Eastern Section AAPG - October, 2002 - Champaign, Il.

Coal Data at the ISGS

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Part B: Applications of ISGS Spatial and Relational Coal Data

Recent applications:

1) Mined-Out Area Mapping

2) Coalbed Methane development potential

3) MIDCARB project

4) Coal Availability Studies

Applications of Spatial & Relational Data: MIDCARB

MIDCARB

Midcontinent Interactive Digital Carbon Atlas and Relational dataBase

- Funded by U.S. Department of Energy - National Energy Technology Laboratory (NETL)

- Joint project between five State Geological Surveys

    1) Illinois
    2) Indiana
    3) Kansas
    4) Kentucky
    5) Ohio

from www.midcarb.org

Applications of Spatial & Relational Data: MIDCARB

Purpose

- Enable evaluation of geologic carbon sequestration potential
- Display and link the states' digital spatial and relational databases through an interactive map service (IMS)
- Estimate the amount of CO_2 emitted by source supplies with respect to potential geologic reservoirs
- Regionally characterize reservoirs:
    - Quality, size, and geologic integrity for:
        - CO2 storage
        - Enhanced hydrocarbon recovery

Applications of Spatial & Relational Data: MIDCARB

Overall Plan

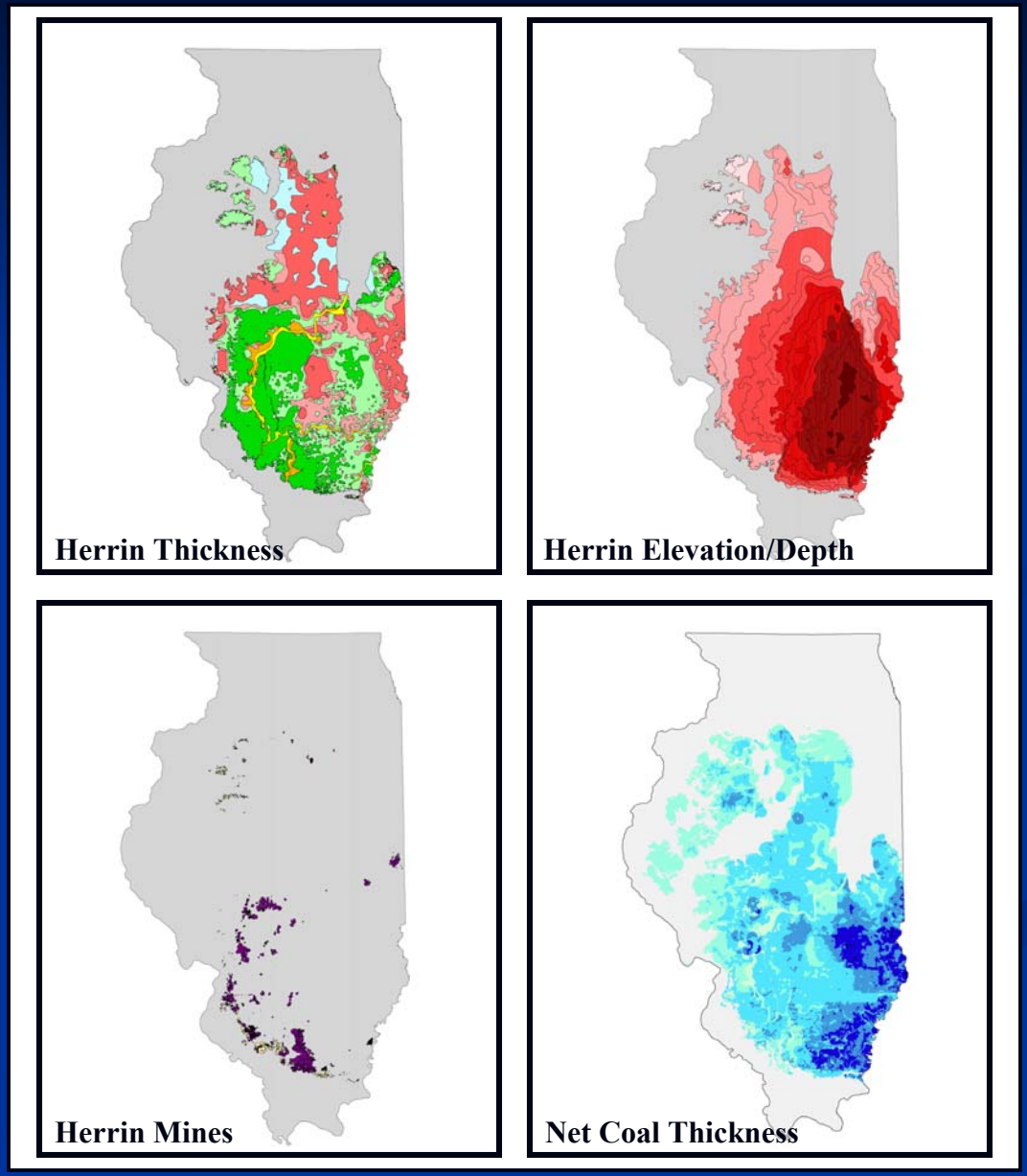
For each state:

- Identification of large stationary sources of CO_2
- Compilation of emissions data from best available data sources
- GIS compilation of potential CO_2 sequestration target layers, and related data

Applications of Spatial & Relational Data: MIDCARB

Layers and Data Used

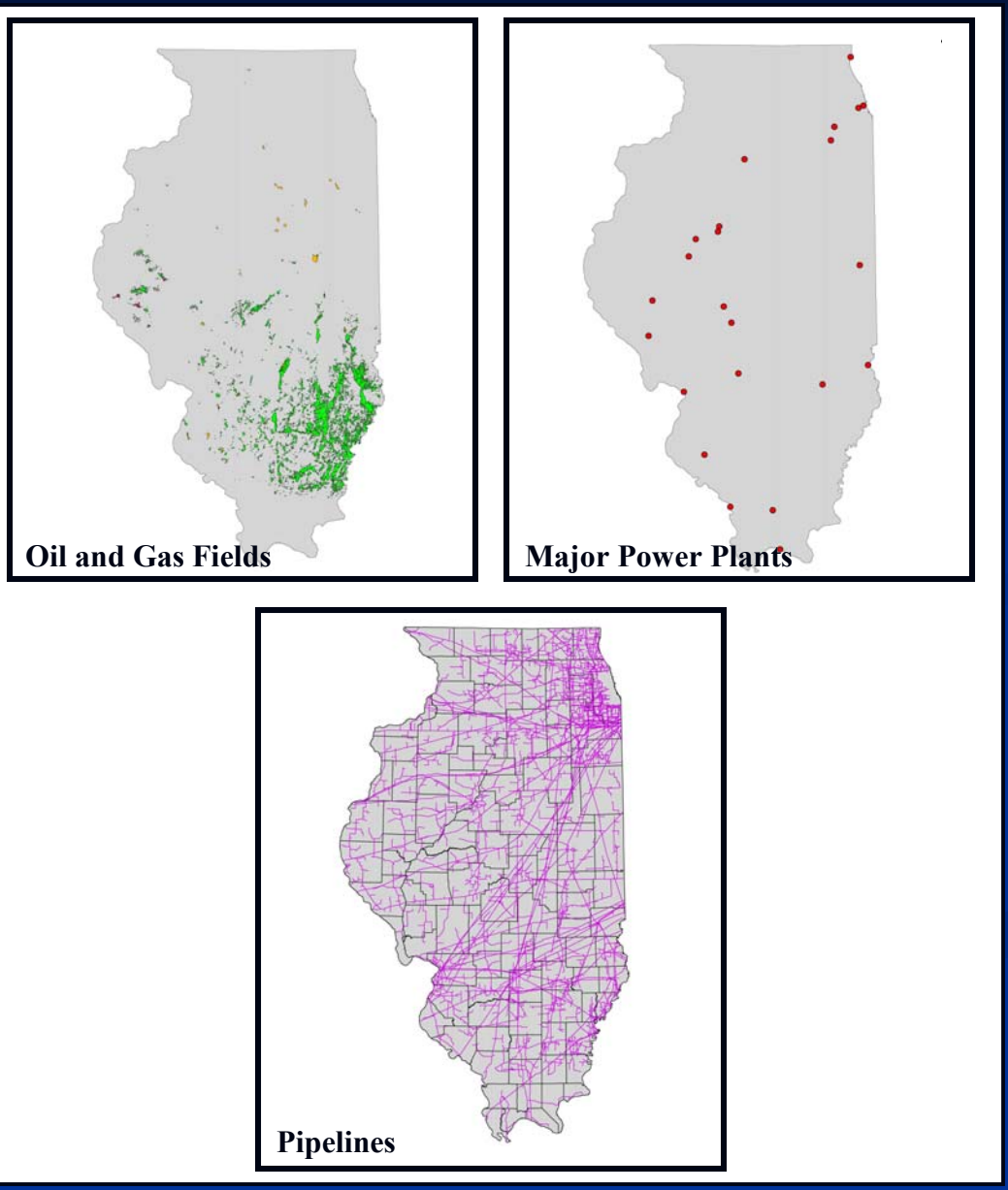
- Thickness
- Elevation/depth
- Mines
- Net coal thickness



Applications of Spatial & Relational Data: MIDCARB

Layers and Data Used

- Other Geologic Layers
  - Oil and gas fields
  - Saline aquifers
- Point-source CO_2 locations
- Infrastructure & basemap

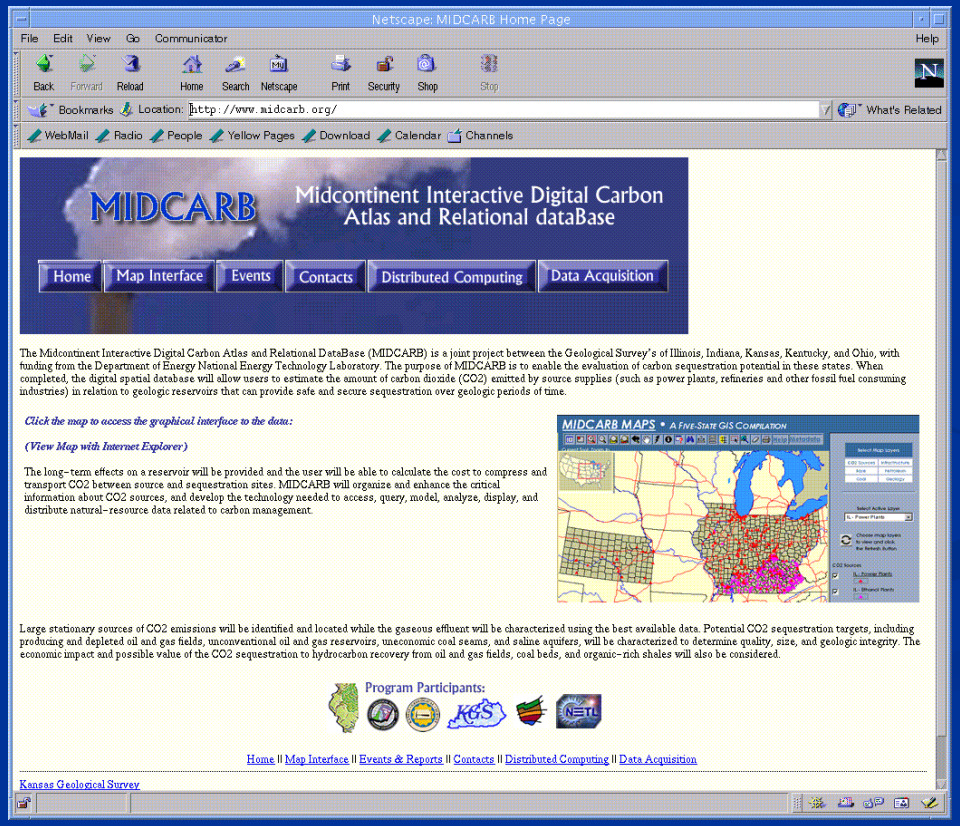


Applications of Spatial & Relational Data: MIDCARB

Products

Interactive Map Service (www.midcarb.org)

Link of digital spatial and tabular data from 5 Surveys as one product!



Applications of Spatial & Relational Data: MIDCARB

Implementation

Agreed that each state would use:

- Oracle or SQL/Server for relational databases
- ArcSDE (Spatial Data Engine) for spatial layers
- server to provide this data over the internet

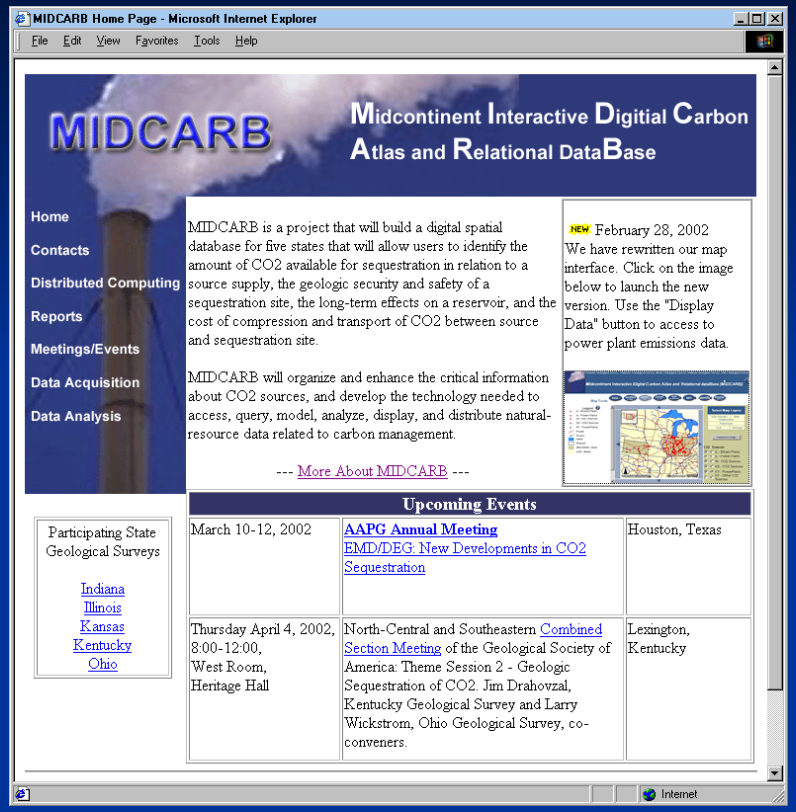
At least one instance of ArcIMS, for initial MIDCARB website

Applications of Spatial & Relational Data: MIDCARB

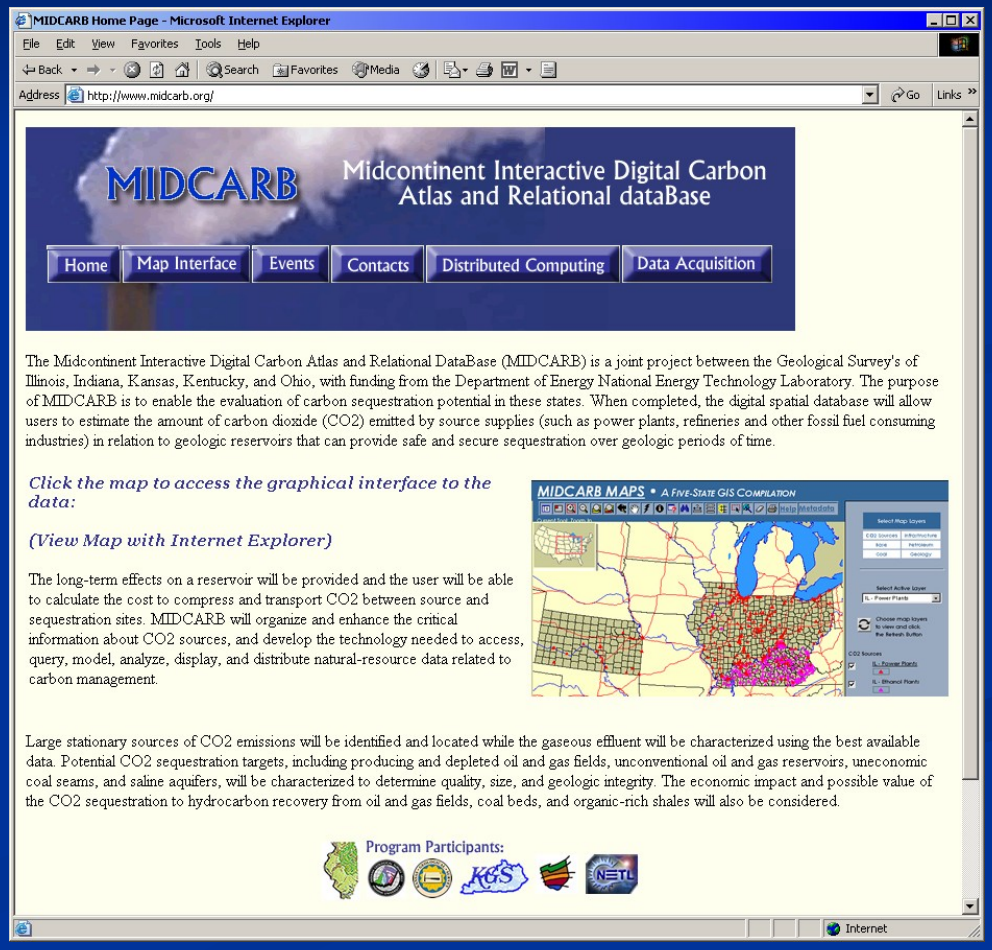
Implementation, issues (simplified!):

- Common data format across 5 states
- Data availability via internet
- Website updates and development

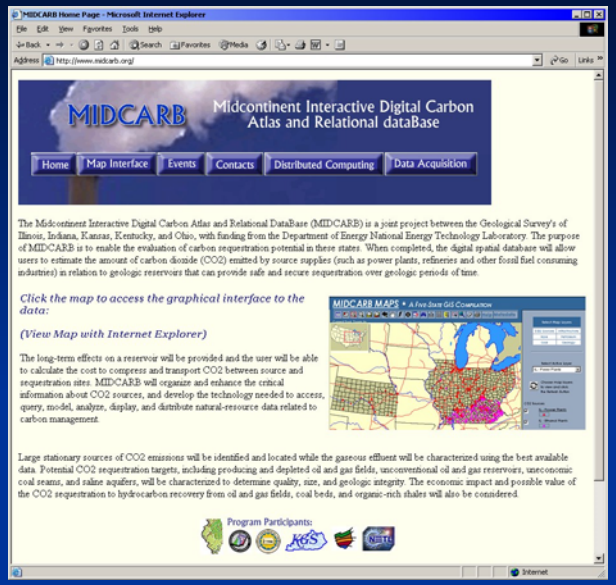
Applications of Spatial & Relational Data: MIDCARB



Website development, IMS updates



Applications of Spatial & Relational Data: MIDCARB



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Brief example of the IMS

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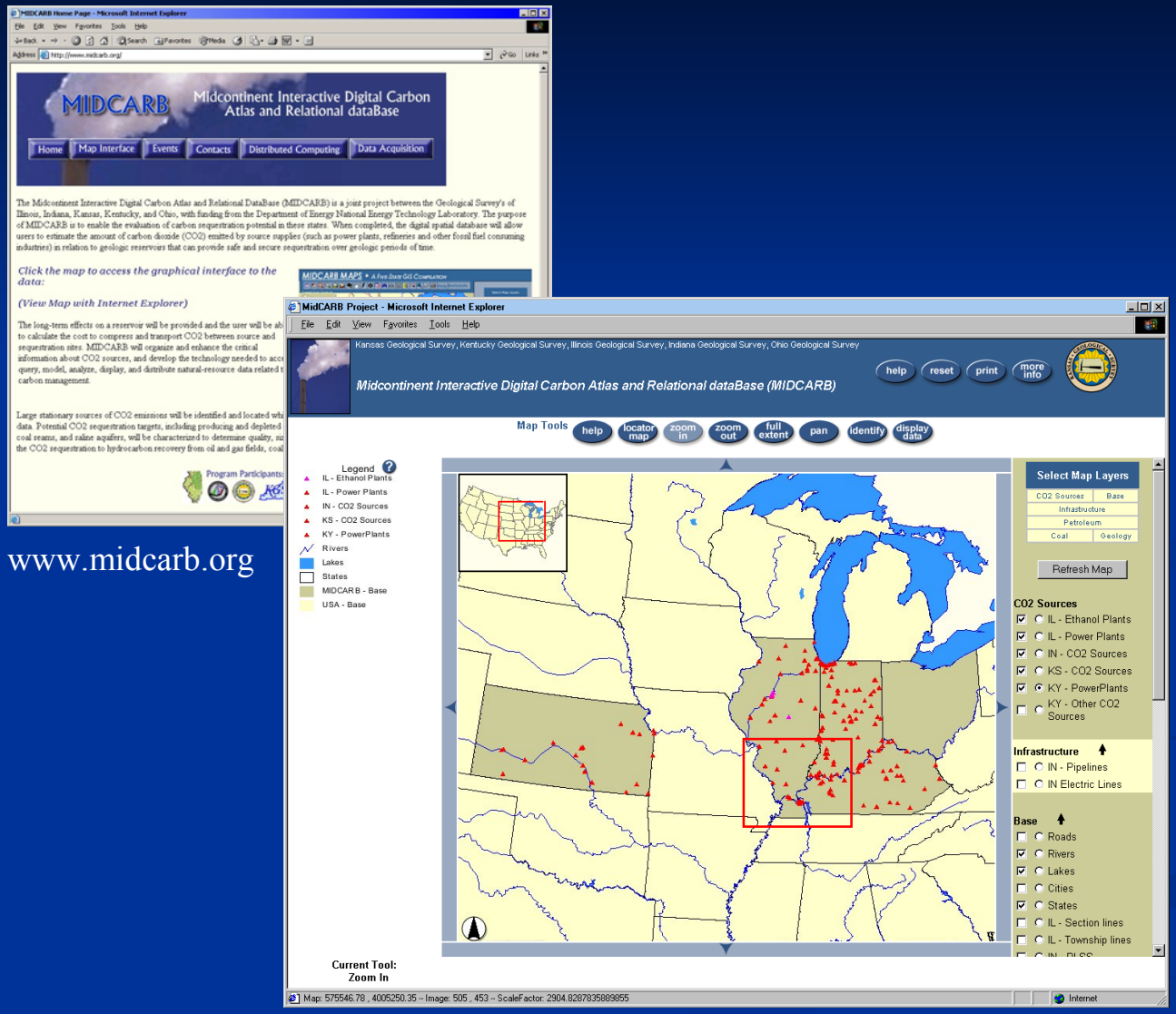

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A) Launch the internet map service (newer version available)

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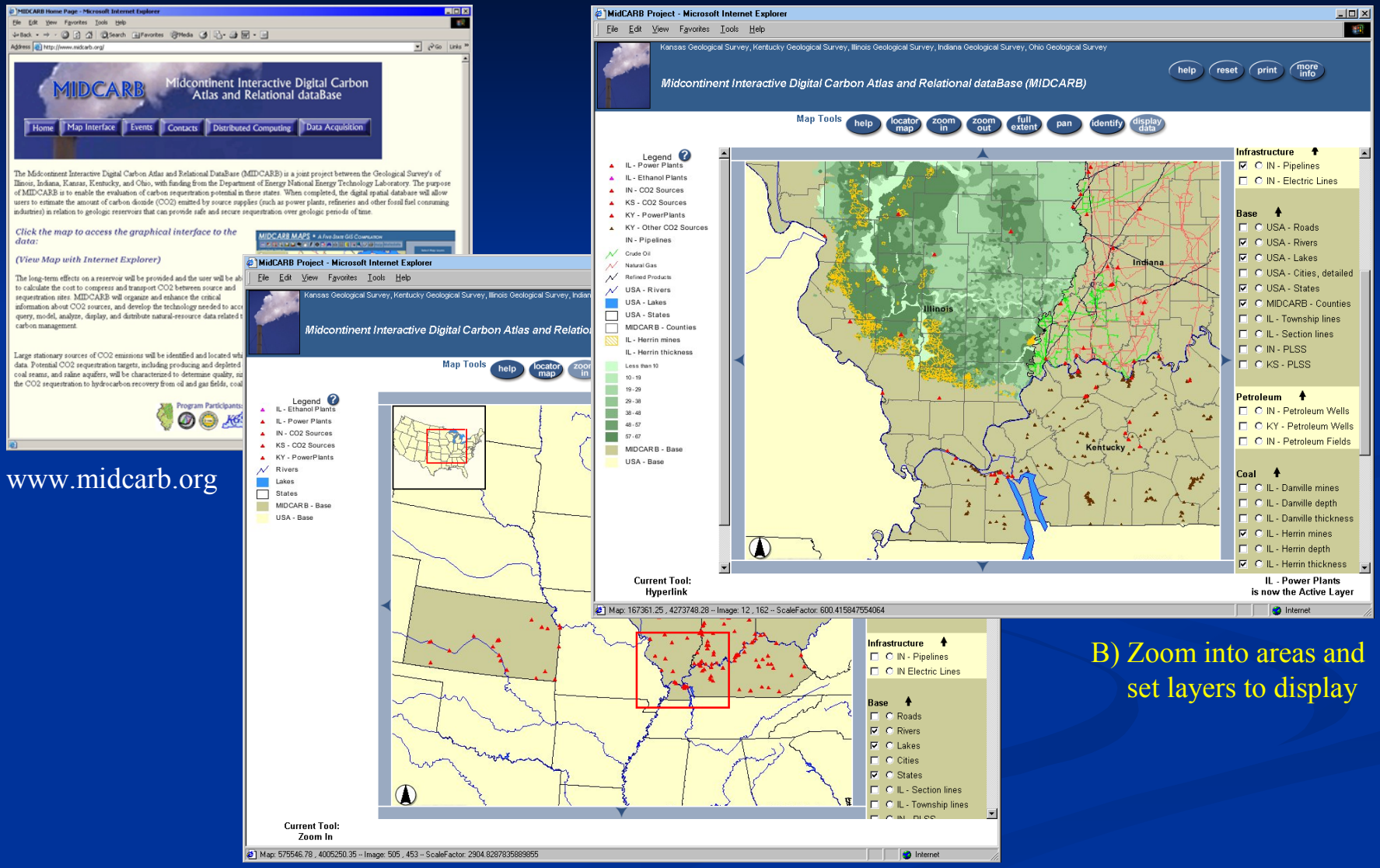

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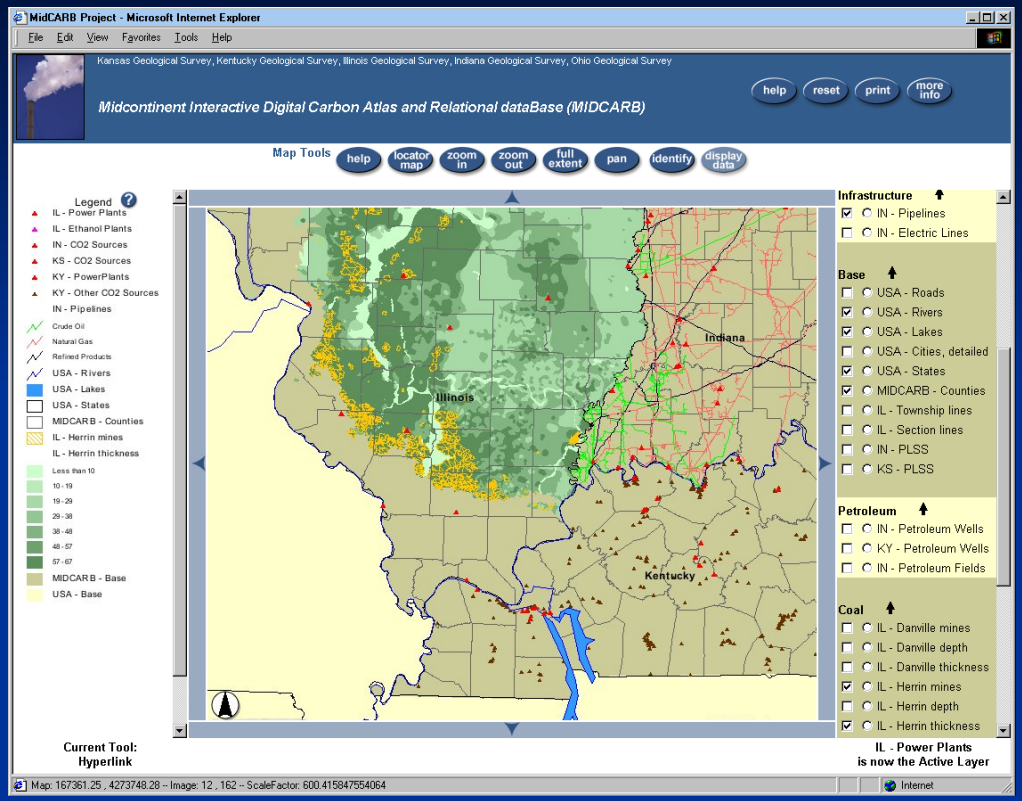
B) Zoom into areas and set layers to display

A) Launch the internet map service

Applications of Spatial & Relational Data: MIDCARB



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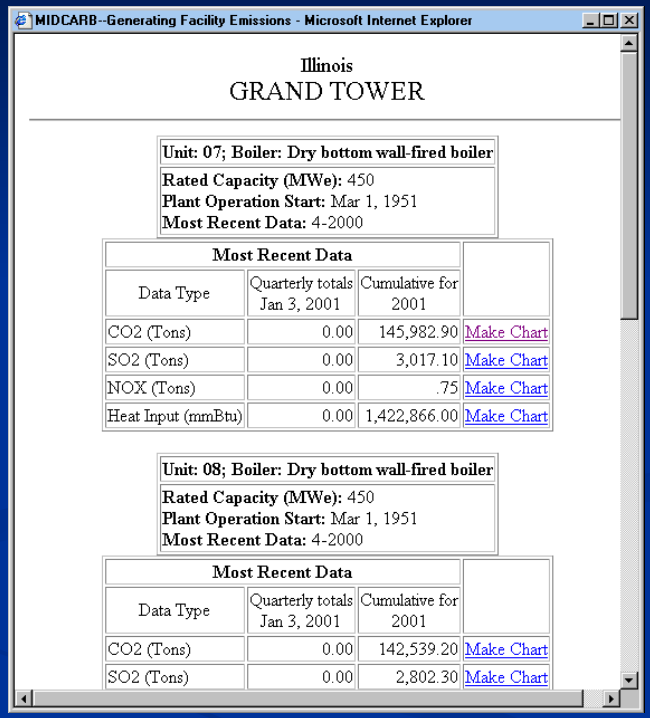
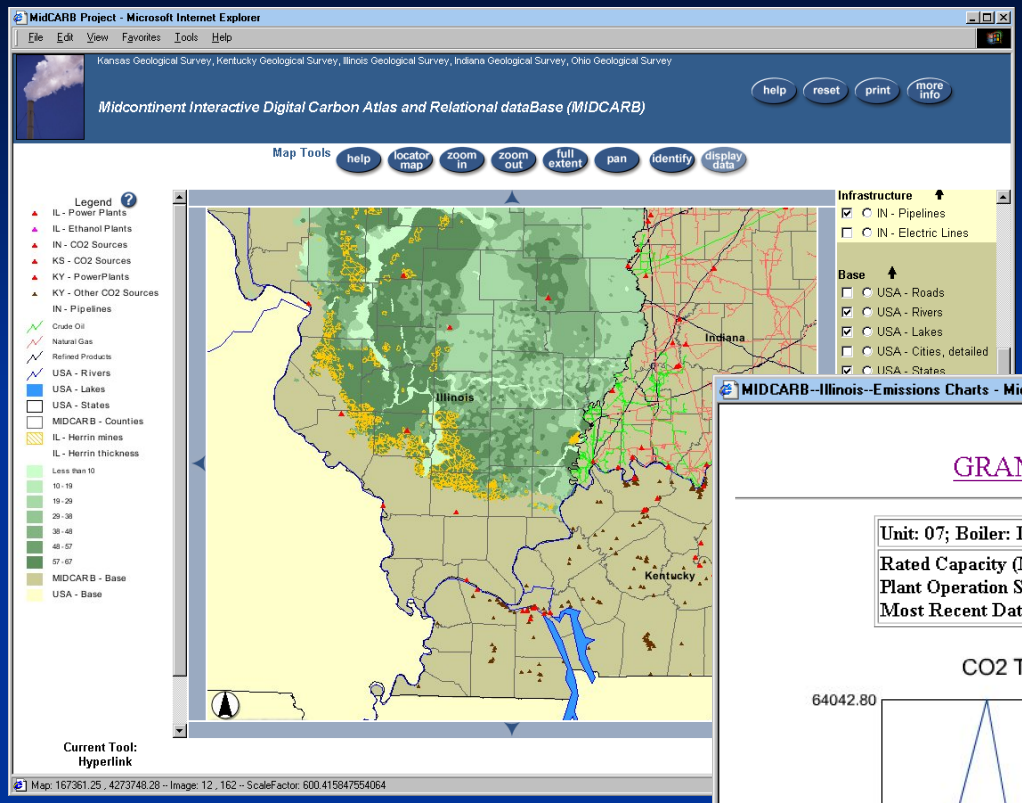


C) Query database

Applications of Spatial & Relational Data: MIDCARB



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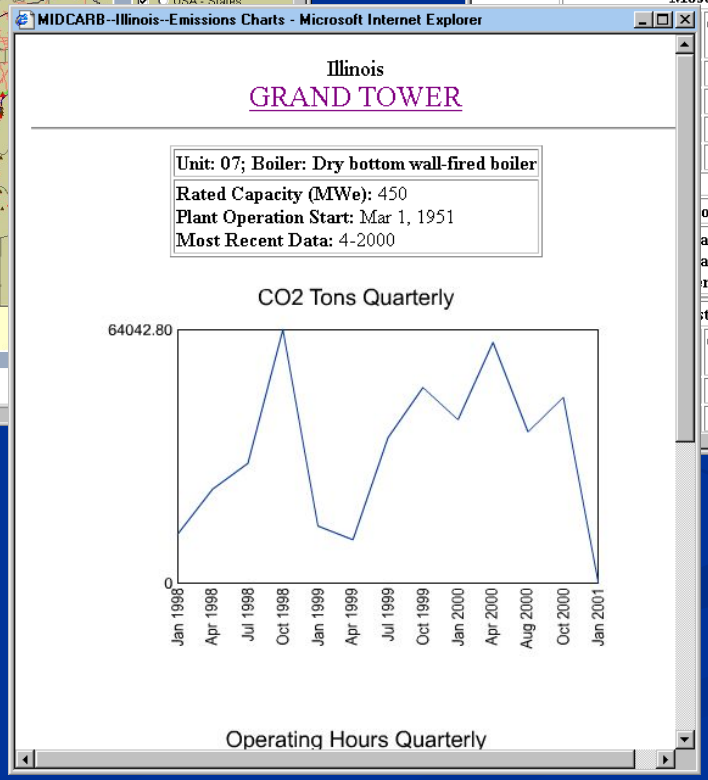

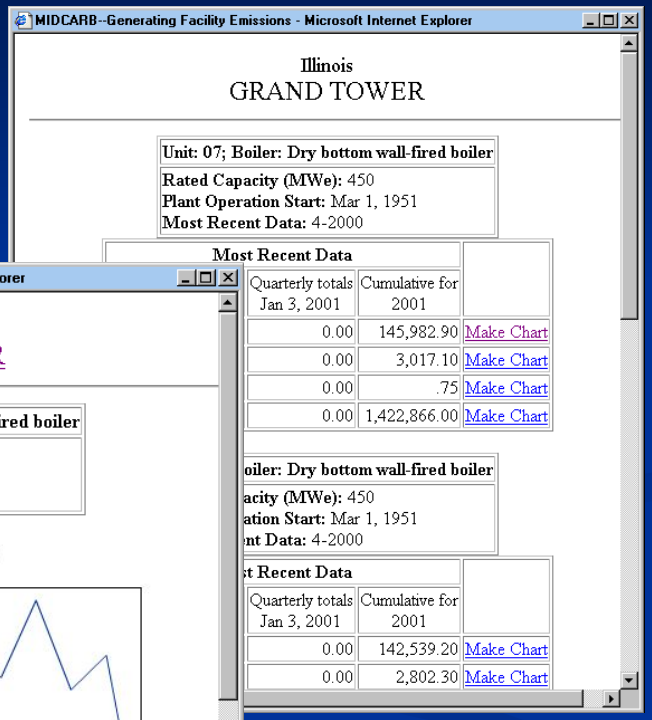

C) Query database and hyperlink to data charts

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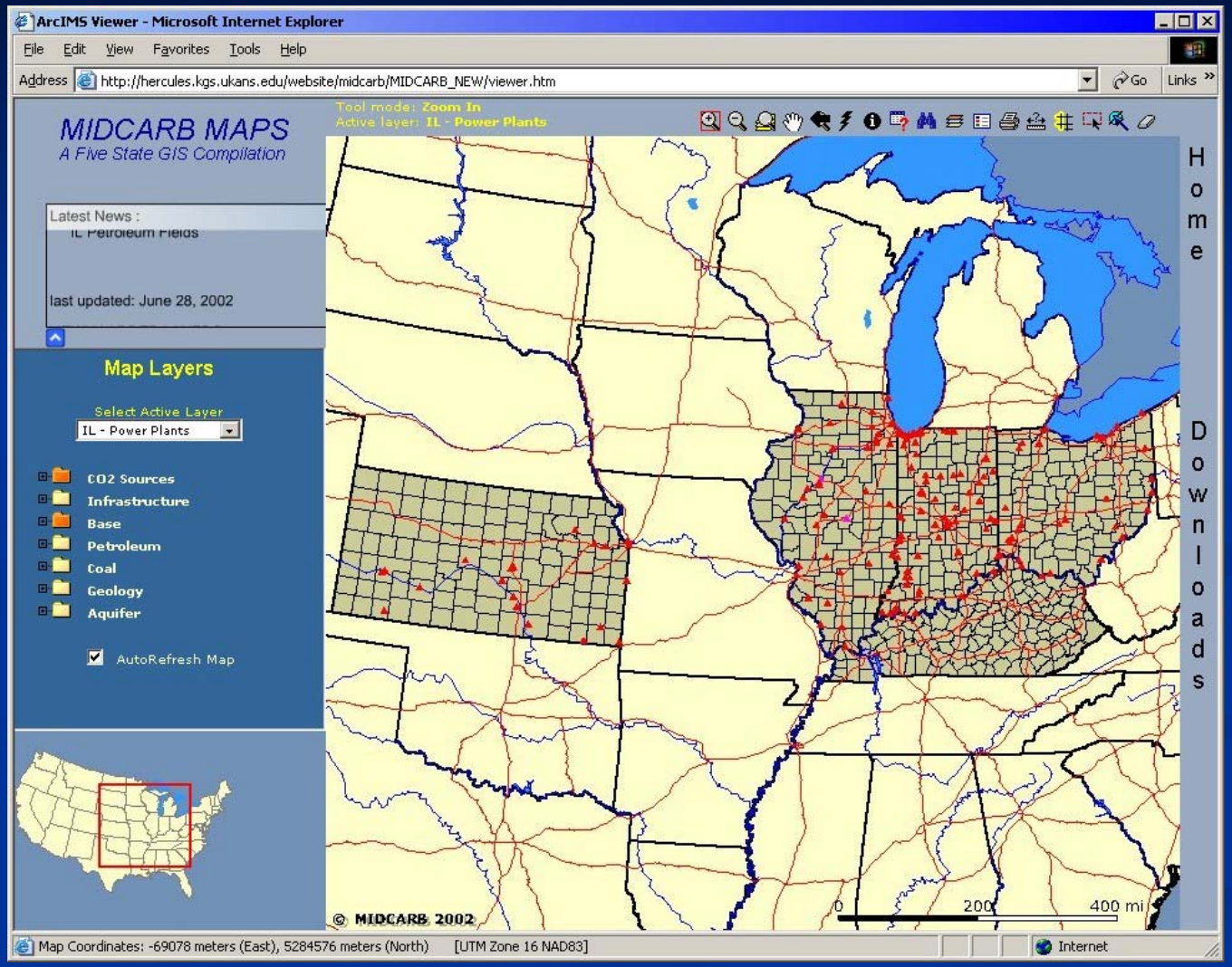

New IMS example 1

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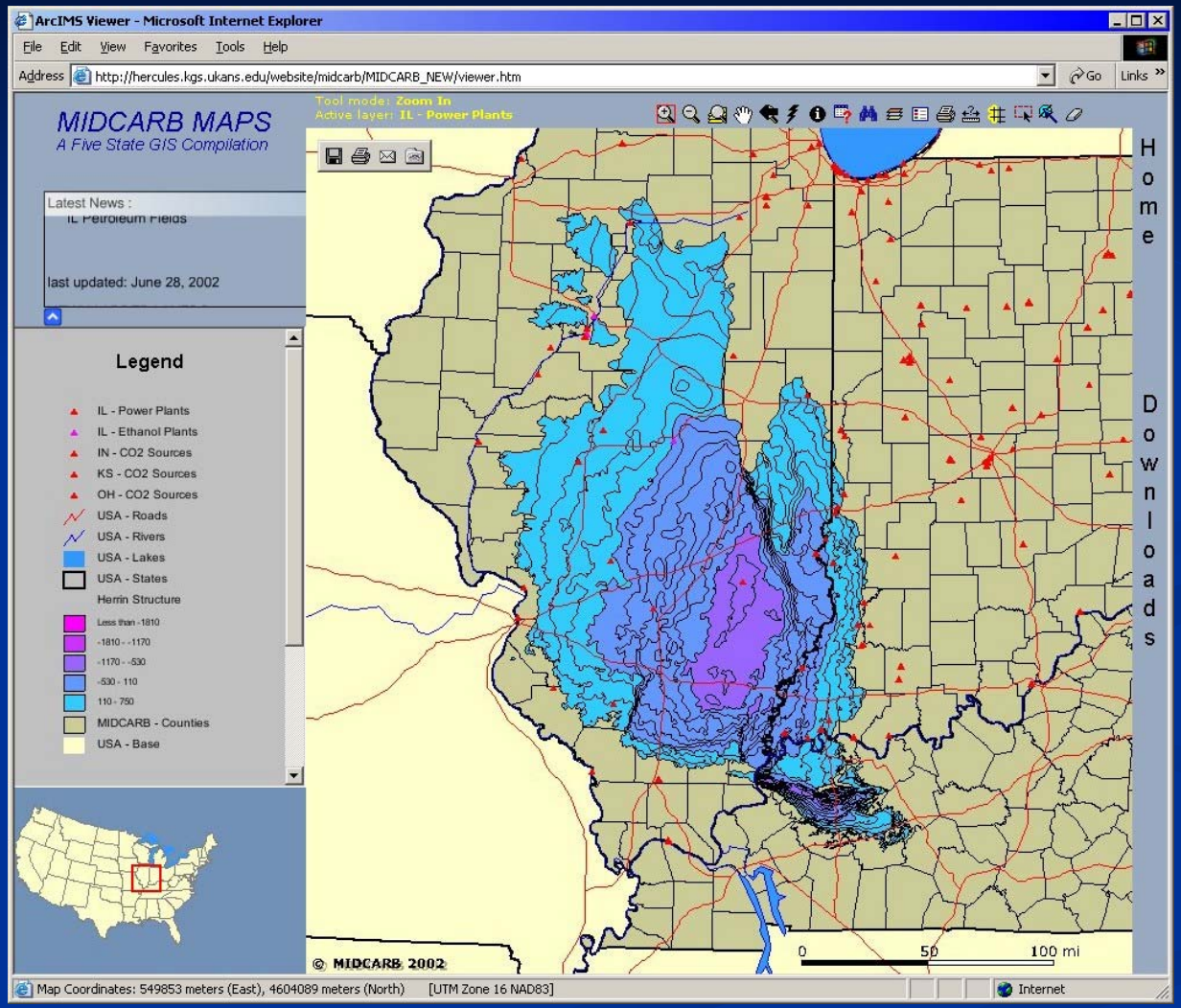


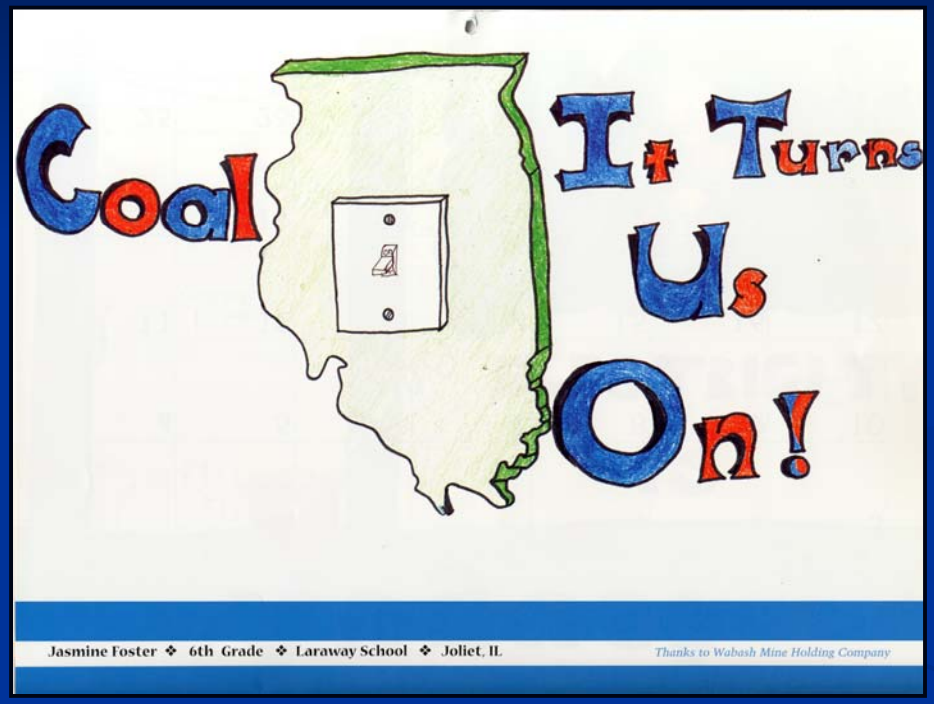
New IMS example 2

Applications of Spatial & Relational Data: MIDCARB

Future Directions

- Additional geologic layers
  (plus more metadata, downloadable shapefiles)
- Analysis functionality
  (volumetric calculations, distance buffers, etc.)
- Replicate IMS instance at other states

Acknowledgements



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