An aerial photograph of ocean waves, showing white foam and deep blue-green water. A semi-transparent teal rounded rectangle is overlaid on the center of the image, containing white and orange text.

**A more robust approach to assessing the  
potential costs and benefits of electronic  
monitoring: a case study of the tuna  
longline fishery in the Eastern Pacific  
Ocean**

**Anthony Rogers**

**Sea Change Economics, LLC**



# Study outline

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- **Collaborators:**
  - **Dr. Josh Graff Zivin, UC San Diego**
  - **Dr. Dale Squires, NOAA**
- **Cost-benefit analysis**
- **Eastern Pacific Ocean**
  - **Tuna longline fishery**
- **Central question:**

**“How likely are positive economic benefits if an electronic monitoring program is implemented for the longline tuna fishery in the Eastern Pacific Ocean?”**

**Assessing the potential costs and benefits of electronic monitoring for the longline fishery in the Eastern Pacific Ocean**

Anthony Rogers, *Sea Change Economics, LLC*  
Dr. Dale Squires, *National Oceanic and Atmospheric Administration*  
*and University of California, San Diego*  
Dr. Joshua Graff Zivin, *University of California, San Diego*

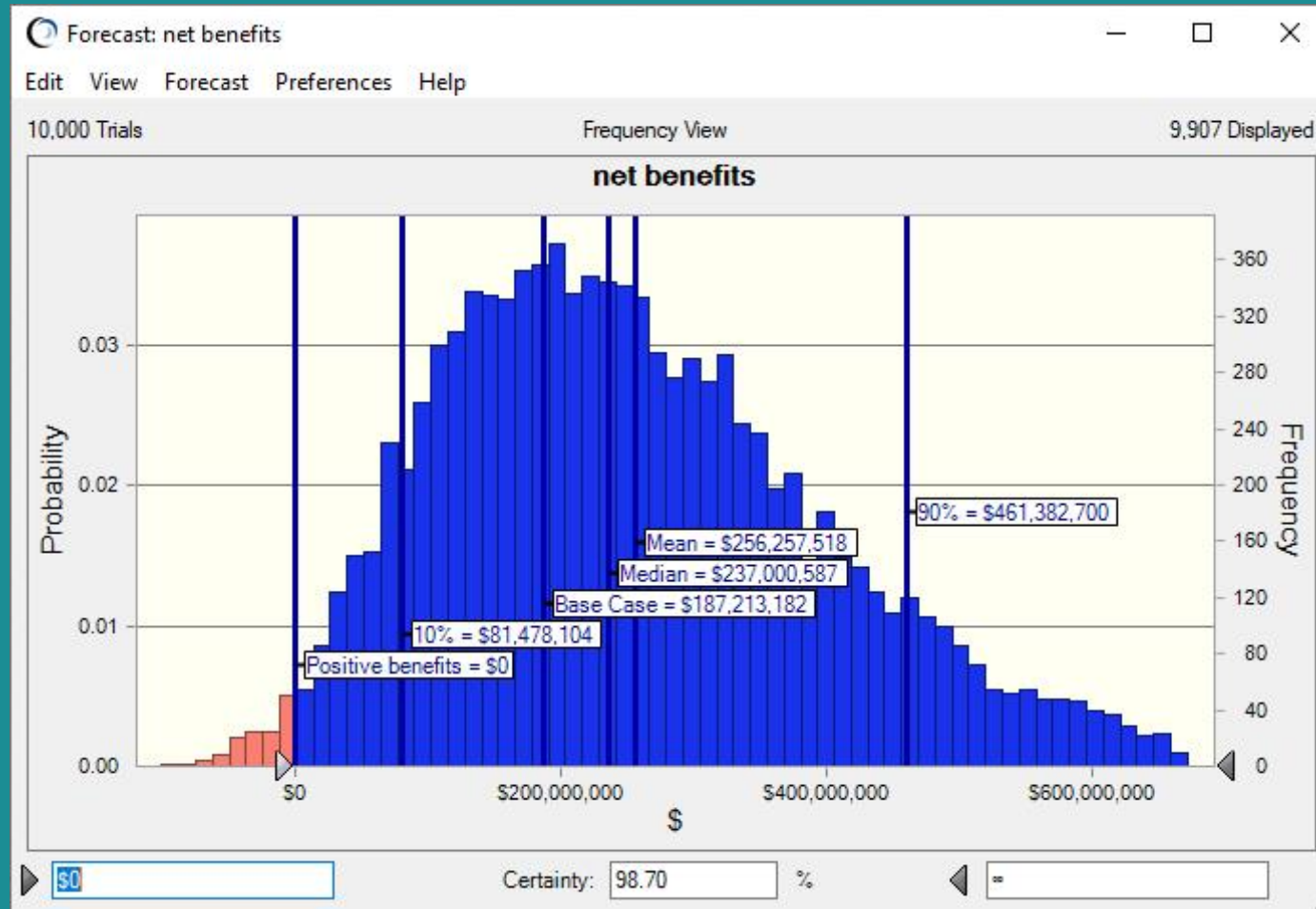
# Approach

- **Cost-benefit analysis**
  - **Net benefits = Benefits – Costs**
- **10 year time horizon**
- **Different scenarios explored**
  - **5/10/20% observer coverage**
  - **On board observers = 5% baseline**
- **Potential challenges:**
  - **Single (“point”) estimates**
  - **Uncertain future costs**

Table 11. Parameter Values Used in the Base Economic Model.

Component	Value (low)	Value (high)	Value (median)	Value (mean)	unit
<b>EPO</b>					
Total EPO annual catch	780,561	856,404	836,817	825,154.80	mt
Longline (LL) catch - total EPO	104,466	159,660	144,379	139,318	mt
Longline vessels in fleet	1,113	1,253		1,183	#
Sets per year - LL whole EPO	111,827.92	254,795.43	186,928.49	187,913.16	sets/year
Total observers in EPO per year	272	302	282	285	#
Cost of IATTC observer program	2,642,531	2,743,292	2,705,041	2,699,664	\$/year
<b>Observer Costs</b>					
Video reviewer wages	30	97	64	64	\$/day
Video reviewer - sets per day	2	9	5	5	days/year
Video reviewers - # employed	-	-	-	36	days/year
Video reviewer - # of days worked per year	95	197	160	155	days/year
Onboard observer wages	48	380	65	148	\$/day
Onboard observer - sets per day	1	2	1	1	#/day
Onboard observer - average days at sea per year	95	197	160	155	days/year
Onboard observers - # employed	-	-	-	61	#
Onboard training	29	127	97	83	\$/observer
Onboard observer - supplies & equipment	56	109	79	82	\$/observer
Onboard observer - travel	357	497	449	434	\$/observer
Onboard observer - insurance & benefits	707	1,301	1004	1,004	\$/observer
Administrative staff wages	1,004	1,205	1,050	1,100	\$/observer

# Monte Carlo simulation results



# Key takeaways

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- 1. EM adoption is highly likely to produce net economic benefits**
- 2. The results of this analysis are robust to different cost & benefit choices, and uncertainty from future EM cost changes**
- 3. EM has significant potential to scale up once the initial investment has been made**
- 4. The approach in this analysis can be easily translated to other regions & fisheries**

Thank You!

**Thank you**