Background
Since the capture of over 200 Nigerian girls on April 15, 2014, by the terrorist organization known as Boko Haram, the world's attention has been focused on the densely populated and ethnically divided nation of Nigeria. A group that was once claimed to be defeated by Nigerian forces in 2009 after the death of its original leader Mohammed Yusuf, Boko Haram appears to be on the rise again, with rising attacks and civilian deaths under its new leadership of Abubakar Shekau. Though the media highlights this group as a more Islamist militant group looking to take advantage of the waning monopoly of force by Nigerian government forces, the reality is far more complex. Dramatic climatic changes in northern Nigeria coupled with an oil resource conflict in the Niger Delta makes Nigeria an interesting case example for conflict analysis.

The encroaching Sahara desert and diminished rain fall in northern Nigeria appears to be exacerbating tensions in the northern part of the country. Pastoral communities and nomadic herdsmen have been involved in various spats of violence as a result of population migrations from the invading desert. Though the only source of conflict in the country, it provides a window into the various complex dynamics that shape conflict in Nigeria.

Methods
Step 1: Mapped conflict points from 1997-2014 to highlight all conflict and casualties associated with Nigeria during this time period.
Step 2: Conducted hot spot density analysis to smooth out point data and determine areas of intense conflict.
Step 3: Conducted hot spot / point density analysis for 2006-2014. Dates were chosen to coincide with the formation of MEND (Movement for the Emancipation of the Niger Delta) and Boko Haram.
Step 5: Conducted a "change over time" analysis of precipitation data from 2001-2014 utilizing the same steps mentioned above.
Step 6: Conducted a spatial join and utilized dissolve tool to pair ACLED conflict data points and the GADM administrative boundaries. The purpose of this was to aggregate fatalities per state in Nigeria.
Step 7: Transferred data layers to Arcscene to create a 3D model utilizing extrusion to create 3D effect
Step 8: Plotted facilities and locations associated with petroleum/gas/oil and MEND conflict data points to highlight proximity of conflict to energy and economic resources.

Results
The "change over time" analysis of conflict points between the periods 1997-2005 and 2006-2014 highlight a dramatic increase in conflict events throughout the southern and northern portions of Nigeria. This dramatic increase in conflict and violence coincides roughly around the founding of Boko Haram (2002) and the alliance that created MEND(2005).

Between 1997 and 2005, conflict was largely confined to the Niger Delta region. After 2006, conflict rapidly spread to the northern states of Yorbe and Borno. MEND operates primarily in the Niger Delta region in southern Nigeria, and though it represents one of the two largest armed groups in Nigeria, its attacks have resulted in far less violence when compared with Boko–Haram. MEND's operations have increased since 2006 and it operates primarily around Nigeria's oil infrastructure, highlighting oil as potential conflict resource.

Boko–Haram operates primarily in the north in the states of Yorbe and Borno, the most violent regions of Nigeria. The analysis of ACLED conflict data shows that Boko–Haram is by far the most violent organization in Nigeria. Boko Haram's most violent years in Nigeria occur after 2009, coinciding with a leadership change.

Climate change in northern Nigeria may also be exacerbating violence and tension in the region. As the data highlights, over the last decade the state of Borno has experienced a rapid decline in precipitation. The encroaching desert from the north has caused mass migrations onto pastoral communities, and has resulted in increased tension and violence. Borno is the most violent state in Nigeria, and has experienced the largest drop in precipitation.

This project highlights that Nigeria is a complex state with rapid changing dynamics that can dramatically increase conflict and violence. A steady drop in precipitation in the north coupled with an oil resource conflict in the south has shown dramatic increases in conflict and violence throughout the country. What this study fails to show is why there is a large discrepancy in level of violence between Boko–Haram and MEND. Boko–Haram has been shown to be far more violent than MEND.

Sources: ACLED; GADM (Global Administrative Areas), Esri World, African Flood and Drought Monitor, Harvard Oil and Gas, AAPG database, Peace Research Institute Oslo
Projection: WGS 1984 UTM Zone 31N
Cartographer: Shawn Snow, April 2015