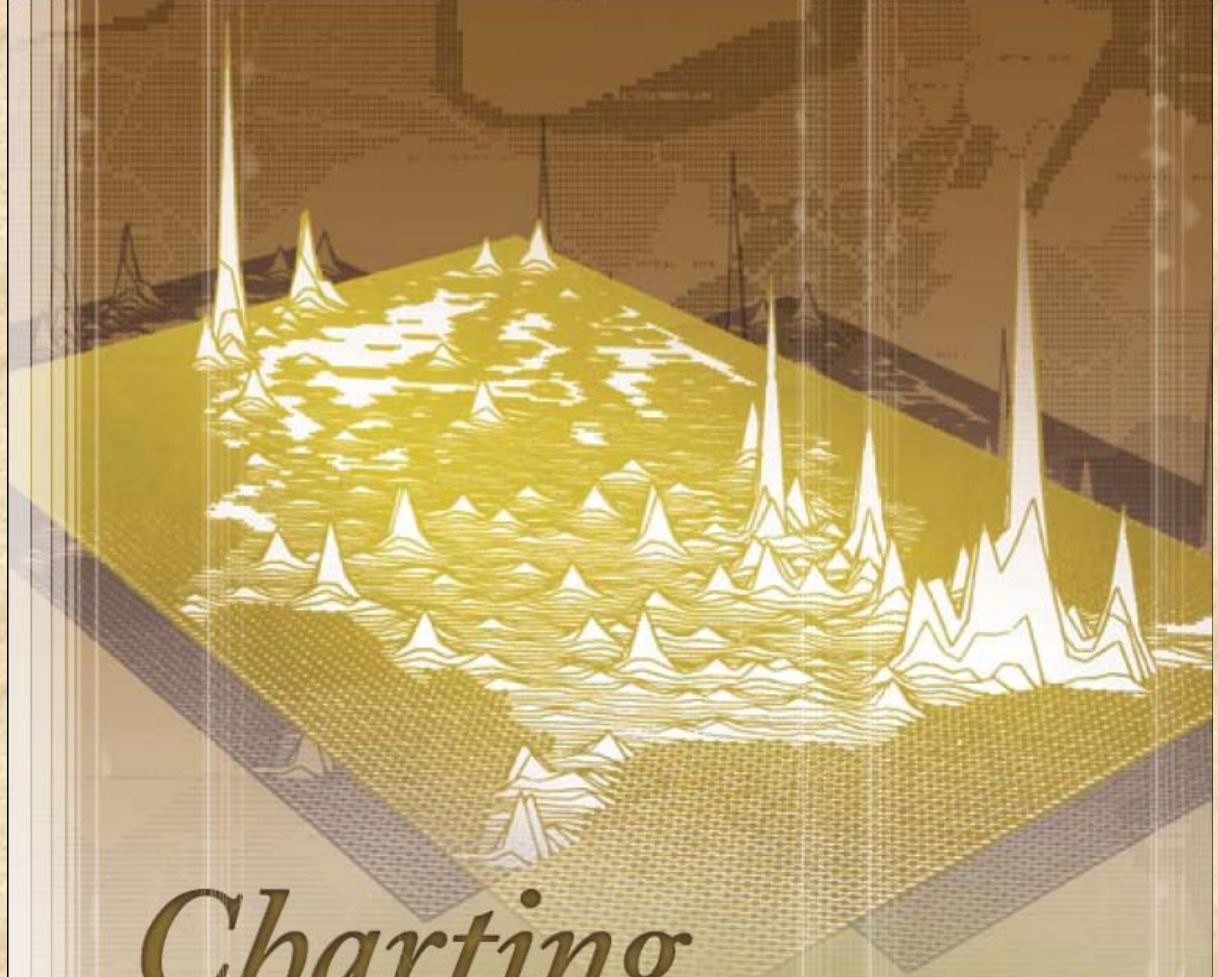
David Maguire, ESRI, Moderator

Germany: East-West, Bridging the Gap
Rima Izem, Department of Statistics, FAS

Space and the City: Modern Chicago
Robert Sampson, Department of Sociology, FAS

Climate Consequences
Daniel Schrag, Department of Earth & Planetary Sciences, FAS

Air Pollution at a Border Crossing
John D. Spengler, Department of Environmental Health, HSPH



Charting the Unknown

How computer mapping at Harvard became GIS

Nick Chrisman