A grayscale satellite image of a city area. Numerous rectangular and irregular shapes, representing buildings and structures, are highlighted in a bright green color. These green shapes are scattered across the image, with some clusters and some isolated. Blue lines are drawn over the image, outlining specific areas or boundaries. A red line forms a circular shape, possibly a roundabout or a specific zone. The background is a grayscale aerial view of the city, showing roads, vegetation, and other urban features.

# Masking changes in land cover in multi-resolution satellite images

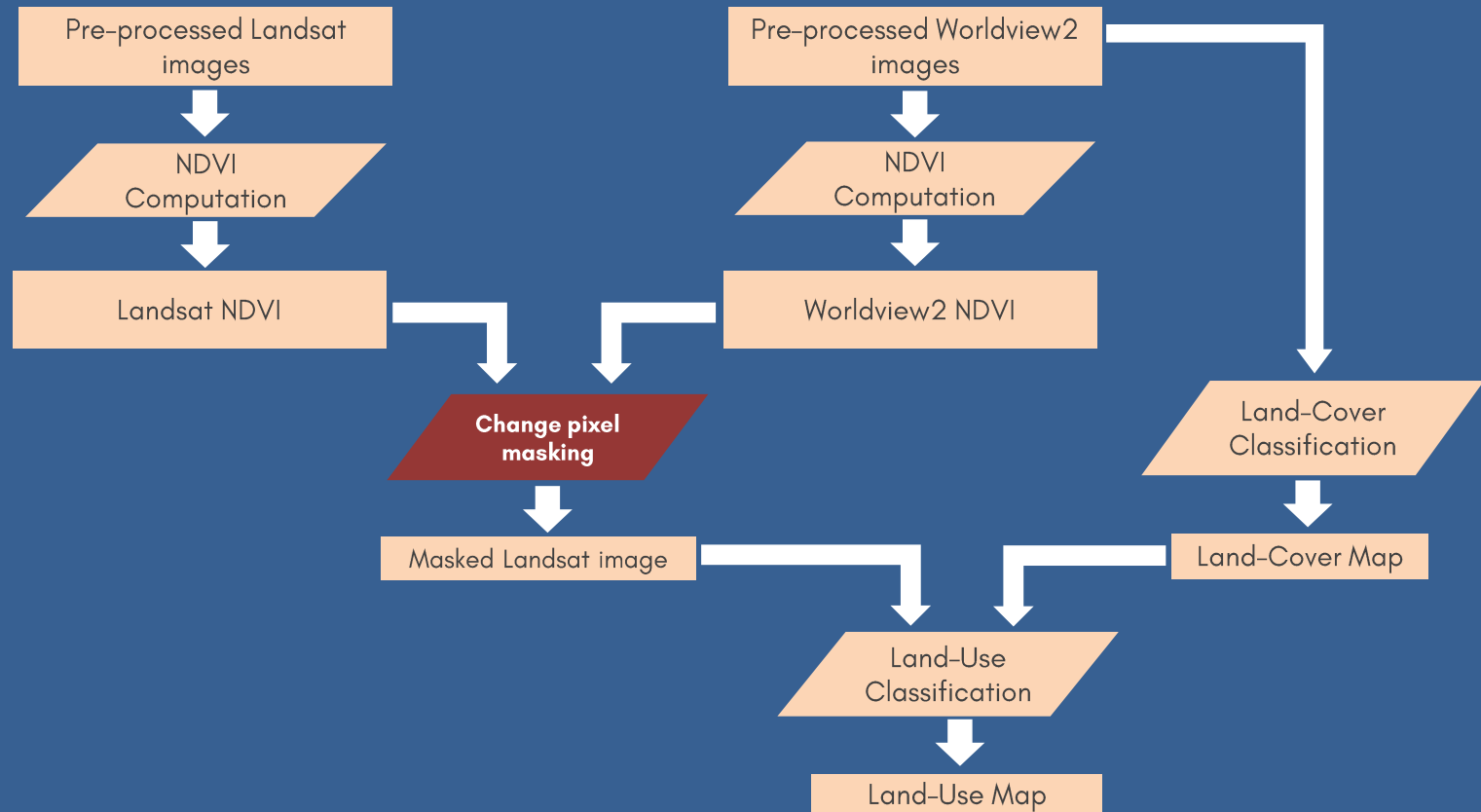
Presenter: **Gab Torres**

Github id: <https://github.com/tropicalmentat>

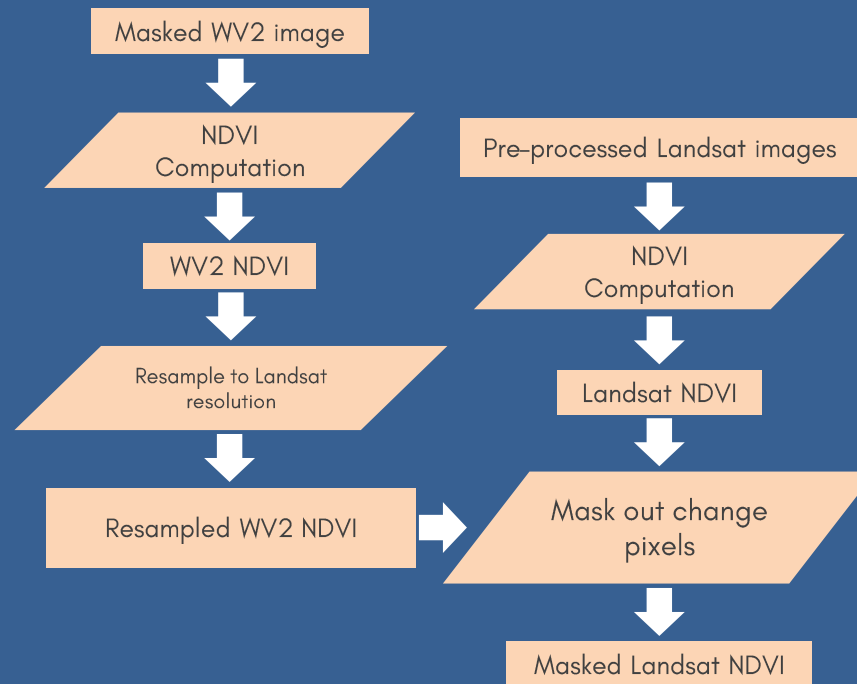
Master of Science in Geography | UP Diliman

Remote Sensing and Geographic Information Systems  
Technologist | Manila Observatory, Ateneo de Manila

# General Work-Flow



# NDVI Computation and Change Pixel Masking



NDVI:  
**N**ormalized  
**D**ifference  
**V**egetation  
**I**ndex

# Inputs

## Worldview2

Panchromatic resolution: 0.46m

4 standard multispectral bands (red, green, blue, near infrared)

## Landsat 8

Multispectral resolution: 30m

8 multispectral bands

For NDVI computation, I am only interested in bands 3 and 4 of both sensors!

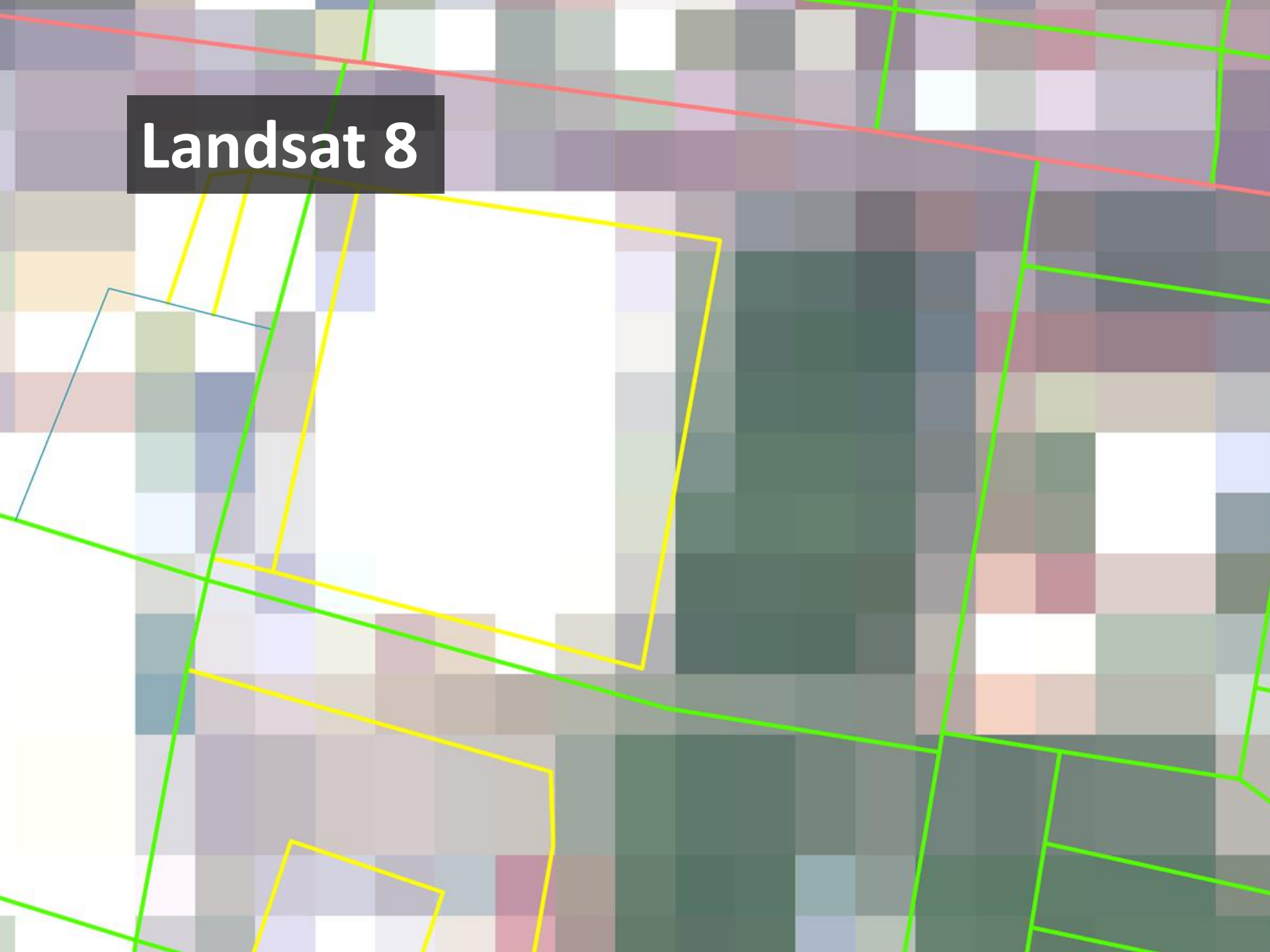


Worldview2





**Landsat 8**



**Where are the changes in land cover between these two images?**

## **Modules used:**

**GDAL** – **G**eospatial **D**ata **A**bstraction **L**ibrary

**Sci-kit image** – For image processing

**Scipy** – For linear regression

**Numpy** – For handling image-arrays

**Random** – For random sampling of pixels

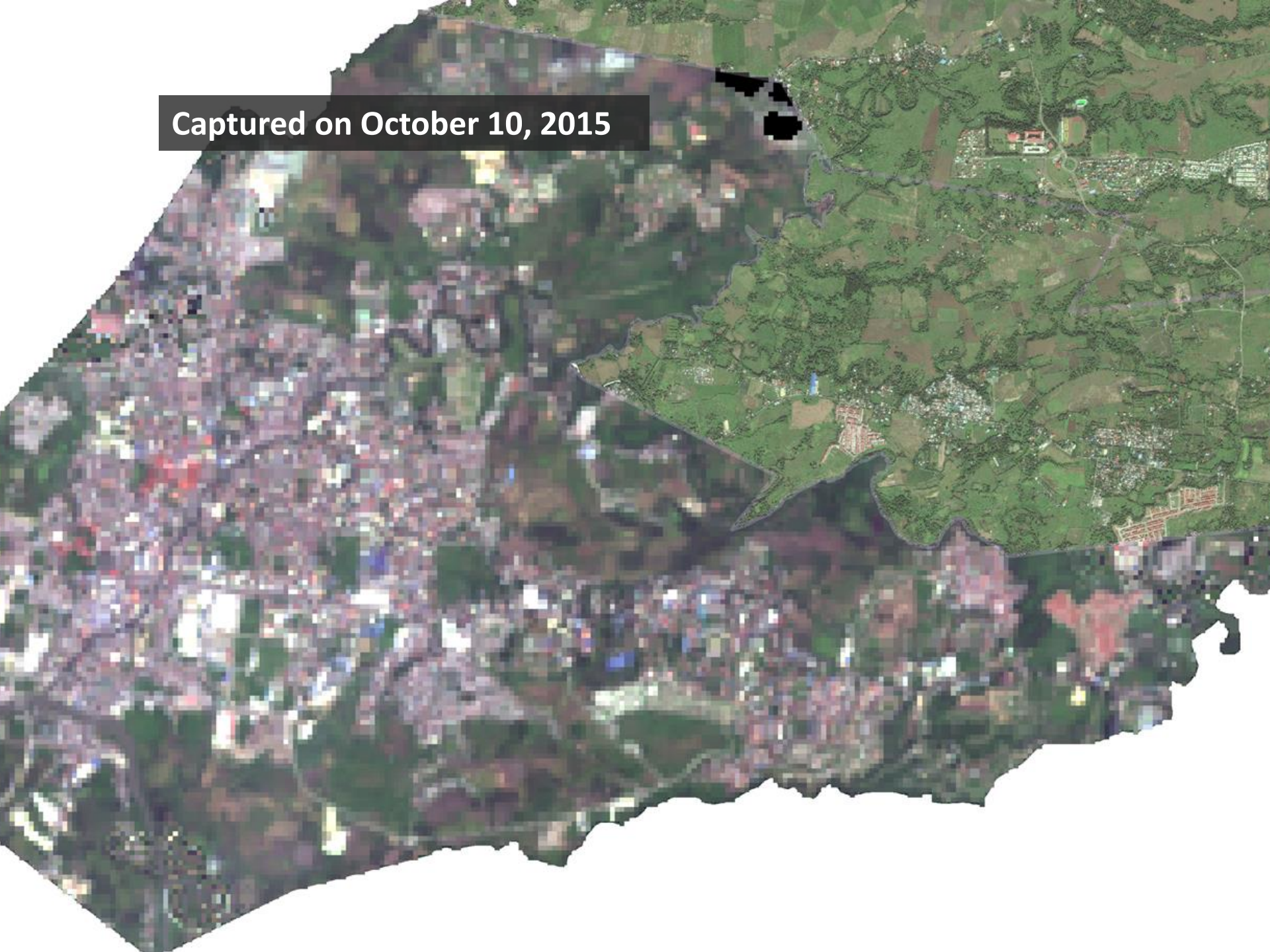


Captured on January 8, 2015





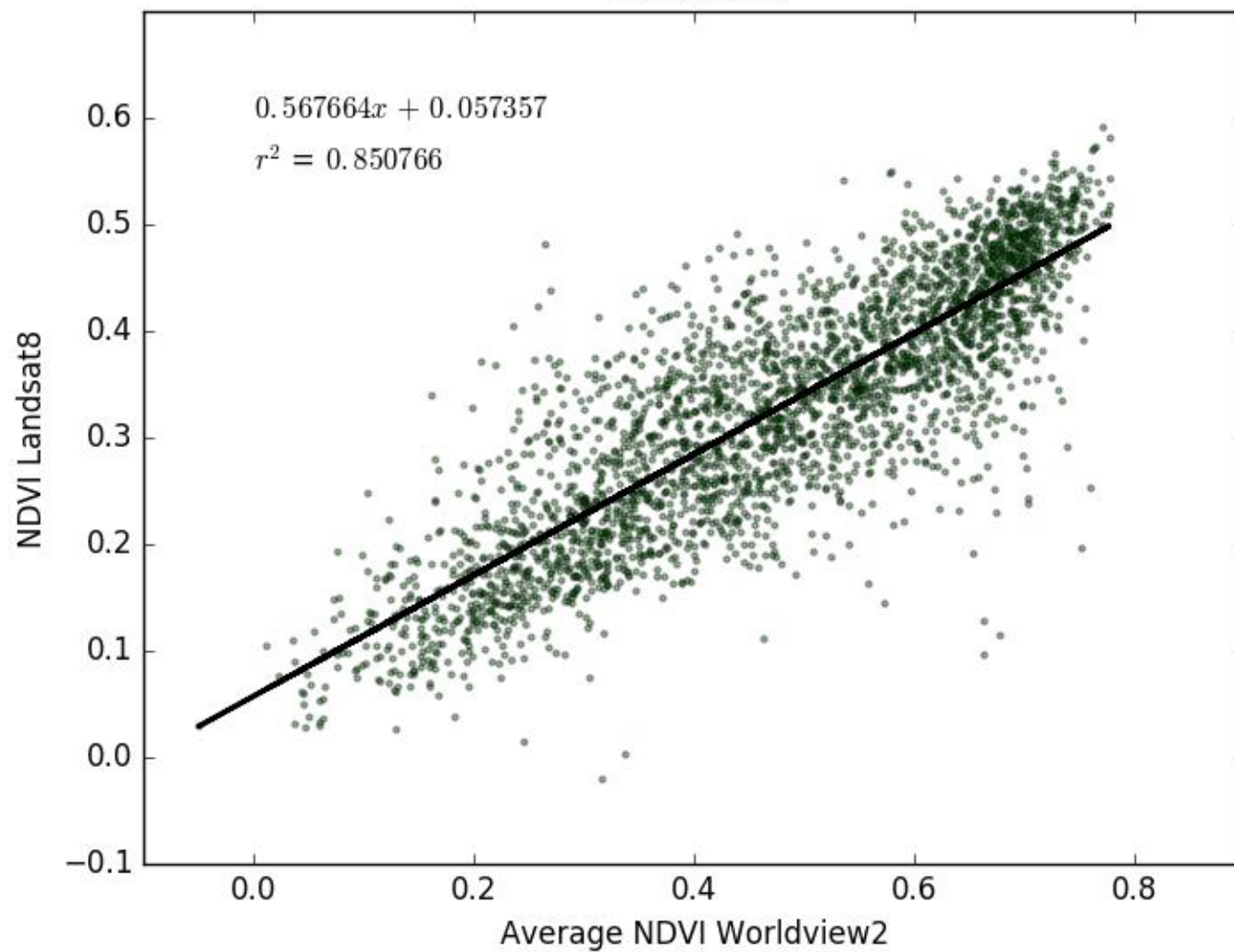
Captured on October 10, 2015



**Pixels in multi-resolution images are correlated.**

**Can be modelled using linear regression.**

### Iteration 3













A satellite map showing a coastal region with a large urban area on the left and agricultural land on the right. A white line, possibly a river or coastline, separates the urban area from the agricultural land. Four yellow rectangular boxes highlight specific areas of land cover change in the agricultural regions. A dark grey text box in the upper right corner contains the title.

## Changes in land cover occurred in agricultural areas

Repository link:  
[https://github.com/tropicalmentat/the-sis-project-scripts/blob/master/mask-change-pixels/temporal\\_filter.py](https://github.com/tropicalmentat/the-sis-project-scripts/blob/master/mask-change-pixels/temporal_filter.py)



A satellite map of a coastal region, likely in the United States, showing a mix of urban, suburban, and rural areas. A prominent white line, possibly a road or a river, winds through the landscape. The map is overlaid with a semi-transparent dark green rectangle containing the text "THANK YOU! 😊".

**THANK YOU! 😊**