



# ***Surfline***

## **Coastal Intelligence**

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Informing the future of safer,  
stronger coastlines

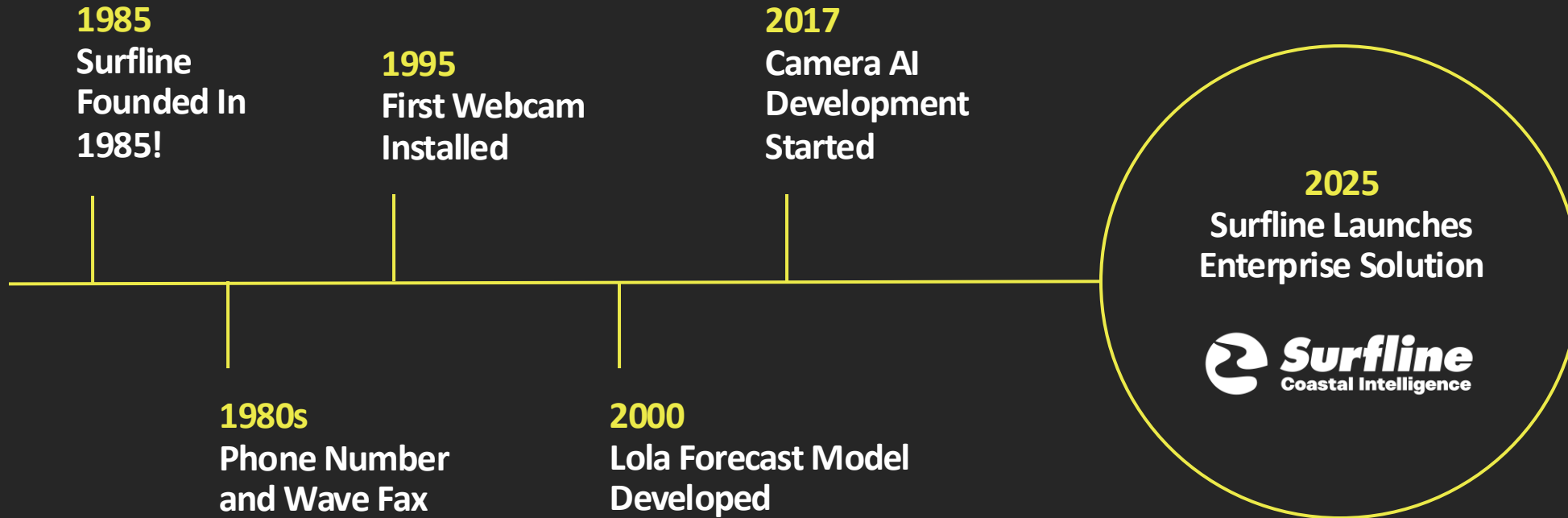


## Agenda

- 01 **Coastal Monitoring**
- 02 **Lifeguarding & Tourism**
- 03 **Case Study: Oceanside Re:Beach Project**



## Surflin's Evolution of Innovation





## What Does Camera Intelligence Look Like?





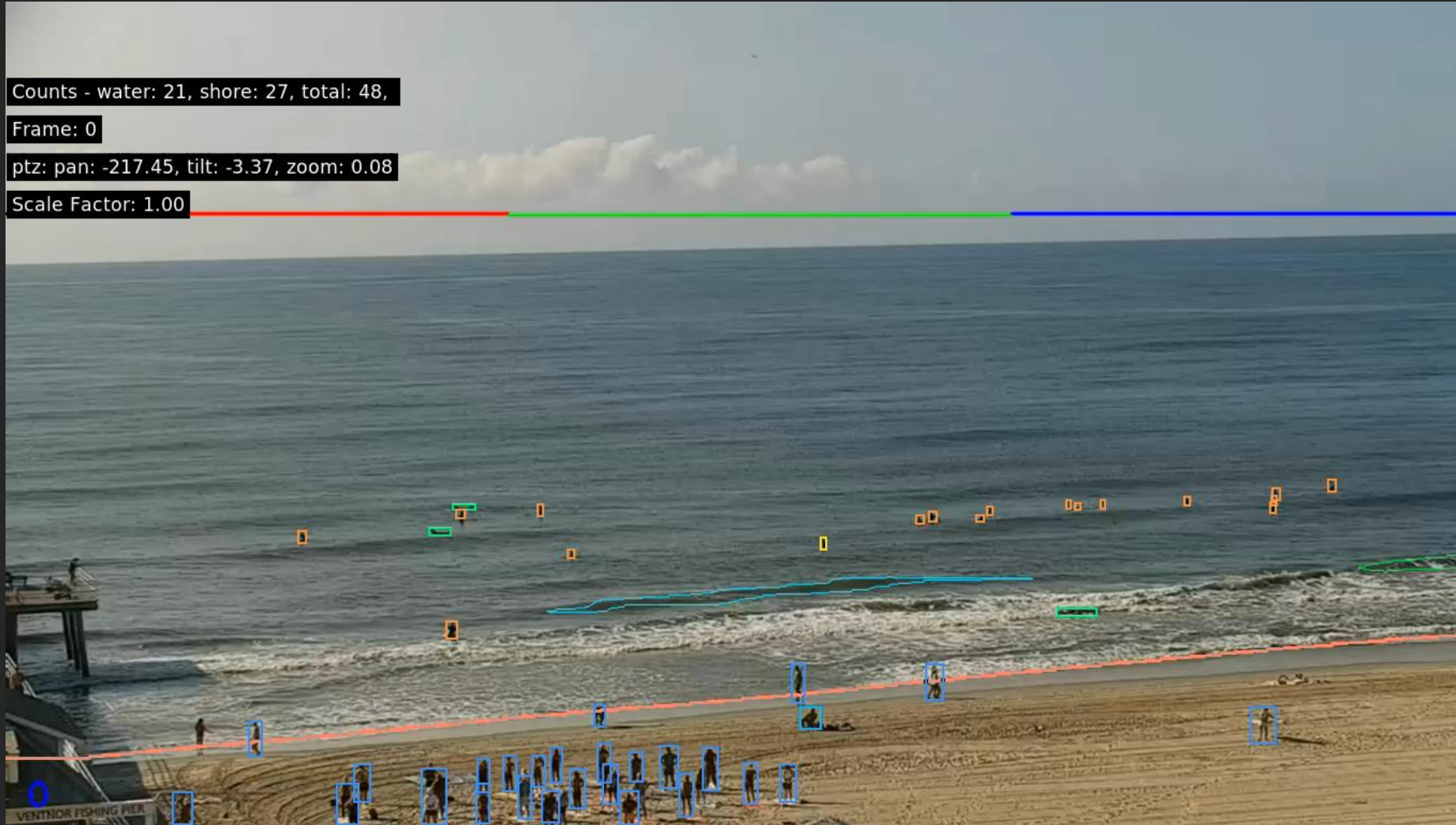
# What Does Camera Intelligence Look Like?

Counts - water: 21, shore: 27, total: 48,

Frame: 0

ptz: pan: -217.45, tilt: -3.37, zoom: 0.08

Scale Factor: 1.00



## Why Camera Based Monitoring?

# Scalable, always on coastal intelligence



### One sensor, hundreds of data points

Erosion, bathy, attendance, wave conditions from a single camera feed.



### Data 365 days a year

Move beyond seasonal surveys.



### Post storm survey response

Rapidly quantify erosion, changes in bathymetry, and crowd displacements within hours.



### Monitoring inaccessible coastlines

Get video/ data where it's hard to send humans.



### Always on video

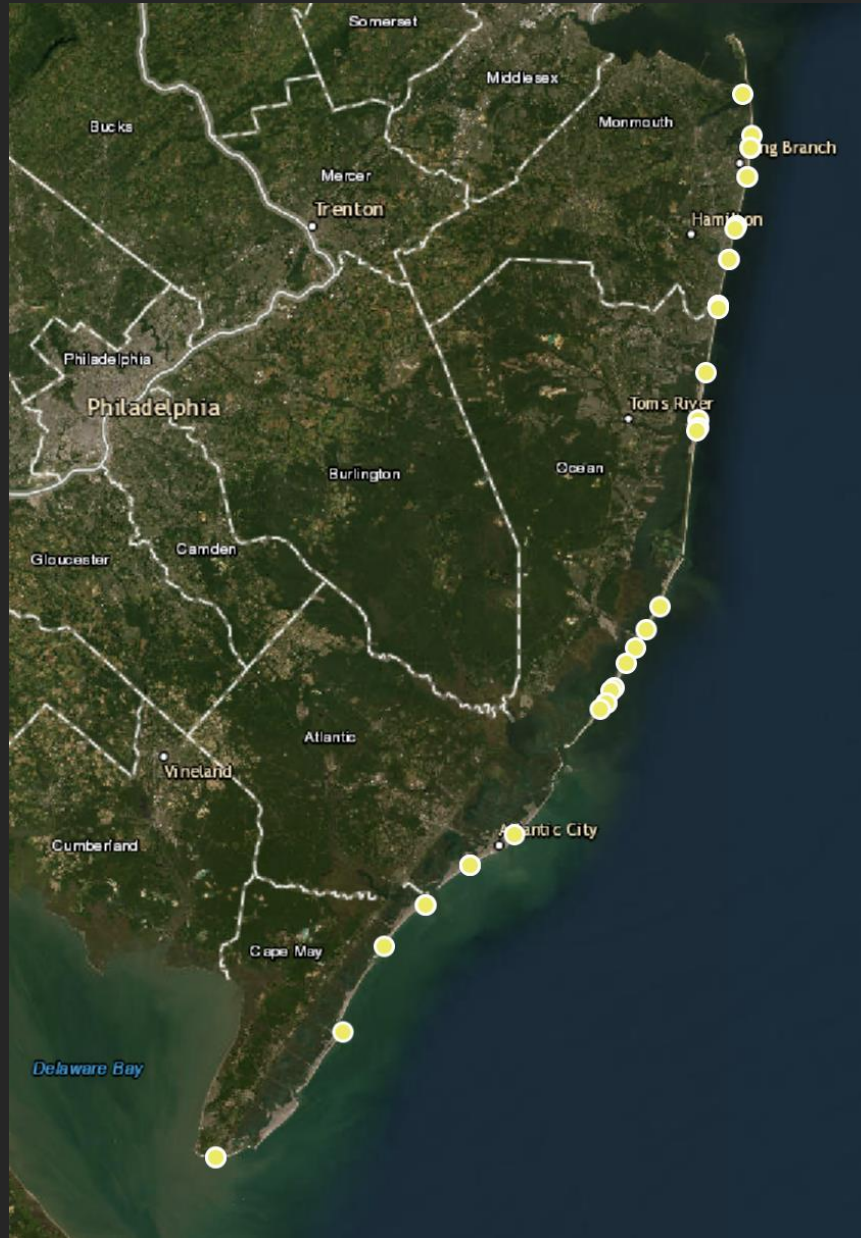
Video accompanied with all the data.

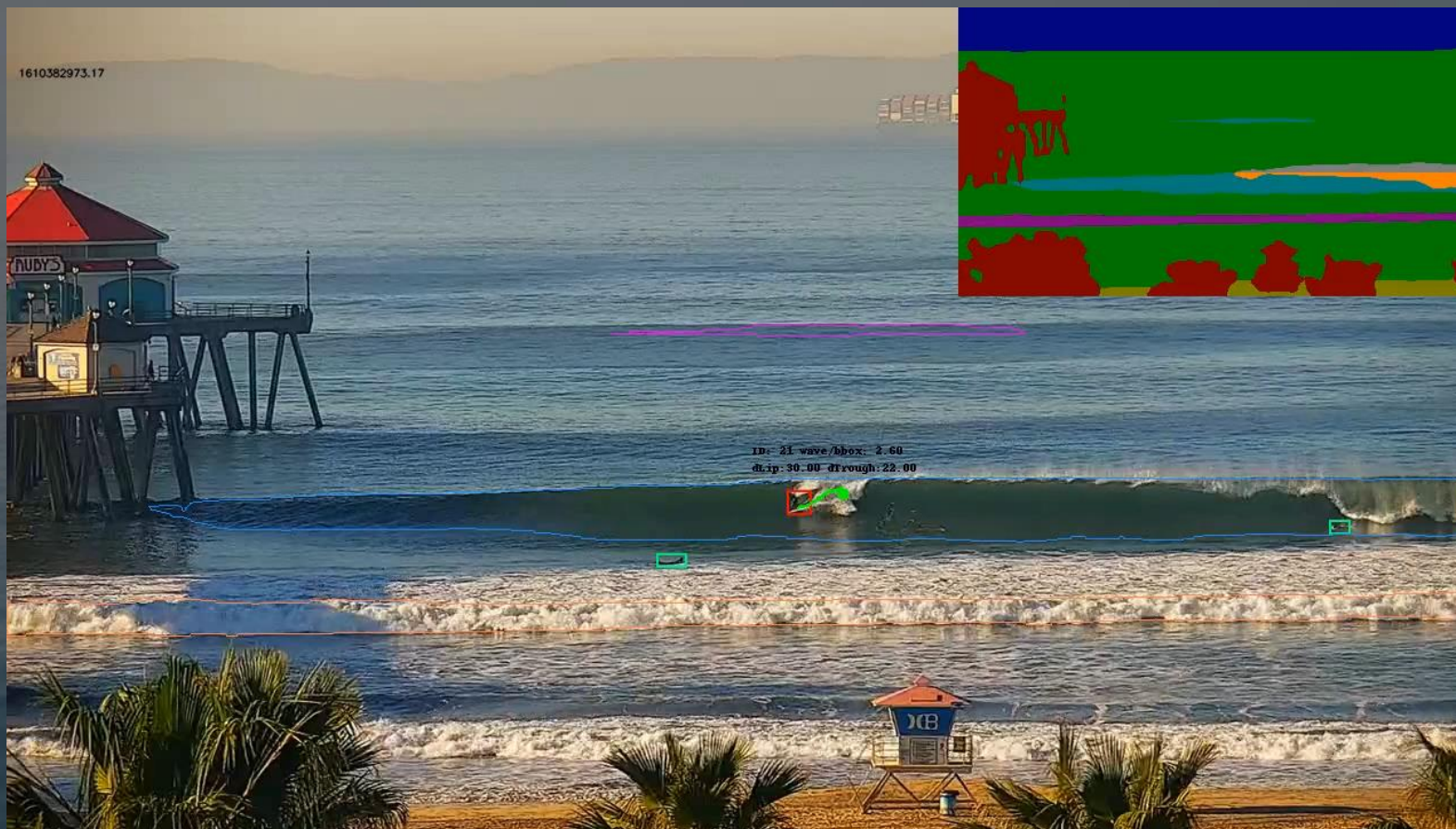




## Surflin has 1,200+ Cameras Globally With 25+ in New Jersey

- Historical data in New Jersey going back up to 5+ years
- Tap into existing cameras, or we install brand new cameras





## Data on every pixel:

- Pixel Level Segmentation
- Spray
- Pitching vs spilling Lip
- Wave Face
- Spilling Whitewater
- Sand vs. water vs. pier etc



High-Frequency Shoreline Monitoring  
*Ehukai Beach Park, Hawaii*

Counts - water: 2, shore: 6, total: 8,

Frame: 0

ptz: pan: -189.47, tilt: -0.00, zoom: 0.08

Scale Factor: 1.00

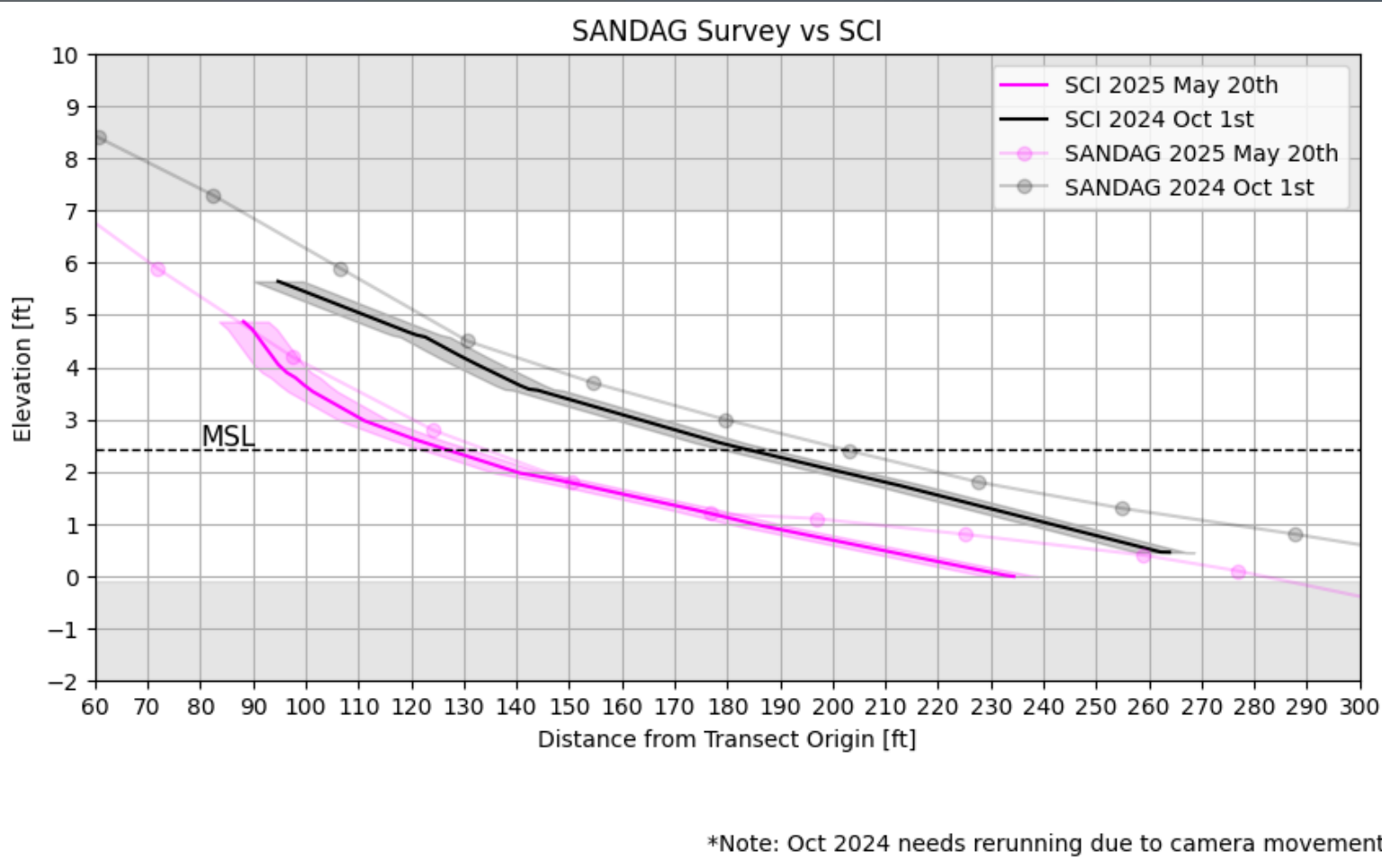


- System easily differentiates sand from water.
- Very different beach and camera angle — technology still works.
- Understand beach erosion 365 days/year at 1Hz



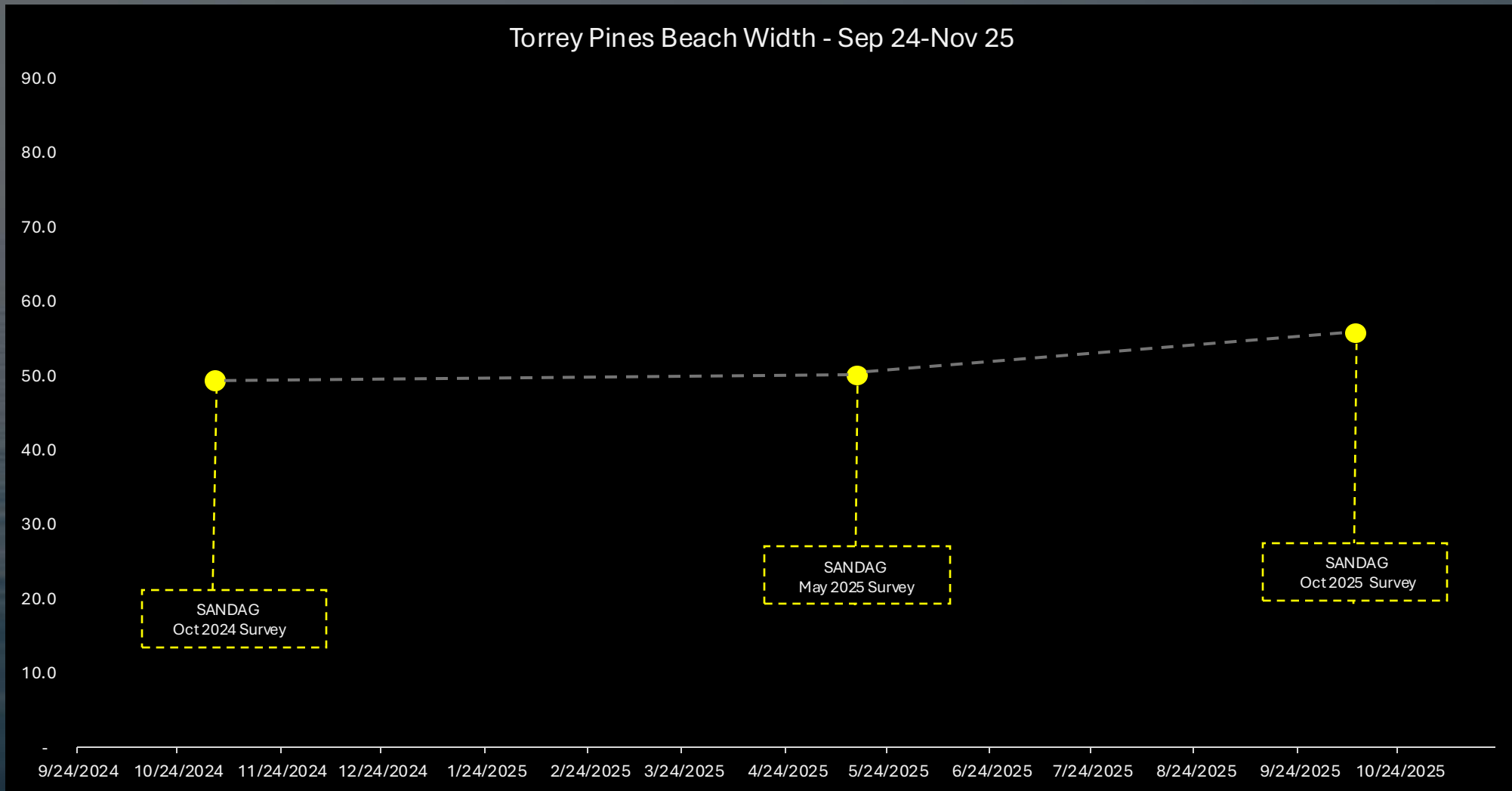
# Shoreline Validation: Surfline vs. SANDAG Surveys

Torrey Pines, San Diego



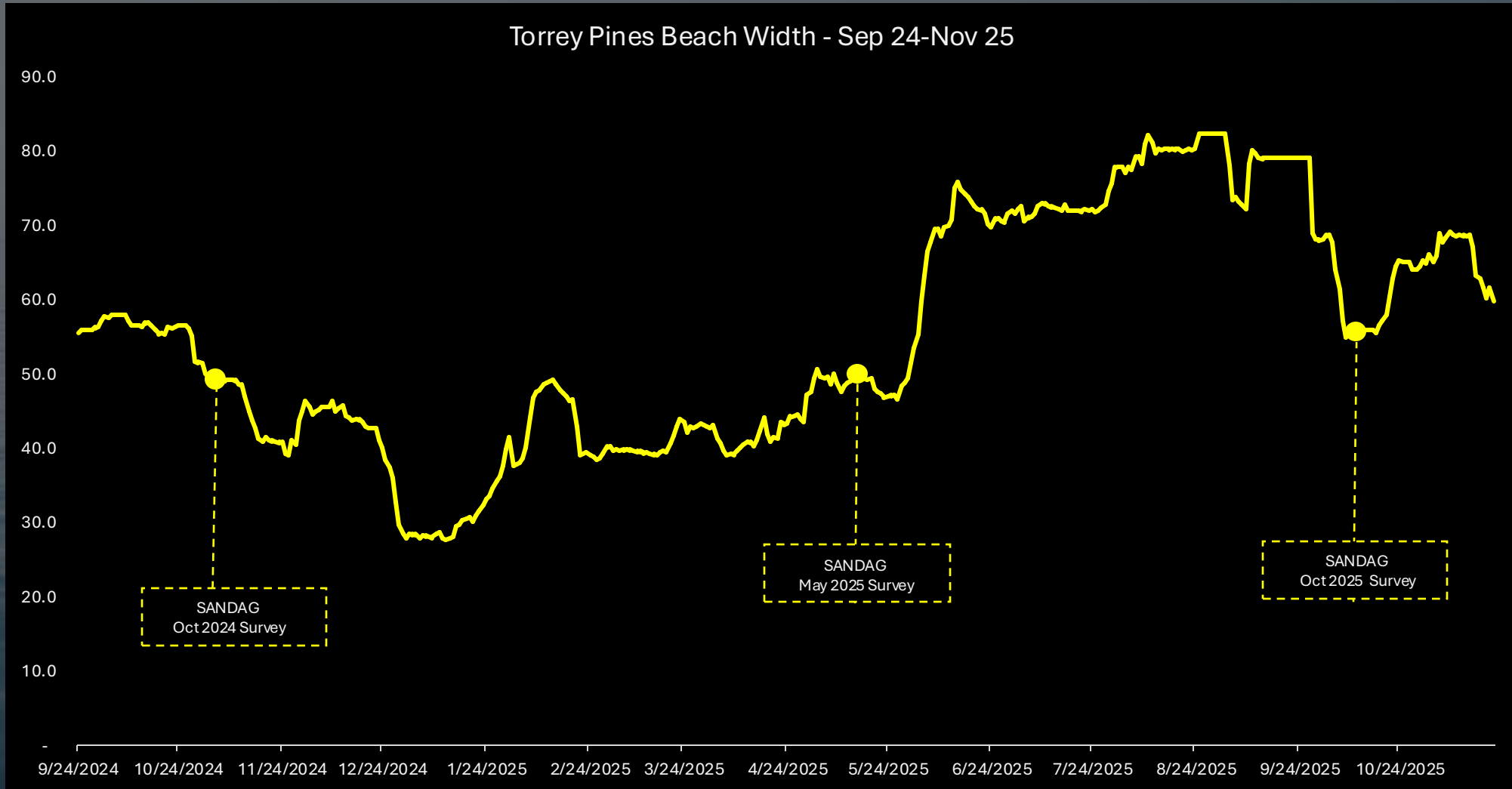
Shoreline technology has been validated against RTK surveys. Formal whitepaper coming in 2026.

Average Vertical Error: ~8cm  
Average Horizontal Error: ~4.5m





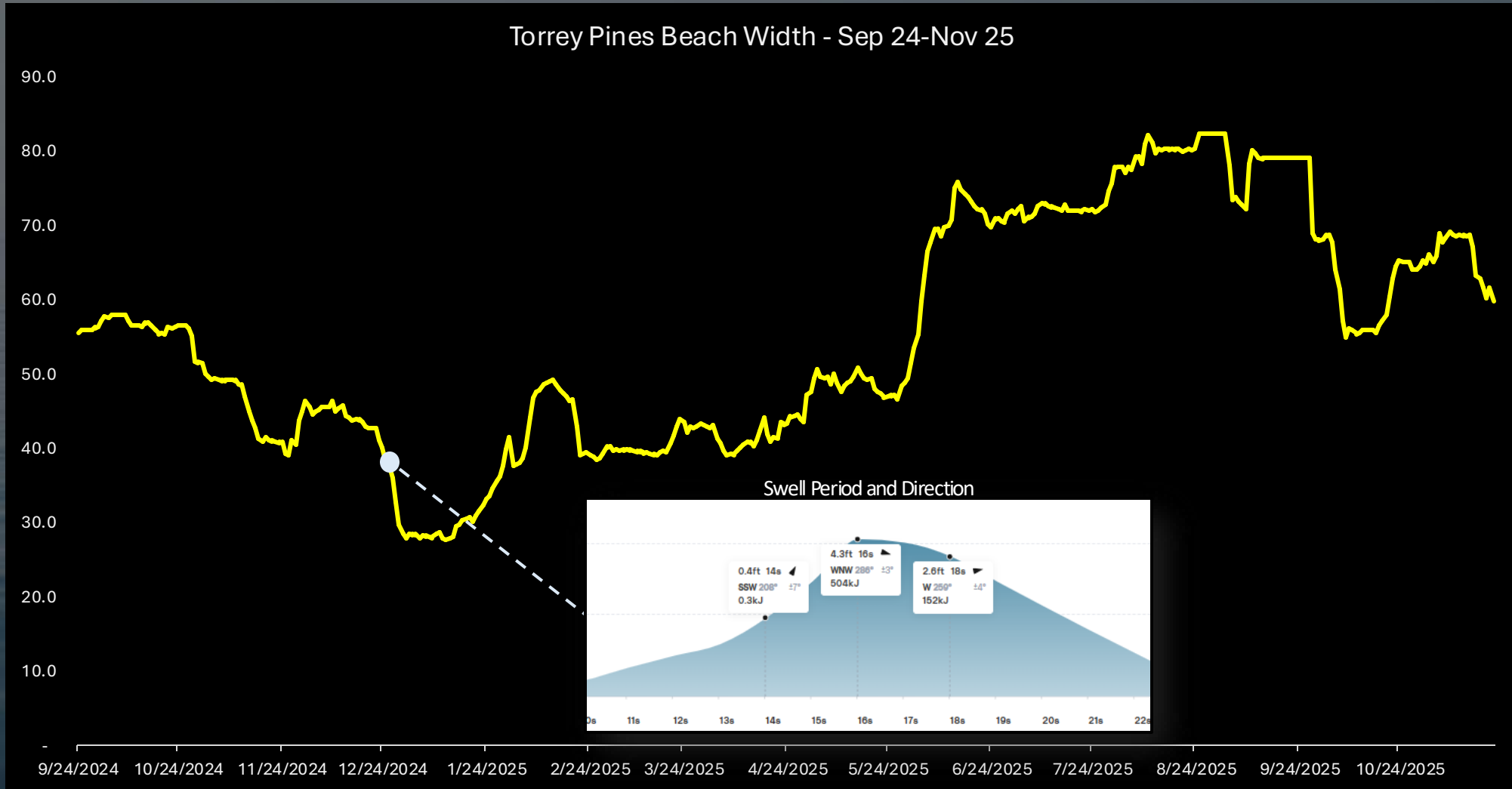
Surfline Continuous Beach Width Data  
*Torrey Pines, San Diego*





# Understand What Metocean Conditions Are Impacting The Shoreline

Torrey Pines, San Diego





Near Real-Time Data Available in Client Dashboard  
*Ventnor Pier, New Jersey*

### Average Shoreline Position at Mean Water Level ⌵

Start Date

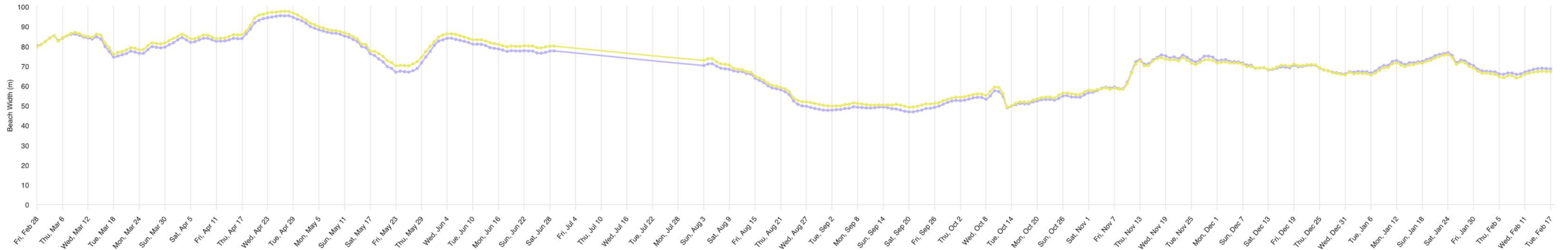


End Date

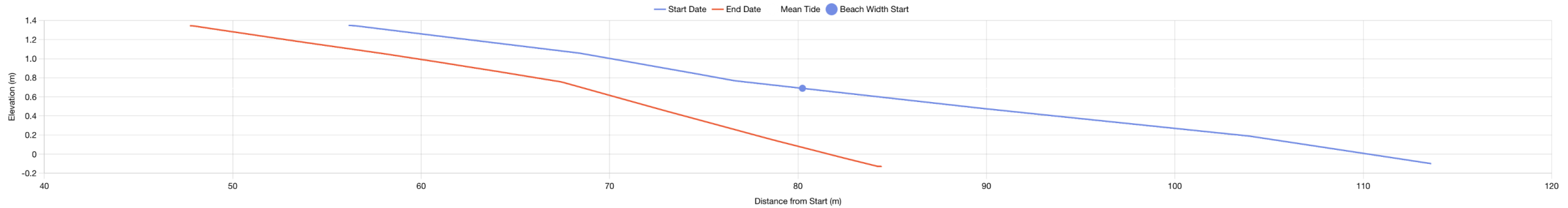




### Beach Width



### Beach Profiles at Transect





# Quantify Wave Overtopping Events

Cardiff, California



1. Real time notifications of overtopping events.
2. Quantify each overtopping event and predict future occurrences.



Data & Video on Flooding Events  
*Ventnor Pier, New Jersey*





# SAND CHANGE FROM TC ALFRED





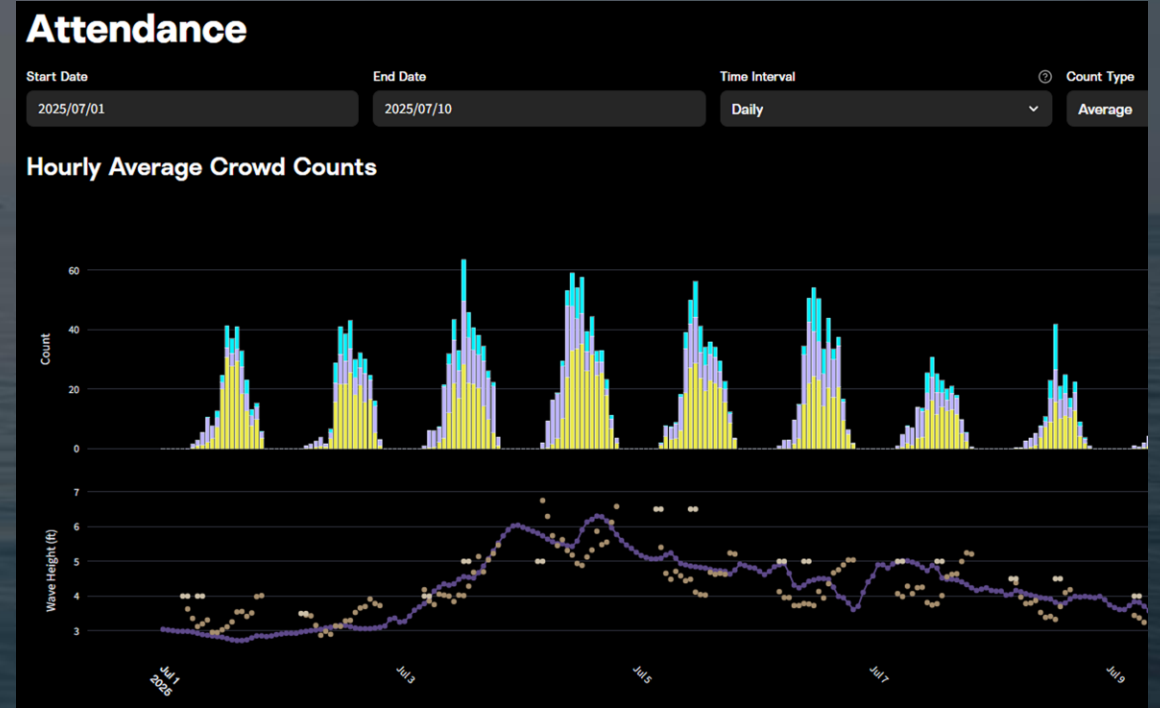
## Continuous, Accurate Insights Into Beach Usage



With the same camera, we can continuously monitor recreation across the entire beach. This data helps to understand carrying capacity of beaches, impact of SLR, etc.



# Understanding When and Where People Use the Beach





Satisfy permit requirements and quantify this economic and cultural resource.



## Project Overview

- 5 new cameras installed, plus 8 existing
- Pre- and post- project monitoring:
  - Shoreline and beach profile
  - Surf quality & utilization
  - Beach attendance
  - Videos to communicate with the community
- Key questions we will help answer:
  - How does beach utilization change?
  - How does the surf change?
  - What is impact to neighboring communities?





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