WebCOOS

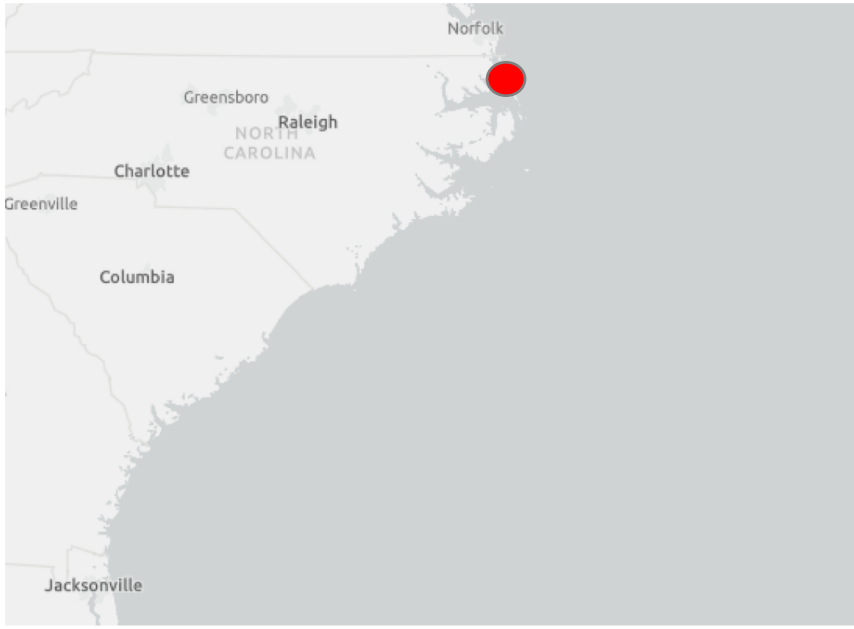
Webcams for Coastal Observations and Operational Support

Greg Dusek (NOAA/SECOORA), Debra Hernandez (SECOORA), Megan Treml (SECOORA), Joseph Long (UNCW), Dwayne Porter (USC), Alex Pang (UCSC), Kyle Wilcox (Axiom), Louisa Schandera (USC), Jeremy Cothran (USC), Lauren Showalter (Axiom)

SECOORA Annual Meeting
Atlanta, GA
June 9, 2022

Currituck County, NC

- Beach safety
- Waves and water levels
- Monitoring beach usage
- Tourism benefits



Other observation options

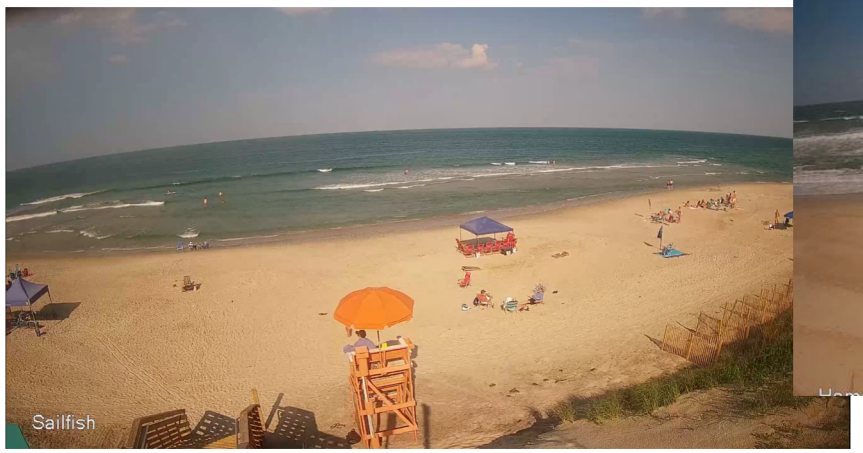
Lifeguard observations

In situ currents

Argus camera systems

WebCOOS - Currituck Partnership

- Worked with Currituck to install two cams
  - Live streaming
  - 10 minute video storage
- Contracted out for about $5k per cam
  - Options for much less depending on needs/installation
- Why partner with WebCOOS?
  - IT and data support
  - Dedicated community page
  - Products to address their specific needs

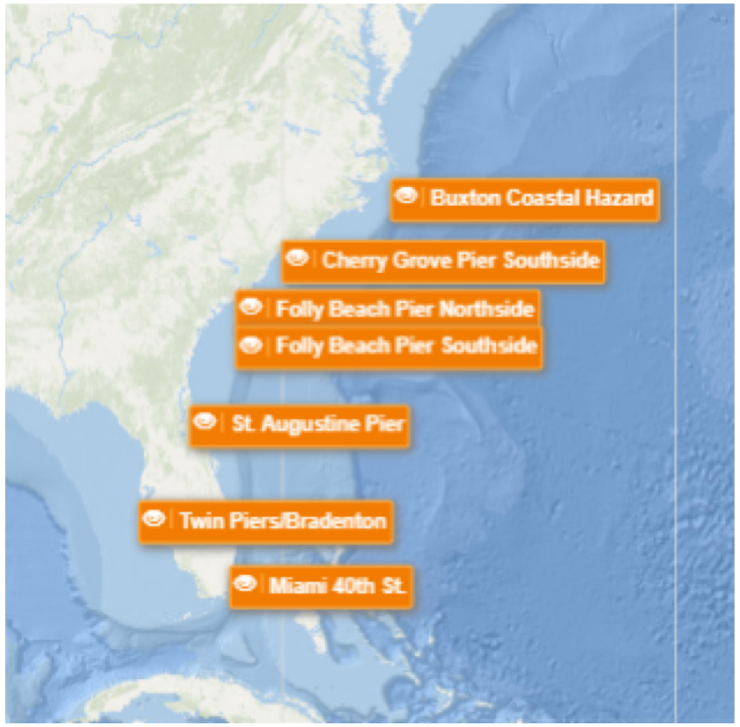


WebCOOS: Webcams for Coastal Observations and Operational Support

- Started as NOS funded WebCAT in 2017 (*Dusek et al., 2019)
- Funded by IOOS OTT Program: September 2020 - August 2023

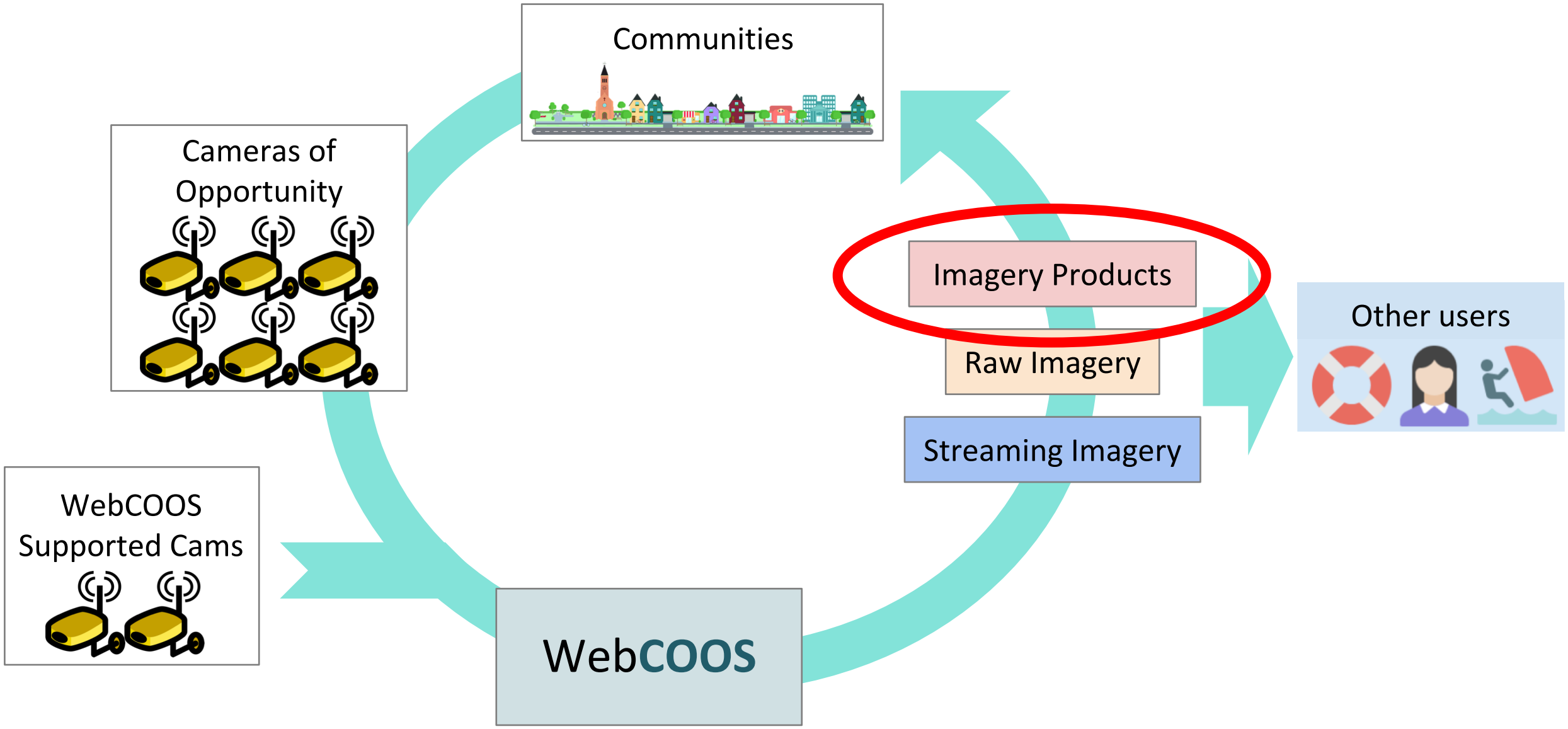
Goals:

- Engage webcam operators and end users
- Operationalize a national webcam data management network
- Automate processing of information from webcam imagery
- Develop a situational monitoring and reporting tool for information on beach activities and hazards



*Dusek G, Hernandez D, Willis M, Brown JA, Long JW, Porter DE and Vance TC (2019) WebCAT: Piloting the Development of a Web Camera Coastal Observing Network for Diverse Applications. *Front. Mar. Sci.* 6:353. doi: 10.3389/fmars.2019.00353

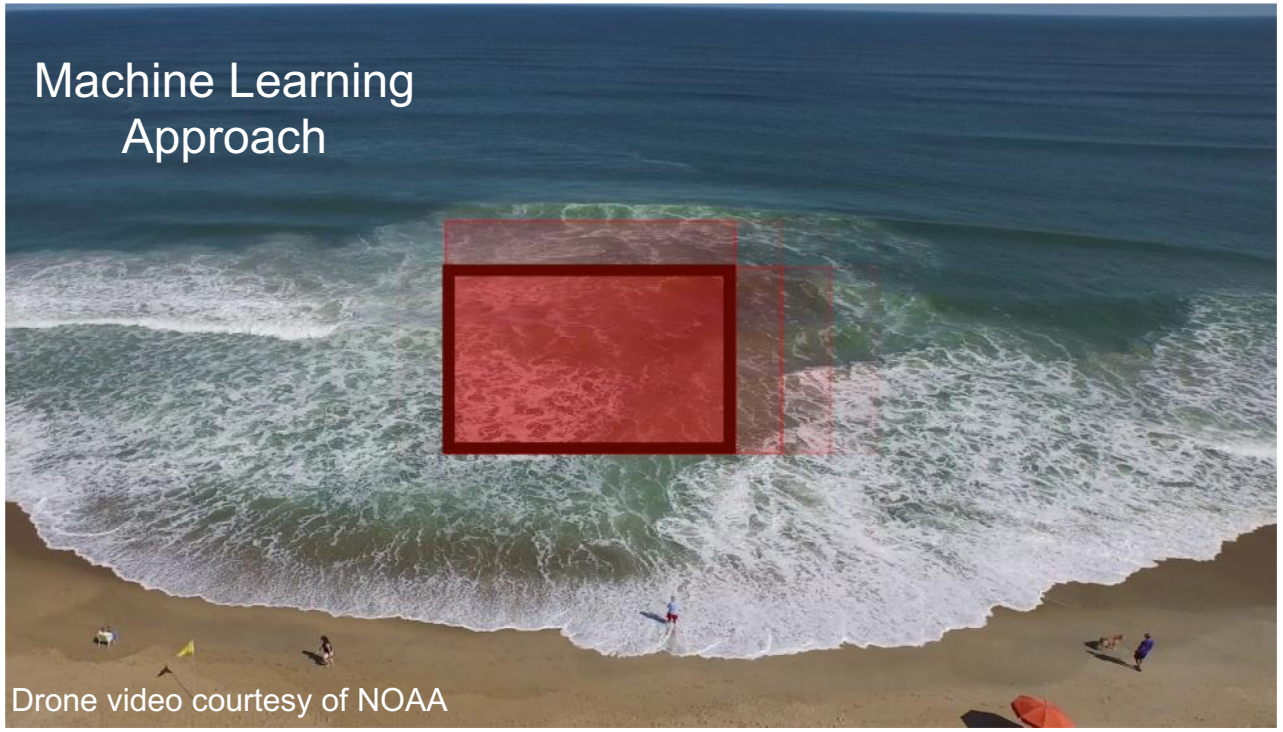
WebCOOS Community Framework



WebCOOS

Rip Current Detection

Developing algorithms/tools to identify rip currents from webcam imagery.

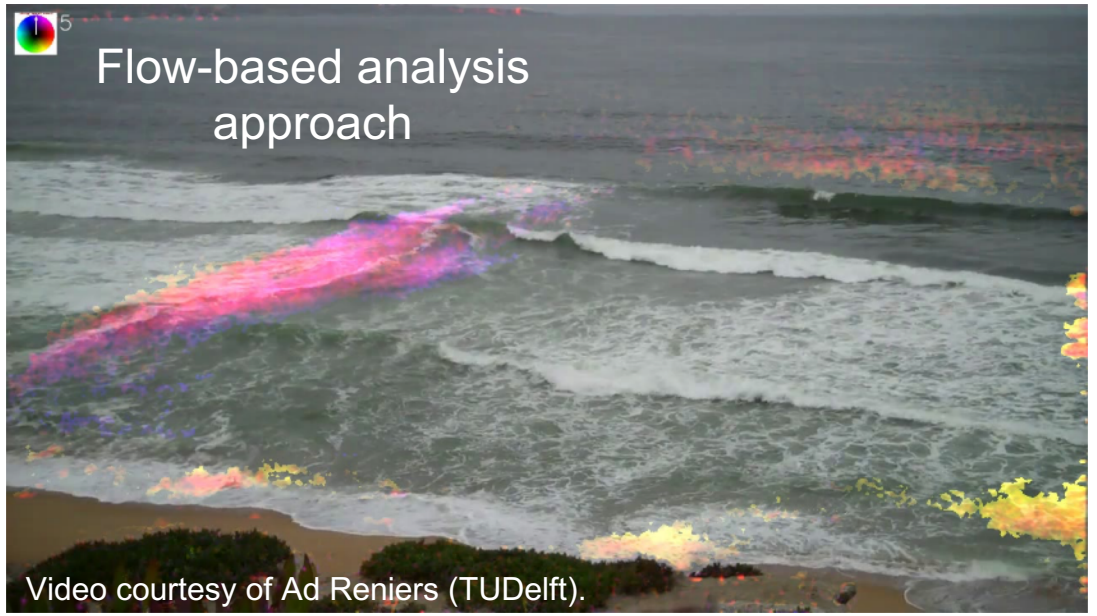


Automated Rip Current Detection with Region based Convolutional Neural Networks

Akila de Silva[a], Issei Mori[a], Gregory Dusek[b], James Davis[a] and Alex Pang[a]

[a]University of California, Santa Cruz, CA, United States
[b]NOAA National Ocean Service, Silver Spring, MD, United States

https://arxiv.org/abs/2102.02902



Flow-Based Rip Current Detection and Visualization

ISSEI MORI[1], AKILA DE SILVA[1], GREGORY DUSEK[2], JAMES DAVIS[1], (Senior Member, IEEE), AND ALEX PANG[1]
[1]Computer Science and Engineering Department, University of California at Santa Cruz, Santa Cruz, CA 95064, USA
[2]NOAA National Ocean Service, Silver Spring, MD 20910, USA

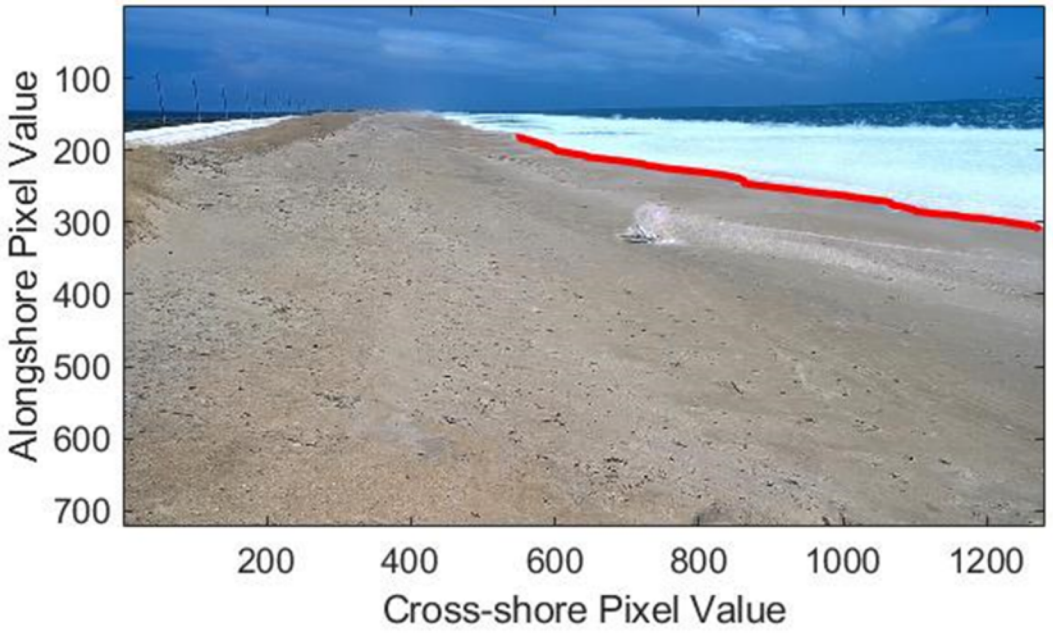
https://ieeexplore.ieee.org/document/9668925

University of California Santa Cruz: Dr. Alex Pang: pang@soe.ucsc.edu

WebCOOS

Shoreline Water Levels and Dune Erosion

- Developing algorithms/tools to identify shoreline water levels (tides, surge, wave runup) from webcam imagery.
- Current methods track pixel intensity in time or use the brightest pixels observed over a 10-minute video.
- Will be used to identify potential dune erosion/overwash events and limited beach access.



University of North Carolina Wilmington: Dr. Joseph Long: longjw@uncw.edu

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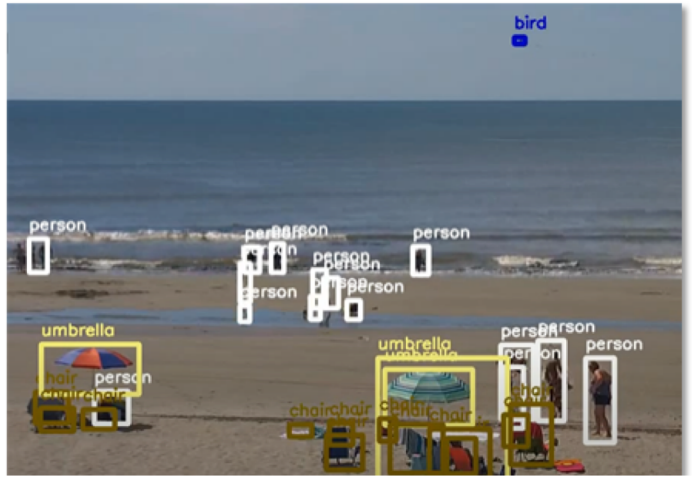
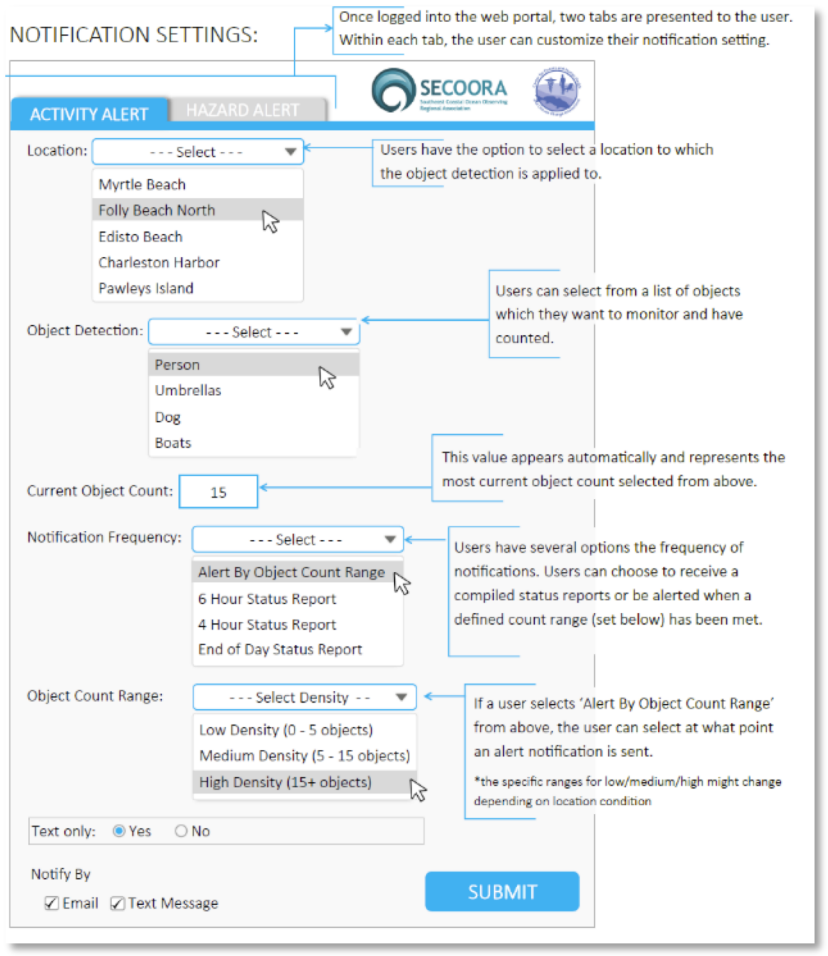
Situational Monitoring and Reporting Tool

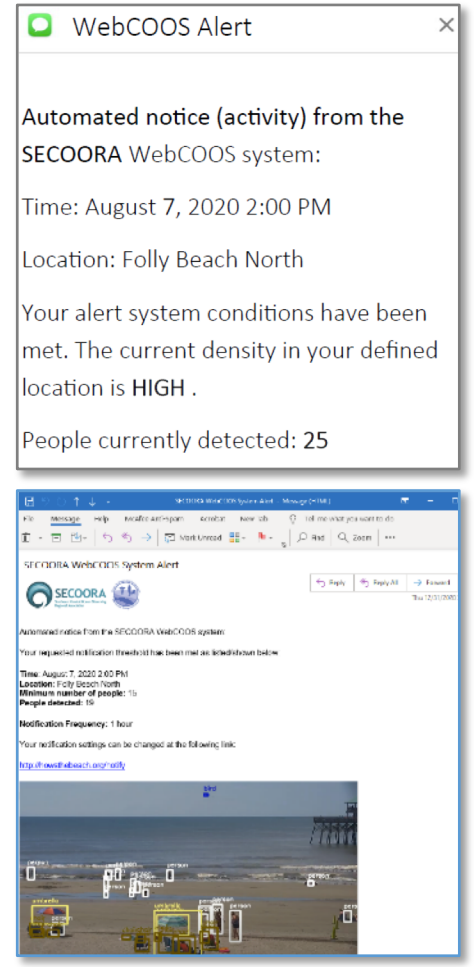
Automated Beach Usage Detection



Flooding Monitoring



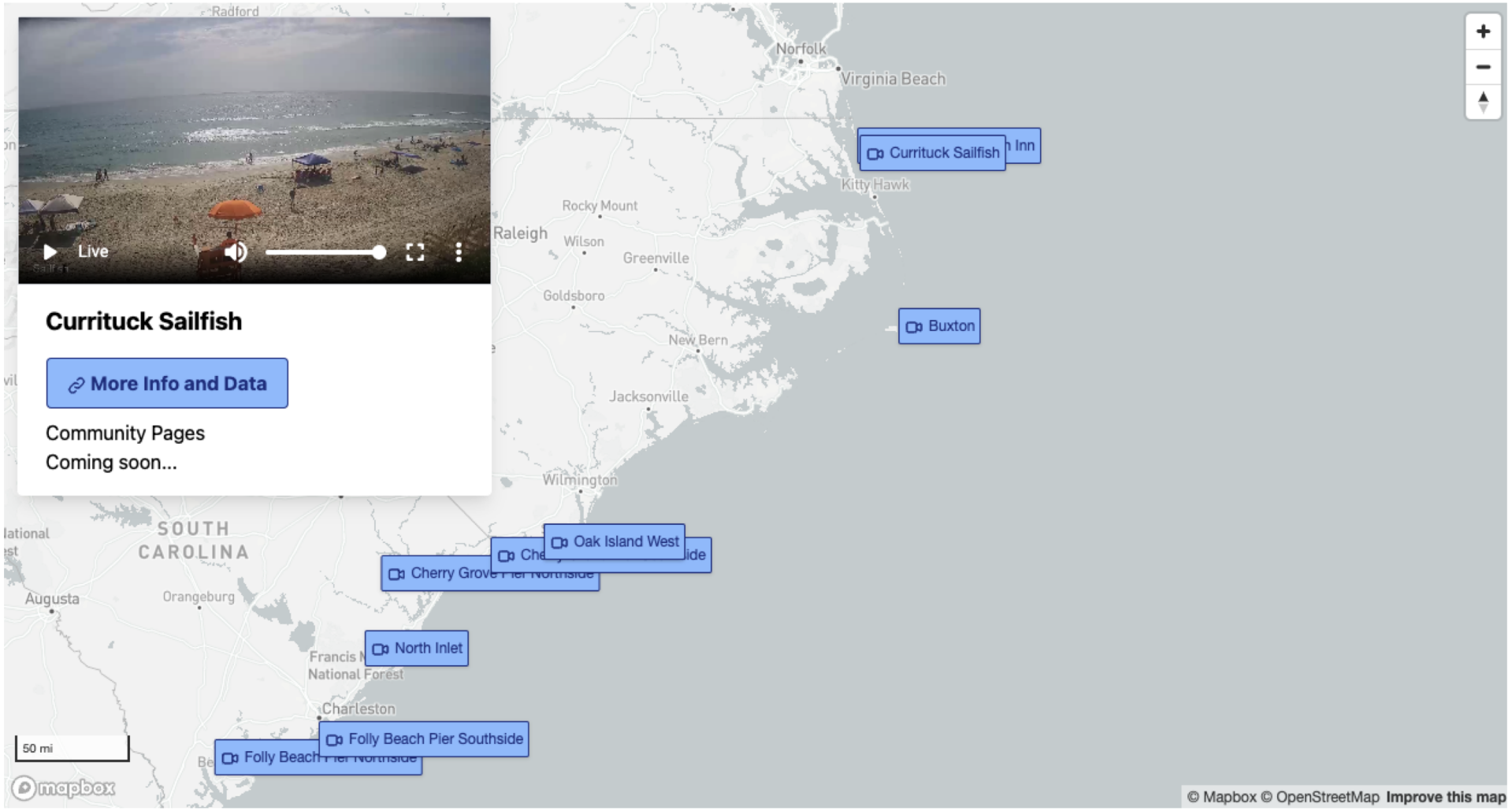
User Interface



Notification Systems

University of South Carolina Team Members : Dr .Dwayne Porter, Lead PI | Jeremy Cothran, Software Developer | Louisa Schandera, Ph.D. Student
porter@sc.edu jeremy.cothran@gmail.com louisas@email.sc.edu

WebCOOS data access



Next steps

- Complete initial WebCOOS site
- Deploy WebCOOS supported cams and cameras of opportunity
- Operationalize imagery products
- Begin national network pilot and strategic plan

Contact the WebCOOS team: webcoos@secoora.org