TORNADOS ANALYSIS

The years 2008-2012 saw the highest insured losses from tornados in history. For example, in 2011 tornados in Joplin MO and Tuscaloosa AL saw a payout of $26 billion in insurance claims. The Storm Prediction Center (SPC) at the National Ocean and Atmospheric Administration (NOAA) maintains data on all reported tornados in the United States with the goal of understanding tornado frequency and intensity over space and time.

The SPC rates tornado damage done to human-built structures and vegetation according to the Fujita scale (F-scale). The F-scale of a tornado is an integer value between 0 and 5 where 5 corresponds to massive damage and 0 corresponds to minimal damage. The F-scale of a tornado is subjectively determined by meteorologists and engineers but recent work has focused on developing an objective formula (method) for determining a tornado F-scale. An appropriate objective classification is one that adheres to past F-scale classification (i.e. is built from past data). An objective damage classification will allow more consistent classification of tornado damage and facilitate tornado research.

The Tornodos dataset contains information on reported tornados in 2012 and a list of variables included in the dataset is provided in the Table below. The goal here is to use past F-scale categories to devise an objective tornados classification scheme. Beware of repeated observations.

Variable	Description
Number	SPC Tornado Number
Year	Year
Month	Numeric Month Value
Day	Day of the Month
Date	Full date of Tornado
Time	Time Tornado First Reported
State	Two letter state Acronym
Fscale	Fujita Scale
Loss	Rounded (3 significant figures) Total Dollar Property Loss (in millions)
CropLoss	Rounded Total Dollar Crop Loss (in millions)
StartLat	Starting Latitude in Degrees
StartLon	Starting Longitude in Degrees
EndLat	End Latitude in Degrees
EndLon	End Longitude in Degrees
Length	Length of impact (in miles)
Width	Width of impact (in yards)