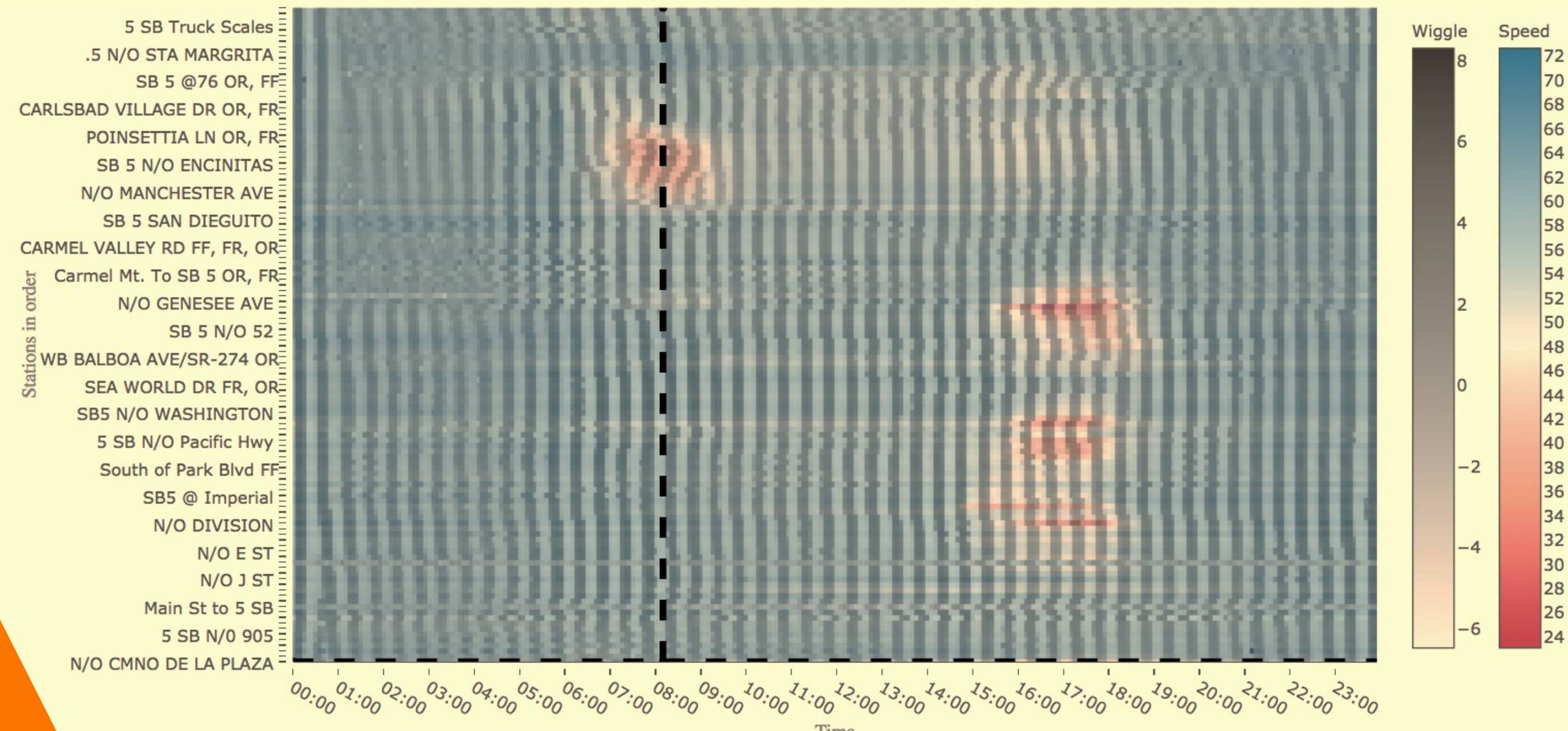


# TRAFFIC CAPSTONE PROJECT

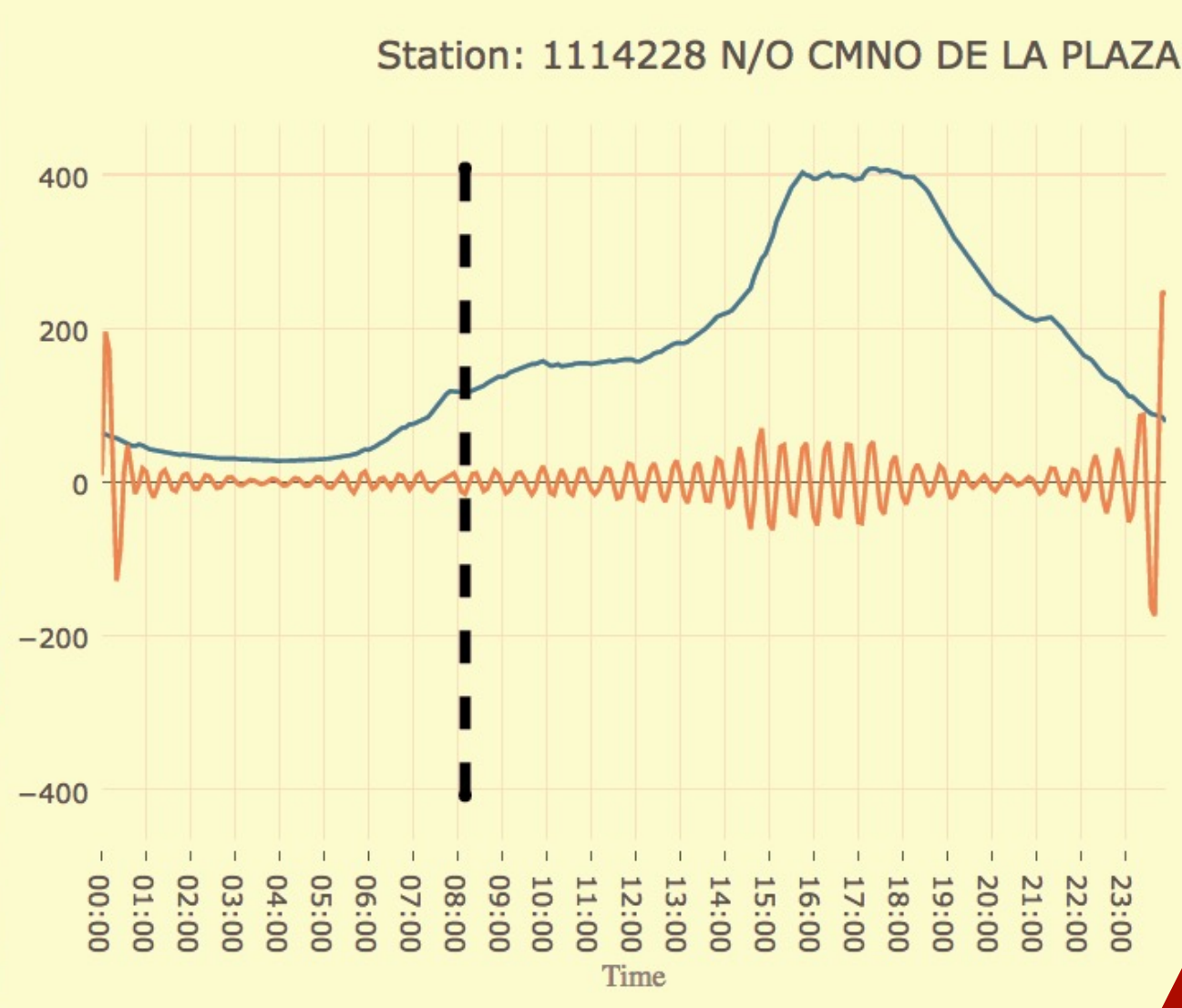
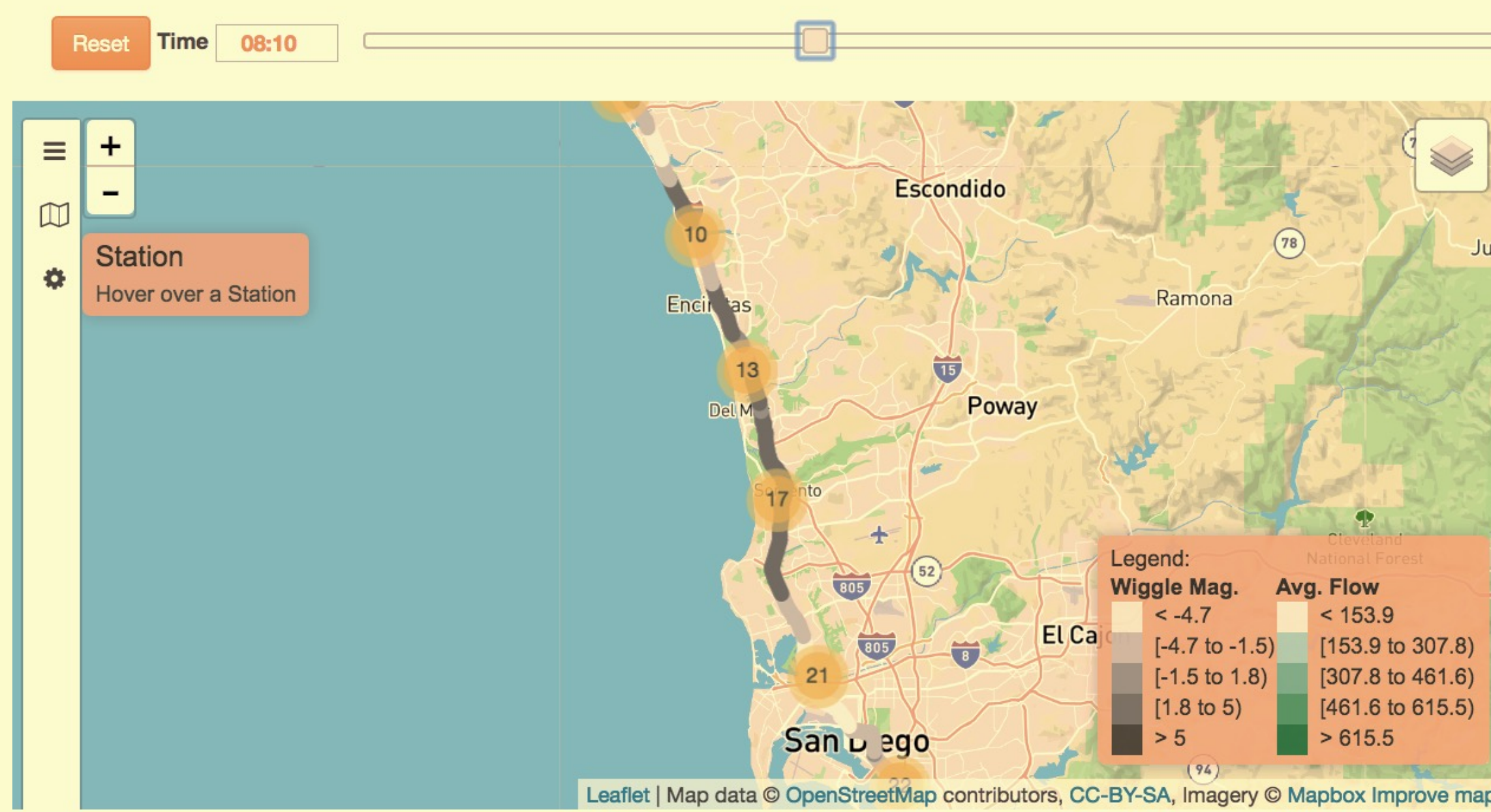
Cohort 2 Traffic Team

ABRAHAM HART ◊ CHRISTOPHER SANDERS ◊ CJ STEVENS ◊ JOSH DUCLOS ◊ MIKI HARDISTY  
ADVISED BY DR. YOAV FREUND

## FREEWAY FLOW OSCILLATION PROPAGATION WITH A SPEED HEATMAP OVERLAY



FLOW MEAN & WAVELET  
TRANSFORMATION TIME SERIES



# 3

FACETS ENABLE  
TRAFFIC EXPERTS TO  
DISCOVER ORIGINATION  
& SHOCKWAVE DURATION  
OF OSCILLATION  
PERTURBATIONS

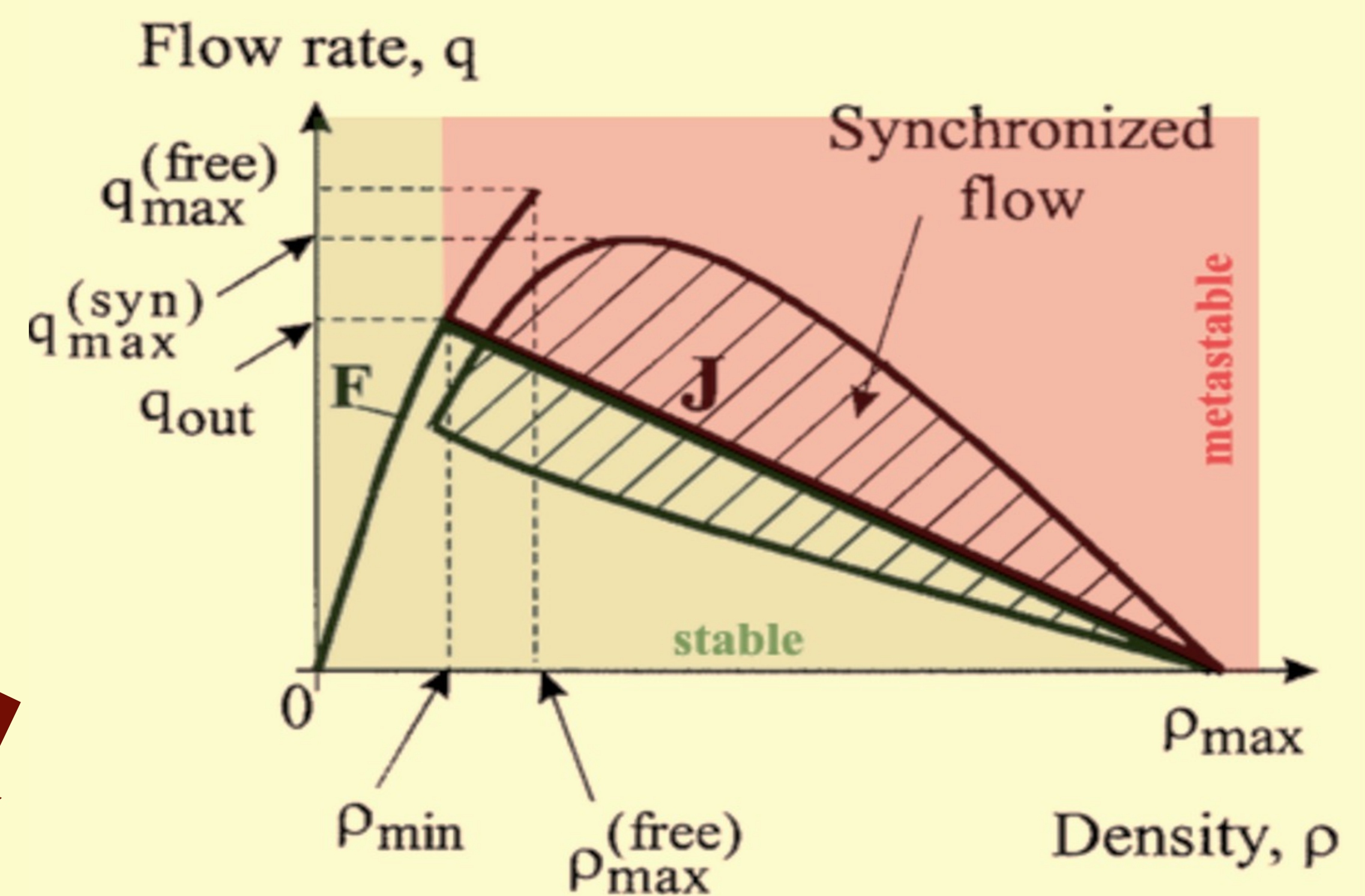
## FREEWAY TRAFFIC CHARACTERISTICS

### JAM IDENTIFICATION & DETECTION

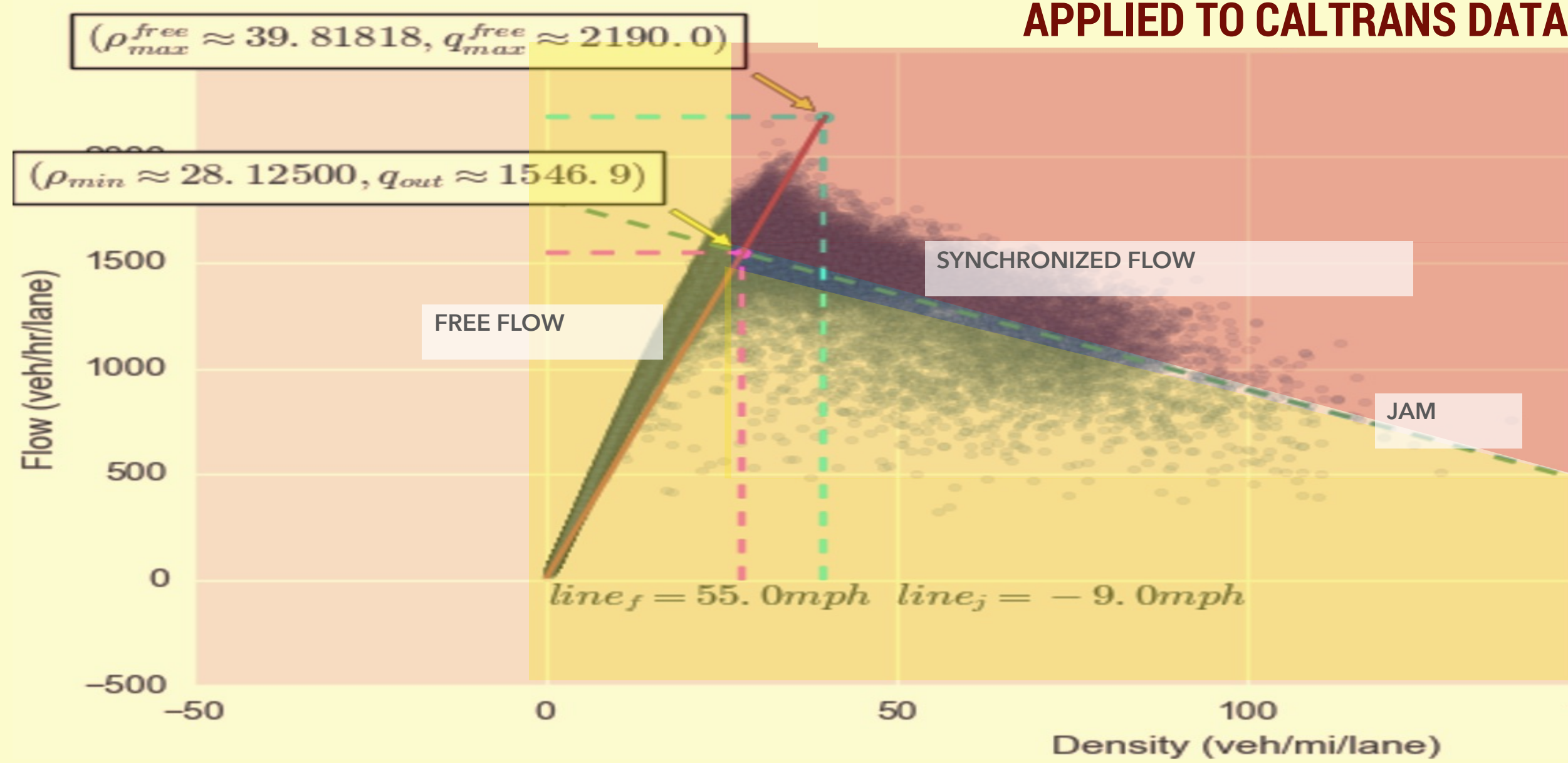
WITH THE FUNDAMENTAL MDOEL OF TRAFFIC

	FREE FLOW	SYNCHRONIZED FLOW	JAM
Speed	HIGH	LOW-MID	VERY LOW
Flow	HIGH	Close to free-flow	VERY LOW
Density	LOW	MID	HIGHEST

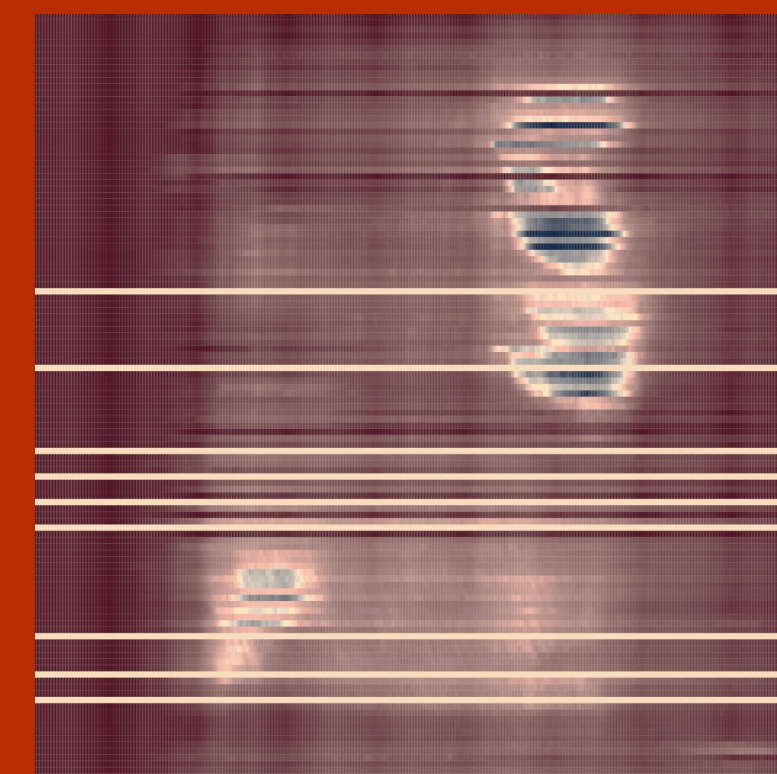
## THE FUNDAMENTAL DIAGRAM OF TRAFFIC



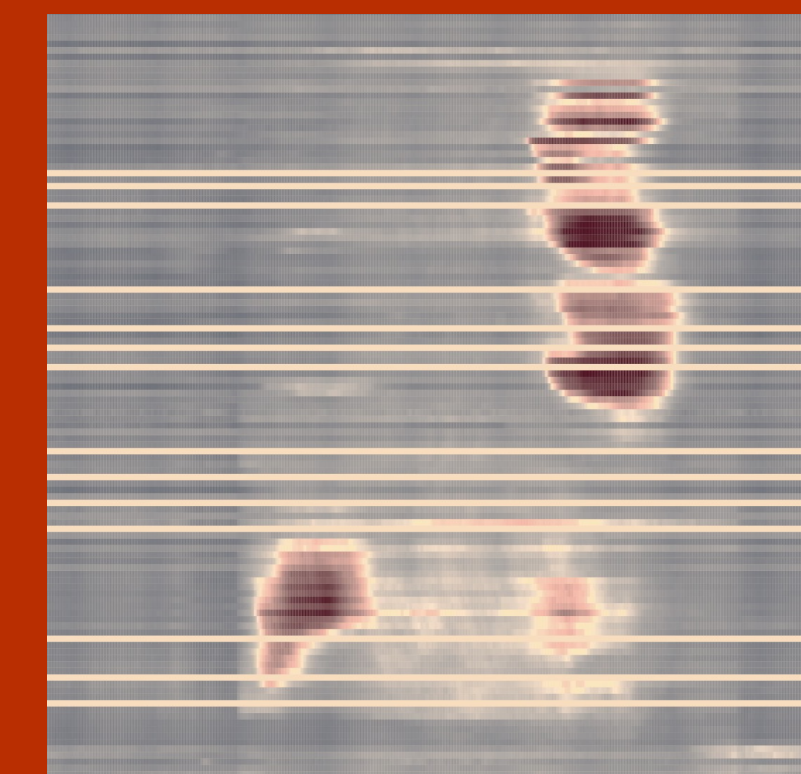
### FUNDAMENTAL DIAGRAM APPLIED TO CALTRANS DATA



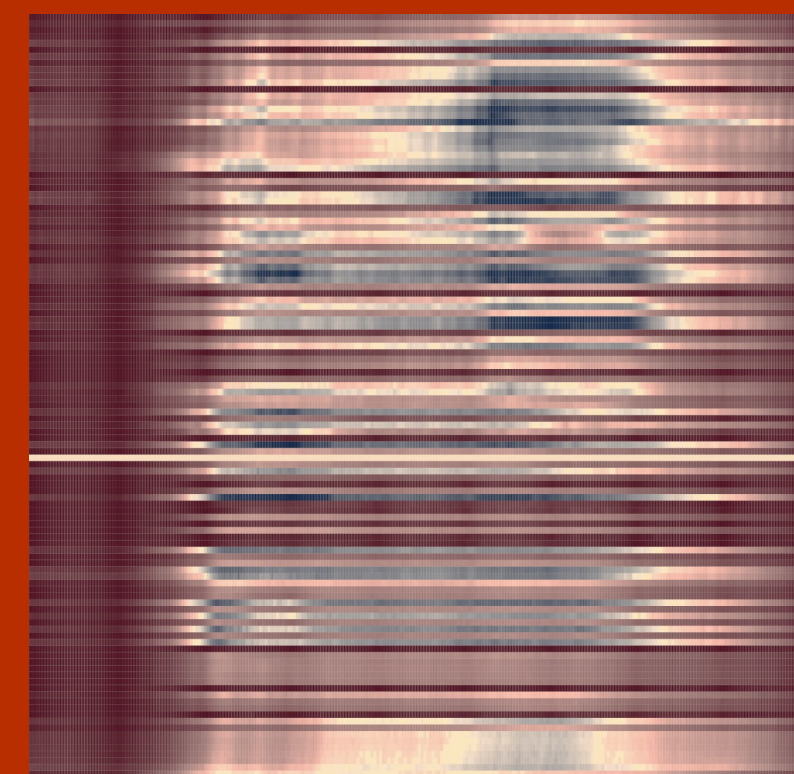
### OCCUPANCY



### SPEED

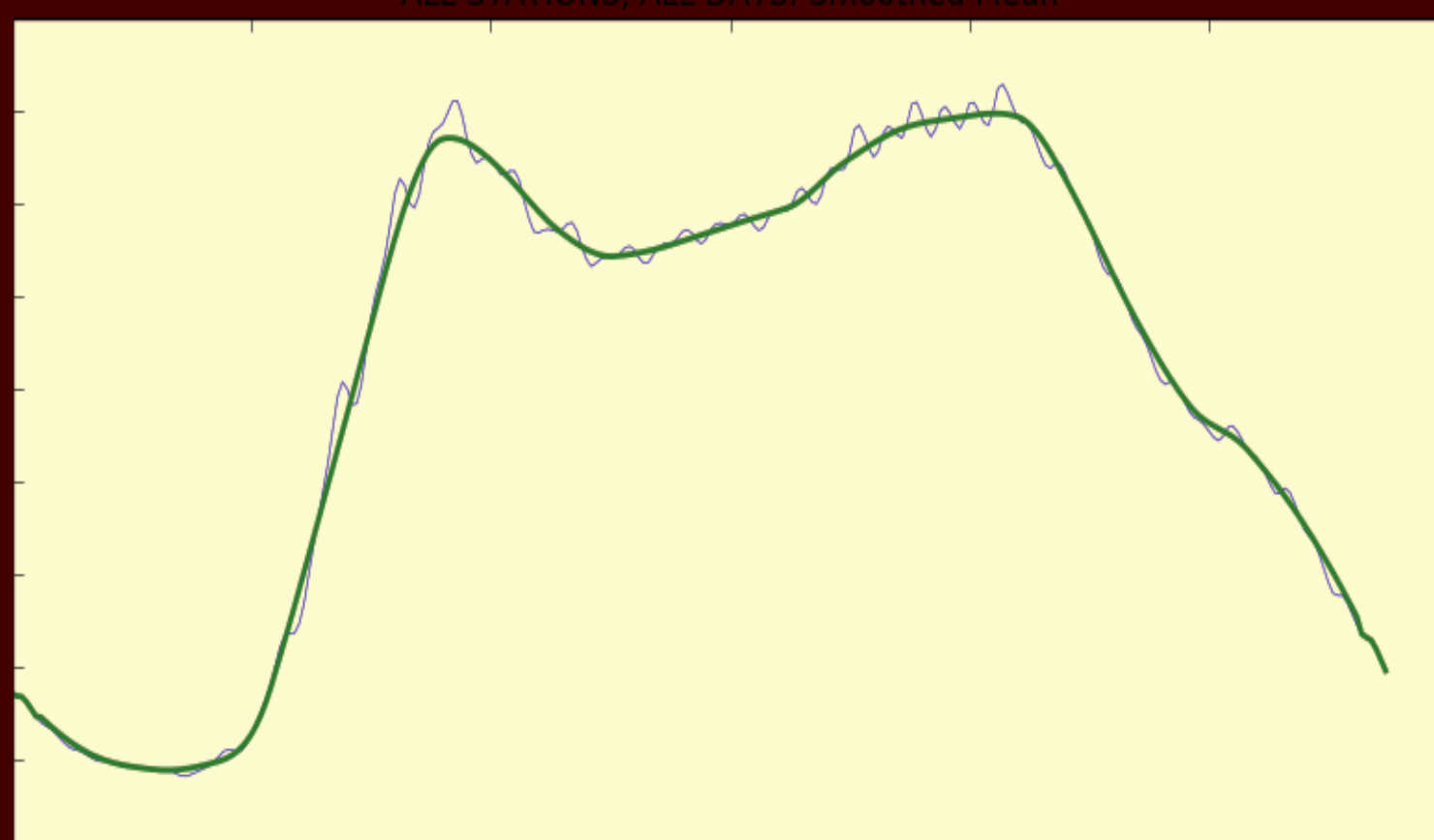


### FLOW

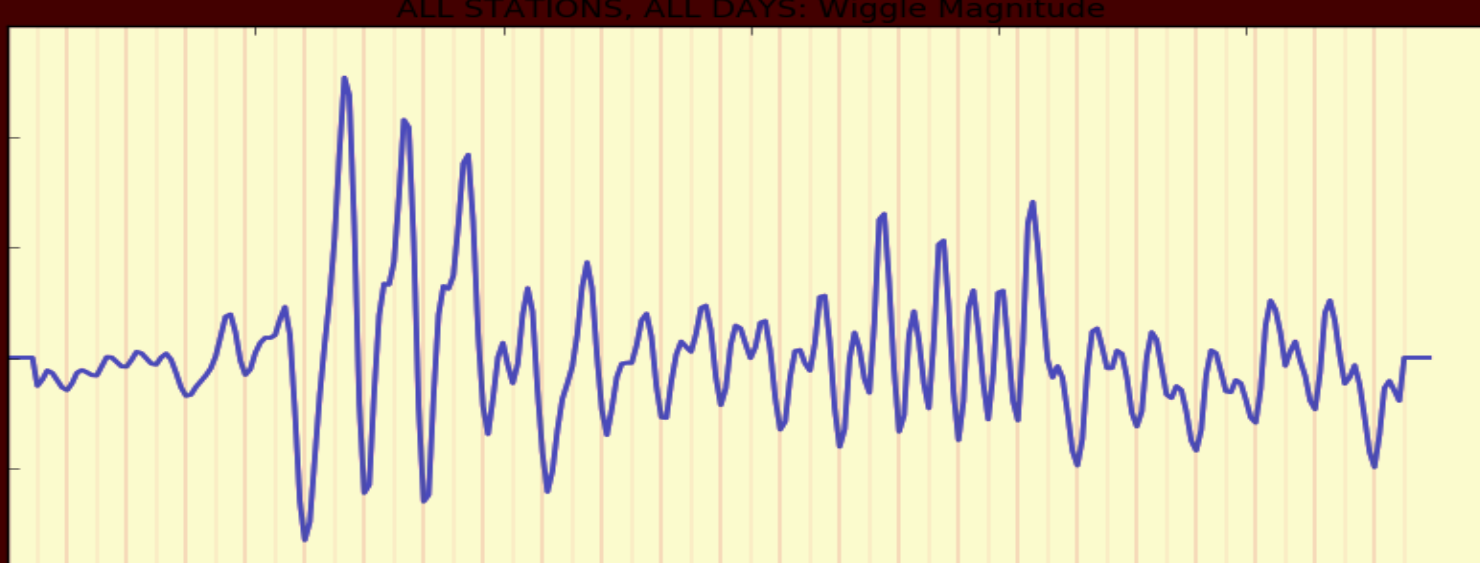


## CHARACTERISTIC STATISTIC HEAT MAPS

RAW MEAN &  
SMOOTHED FLOW



EXTRACTED  
WIGGLES



EXPLORATION AND EVOLUTION OF EXTRACTING  
**THE "WIGGLES"**  
FROM THE RAW MEAN DIFFERENCE FROM A  
SMOOTHED MEAN TO PROJECTION OF THE  
RAW MEAN ONTO MORLET WAVELETS

WAVELET  
TRANSFORMATION

