Socioecological transformations in the Republic of Georgia

Type: Ph.D. project, NASA and ETH funding

Status: In progress

Ph.D. Student: Owen Cortner (EPL)

Supervisor: Rachael Garrett (EPL)

Co-supervisor: Pontus Olofsson (Boston University)

- **Land Cover and Land Use Change** are modifications to the types of vegetation (e.g. trees, pastures) and human designations (e.g. conservation, grazing) of land areas. These changes have implications for biodiversity, carbon, and livelihoods.
- **Georgia,** which contains large parts of the **Caucasus biome**, is heavily forested and contains high levels of biodiversity and endemism. Like other temperate mountainous regions around the world, Georgia faces the dual pressures of climate change and globalization on a backdrop of rapid political change.

Goal: This research aims to answer how Georgia's modern history has impacted land use patterns and carbon dynamics, what future patterns are expected, and how future policy can be shaped to aid environmental and development goals.

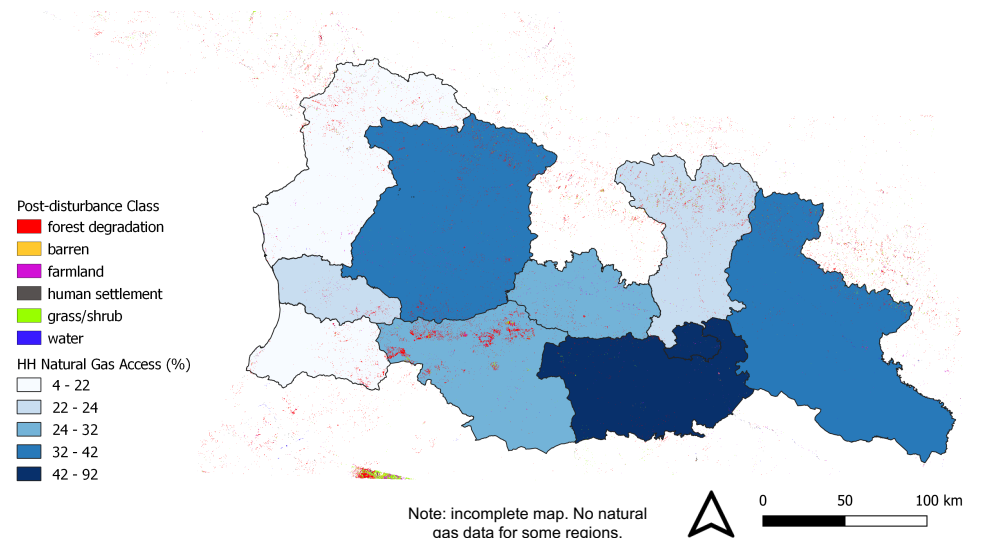Figure 1 – Landscape mosaic, Borjomi 2018

Figure 2 – Forest disturbance 1991-2018 and Natural Gas Access 2011

- To answer these questions, this project will use map products from our remote sensing collaborators at Boston University, census data from the Georgian government, and field interviews with forest communities, farmers, and policymakers.

- **Paper 1** will explore how human forest use influences forest degradation and investigate the underlying drivers of forest use.
- **Paper 2** will investigate which drivers have been most limiting to agricultural development and what effects future agricultural trajectories may have on carbon dynamics and biodiversity.
- **Paper 3** will investigate the evolution of institutional arrangements since the end of the Soviet Union and the impact on agriculture and forests. Institutional analysis will focus on the interconnected roles of land tenure, markets, and credit.