



DEPARTMENT OF  
AGRICULTURAL ECONOMICS

## Update on GCOOS Valuation Project

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GCOOS-RA Meeting

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# The Economic Benefits of the Gulf of Mexico Coastal Ocean Observing System (GCOOS)

- ❑ Cooperative Agreement M13AC00014 between BOEM and the Coastal Marine Institute at LSU
- ❑ Period of performance: Sept 2013 – Feb 2018
- ❑ MSU subaward



**MISSISSIPPI STATE**  
**UNIVERSITY**  
Department of Agricultural Economics

# Outline

- Valuation Strategy
  - BOEM Cooperative Agreement Update
  - Survey Update
  - Overview of results from pilot Vessel survey
  - Way Forward
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- **WARNING: THE STORY YOU ARE ABOUT TO HEAR IS ANTI-CLIMACTIC**

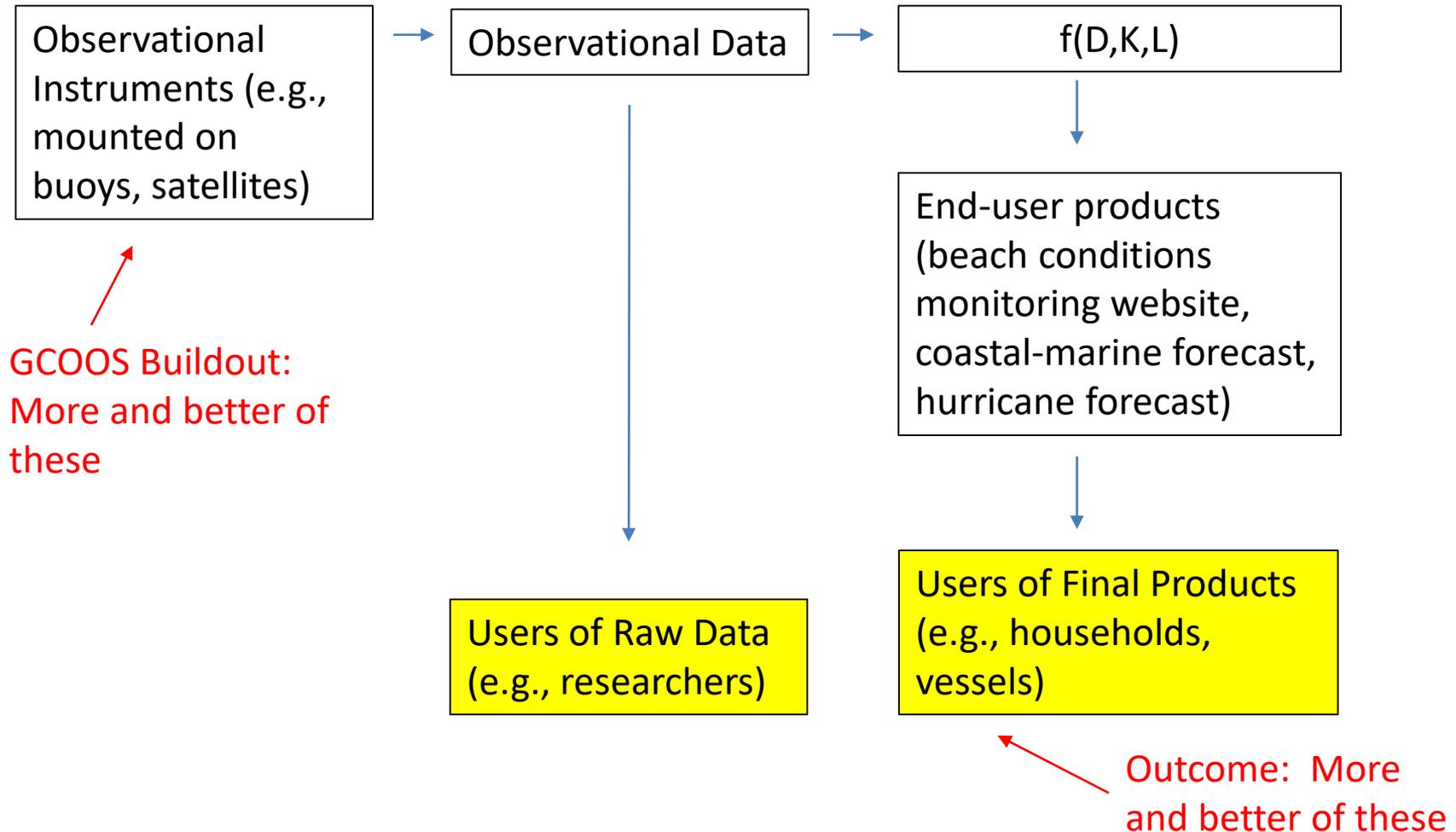


# Valuation Strategy

- ❑ Economic Value has meaning only when evaluating a well-defined *change* from a well-defined base.
  
- ❑ What is the *change* to consider in this case?
  - GCOOS Buildout



# Conceptual Diagram of GCOOS Uses and Users



# Measuring the benefits: So what, exactly, is to be valued?

## ❑ Shares characteristics with Ecosystem Service Valuation

- Lots of important background stuff (data, instruments akin to ecosystem *functions*)
  - Most not relevant to public
- Only the “final goods/services” (forecasts, advisories akin to ecosystem *services*)
  - Relevant to public: this is the point of valuation

## ❑ GCOOS has lots of moving parts

- How much can we reasonably expect to capture in a single valuation exercise (or even a few of them)?



# Our Proposed Approach

- ❑ Select set of “key” final products relevant to general public explicit or implicit in buildout
  - Expanded beach conditions monitoring system
  - Improved coastal-marine forecast
  - Improved hurricane forecast
- ❑ Use survey-based valuation methods to estimate incremental value of each component
  - No data exist to pursue Revealed Preference Methods
  - Literature is sparse
- ❑ Sum up selected estimates to yield lower bound on full value of buildout



# Populations of Interest

## ❑ Expanded Gulf-wide Beach Conditions Monitoring Program

- Gulf Coast HHs that have visited Gulf beach in past 12 months
  - GfK Knowledge Panel (estimated 35-50% incidence)

## ❑ Improved Coastal-Marine Forecast

- Gulf Coast coastal-marine vessel owners/operators
  - via state vessel registration lists

## ❑ Improved Hurricane Forecast

- Apply Jeff Lazo's (NCAR) ongoing work (survey of Houston & Miami HHs)



# OMB Clearance / BOEM Coop Agreement

- ❑ Survey must go through OMB clearance
  - Must be cleared by sponsoring agency (BOEM)
- ❑ 2015-2016: due to BOEM personnel turnover, very little happened
  - Permanent replacement named mid-summer 2016 (Anna Atkinson)
- ❑ Mid-summer 2016: process began in earnest
  - Supporting Statements A & B, 60-day Fed Register Notice, etc., submitted
  - 60-Day Notice published in Fed Register on Dec. 19, 2016
  - 30-Day Notice drafted in Jan. 2017, but then languished...
  - BOEM comments received end of March & April 2017
    - Responses & revisions sent back April 11
  - Beginning of May...still waiting on 30-Day Notice approval
  - End of June...publication of 30-Day Notice targeted for August...but never happened
  - **Aug 28...informed that BOEM will not be moving survey – or any other information collections--forward**
  - **Sept 5: BOEM informs us that either we close out the project or redirect funds to another topic. But anything related to GCOOS off the table.**



# In the meantime, however...

- ❑ As surveys appeared to be making way through the process...
- ❑ We got everything in place to launch them
  - Including setting up a \$33K contract with GfK Custom Research (a highly-respected online sample firm) for the beach monitoring system survey
  - As well as having them program the survey to administer it
- ❑ And my master's student, Ruth Quainoo, adopted the GCOOS Beach monitoring system valuation survey as her thesis topic...
  - (project partially funded her stipend, tuition, etc.)
  - Defended thesis proposal in June 2017
  - Targeted final thesis defense and graduation of May 2018



# Ongoing...

- ❑ There is some outside chance that LSU AgCenter would fund beach survey internally
  - Waiting since early September...

# Also in the meantime...

- ❑ Rex Caffey's master's student, Cody Plummer (who received no BOEM funding), chose to pursue a parallel version of the Coastal-Marine Vessel survey for his master's thesis
- ❑ Mitch Roffer agreed to let him survey his ROFFS Fishy Times Newsletter subscribers
  - Some of you may have received it...
- ❑ He conducted a pilot version of the survey on this sample in September 2016
  - Defended thesis and graduated in Summer 2017



# Coastal Marine Vessel Pilot Survey

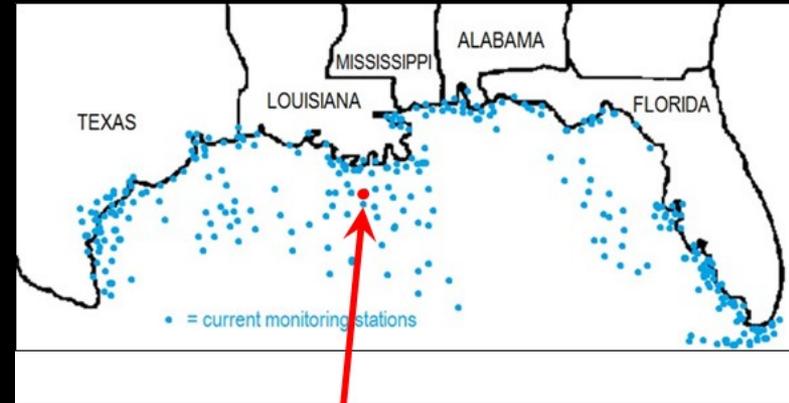
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- Effort led by Cody Plummer, LSU master's student
- Opportunity to engage a targeted population of **avid** users of networks similar to GCOOS
  - Data repackaging services
- Population provided by Mitchell Roffer Ph.D., proprietor of Roffers Offshore Fishing Forecast Service (ROFFS)

**ROFFS**<sup>TM</sup>  
ROFFER'S OCEAN FISHING FORECASTING SERVICE, INC.

# Valuation Scenario

- Under current funding, there are 321 stations and sensors monitoring coastal-marine conditions throughout the U.S. Gulf of Mexico. There is a proposal to expand this network by an additional 129 stations, a 40% expansion, for a total 450 stations and sensors Gulf-wide
- While specific benefits of this build-out will vary by location and user need, the expansion has the overall potential for:
  - improved accuracy of real-time weather and sea-state observations
  - improved accuracy of coastal marine forecasts
  - more advanced notification of hazardous weather
  - expanded monitoring of atmospheric and water data
- This expansion of the network would not be free. It would require additional funds, at taxpayer expense, to purchase the needed monitoring equipment, to hire additional personnel, and maintain the system
- Suppose a vote were held today on whether to expand the network of coastal-marine monitoring stations at a one-time cost of \$X per taxpaying household

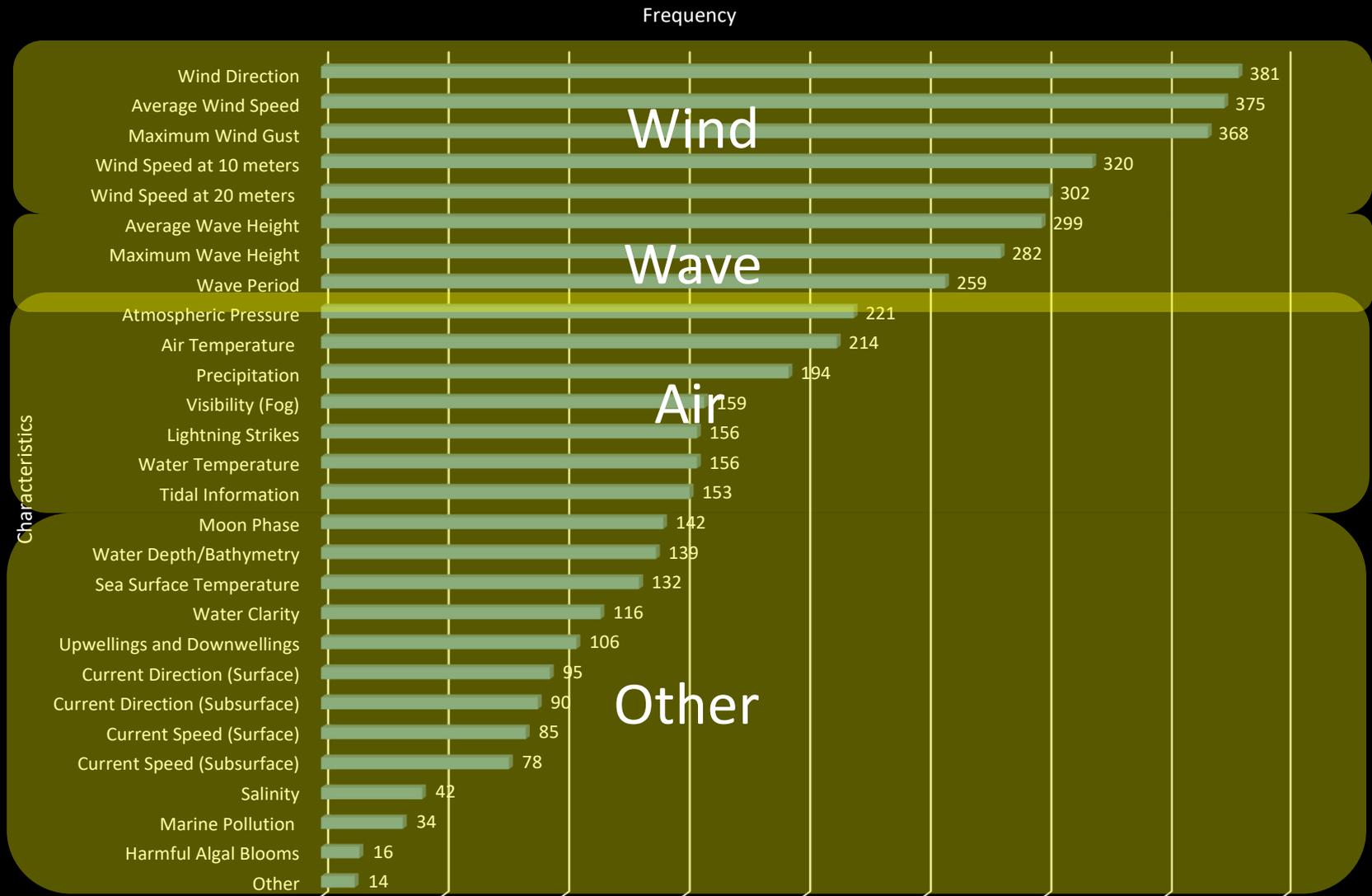


Historical plot	Parameter	Measurement
	Wind direction	ESE ( 120 deg true )
	Wind Speed (WSPD):	13.6 kts
	Wind Gust (GST):	15.5 kts
	Wave Height (WHT):	5.2 ft
	Dominant Wave Period (DPD):	6 sec
	Atmospheric Pressure (PRES):	30.16 in
	Air Temperature (ATMP):	67.5 °F
	Wind Speed at 10 meters (WSPD10M):	13.6 kts
	Wind Speed at 20 meters (WSPD20M):	15.5 kts

# Vessel Characteristics

	Combined		Atlantic		Gulf	
	Count	Percentage	Count	Percentage	Count	Percentage
<b>Owner of Boat</b>						
Yes	298	73.9%	212	77.1%	58	63.1%
<b>Length of Boat</b>						
< 25 ft. (1)	74	18.3%	53	19.3%	15	17.4%
26-40 ft. (2)	234	57.8%	166	60.4%	48	52.2%
> 41 ft. (3)	97	23.9%	56	20.3%	28	30.4%
<b>Purpose of Boating</b>						
Recreational fishing	327	81.1%	229	83.3%	70	76.1%
Charter fishing	31	7.7%	21	7.6%	8	8.7%
Commercial fishing	9	2.2%	3	1.1%	5	5.4%
Sailing	2	0.5%	2	0.7%	0	0%
Tourism	9	2.2%	5	1.8%	0	0%
Maritime T&C	1	0.2%	0	0%	1	1.1%
Oil & Gas Service	2	0.5%	1	0.4%	1	1.1%
Research	15	3.7%	10	3.6%	4	4.4%
Other	7	1.7%	4	1.4%	3	3.3%

# What type of information are they seeking?



# Raw Vote Responses

## Bids for expanding the network

WTP <sub>Aggregate</sub>	\$1	\$2	\$4	\$6	\$10	Total
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Yes	77 (92%)	58 (83%)	61 (84%)	64 (81%)	70 (73%)	330 (82%)
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WTP <sub>Atlantic</sub>	\$1	\$2	\$4	\$6	\$10	Total
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Yes	56 (25%)	39 (17%)	36 (16%)	47 (21%)	49 (21%)	227 (81%)
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WTP <sub>Gulf</sub>	\$1	\$2	\$4	\$6	\$10	Total
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Yes	16 (21%)	11 (14%)	17 (22%)	17 (22%)	16 (21%)	77 (83%)
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# Estimated Value of Expansion

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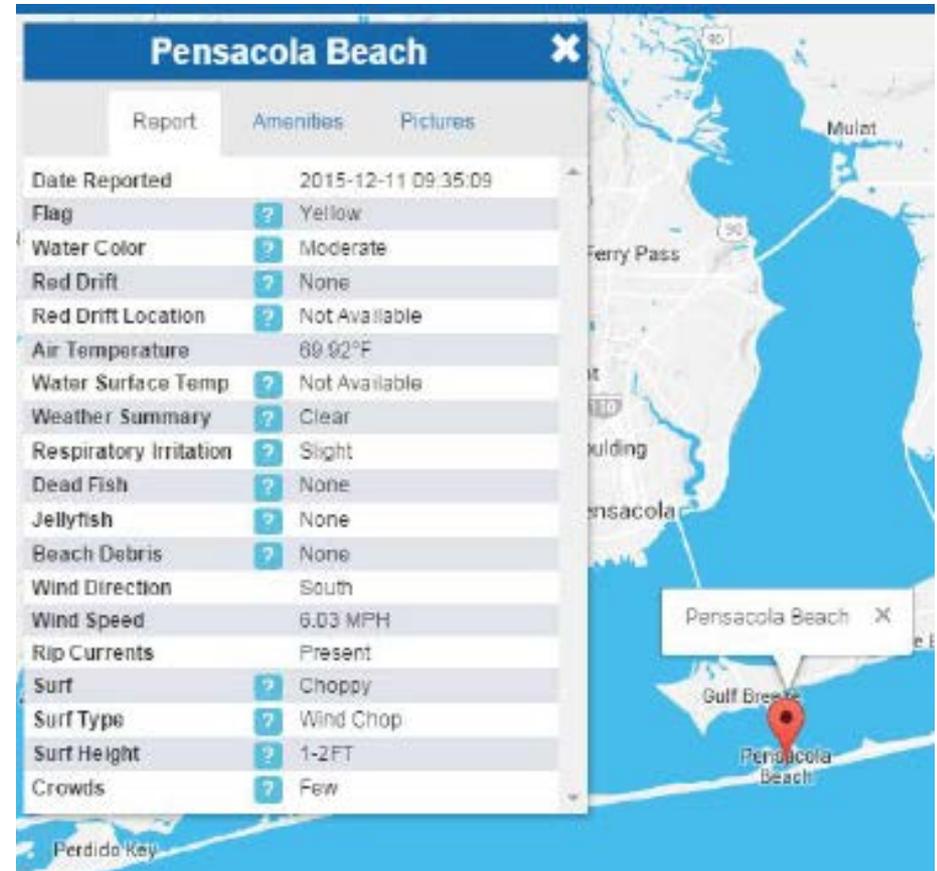
- Mean WTP estimated at **\$18.41** per person (one-time payment) for the proposed 40% expansion in the number of GOM stations.
- 95% Confidence Intervals by region:
  - Aggregate: **\$7.22 - \$29.59**
  - Atlantic: **\$10.02 - \$32.38**
  - Gulf: **\$10.24 - \$32.61**

# Things to Keep in Mind

- Results are from a pilot survey
  - Goal was to test survey instrument and provide student data for thesis
- Population of interest is Vessel owner/operators in the Gulf
- But sample is not likely representative of this population
  - Dominated by Atlantic region respondents (227, only 77 from Gulf)
  - Appears dominated by high-intensity data users: high income, college-educated, white males, fishing vessels (26-40'), 32-40 trips per year, 25-45 miles offshore trips, tend to pay for additional services
  - Exact number of individuals reached unknown
    - Email list, so some may be outdated, ignored, sent to junk mail, etc.
  - Estimated response rate pretty low (assuming estimated number of contacts is right)
- Because of all of the above, aggregation of welfare estimates to a population of interest is not recommended.

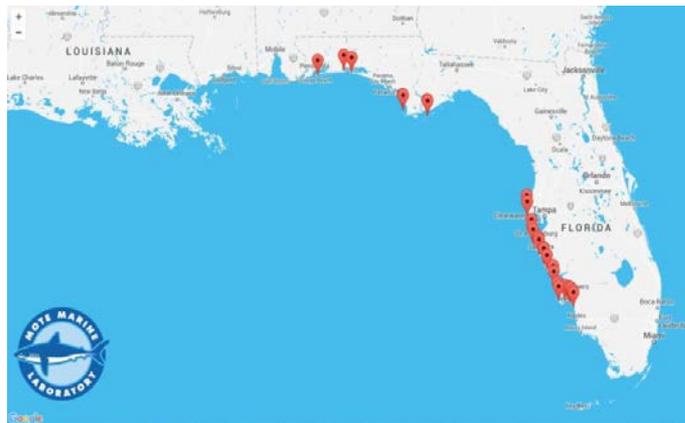
# Expanded Beach Conditions Program Survey

- Would be administered to representative sample of 1,100 beachgoing Gulf HHs.
- via GfK Custom Research
  - Owner of the only probability-based online sample in U.S.
    - both online and offline populations
    - NOT an opt-in or convenience sample
- Would provide estimate of the value to the public of GCOOS-proposed expansion of current Mote beach monitoring systems to all 5 Gulf states



# Expanded Beach Conditions Program Scenario

- **VALUATION SCENARIO LANGUAGE:**
- There is a proposal to expand this website to public beaches across all 5 Gulf Coast states.
- With the beach conditions monitoring service in place, the conditions at any of the 28 currently-monitored beaches in Florida plus the 48 additional beaches in Alabama, Florida, Louisiana, Mississippi, and Texas would be accessible from a website on your computer, smart-phone, or other device, just like the example shown earlier.
- There would be a subscription fee to access the service. The fee would be \$X per month.
- The fee would be paid online, to the provider of the service, just like you would pay for any other subscription to an online service. Access would require a log-in name and password, provided to you after paying the subscription.
- The subscription would be month-to-month. So you could subscribe to as few or as many months as needed.
- So, based on what we've told you about the beach conditions monitoring service, if it were available, do you think you would pay the \$X per-month fee to access it during at least one month out of a typical year?



# The Way Forward?

- If we can find funding to complete the work anyway, we'll do so.
  - We are invested in it; student is depending on it
- If not:
  - Ruth needs to throw it in reverse, scramble for new topic, etc.
  - Although Cody's results are informative, they are not appropriate for putting value on GCOOS benefits
  - Overall project and objectives will need to be abandoned

# THANKS!

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**ANYONE ELSE???**

