#SocialQuake

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Introduction

Our research question was how many relevant tweets are needed to successfully sense that an earthquake has occurred? Is this process faster than how quickly scientific organizations release their findings?

Motivation

Earthquakes are a daily occurrence and regardless of strength on the Richter scale, can cause major crises across the globe. In the current media age, when an earthquake hits, many people turn to Twitter to send distress messages, give information about his/her current location, and inform users of the current situation. This social data is essential to collect, as it can be matched with scientific data, and help determine the severity of the earthquake. Scientific sensors can sometimes fail, while social data should be reliable to use as a metric.

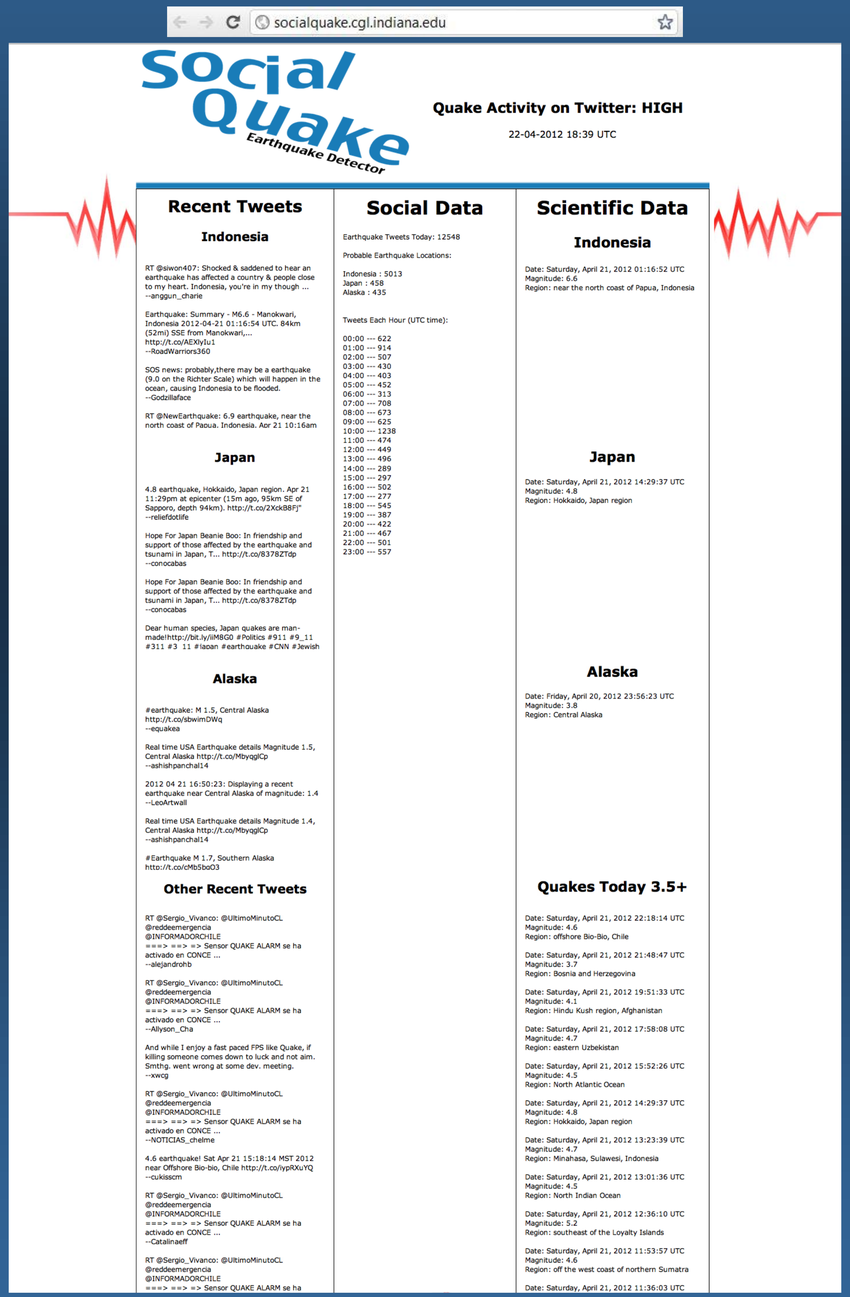
Methods and Data

Methods

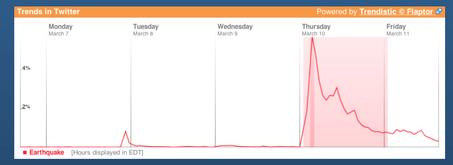
- Tweetstream + Python + PHP
- Gathered common Tweets relating to earthquakes
- Filtered out unrelated earthquake words
- Created a counter to measure the amount of Tweets per hour and per day
- Analyzed tweets to find mentioned location
- Built a scale to define quake activity that is based on a grounded theory approach (Glaser Strauss 1967)

Data

- USGS CSV feed for daily earthquakes 2.5 and higher on the Richter scale
- Twitter for earthquake tweets
- (Past) Social Data
- (Present) Social Data
- Scientific Data



Social Quake Website:4 hours of data were estimated to give a consistent view of a 24 hour day



2011 Japanese Quake: Tweets went from below .01% to a peak of 5.68% within 3 hours

Results

- Ability to determine when and where an earthquake occurs through social data.
- Social data was able to report the location of an earthquake that confirmed scientific data, sometimes before scientific data from USGS was released

Conclusions and Future Work

Conclusions

- Created a functioning website that determines location and time of an earthquake, displays top 3 earthquakes each day, and displays relevant tweets for the data.
- Gathered informational earthquake tweets in one central location

Future Work

- Should look at the correlation between tweet mentions and the magnitude of the earthquake being talked about.
- At what point in strength on the Richter scale do people start to tweet about the earthquake in significant numbers?
- Should we not mention earthquakes in our scientific data if it doesn't meet that threshold?

Reference and Acknowledgements

- USGS.gov for the scientific data
- Trendistic.com for the past data
- Twitter for the social data
- Professor Fox
- Glaser Strauss 1967