



Parachute science in Hawai'i:

Assessing local connectivity of Hawai'i-based marine and coastal research

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Parachute science and scientific colonialism

- The practice of obtaining data, resources from other countries while not returning research outputs or benefits is increasingly recognized as “**scientific colonialism**”
- Recent study on parachute science in the Coral Triangle shows the extent of externally-driven research across Moananuiākea

Given the deep impacts of parachute science on local communities, **is this happening here in Hawai‘i? If so, how can we recognize and quantify its extent?**

Current Biology

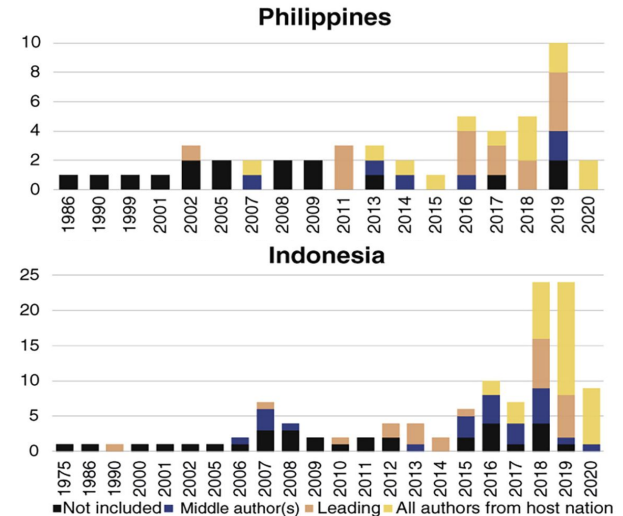


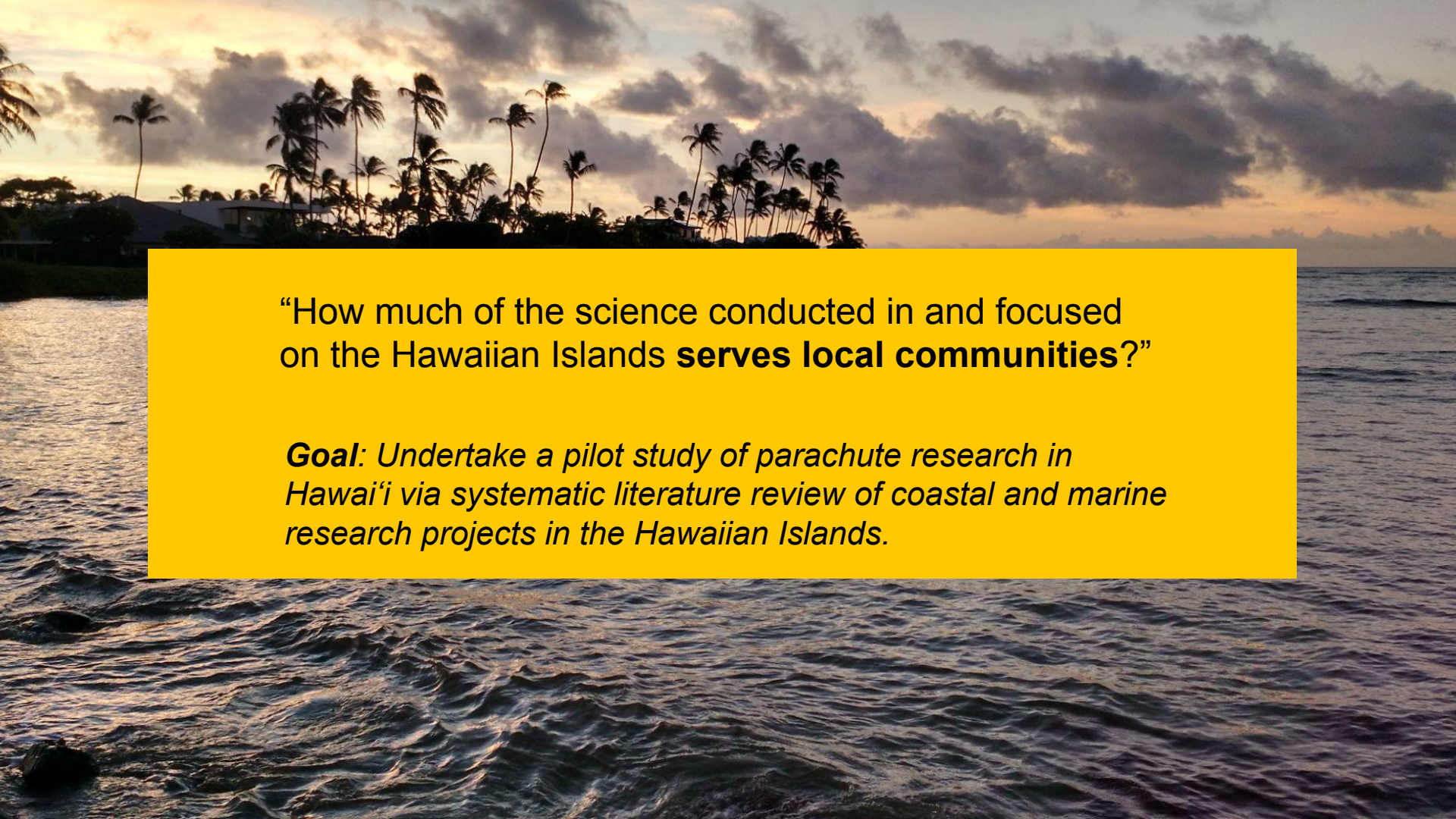
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Correspondence

Turning the tide of parachute science

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A tropical sunset scene with palm trees and a house on a hill overlooking the ocean. The sky is filled with dramatic, dark clouds, and the sun is low on the horizon, casting a warm glow. The water in the foreground is dark and textured with small waves.

“How much of the science conducted in and focused on the Hawaiian Islands **serves local communities?**”

Goal: Undertake a pilot study of parachute research in Hawai'i via systematic literature review of coastal and marine research projects in the Hawaiian Islands.

Central questions

- **Question 1:** How many authors that publish research based in Hawai'i or using data collected from Hawai'i are also based at Hawai'i institutions?
- **Question 2:** What are the major funding sources of this work, and how much is directed towards Hawai'i-based researchers?

Pilot study aim 1: Determine the percentages of Hawai'i-based authorship vs externally-based authorship of Hawaiian Islands coastal and marine research published between 1990 and 2020 using the Google Scholar database.

Pilot study aim 2: Examine NSF awards to research on or in Hawai'i and determine whether this funding is directed locally or externally.

Study methods

Assessing “locally-based” authorship

- Publications that have at least one author at a Hawai'i institution are coded as **Hawai'i-based**
- Publications with no authors at a Hawai'i institution are coded as **externally-based**

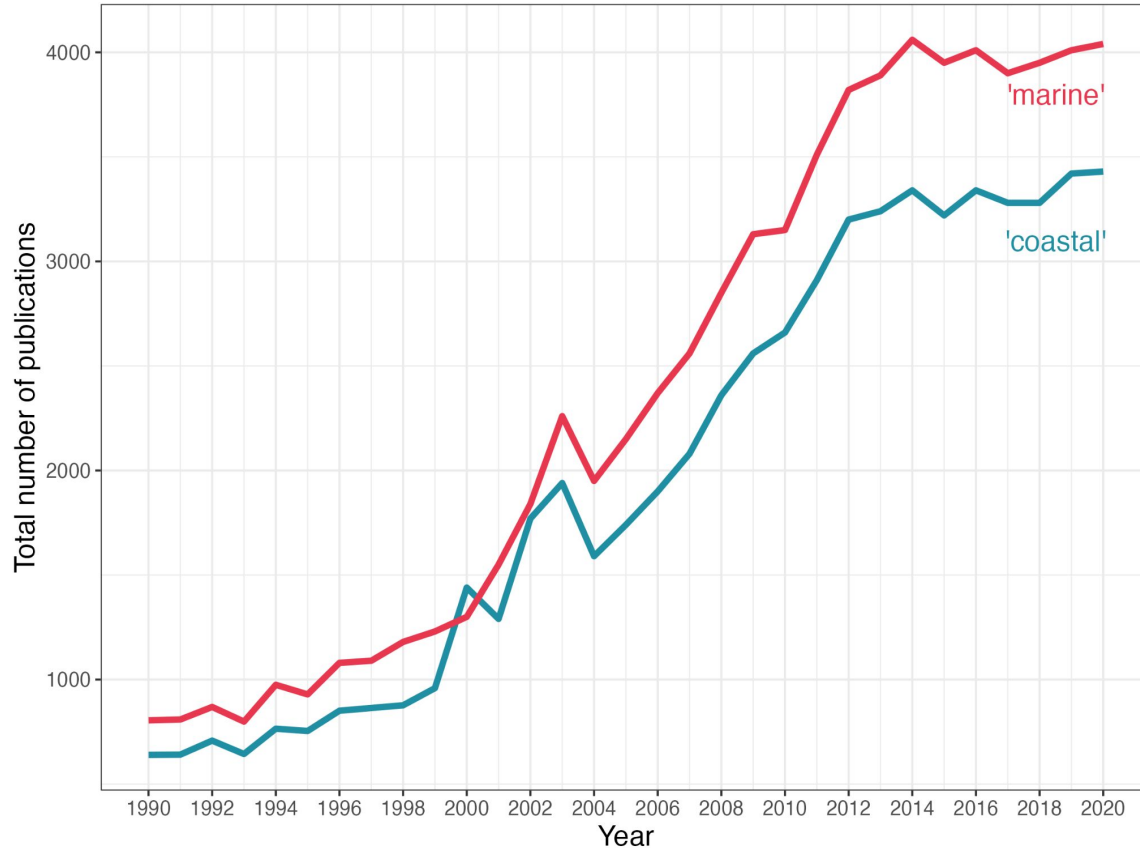
Pilot Data Collection: Google Scholar

- Examined 3 decade interval from 1990-2020
 - Search terms: “**Hawaiian Islands Marine**”, “**Hawaiian Islands Coastal**”
 - Zip codes used to extract author affiliations

Limitations

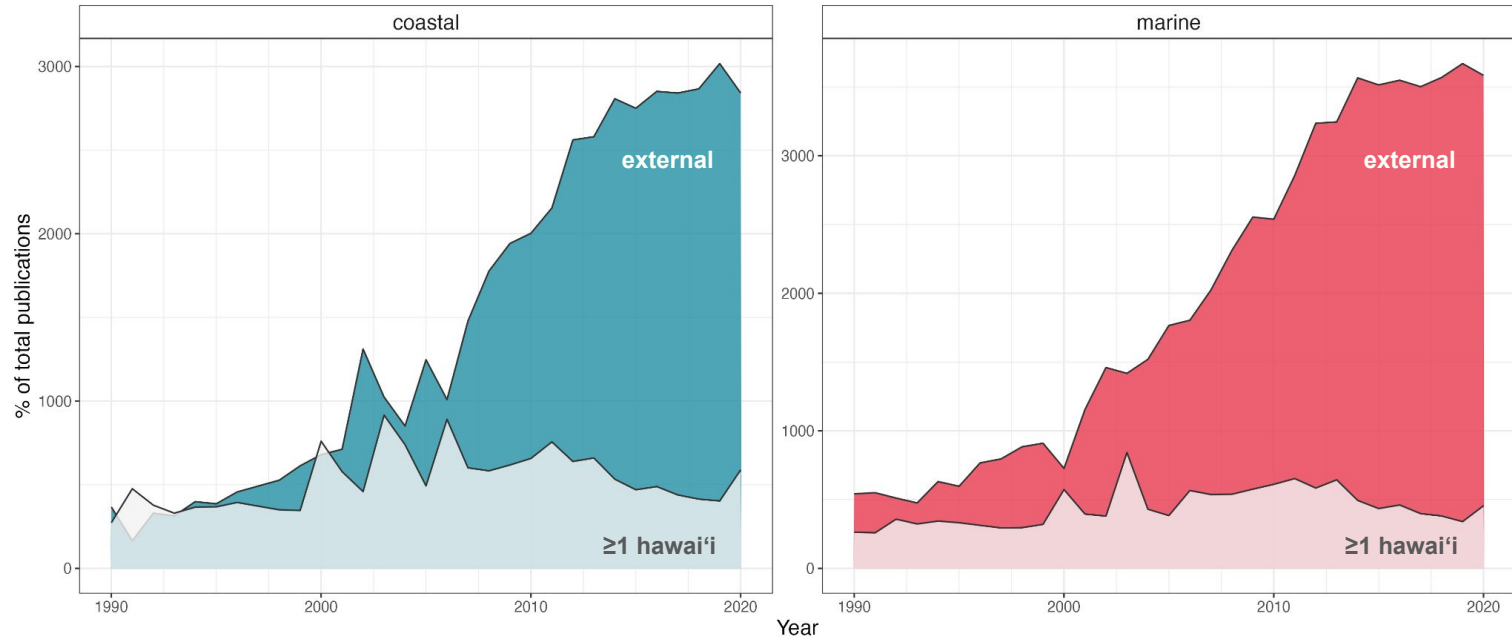
- Google scholar does not allow metadata downloads; counts may include non-related studies or duplicate publications
- “Hawai'i-based” is not equivalent to **local** and does not indicate extent of community connection to research

Publications (research) on Hawai‘i has increased



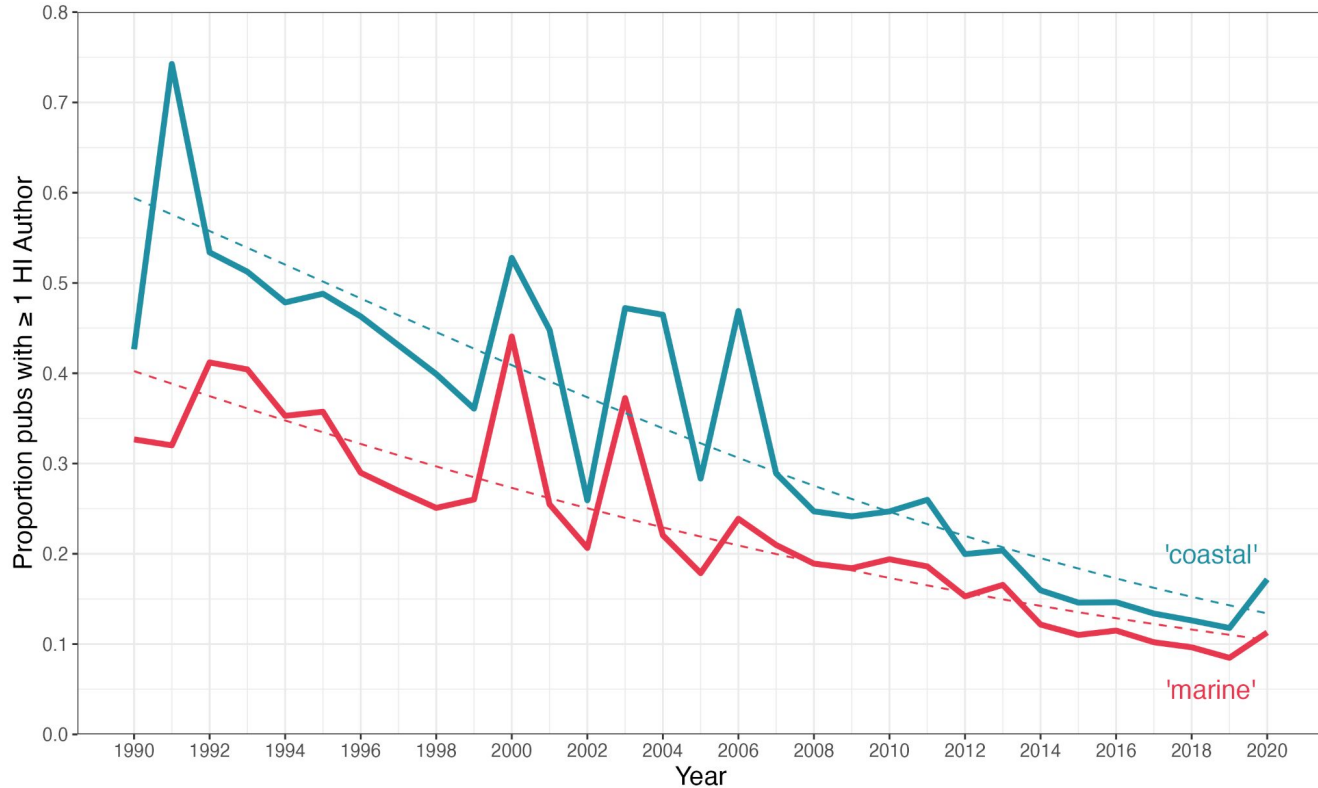
The number of Hawaiian Islands marine and coastal publications have steadily increased over the past three decades

...But this growth is driven by external authorship



Despite increases in total manuscripts, the number of coastal & marine research publications with Hawai'i authors has not dramatically changed in 30 years

Hawai'i authorship is becoming more rare



With large increases in external authorship come large decreases in Hawai'i-based authorship as a proportion of total publications

What drives growth of external authorship?

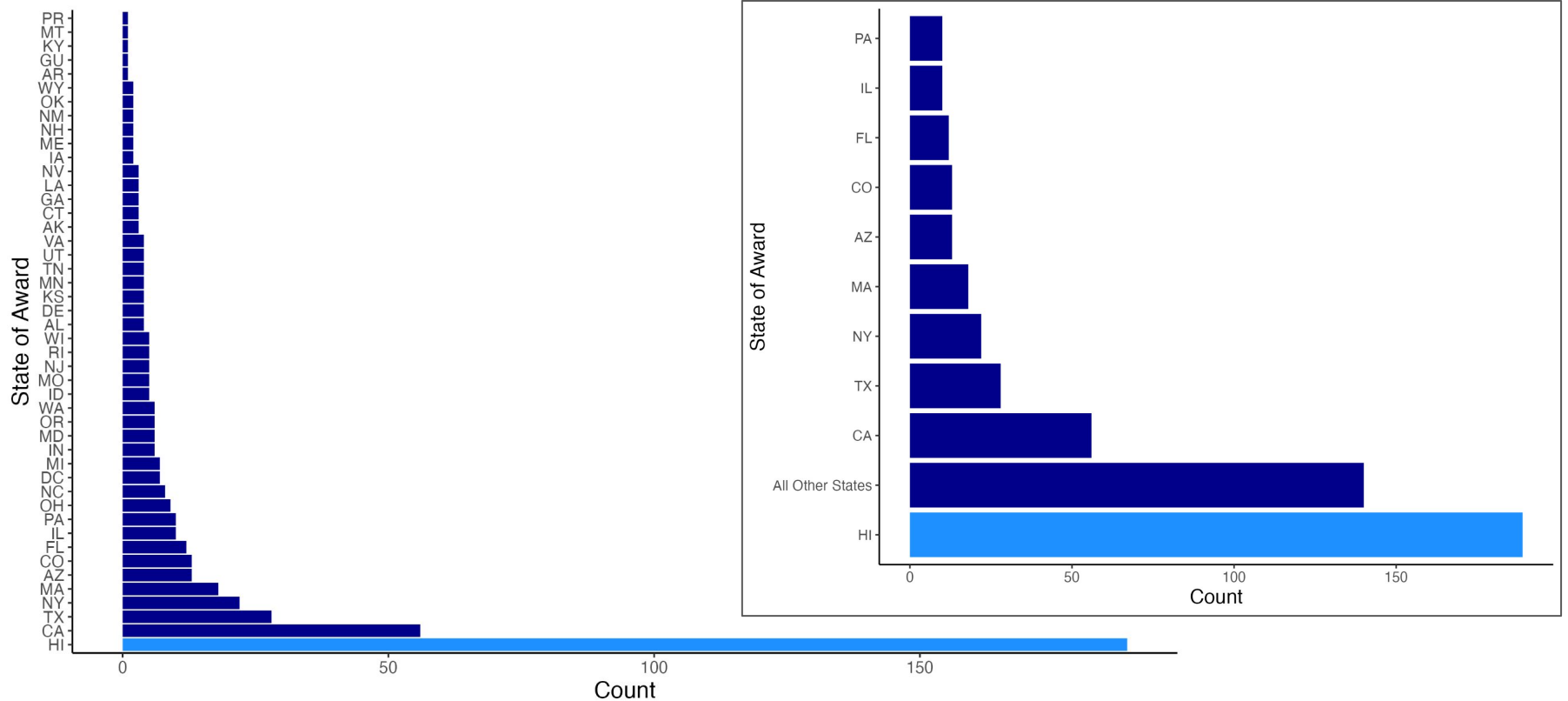
How can we explain these trends?

- Increased data accessibility for external or remote researchers
- Barriers to publication for Hawai'i-based authors
 - **Do funding flows incentivize externally-driven research?**



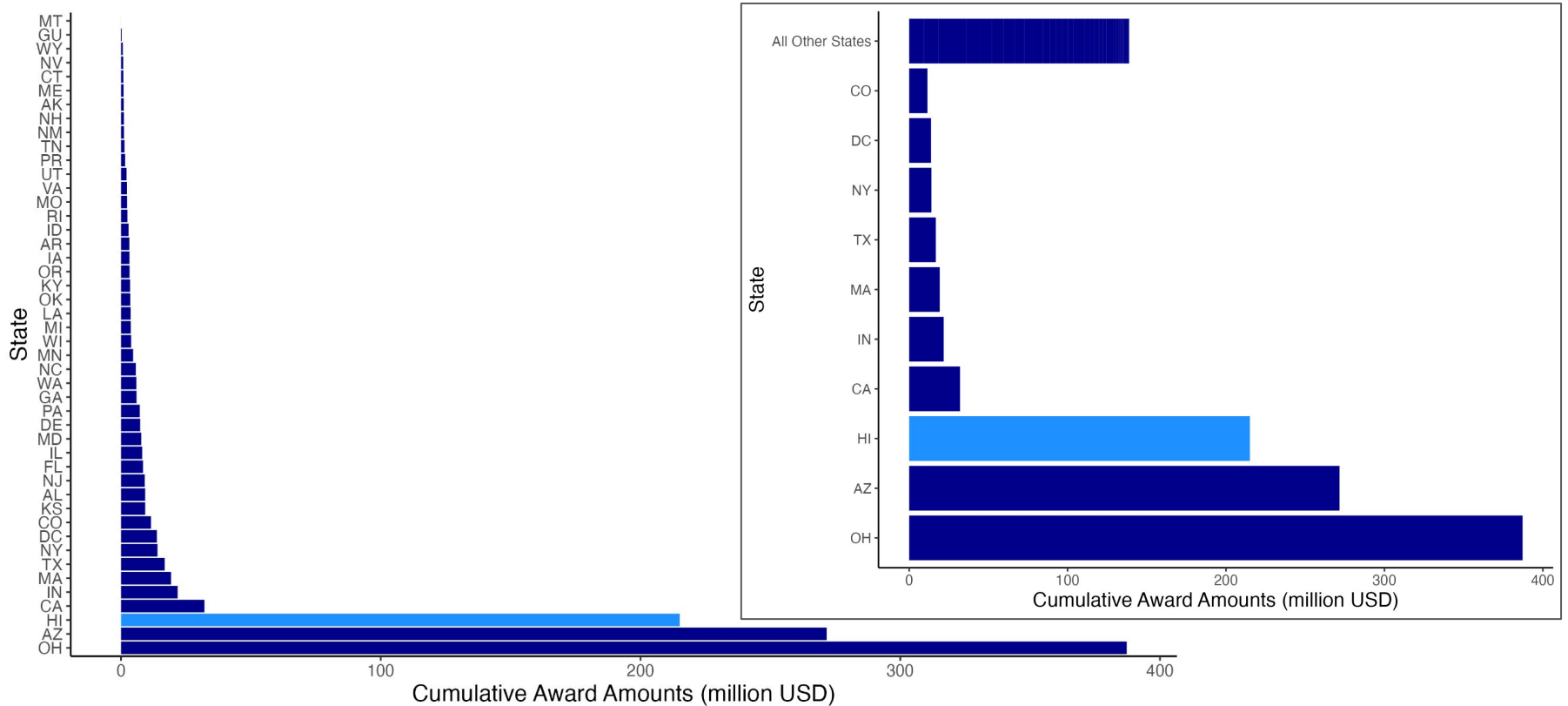
Pilot study aim 2: Examine NSF awards to research on or in Hawai'i and determine whether this funding is directed locally or externally.

Active NSF awards show some funding flows



The majority of NSF- funded projects on Hawai'i are conducted in Hawai'i...

Active NSF awards show some funding flows



...but much funding is directed out of state

Do NSF grants reflect differentiation in research type?

- Hawai'i receives most awards, but not always the largest monetary amounts
- Potential mismatch in where infrastructure is situated vs. where analyses are undertaken?
- Across NSF, major monetary players in Hawai'i are *astronomy collaborations* and *large-scale ecological observatory networks*



Further research needed to determine NSF breakdowns by state, institution

PILINA KAI

Assessing local connectivity of Hawai'i-based marine and coastal research



For more information about this research, kindly visit:
[HTTPS://SEAGRANT.SOEST.HAWAII.EDU/](https://seagrant.soest.hawaii.edu/)



Future Directions

- Pilot study drafted as HISG report by Rappa Fellow S. Chin
- Diversity databases queried (e.g., WoS, Scopus) and download full metadata
- Search abstracts and acknowledgements for references to reciprocal science
- Undertake a network analysis of the authors
- Expand search terms - “astronomy,” “ocean,” “volcanism,” etc.
- Assess Hawai'i NSF funding by activity type (Research vs. Non-Research Awards)
- **Do you have any ideas?**

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EXTRA: Active NSF awards show some funding flows

