



## **Spatiotemporal Thinking & Problem-Solving**

CAGIS is an interdisciplinary research center that focuses on using advanced **space-time theories, methods, and technologies** in cutting-edge Geographic Information Science for complex geographical problem-solving.



## **Location**

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## **Center for Applied GIScience (CAGIS)**

The University of North Carolina  
at Charlotte



**CAGIS**

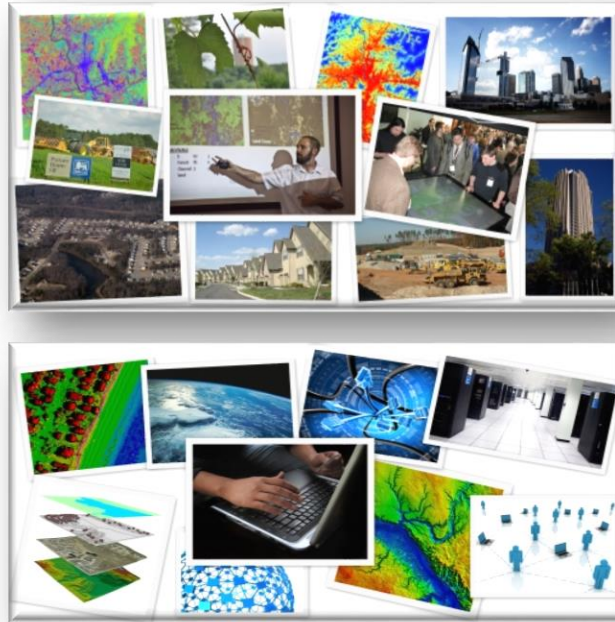
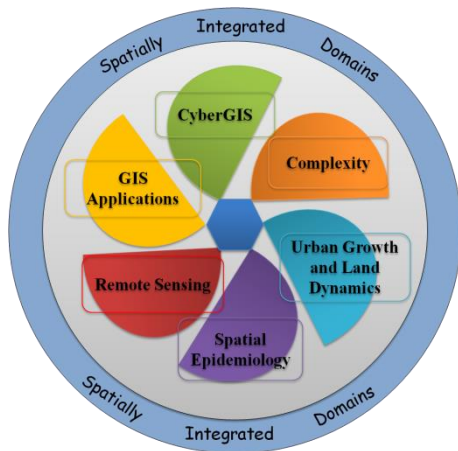
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## Research Themes

Based on the **synergistic coupling of spatiotemporal and computational thinking**, major research themes of CAGIS consist of:

- **CyberGIS** for large-scale geographical problem-solving
- Land use/cover change and **sustainability** study
- Complexity theory and geospatial modeling
- **Big data** and space-time analytics
- Remote sensing, sensor networks, and volunteered geographic information
- Computational intelligence for **geocomputational modeling**
- Cartography and geovisualization driven by Internet
- **Open-source GIS**



CAGIS has unique strength in cutting-edge GIScience technologies and has intensive interest in their applications in alternative **spatially integrated domains**, including

- Environmental studies
- Ecology
- Earth science
- Hydrology
- Public health and environmental health
- Social science
- Transportation
- Urban regional analysis and policies.

## International Laboratories

Partnered with International Cartographic Association (ICA) and the Open Source Geospatial Foundation (OSGeo), and NVIDIA, CAGIS has two **international laboratories**:

- Open Source Geospatial Laboratory
- GPU Research Center



## Computing Resources

- High-performance computing cluster: **JADE** (desktop grid), **Sapphire** (desktop grid; Windows cluster; 120 CPUs)
- Large-memory workstation: **Diamond** (256G memory; Windows)
- Many-core GPUs
  - 1 NVIDIA Tesla K40 (2880 cores)
  - 1 NVIDIA Tesla K20 (2496 cores)
- 15 TB backed network storage space
- 16 lab workstations
- 70" flat LCD screen
- Access to advanced **supercomputing** resources from:
  - US NSF XSEDE
  - US DOE Open Science Grid
  - RENCI