

(Open) GIS for the Developing World

Dr. Joseph Holler, josephh@middlebury.edu

Mon	11:15-12:05	class	in 219
	1:30-4:15	lab	in 317
Wed	11:15-12:05	class	in 219
Thu	10:45-12:15	office	in 324
Fri	9:30-11:00	office	in 324
	11:15-12:05	class	in 219

Description:

In this course we will explore the opportunities and challenges of using geographic information systems (GIS) to study population and environmental change in least developed countries. We will learn techniques to overcome the digital divide in countries with scarce data and low technological capacity, drawing on examples from Africa. In labs and independent projects, we will use open source software and data, learn how to control for data errors and quality, digitize and classify satellite images, analyze change over time, and practice participatory GIS. Throughout the course, we will critically reflect on how GIS affects our understanding of, and conditions in, the environment and society.

Objectives:

- Survey applications, opportunities and challenges of using open GIS in developing countries.
- Acquire geospatial data from free and open sources, assess its accuracy, and prepare it for research.
- Analyze change in human population and physical landscapes using open-source software. Methods will include use of databases, vector data, and raster data.
- Critically assess the contributions, shortcomings, and potential impacts of using geographic information systems to research social and environmental change in developing countries.
- Communicate research effectively in multiple forms and media, including proposals, presentations, tables and cartographic figures, and final reports.
- Gain competency and confidence in conducting research, learning new methods, and overcoming data and processing errors.

Expectations:

- I expect the class to actively participate and to minimize distractions during class meetings. Diversity of interests, experiences, identities, and academic strengths is welcome.
- Successful learning will be expected and supported. If you require accommodations for learning-related disabilities, communicate with myself and ADA Coordinator Jodi Litchfield (litchfie@middlebury.edu) as soon as possible. This will be confidential.

Evaluation:

- Assignments and Labs: 30%
- Individual Projects: 70%
 1. Corrected Population: 10%
 2. Population Change: 10%
 3. Research Proposal: 10%

4. Land Cover Change: 20%
5. Report & Presentation: 20%

Temporal Flow:

- *Monday 9:00:* Pre-lab assignment due on Moodle, preparing you with the concepts and methods required for the week's discussions and lab practical.
- *Monday 11:15:* Class discussion builds on and transfers the pre-lab concepts to prepare for lab.
- *Monday 1:30:* Lab time is used to implement problem solutions while interacting with peers and the instructor.
- *Wednesday 9:00:* Results from the lab assignment due in Moodle.
- *Wednesday 11:15:* Class discussion begins with workshop to resolve problems, increase efficiency, and critique methods from lab. Further discussion extends and applies methods to new problems and domains, including applications for student projects.
- *Friday 11:15:* Class discussions will focus on theory and context of using GIS for sustainable development. Reading will be given in advance of discussion.

Anticipated Schedule:

Week	Theme & Goals	Project
Week 1 Feb 9 th	GIS and Sustainable Development: thematic maps in QGIS	
Week 2 Feb 16 th	Finding & documenting vector data	
Week 3 Feb 23 rd	Assessing & correcting attribute errors	
Week 4 Mar 2 nd	Assessing & correcting spatial errors	Part 1
Week 5 Mar 9 th	Analyzing population change	
Week 6 Mar 16 th	Finding & documenting remote sensing data	Part 2
spring break		
Week 7 Mar 30 th	Land Cover Classification	
Week 8 Apr 6 th	Research Proposal / Land Cover Change Analysis	Part 3
Week 9 Apr 13 th	Political Ecology of GIS	
Week 10 Apr 20 th	AAG Meeting / Open GIS in Development & Conservation	
Week 11 Apr 27 th	GIS Research Ethics / Complete Individual Projects	Part 4
Week 12 May 4 th	Present Individual Projects	Part 5