



DEPARTMENT OF COMMERCE RESEARCH PERFORMANCE PROGRESS REPORT (RPPR)

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AWARD INFORMATION	
1. Federal Agency: Department of Commerce / NOAA	2. Federal Award Number: NA21OAR4320203
3. Project Title: Cooperative Institute for Marine Ecosystem and Resources Studies (CIMERS)	
4. Award Period of Performance Start Date: 10/01/2021	5. Award Period of Performance End Date: 09/30/2026
PRINCIPAL INVESTIGATOR/PROJECT DIRECTOR	
6. Last Name and Suffix: ,	7. First and Middle Name: ,
8. Title:	
9. Email:	10. Phone Number:
AUTHORIZING OFFICIAL	
11. Last Name and Suffix: Ozkan-Haller , null	12. First and Middle Name: Tuba ,
13. Title: Assoc VP for Research, Finance, and Ops	
14. Email: sponsored.programs@oregonstate.edu	15. Phone Number: 5417374933
REPORTING INFORMATION	
Signature of Submitting Official: Zachary Gill	
16. Submission Date and Time Stamp: 07/31/2023	17. Reporting Period End Date: 06/30/2023
18. Reporting Frequency: <input checked="" type="radio"/> Annual <input type="radio"/> Semi-Annual <input type="radio"/> Quarterly	19. Report Type: <input checked="" type="radio"/> Not Final <input type="radio"/> Final
RECIPIENT ORGANIZATION	
20. Recipient Name: OREGON STATE UNIVERSITY	
21. Recipient Address: 1500 SW JEFFERSON ST, CORVALLIS, OR 97331-8655 USA	
22. Recipient UEI: MZ4DYXE1SL98	23. Recipient EIN: 611730890

ACCOMPLISHMENTS

24. What were the major goals and objectives of this project?

The major goals of the Cooperative Institute for Marine Ecosystem and Resources Studies (CIMERS) are to:

1. co-produce knowledge with NOAA researchers, resource managers, and stakeholders to understand and predict changes in ocean ecosystems, habitats, resources, coastal communities, and economies,
2. build effective, collaborative, and transdisciplinary teams that develop solutions to complex challenges posed by interacting human and ocean system changes and the needs of a science-empowered sustainable ocean economy,
3. provide a nimble research infrastructure that allows NOAA and OSU to develop and employ technological innovations to anticipate and respond to emerging ocean management challenges,
4. Effectively share knowledge to inform the sustainable use and stewardship of ocean ecosystems and society's ability to adapt to and mitigate the risks of climate change,
5. support and train a diverse and inclusive ocean science workforce that is reflective of the nation that we serve.

CIMERS addresses these goals through collaborative research and training with NOAA partners including the Pacific Marine Environmental Laboratory (PMEL), Northwest Fisheries Science Center (NWFSC), Alaska Fisheries Science Center (AFSC), and the Office of National Marine Sanctuaries (ONMS).

25. What was accomplished under these goals?

The CIMERS award is in the beginning phase and we are beginning to make progress on project goals. These include (numbers reference goals in question 24) efforts in support of:

- Goal1: Engagement of commercial fishermen, Tribal entities in development of research ideas and projects to support climate-resilient fisheries and inform impacts of offshore wind development.
- Goal2: Partnership with OSU's research office to develop training and teams in transdisciplinary research.
- Goal3: Hiring and support of new faculty to respond to emerging expertise needs in marine acoustics and genomics integration, new biomarkers-based research into impacts of ocean acidification and other ocean stressors, ocean ecosystem and fisheries modeling, protected species conservation and management science.
- Goal4: Informed state and federal legislative representatives on advances in ocean science including the development of climate adaptation tools. Engaged media in understanding of new ocean discoveries.
- Goal5: Partnership with the Living Marine Resources Cooperative Science Center, and other programs to support expanded opportunities in undergraduate and graduate student training in NOAA science.

ACCOMPLISHMENTS (cont'd)

26. What opportunities for training and professional development has the project provided?

Development of transdisciplinary research training programs for OSU researchers.

Training of NOAA personnel in Pacific Island Fishery Science Center in operational deployment of AUVs.

Support for early career researcher professional development affinity group

27. How were the results disseminated to communities of interest?

CIMERS researchers worked with media to share outcomes of our research. These include work:

<https://www.opb.org/article/2022/06/30/axial-seamount-volcano-research-oregon-coast-crab-battle/>

<https://www.opb.org/article/2023/03/16/oregon-coast-deep-sea-volcano-axial-seamount-research-eruption-forecasting/>

<https://www.vox.com/22557690/underwater-volcanoes-seamounts-biodiversity-life-deep-sea-mining>

<https://www.oregonlive.com/environment/2022/01/as-tonga-recovers-from-eruption-oregons-own-undersea-volcano-poses-little-threat-experts-say.html>

<https://phys.org/news/2023-07-warmer-ocean-temperatures-salmon-bycatch.html>

<https://phys.org/news/2022-01-explore-ways-hatchery-steelhead-wild.html>

<https://today.oregonstate.edu/news/fewer-salmon-eat-southern-resident-killer-whales-spend-less-time-san-juan-islands>

ACCOMPLISHMENTS (cont'd)

28. What do you plan to do during the next reporting period to accomplish the goals and objectives?

Continue engagement with NOAA partners and ocean users to advance research activities.

PRODUCTS

29. Publications, conference papers, and presentations

CIMERS had 19 publications during this reporting period. The details for the publications with submitted to the NOAA respository on or before 7/30/23.

PRODUCTS (cont'd)

30. Technologies or techniques

Advances in technology include:

The successful integration and continued at sea deployment of a 3-frequency echosounder into a Slocum autonomous underwater glider, in addition to deployments at sea in support of autonomous surveys of zooplankton and fish populations.

31. Inventions, patent applications, and/or licenses

Nothing to Report

PRODUCTS (cont'd)

32. Other products

Nothing to Report

PARTICIPANTS & OTHER COLLABORATING ORGANIZATIONS

33. What individuals have worked on this project?

CIMERS had 35 researchers, and staff that work on various project under this award. Details on attached document.

Attach a separate document if more space is needed for #6-10, or #24-50.

PARTICIPANTS & OTHER COLLABORATING ORGANIZATIONS (cont'd)

34. Has there been a change in the active other support of the PD/PI(s) or senior/key personnel since the last reporting period?

Changes include hiring of key personnel in ocean acidification (assistant professor) and acoustics (research associate) research to meet needs and opportunities of PMEL partners

35. What other organizations have been involved as partners?

Other organizational partners include:

Living Marine Resources Cooperative Science Center
Louis Stokes Alliance for Minority Participation
New Beginnings for Tribal Students
Oregon Sea Grant
Marine Mammal Institute
Oregon Dungeness Crab Commission
Oregon Trawl Commission
Korea Polar Research Institute

PARTICIPANTS & OTHER COLLABORATING ORGANIZATIONS (cont'd)

36. Have other collaborators or contacts been involved?

Nothing to Report

IMPACT

37. What was the impact on the development of the principal discipline(s) of the project?

Impacts include:

CIMERS projects to date have advanced the use of autonomous vehicles and integration with acoustic technologies in support of NOAA mission science in ecosystem and fishery surveys, and in protected species management.

CIMERS Earth Ocean Interactions research has supported the development of seafloor mapping products, as well as deployment of hydrophones central in environmental baseline monitoring that are essential for science-informed planning of marine renewable energy development

CIMERS ocean time-series surveys continue to provide unique information and state of ocean ecosystem conditions in support of NOAA's Integrative Ecosystem Assessment.

IMPACT (cont'd)

38. What was the impact on other disciplines?

Nothing to Report

39. What was the impact on the development of human resources?

CIMERS research and student support activities are supporting the training of early career researchers needed to support NOAA's mission science activities.

IMPACT (cont'd)

40. What was the impact on teaching and educational experiences?

CIMERS provided access to hands on research experiences, opportunities for student-defined research, and exposure to active researchers that enhance the teaching and educational experiences. Examples include: 1) involvement of graduate students in NH-line survey cruises that has enabled research into zooplankton population genetics and physiological responses to changing ocean conditions, 2) live telepresence experience for OSU undergraduate students to interact with researchers at sea studying hydrothermal vent geology, chemistry and biology, and 3) engagement of students from the Louis Stokes Alliance for Minority Participation in NOAA science during their annual pre-college trip to Hatfield Marine Science Center.

41. What was the impact on physical, institutional, and information resources that form infrastructure?

CIMERS researchers maintain and advance state of the art research techniques and facilities for analyses of ocean biomolecules, and dissolved trace gases, and represent enhancement of research capabilities to the broad ocean science community. CIMRS researchers also lead in the maintenance of crucial ocean time series observations of coastal ocean physics, biogeochemistry, and ecology. These unique in-situ observations form the data baseline that is used to ascertain changes in ocean ecosystems.

IMPACT (cont'd)

42. What was the impact on technology transfer?

Technology skillsets in AUV deployment were transferred to NOAA personnel.

43. What was the impact on society beyond science and technology?

State and Federal decision makers have new knowledge of the pathways of climate change in the ocean, their consequences and potential solutions.

IMPACT (cont'd)

44. What percentage of the award's budget was spent in foreign country(ies)?

0 , No budget spent in foreign countries during the reporting period.

CHANGES/PROBLEMS

45. Changes in approach and reasons for change

Nothing to Report

CHANGES/PROBLEMS (cont'd)

46. Actual or anticipated problems or delays and actions or plans to resolve them

Nothing to Report

47. Changes that had a significant impact on expenditures

Nothing to Report

CHANGES/PROBLEMS (cont'd)

48. Significant changes in use or care of human subjects, vertebrate animals, biohazards, and/or select agents

Nothing to Report

49. Change of primary performance site location from that originally proposed

Nothing to Report

PROJECT OUTCOMES

50. What were the outcomes of the award?

Examples of outcomes include (Goal numbers refer to those described in question 24):

Goal1: New partnerships among NOAA researchers across line offices (OAR, NMFS, NOS), academic researchers, commercial fishermen, and Tribal entities in developing user-relevant collaborative research program in multiple stressor management

Goal2: Enhanced capacity in transdisciplinary research, and engagement of scholars in fields including traditional ecological knowledge research in ocean science.

Goal3: The integration of passive and active acoustics into uncrewed systems is supporting the path to operational deployments of new, cost-effective ocean survey technologies in support of ecosystem, marine fisheries, protected species, and marine renewable energy development management.

Goal4: Policy makers and the public that are more informed about the impacts of climate change on ocean ecosystems and resources, the use of new technologies to explore and manage the ocean, and the importance of partnerships in development new knowledge and solutions to ocean challenges.

Goal5: Increased participation of researchers from diverse backgrounds in NOAA science through partnerships with organizations such as the Living Marine Resources Cooperative Science Center.

DEMOGRAPHIC INFORMATION FOR SIGNIFICANT CONTRIBUTORS (VOLUNTARY)

Gender:

- Male
- Female
- Do not wish to provide

Ethnicity:

- Hispanic or Latina/o Not
- Hispanic or Latina/o Do not
- wish to provide

Race:

- American Indian or Alaska Native Asian
- Black or African American
- Native Hawaiian or other Pacific Islander
- White
- Do not wish to provide

Disability Status:

- Yes
 - Deaf or serious difficulty hearing
 - Blind or serious difficulty seeing even when wearing glasses
 - Serious difficulty walking or climbing stairs
 - Other serious disability related to a physical, mental, or emotional condition
- No
- Do not wish to provide

Attach a separate document if more space is needed for #6-10, or #24-50.