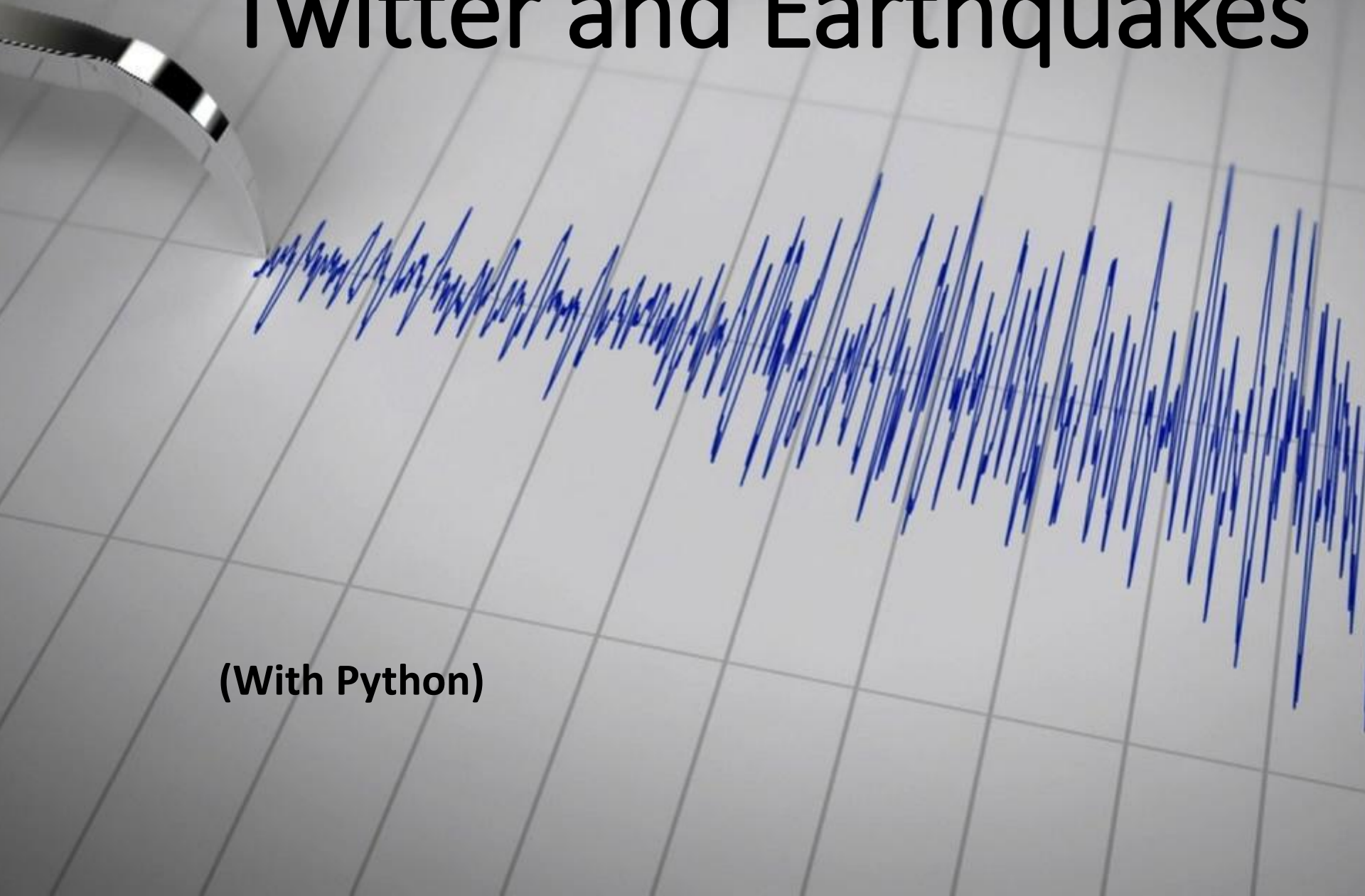
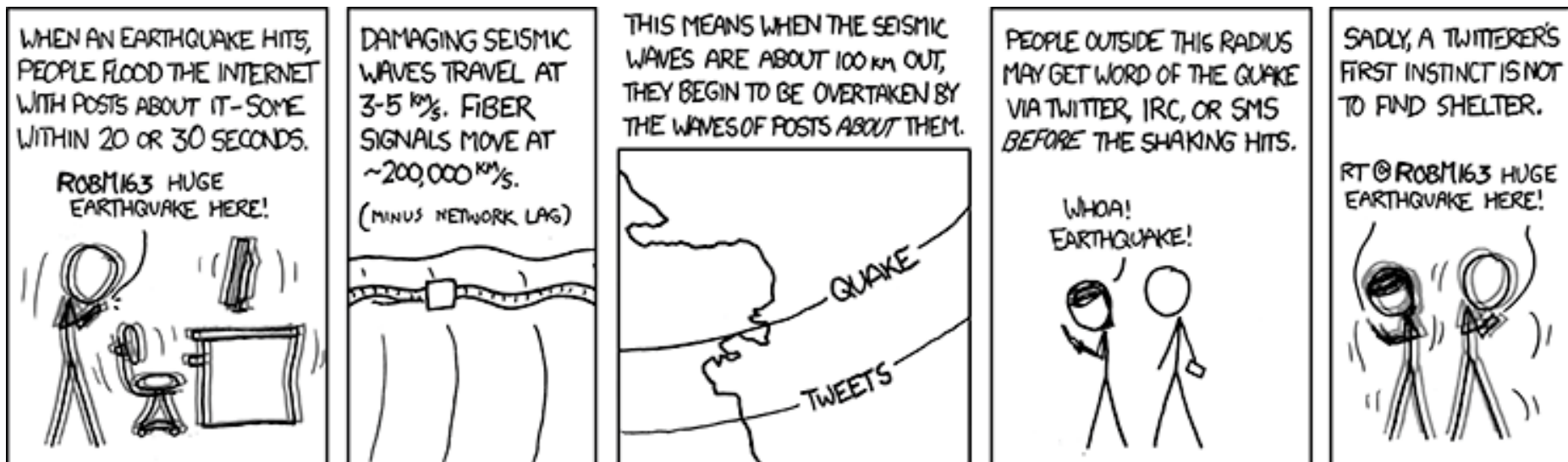


Twitter and Earthquakes

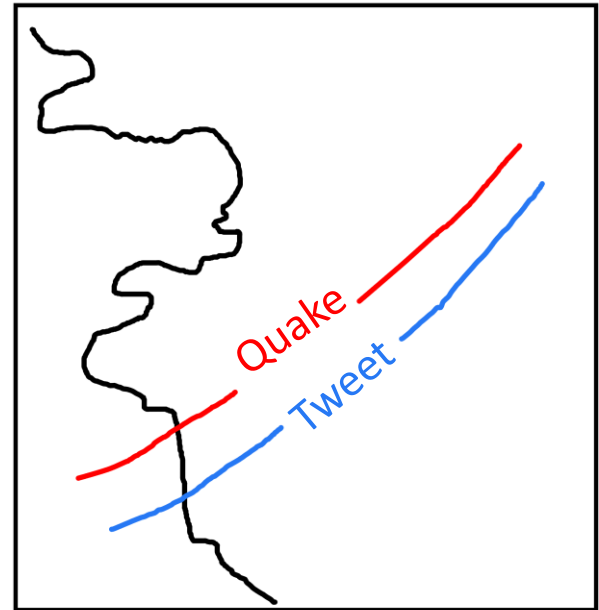
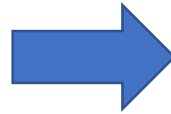
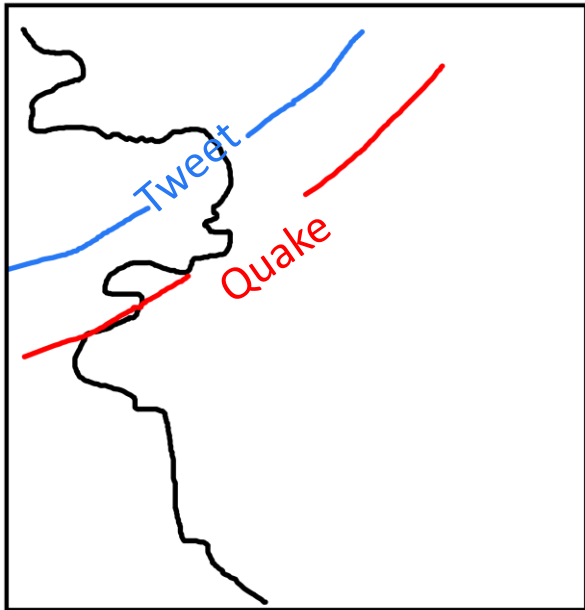
(With Python)



The XKCD webcomic

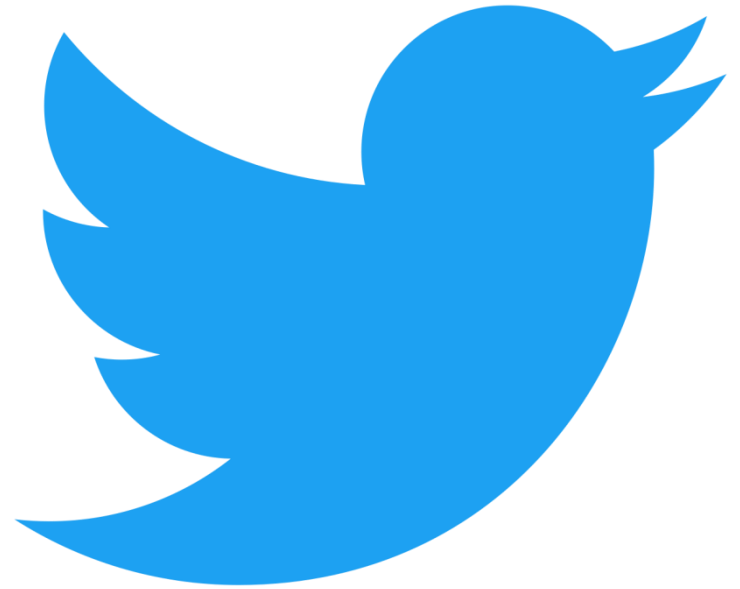


Motivation

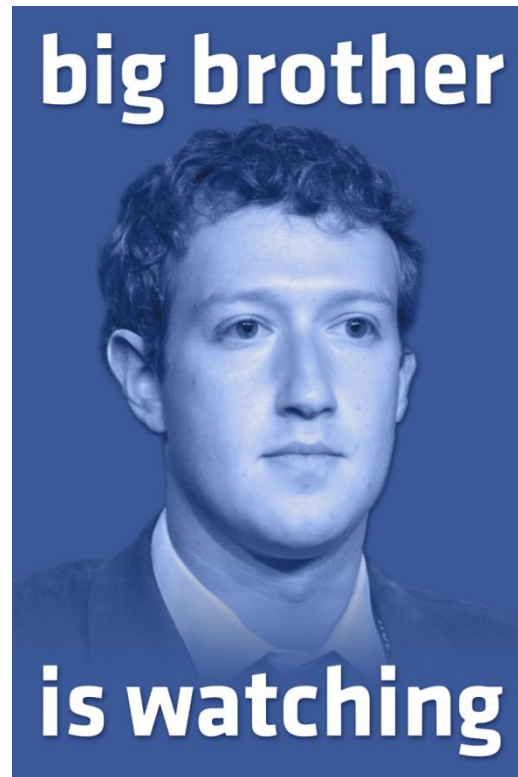


EARTHQUAKE! WHAT TO DO!?

- *Scream*
- *Get safe*
- Tweet
«*earthquake omg*»



Tweets are scary



It is very easy to track your daily life

Oklahoma – 03/09/2016, 6AM

Magnitude 5.8 Earthquake

CNN Weather | EARTHQUAKE

MAGNITUDE 5.6
Depth 6.6 km
74 miles NNE of Oklahoma City
Oklahoma

Salina
St. Louis
Oklahoma City

JUST IN

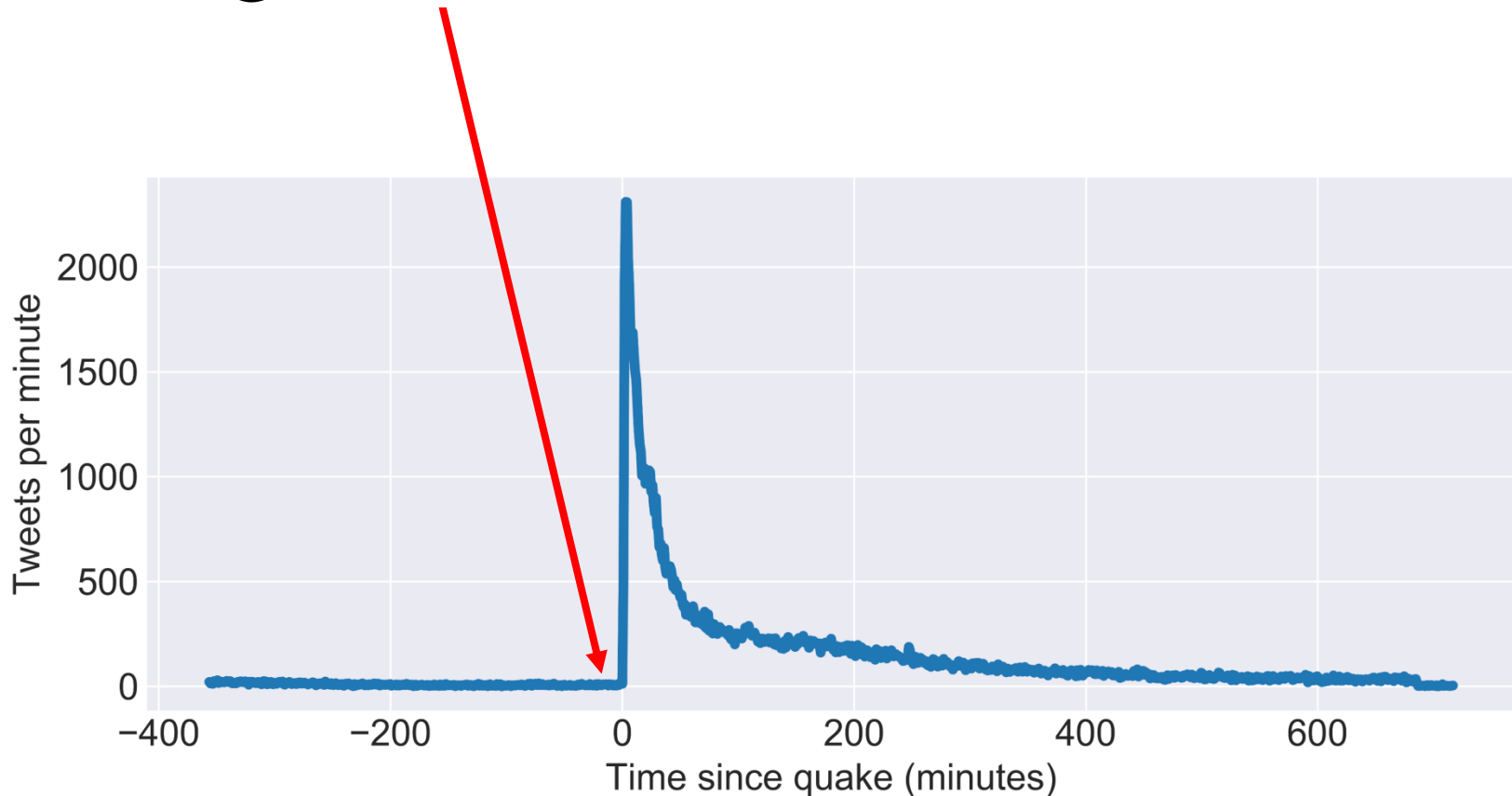
5.6 MAGNITUDE TREMOR HITS OKLAHOMA; FELT IN 7 STATES

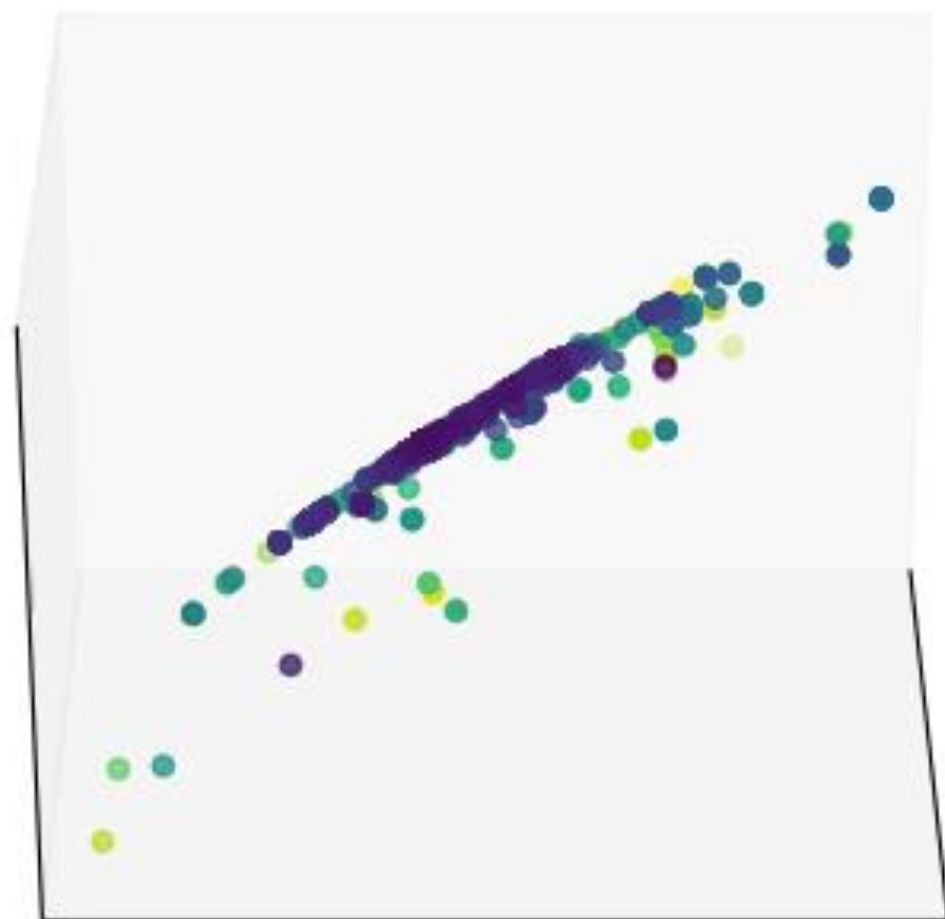
ALL BUSINESS:
THE ESSENTIAL DONALD TRUMP
2 DAYS

CNN
3:54 PM ET

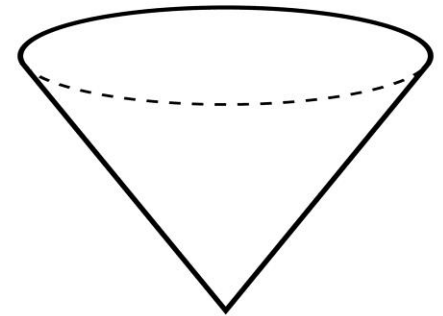
Tweets per minute

I feel invincible earthquake
powerful just like a tidal
wave 🌊





Data fitting



- Assume earthquake travels at constant speed from a point – *a cone*

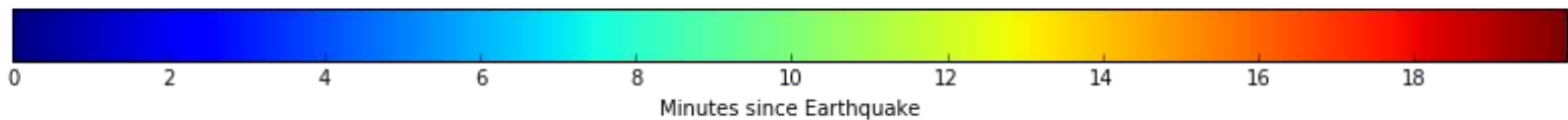
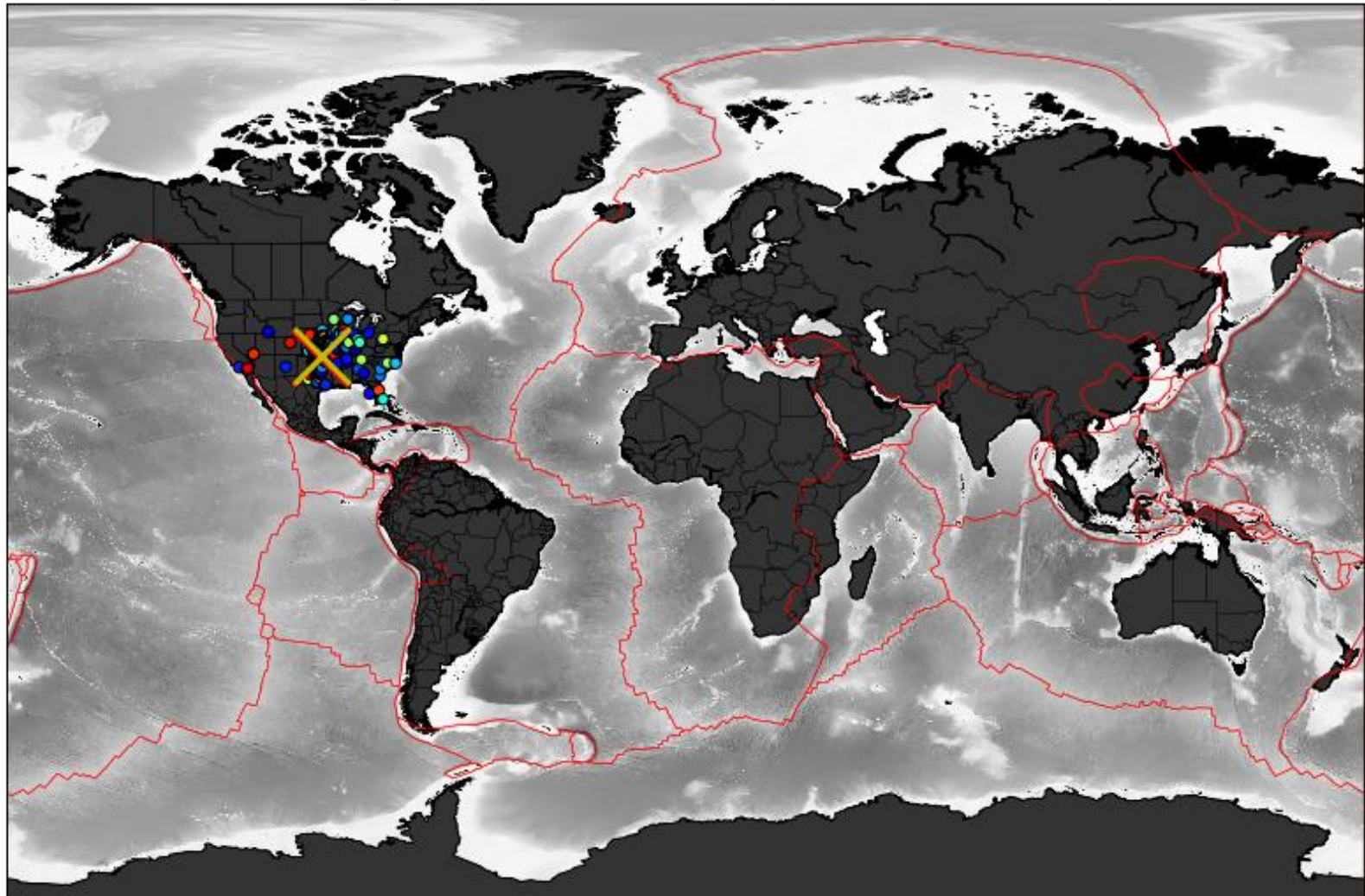
$$time = a\sqrt{(x - x_0)^2 + (y - y_0)^2}$$

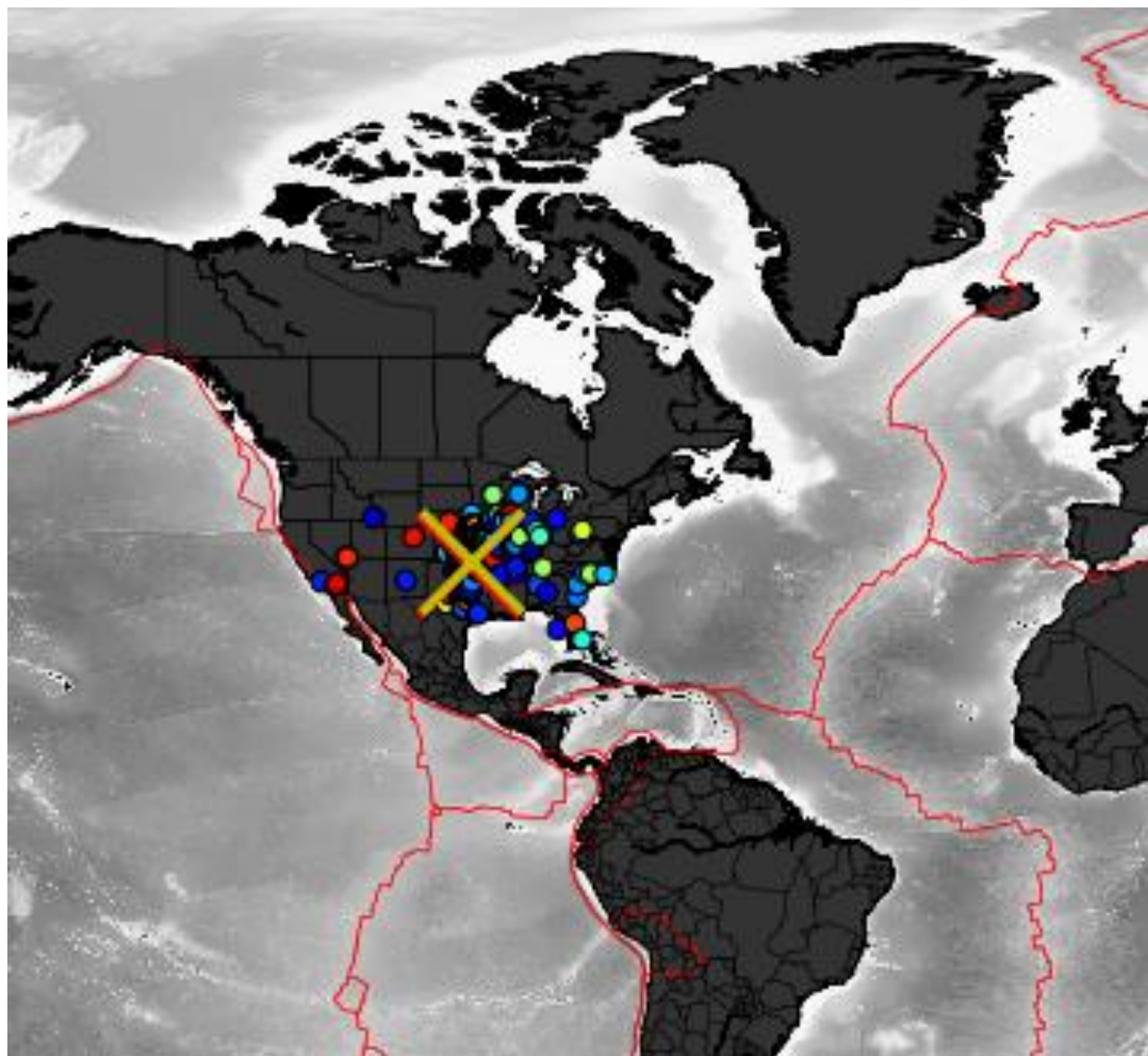
- People take a moment to tweet:

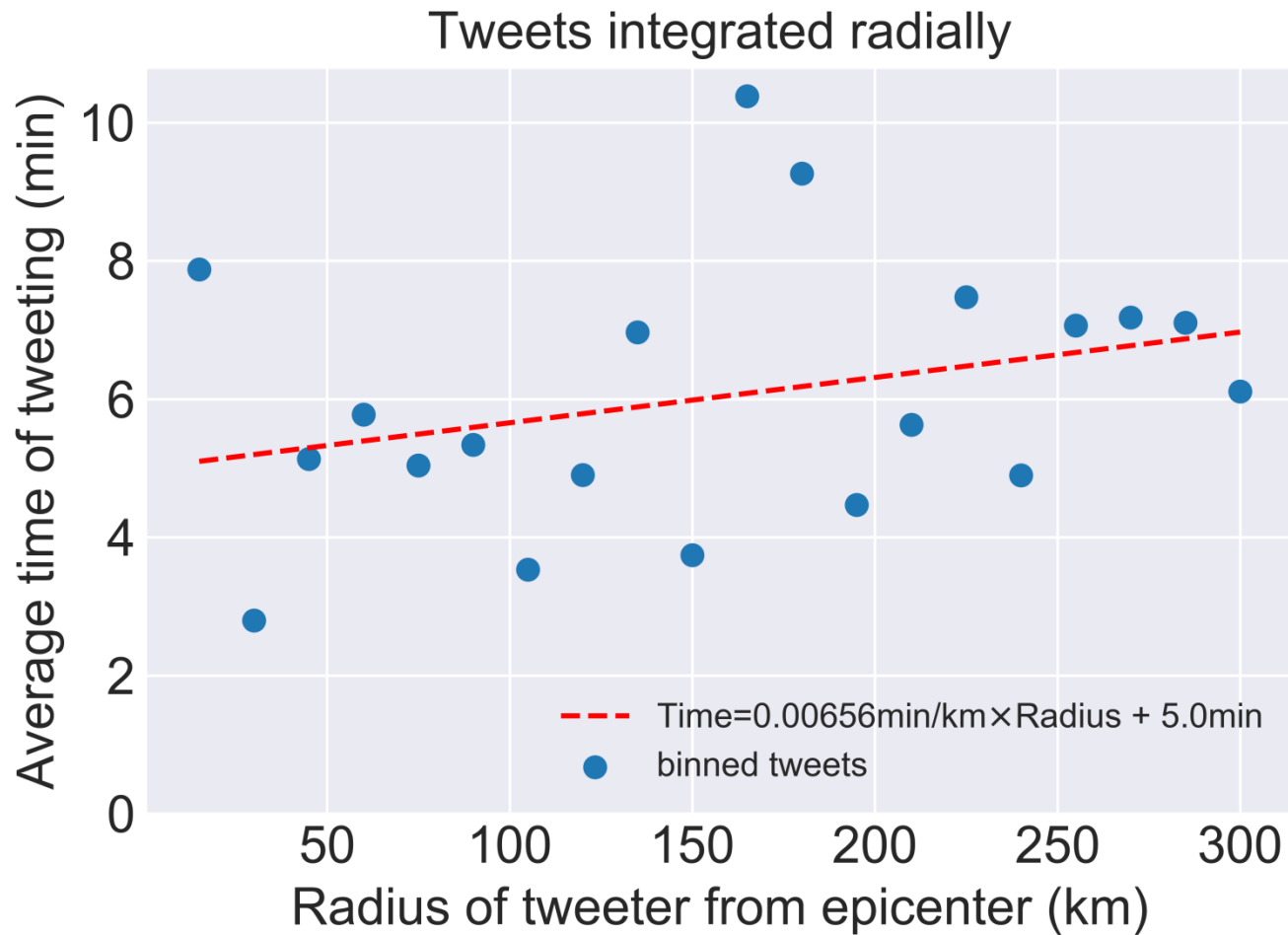
$$time = a\sqrt{(x - x_0)^2 + (y - y_0)^2} + c$$

Found epicenter within 9km

Tweets messaging 'Earthquake' minutes after the September 2016 Oklahoma earthquake



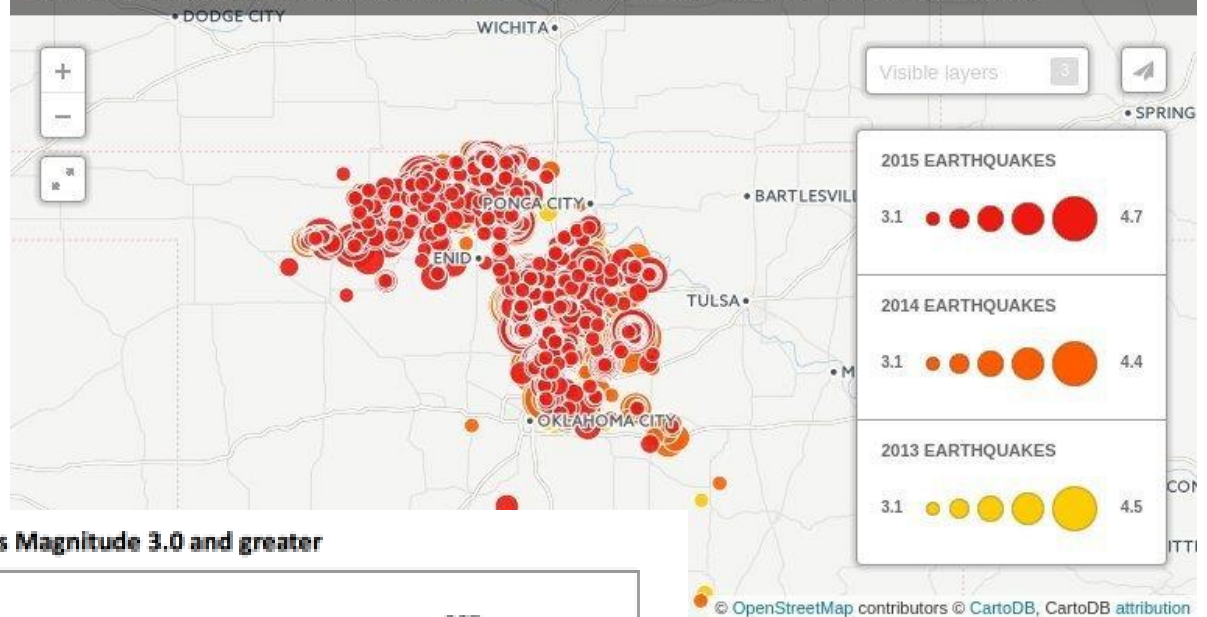




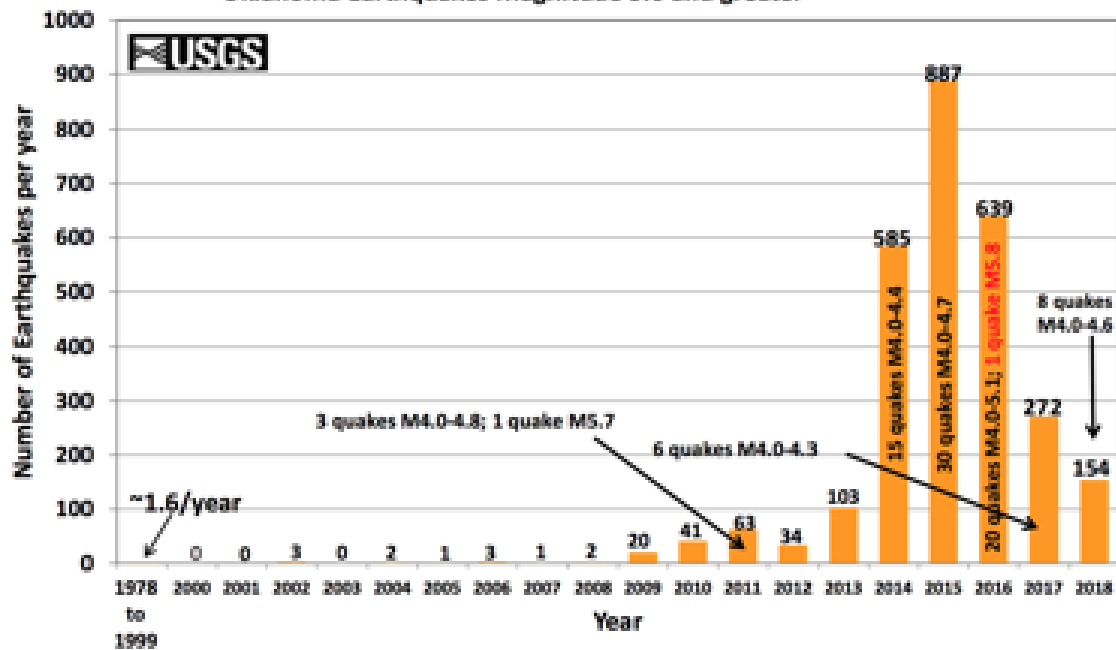
- Earthquake travelled at 2.5km/s
- People take 5 min to tweet

Oklahoma earthquakes: 2013 through 2015


Earthquakes of magnitude three or greater from 2013 through 2015. Data from the Oklahoma Geological Survey.



Oklahoma Earthquakes Magnitude 3.0 and greater



Source: USGS-NEIC ComCat & Oklahoma Geological Survey; Preliminary as of Dec 3, 2018

A photograph showing a multi-story building in the process of collapsing. A large, billowing cloud of dust and debris is rising from the base of the structure. The building's facade is dark and appears to be made of metal or concrete panels. To the right, a tall, modern glass skyscraper stands as a stark contrast. In the foreground, a street sign for 'Saratoga' is visible, tilted at an angle. A semi-transparent rectangular box is overlaid on the center of the image, containing the text 'Can we use this for good?'.

Can we use this for good?

Thanks!

- I welcome ideas for tracking other behaviour!

(work done using jupyter, python-twitter, matplotlib, scipy and hyperspy)