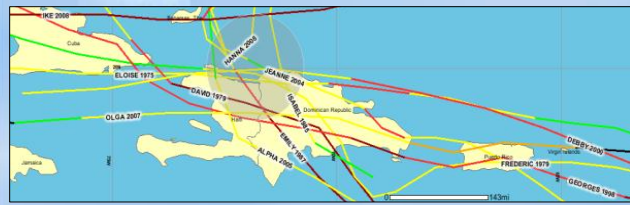
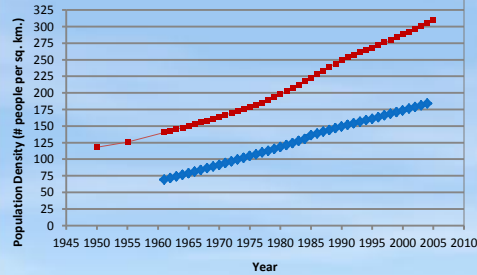


Haiti and the Dominican Republic: Shared Island, Same Tropical Storms, Similar Consequences?

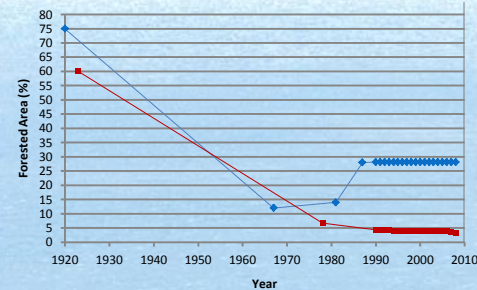
Tropical Storm and Hurricane paths through Hispaniola: 1963-2008; Source: National Hurricane Center



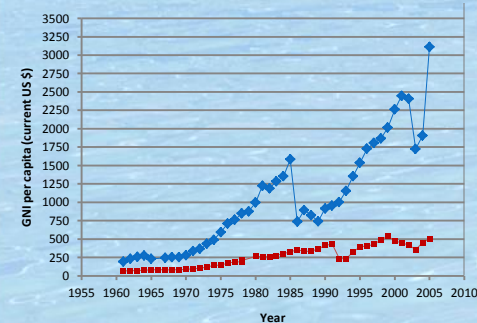
Population Density



Forested Land Area



GNI per capita



Honors Thesis: Michelle McSweeney Mentor: Dr. Claire Pavlik, Geography

Hispaniola: Similarities and Differences

Haiti and the Dominican Republic share characteristics that influence the vulnerability to tropical storm impacts:

- **Tropical Storm risk:** tropical climate; location in northern Caribbean region; commonly affected by tropical storms
- **Physical geography:** rugged mountains, low coastal areas; high potential for runoff and flooding
- **Offshore bathymetry:** sea floor depth variation, which influences storm surge level
- **Population size:** similar populations are at risk (2009)

Haiti and the Dominican Republic also have significant differences influencing the severity of storm impacts:

	HAITI	DOMINICAN REPUBLIC
Population Density (# people per sq. km)	2004: 292.67	2004: 181.23
Forest Area (%)	2008: 3.2%	2008: 28.14
Urban Population (%)	2008: 47%	2008: 69.1%
Labor in Agriculture (%)	2000: 66%	2005: 14.5%
GNI per capita (current USD)	2008: 1,180	2008: 7,890

- **Population:** population density; higher population density poses higher risk to more human lives.
- **Deforestation:** loss of land cover increases speed of runoff and risk for flash flooding.
- **Economic Diversification:** level of urbanization, labor in agricultural sector and GNI per capita, where better diversification of the economy is related to higher levels of urbanization and GNI per capita, and lower labor in agriculture; reduces dependence on land and increases quality of infrastructure that can withstand tropical storm events.

Paired Case Study Approach

- Which storms affected both countries?
- How severe were the storm impacts for each country?
- What factors help explain deaths and storm damage?

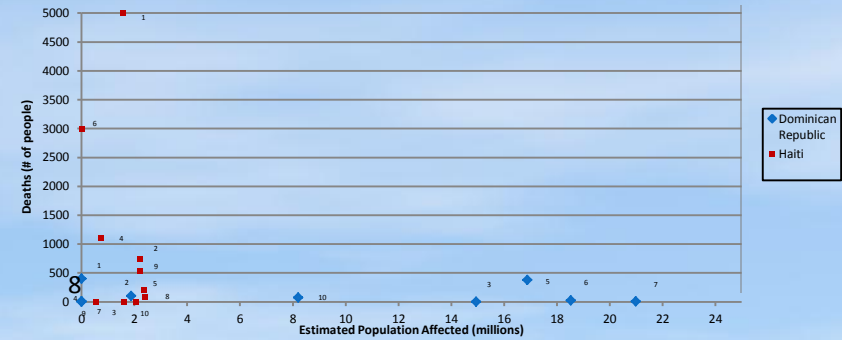
Research Questions

- Are impacts of tropical storms in Haiti and the Dominican Republic similar?
- Can the amount of population at risk in the storm's path and land and near shore terrain variation help explain differences?

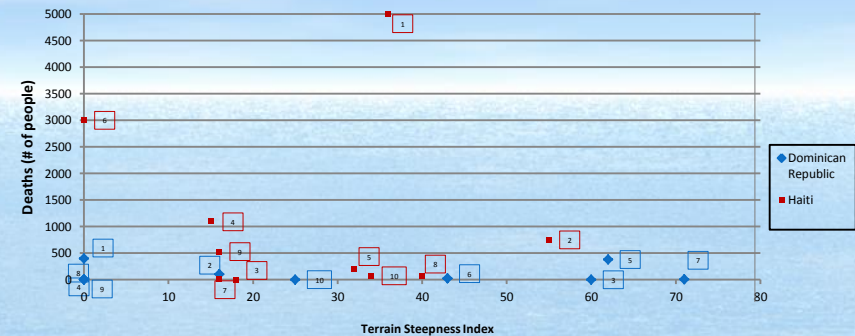
Methodology

- **Identified 10 severe tropical storm events affecting both Haiti and the Dominican Republic:** established storm category, deaths, property damage
- **Inventoried landscapes adjacent to storm paths:** terrain, drainage, estimated population at risk
- **Compared storm impact data:** controlling for populations at risk, storm severity, terrain, and drainage

Storm deaths vs. estimated population affected



Deaths from storm vs. terrain steepness



Major Results

- Evidence does not support the fact that similar physical and geographic natural factors between the Dominican Republic and Haiti, correspond to similarities in severity of storm impacts.
- The risks posed by natural factors do not follow expected trends. It is these factors which are similar between Haiti and the Dominican Republic, however resulting storm impacts and degree of impact severity are not.
- Differences in social and economic factors between Haiti and the Dominican Republic correspond to differences in impact severity between the two countries.
- Haiti has higher population density than the Dominican Republic, making tropical storms and their paths much more dangerous to a higher proportion of people. This has resulted in overall higher deaths from tropical storms in Haiti than in the Dominican Republic
- Haiti also has a very small percentage of forest cover remaining due to deforestation practices, and this lack of land cover increases the severity of flash flooding and mudslides that contribute largely to the population killed from storms.
- Finally, the lower level of economic development in Haiti, such as a much lower GNI per capita, means that infrastructure, homes and buildings are poorly built and cannot protect people from tropical storms as well as in the Dominican Republic, where capital resources are much higher.
- Therefore, the fact that Haiti and the Dominican Republic share an island and similar characteristics, consequences to severe tropical storms are extremely different.

Selected Sources

- Complete overview of the history, economy, people and government of Haiti and the Dominican Republic: *Commonwealth of Caribbean Islands: A Regional Study*. 1987. Library of Congress: Federal Research Division
- Aerial photographs of Hispaniola topography and land cover, as well as news reports on tropical storm events: *NASA: Earth Observatory*
- Data source for tropical storm formation and storm tracks: *National Hurricane Center*
- Tropical storm reports on characteristics and impacts of specific storms: *National Oceanic and Atmospheric Administration*
- Data source for statistics regarding total population change, urban population change, forest area change, and GNI per capita change over time (particularly 1950-2008): *United Nations Food and Agriculture Organization*