

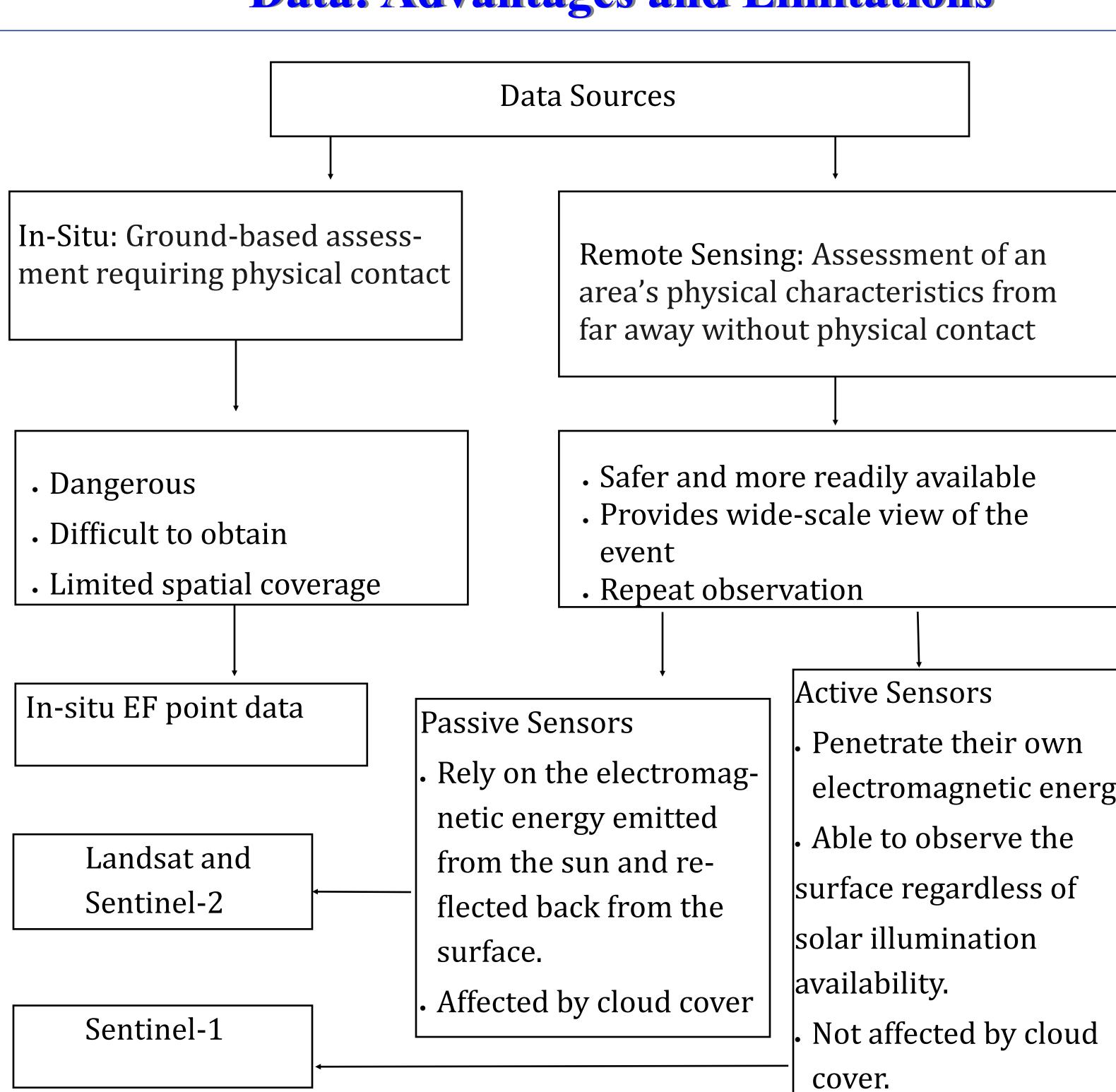
For this research project, geospatial analysis will be utilized to study tornado outbreaks in Alabama, and to analyze that as well. This project is significant because these tornado outbreaks resulted in many deaths and lots of devastation in the region. By studying these tornadoes closely, a better understanding of the tornado events will be developed. The goal of the study is to compare the relationship of elevation to the severity of the tornadoes (EF Scale) as well as look into how surface modification has amplified the effect of the tornadoes (EF Scale) as well as look into how surface modification has amplified the effect of the tornadoes (EF Scale) as well as look into how surface modification has amplified the effect of the tornadoes (EF Scale) as well as look into how surface modification has amplified the effect of the tornadoes (EF Scale) as well as look into how surface modification has amplified the effect of the tornadoes (EF Scale) as well as look into how surface modification has amplified the effect of the tornadoes (EF Scale) as well as look into how surface modification has a mode to the tornadoes (EF Scale) as well as look into how surface modification has a mode to the tornadoes (EF Scale) as well as look into how surface modification to the tornadoes (EF Scale) as well as look into how surface modification has a mode to the tornadoes (EF Scale) as well as look into how surface modification has a mode to the tornadoes (EF Scale) as well as look into how surface modification has a mode to the tornadoes (EF Scale) as well as look into how surface modification has a mode to the tornadoes (EF Scale) as well as look into how surface mode to the tornadoes (EF Scale) as well as look into how surface mode to the tornadoes (EF Scale) as well as look into how surface to the tornadoes (EF Scale) as well as look into how surface to the tornadoes (EF Scale) as well as look into how surface to the tornadoes (EF Scale) as well as look into how surface to the tornadoes (EF Scale) as well as look into how surface to the tornadoes (EF Scale) as well as look into how surface to the tornadoes (EF Scale) as well as look into how surface to the tornadoes (EF Scale) as well as look into how surface to the tornadoes (EF Scale) as well as look into how surface to the tornadoes (EF Scale) as well as look into how surface to the tornadoes (EF Scale) as well as look over time, taking land surface changes, elevation, and EF values into consideration to better understand the relation to better understand the relation between them. In terms of the time series analysis, I will look into major tornado outbreaks that affected the study sites from 1974-2020. All of this will be accomplished using ArcMap, Google Earth Engine, and other programs/tools. Relevant datasets are coming from LANDSAT, Sentinel 1 and 2, Digital Elevation Model (DEM), and from other relevant sources.

# Background

- . Dixie Alley is an area in the US that has a high frequency of strong, long-track tor does that move at high speeds (Bradburn 2016).
- The heart of Dixie Alley is the state of Alabama, which experiences leading with state of Oklahoma in terms of the highest number of EF5 tornadoes with eight since 1950 (Kazek 2015).
- . Given the severity of the tornadoes in the state, it would be helpful to analyze th tornado tracks, their impact, and factors that affect their severity more closely.
- In this study, that will be accomplished primarily using data acquired through a combination of remote sensing and geospatial technologies.

### **Objective**

The objectives of the study are to 1) map the damage extent, 2) compare land cover change to damage intensity, and 3) compare elevation to damage intensity.



# **Data: Advantages and Limitations**

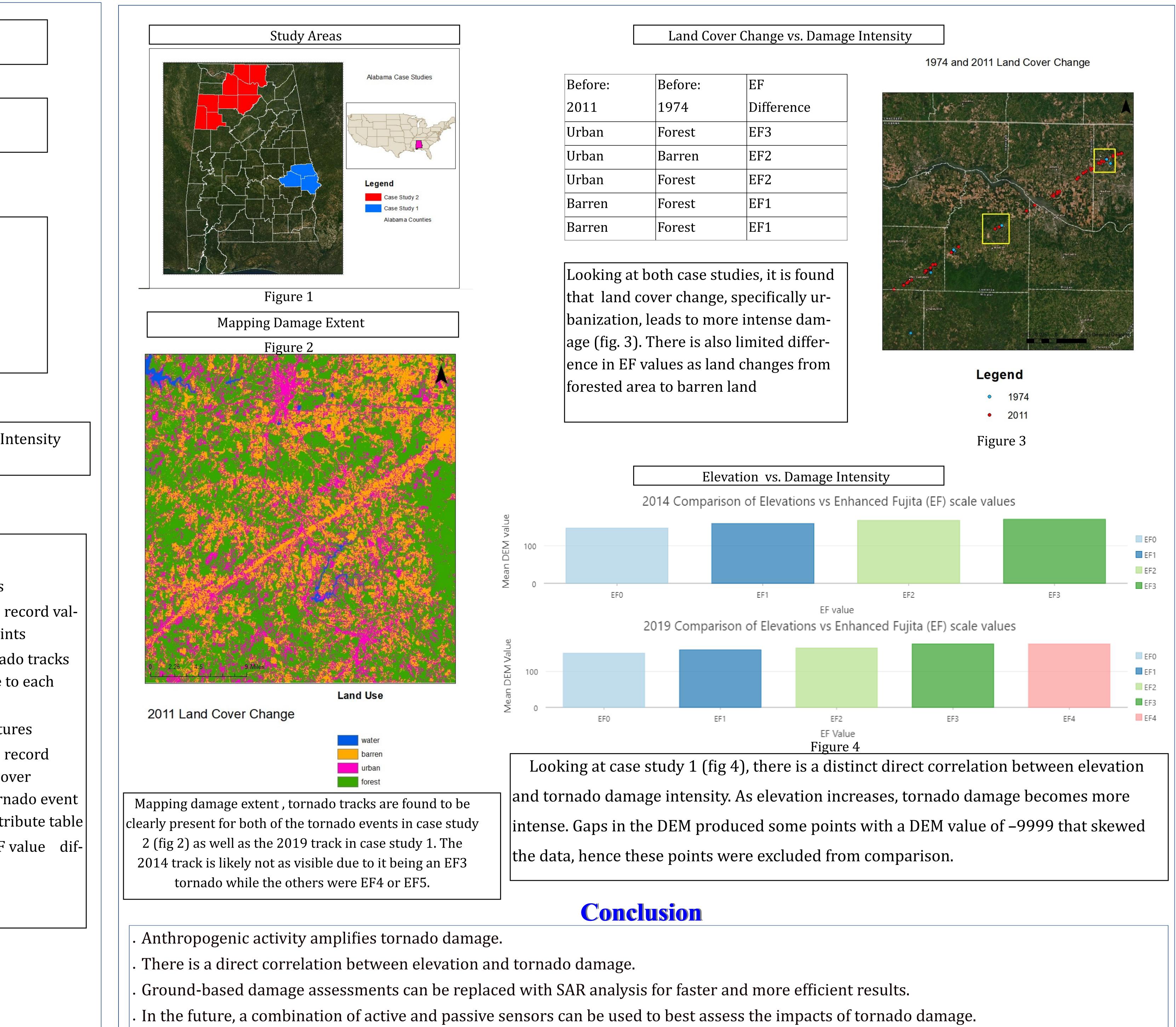
# Analysis of Tornado Events in Alabama Using Geospatial Techniques: Impacts and Aggravating Factors

Met	hod

SAR Analysis Workflow
Pre-Processing: Sentinel-1
<ul> <li>Sentinel Application Platform (SNAP)</li> <li>Coregistration</li> <li>Interferogram generation</li> <li>Debursting</li> <li>Merge</li> </ul>
Land Cover Change vs. Damage I Workflow
<ul> <li>ArcMap 10.7.1</li> <li>Assign values to classifications</li> <li>Extract multi-value to point to</li> </ul>
ues in attribute table of EF poi Identify EF points from 2 torna
in the same area that are close other or overlap
<ul> <li>Create layer from selected feat</li> <li>Extract multi-value to point to</li> </ul>
values of EF points and land control classification values before tor
for both tracks on the same att • Use raster calculator to find EF
ference

Navya Kolli and Esayas Gebremichael

### Abstract





### Result