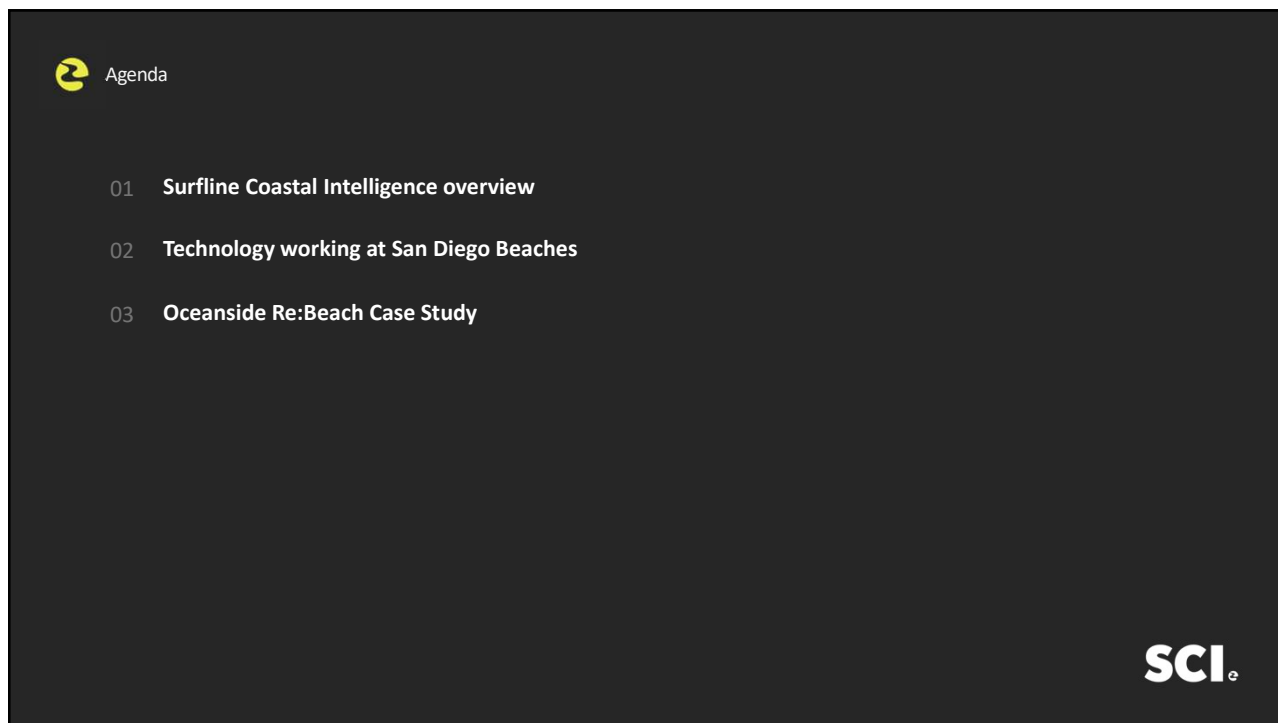
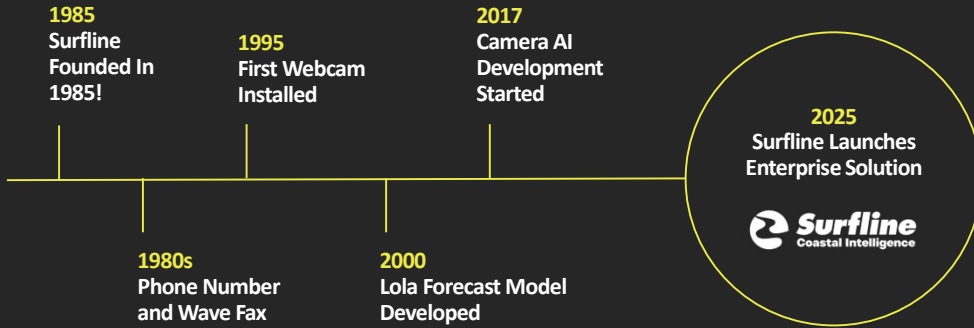




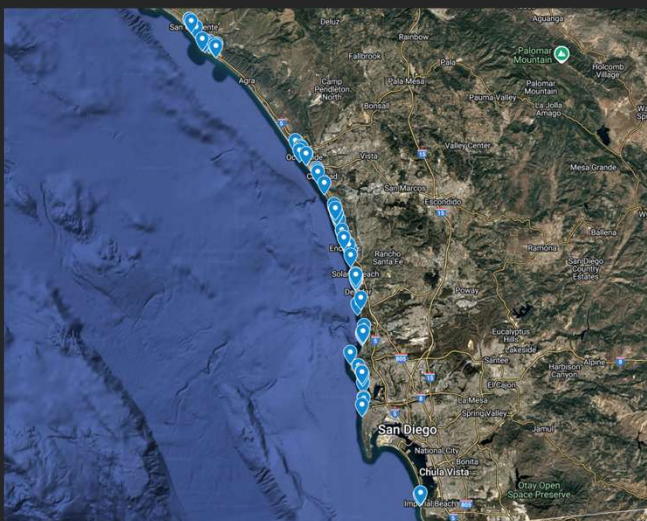
1



2



3



Region	Camera(s) Location
Carlsbad	Carlsbad State Beach
Carlsbad	Ponto
Carlsbad	Tamarack
Carlsbad	Terra Mar Point
Del Mar	Del Mar
Encinitas/ Cardiff	Beacons
Encinitas/ Cardiff	Cardiff Reef
Encinitas/ Cardiff	D-Street
Encinitas/ Cardiff	George's
Encinitas/ Cardiff	Grandview
Encinitas/ Cardiff	Moonlight State Beach
Encinitas/ Cardiff	Pipes
Encinitas/ Cardiff	San Elijo State Beach
Encinitas/ Cardiff	Seaside Reef
Encinitas/ Cardiff	Swami's
Imperial Beach	Imperial Beach Pier
La Jolla	Blacks
La Jolla	La Jolla Shores
La Jolla	Scripps
La Jolla	Torrey Pines State Beach
La Jolla	Windansea
Mission Beach	Mission Beach
Ocean Beach	Ocean Beach
Ocean Beach	Sunset Cliffs
Oceanside	Forster St.
Oceanside	Oceanside Harbor
Oceanside	Oceanside Pier
Oceanside	The Rock
Pacific Beach	PB Pier
Pacific Beach	Old Man's @ Tourmaline

4



What Does Camera Intelligence Look Like?



SCI_e

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SCI: Coastal Intelligence Capabilities Overview



01 Coastal Resiliency

- Continuous shoreline & beach-profile measurements
- Wave run-up and overtopping
- Flood risk monitoring
- Bathymetry
- Wave climatology

02 Coastal Tourism & Management


- Beach attendance data
- Surf amenity data
- Carrying capacity assessments

03 Coastal Safety & Security

- Predictive risk and hazard forecasting
- Automated alerts to support lifeguards
- Near-real-time vessel detection
- Alerts for vessels & people entering restricted Areas

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6

 Continuous, Accurate Insights Into Beach Usage

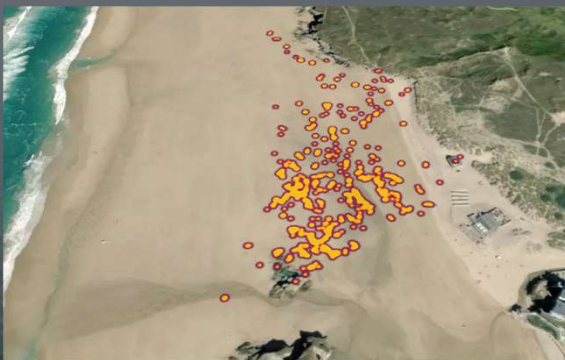


We use a single panning camera to monitor activity across the entire beach including shoreline, wading, swimming, and surfing zones.



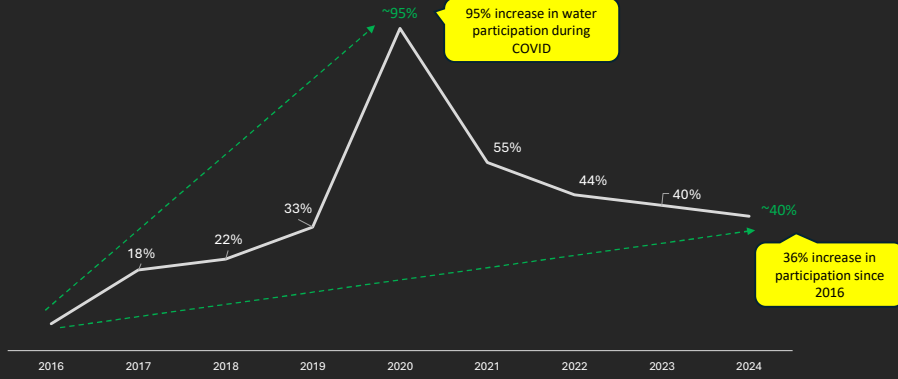
7

 Understanding When and Where People Use the Beach



8

Change In Water Participation Since 2016 - North County San Diego



9

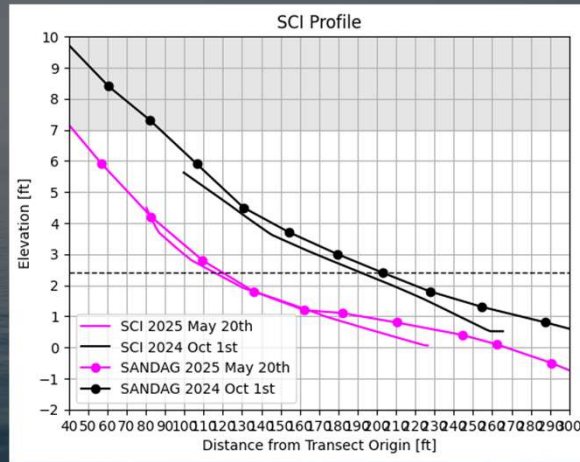


Continuous shoreline & beach profile measurements, 365 days/year.



10

 Shoreline Validation: Torrey Pines vs. SANDAG Surveys

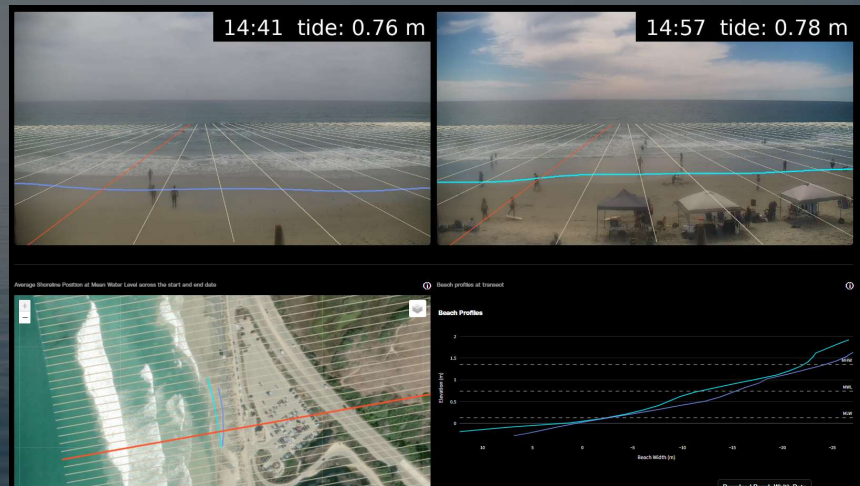


We are actively validating our shoreline monitoring technology across multiple SANDAG sites to ensure accuracy and reliability.



11

 See How Sand Moves Post-Event



Near-real-time data available in client dashboard.



12

 Wave Overtopping – Cardiff Reef



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

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13

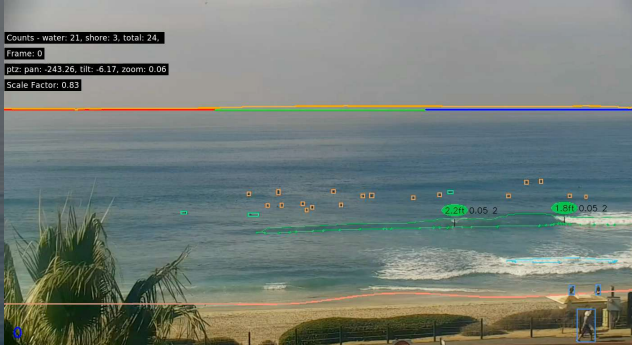
 Wave Overtopping During November King Tide – Seaside Reef



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14

 Deeply Understand Surfing Resources – Tamarack (Carlsbad)



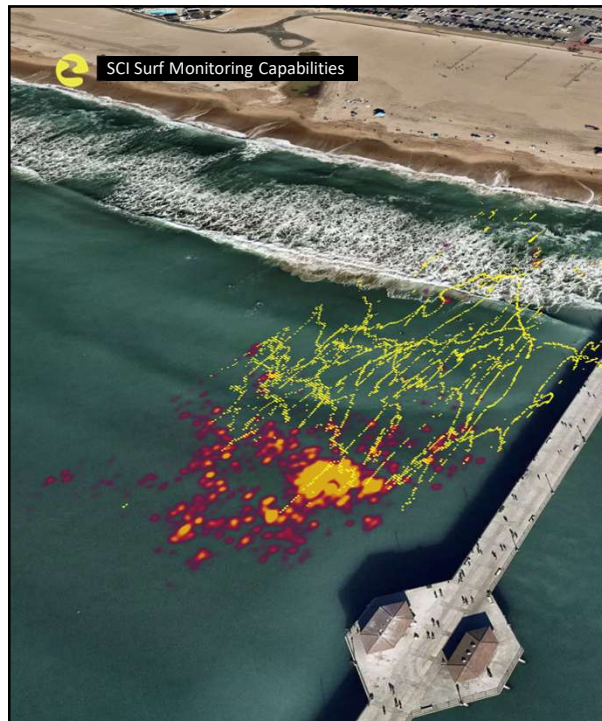
Takeoff zones



Ride tracing



15



01 **Wave Analytics**

- Breaking wave heights
- Number of breaking waves
- Rights vs lefts
- Wave quality (peel angle, other)
- Wave lengths & time
- Breaking wave heatmaps
- Bathymetry

02 **Surfer Analytics**

- Number of surfers in the water
- Number of ridden vs unridden waves
- Ride lengths & distance
- Number of surfers on a wave
- Take off zones & heatmaps

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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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- 01 **Attendance & risk forecasts**
Understand expected crowding & ocean risk to inform staffing plans.
- 02 **Eyes on unmanned, high-risk areas**
See the riskiest areas of your beach; deploy guards to unmanned zones faster.
- 03 **Video capture**
Support training.



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- 01 Identify when people or vessels aren't where they're supposed to be.
- 02 Get alerted shortly after an event happens.
- 03 Daylight or infrared compatible.

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19



1. 60+ San Diego cameras, with up to 10 years of historical data.

Tap into existing cameras, or we install brand new cameras.

2. Video helps to communicate erosion & beach dynamics to the public.

We can also host live feeds on your tourism site.

3. Single camera provides data on coastal resiliency, recreation and security.

Continuous, year-round insights that complement historic surveys.

4. Measure the economic and social impact of beach nourishments.

Understand how, when, and why people use the beach.

5. Next-generation surf monitoring.

Satisfy permit monitoring requirements and optimally manage your surf breaks.

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Reach out to the Surfliner team — we learn about your needs, scope areas of interest and align on the appropriate combination of New & Existing cameras.



Paul Ganev - General Manager
pganev@surfliner.com



Austin Heimark - Sales
aheimark@surfliner.com