

**Climate Program Office
Science Review
May 24-26, 2022**

Climate Program Office Response to Panel Review Recommendations

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Preamble

The Climate Program Office (CPO) Review (see [Review Website here](#)) was held May 24-26, 2022 to provide an independent, external assessment of the Program, including its management structures, and to recommend strategic directions in key areas for CPO and for OAR. The review assessed the research activities CPO funds, how CPO decides what types of research and science to support, and how CPO engages with the public and peer communities to communicate about its work.

The Review covered five years, 2017-2021, of CPO activity and management. The recommendations based on the findings are forward-looking to help CPO improve the quality, relevance, and performance of the research and science it supports in the current and future environment it faces.

The CPO portfolio activity areas covered in the review were: 1) Climate Science/Earth System Science and Modeling; 2) Climate and Societal Interactions; 3) Communication, Education and Engagement; 4) Integrated Information Systems and Risk Areas Initiative; and 5) Portfolio Management, Administration, and Organizational Excellence. Reviewers were asked to provide perspective and advice on how CPO and NOAA/OAR can most effectively position themselves over the next five years to tackle new, often rapidly-changing challenges and opportunities while leveraging existing research programs, partnerships, technologies, data science, and products.

The [Summary Report of the Review of the NOAA Climate Program Office](#) includes high-level recommendations for NOAA leadership vis-a-vis the crucial role that CPO plays in building a Climate Ready Nation. It also includes specific recommendations for CPO, cross-cutting the five areas covered by the review and also specific to each area. This report focuses on the CPO responses to the review comments. The Summary provides an overview of key findings and recommendations by the Panel and responses by CPO. Next, a table summarizes CPO's response and actions to the Panel's numbered recommendations with timelines for completion. The Appendix further details the CPO responses and action plans. **Note: In this updated Response document, the table and the Appendix have been revised to reflect progress that has been made over the year since the original Response was developed.**

Overall, the review comments are extremely useful and timely to CPO as it embarks on the development of its next strategic plan (already underway). CPO is grateful to OAR for initiating this process and to the panel review experts for their dedication to CPO's mission.

Summary

[The Panel's Summary Report](#) is highly complimentary of CPO and praises the Program for meaningful successes throughout the review period. Ninety three out of ninety four total quality, relevance and performance ratings across the five CPO activity areas and the Office overall by ten panelists, were "Exceeds Expectations" or "Highest Performance," with only one rating of "Satisfactory."

Summary of Key Panel Recommendations and Highlights

The Report's Summary of Recommendations included the following key verbatim comments cross-cutting CPO activity areas:

- "CPO is significantly under-resourced for the mission and responsibilities it has, especially in the context of increasing commitments to the NOAA Climate Ready Nation concept which involves new levels of Earth and human systems science and integration, and emphasizes increased interaction with all parts of civil society in an effort to enhance planning and preparation."
 - "CPO programs supporting university-based research efforts for the 'long-haul', as is required to tackle complex problems, is a plus."
 - "Maintaining and possibly expanding the grants programs is thus an important objective for CPO, even in difficult budget times."
 - (CPO Comment: Grants are critical for both advancing Earth system science and modeling as well as integrated applied science and engagement in support of decisions and investments. Grants are the primary vehicle to enhance CPO engagement with universities and non-profit research entities, both of which are essential to more robust and diffused information systems.)
- "Despite resource constraints, the Panel noted that the quality, relevance, and performance of CPO's efforts have continued to be high. They are of high and increasing importance to the overall mission of OAR and NOAA, as well as the overall federal priority in climate science and readiness, the research community and stakeholders around the country."
- "The Panel encourages CPO leadership, in laying out its strategic visioning, to reflect on opportunities and priorities, and how the existing programs link with each other, other parts of OAR, NOAA, and other agencies. The goal would be to identify ways that line offices can work in collaboration with CPO to achieve more impactful outcomes without increased spending."

Specific highlights from the Panel for each CPO Activity Area include:

- Climate Science/Earth System Science and Modeling (Area 1)
 - "Earth System Science and Modeling (ESSM) has maintained a high-quality research portfolio by being responsive to scientific needs identified through National Academy reports, community-oriented workshops, conferences and meetings, and external partnerships."
 - "ESSM has accelerated OAR laboratory research and, thus, has played a critical role in aiding NOAA labs and programs in meeting their missions."
- Climate and Societal Interactions (Area 2)

- “A Climate Ready Nation needs to integrate climate considerations throughout the functions and decisions of the country on various facets, that include managing risk, maximizing opportunities, and simultaneously reducing emissions. While this is a tall (but imperative) order, there is no better program in NOAA, or for that matter, even in the federal government that is more appropriate to lead such an initiative than CPO through the Climate and Societal Interactions (CSI) programs.”
- Communication, Education and Engagement (Area 3)
 - “The quality of products developed and deployed by the Communication, Education, and Engagement (CEE) Division was deemed to be excellent and, in many cases, best-in-class in the government for climate communications and engagement.” “The content curated at *climate.gov*, Climate Explorer, and the U.S. Climate Resilience (CRT) are high-quality, critical tools for accessing climate related information. *Climate.gov* has established a reputation as a leader in its field, having made quantum improvements in its content and accessibility in recent years.”
- Integrated Information Systems and Risk Areas Initiative (Area 4)
 - “The National Integrated Drought Information System (NIDIS), National Integrated Heat Health Information System (NIHHIS), and the substantive CPO contributions to the National Climate Assessment (NCA) process and products are outstanding, highly visible, and recognized nationally and internationally.”
- Portfolio Management, Administration, and Organizational Excellence (Area 5)
 - “The Administrative Service Division (ASD) performance appears to be outstanding, with a very impressive track record. The ASD’s team culture focuses on and emphasizes innovation in workflows and processes. ASD and CPO management exhibited agility in its hiring practices and ability to pivot to address challenges. Notable examples of the latter are the successful and dramatic shift to digital grant packages during COVID-19 and turning the unexpected need for remote work into an opportunity for process streamlining.”

Summary of Key CPO responses

The Panel’s Report provided **32 recommendations** across CPO’s five Activity Areas. The following is a summary of key CPO responses to these recommendations, which are listed and responded to in full in the body of this response document.

- CPO will address many of the Panel’s recommendations in the new CPO Strategic Plan, which is now underway and should be completed by the end of FY23.
- CPO will advance a seamless approach to Earth System science and prediction across timescales from weather to climate and across spatial scales from global to local with partners and address complex, compound societal risks.
- CPO will further develop interdisciplinary and integrated research approaches that look across Earth and human systems to understand the complex, cascading and compounding risks and impacts of climate change.
- CPO will continue to engage the broad research and decision making communities as well as NOAA, OAR and other Line Offices to gather input on CPO priorities and how

CPO should evolve, pursue new resources and expand its value chain especially in support of NOAA's Climate Ready Nation initiative.

- CPO will work with OAR and NOAA to expand the competitive grants by better communicating their value (including strong university research components) in complementing and magnifying OAR's laboratory and Cooperative Institute (CI) research and together with partnership building, engagement and education in supporting the accomplishment of NOAA's mission and society at large.
- CPO will enhance its strategic value-chain integration of ESSM and CSI programs to address Climate Ready Nation risk areas and advance climate information systems (i.e. NIDIS, NIHHIS).
- CPO will advance an approach to the CAP/RISA networks that builds towards a national system to support climate adaptation while enhancing AdSci, particularly internationally and with attention to opportunities in research important to food systems .
- CPO will work to increase internal and external coordination, collaboration, partnering and leveraging of resources.
- CPO will develop a corporate communication vision and will continue to evolve communication and engagement using collaborative, synergistic and evidence-based approaches.
- CPO will work with OAR and NOAA to expand NIDIS, NIHHIS and other Integrated Information System approaches and their productive partnerships.
- CPO will continue to build and expand its Diversity, Inclusion and Environmental Justice activities.
- CPO will assess and improve administrative and program staffing models, how resources are allocated and process effectiveness and efficiency.
- CPO will think strategically about possibly de-emphasizing some areas in order to grow into new ones.

Recommendations, Responses, and Action Plans

CPO Science Review Action Sheet					
#	Recommendation	Action	Champion	Target Start, Updated Completion Date	Status/Notes
AA1					
1	Obtain Research Community's Input on ESSM	<p>1. Issue a biennial community priorities survey to solicit input from the broad community on ESSM division priorities and function. Use survey input to guide program activities.</p> <p>2. Engage the broad research communities, including continued support for the ESSM Council, in gathering inputs for CPO funding opportunities and consider opportunities (for new resources) and priorities of NOAA and the Administration for CPO research programs to evolve and expand.</p>	Jin Huang	10/04/22, #1: TBD if we decide to issue a survey #2: 09/30/2024	On Track
2	Support University-based Research	<p>1. Include the importance of continuous support for long-term research (e.g., field campaigns) in CPO's next strategic plan</p> <p>2. Maintain and possibly expand the grants programs which have a strong component to support university-based research with funding through new initiatives such as the IRA</p>	Jin Huang	10/04/22, #1: 06/30/23 #2: 06/30/23	Complete

3	Integrate Short-term Predictions and Long-term Earth system Projections	<p>1. Integrate seamless programmatic and scientific approaches into emerging CPO strategic plan.</p> <p>2. CPO will engage with WPO and NWS STI on development of the Seasonal Forecast System, including exploring engagement with GFDL on the relevance of SPEAR to this NWS mission need.</p> <p>3. CPO will encourage application of short timescale weather, and seasonal forecast systems and datasets in R&D projects in relevant solicitations.</p> <p>4. CPO will engage with GFDL and the community on application of SPEAR to multi-annual and longer-timescale predictions and projections, and explore the possibility of the development of a multi-annual to decadal prediction capability at NOAA.</p>	Dan Barrie	<p>10/04/22,</p> <p>#1: 06/30/23</p> <p>#2: 12/31/24</p> <p>#3: 9/30/23 and ongoing</p> <p>#4: 6/30/2023</p>	On Track
4	Focus on the Coupled Earth System	<p>1. Include this seamless approach to Earth System science and modeling across timescales from weather to climate and across spatial scales from global to local in the new CPO Strategic Plan.</p> <p>2. Support development of prediction and projection systems in service of the Climate, Ecosystems, and Fisheries initiative.</p>	Dan Barrie	<p>10/04/22,</p> <p>#1: 06/30/23</p> <p>#2: 06/30/23</p>	Complete

5	Foster Stronger Synergy between WPO and CPO	<p>1. CPO and WPO will develop and implement the “Seamless Weather to Climate and OAR Programs” strategy as part of their next generation strategic plans</p> <p>2. Coordinate with WPO when needed to embrace a seamless approach to Earth System science across timescales from weather to climate and across spatial scales from global to local.</p> <p>3. Communicate CPO and WPO’s respective roles in seamless Earth system modeling and cross-scale predictions to the research community and interagency partners at 2023 Fall AGU or 2024 AMS Town Hall meeting</p> <p>4. Coordinate with WPO on wildfire smoke research, spanning laboratory, field measurements, process and global modeling as well as satellite applications, leveraging CPO’s long standing collaboration with OAR field campaigns and WPO’s support for National Air Quality Forecasting Capability (NAFC).</p>	Jin Huang	<p>10/04/22, #1: 09/30/23</p> <p>#2: 09/30/23</p> <p>#3: 1/31/24</p> <p>#4: 09/30/23 and ongoing</p>	On Track
6	Integrate ESSM Efforts and other Activity Areas and LOs	<p>1. Organize the second ESSM-CSI Round Table to identify areas and format (e.g., joint NOFOs) for collaborations with CSI research programs (RISAs, AdSci), given that RISAs are 5 year grants projects with fixed work plans (Target Date: 09/30/2023)</p> <p>2. ESSM will work with CSI, CEE, NIDIS, NIHHIS, CPO Risk Teams, other LOs and CPO leadership to develop a clear strategy for better integration in support of NOAA’s Climate Ready Nation.</p>	Jin Huang	<p>10/04/22, #1 09/30/23 #2 9/30/23</p>	Complete
AA2					

1	Strategically Leverage CSI	<p>1. Continue to look for unique opportunities, in partnership with CPO leadership, to engage in ways that enhance our ability to advance social and interdisciplinary science that serves stakeholders, particularly the most vulnerable, whether in blended funding opportunities (e.g. the Marine Ecosystems competition) or other joint collaborative ventures</p> <p>2. CSI will look to the CAP Theory of Change (from RISA Program Theory, Final Recommendations, Award # SUBAWD001601), new progress in evaluation in the CAP, and planning to be undertaken for Adaptation Science as sources for leveraging opportunities and contributing to a Climate Ready Nation</p>	Ariela Zycherman Jennifer Dopkowski	10/11/22, #1 and #2 by 9/30/23	Complete
2	Extend CSI efforts and connectivity across NOAA and other federal climate efforts	1. As the whole-of-government approach to adaptation and resilience expands, CSI will seek to expand opportunities to invest in collaborative and regionally relevant (transformative) resilience science and related efforts.	Chelsea Combest-Friedman	10/11/22, #1 by 9/30/23	On Track
3	Explore Strategies to Enable Implementation and Scaling of Climate Solutions	<p>1. Advertise the SBIR and STTR opportunities in our community. Through the AdSci Community of Practice, PIs advance research and engagement strategies that broaden and diversify adaptation pathways particularly accessible to lower income communities, including evaluation of how these strategies can be mainstreamed.</p> <p>2. Continue funding the widely appealing climate adaptation monograph series to serve as a launching point for future research on capacity building, particularly where connected to accessible funding.</p> <p>3. Leverage sustained research projects, emphasizing their growing partners and constituencies. Widen the use of findings to build on existing successes and ensure that the lessons</p>	Bhaskar Subramania	10/11/22, #1 by 11/2023; #2 by Winter 2024; #3 ongoing	On Track

		learned are documented, shared, and relevant in neighboring settings.			
4	Develop Strategies for Long-term Viability, Sustainability, and Scaling of each RISA Beyond Initial Five-year Support.	<p>1. The Program will build up capacity through the addition of 2-year regional positions and collaborative planning activities while full teams are stood-up as well as funding cross-regional projects to scale and test tools and methods in different parts of the U.S.</p> <p>2. We will work with NOAA lawyers and legislative affairs specialists for a model of ten-year cooperative agreements</p>	Chelsea Combest-Friedman Caitlin Simpson Ariela Zycherman Sean Bath	10/11/22, #1 by 9/30/23 #2 cannot be completed by program	Complete
5	Sustain and Expand AdSci and International Grants Programs	<p>1. Increase the visibility of and build on current internal NOAA and external partnerships (including DoS and USAID) to support adaptation research that expands NOAA's engagement with and reach into transformative pathways of change and resilience. We will be working with partners on adaptation pathways that emphasize benefits for at-risk populations.</p> <p>2. Execute an innovative Adaptation Sciences grants competition focused on climate resilience in island jurisdictions that is open to U.S. and non-U.S. PIs and partners.</p> <p>3. Integrate CSI's international strategy in CPO's next strategic plan.</p>	Lisa Vaughan	10/11/22, #1, #2, #3 9/30/2023	Complete
6	Expand Engagement in Food Systems and Associated Communities	<p>1. Explore avenues for supporting fishing community adaptation information needs and avenues to connect to NOAA-wide and federal efforts on knowledge systems and related support to advance future food systems.</p> <p>2. Expand partnerships with NOS and relevant USDA offices on aquaculture, seafood health and competitiveness, in the context of health and well-being of populations living along the coast</p>	Jennifer Dopkowski and Lisa Vaughan	10/11/22, #1 by 9/30/23; #2 by 9/30/23	Complete
AA3					

1	Develop Vision for Climate.gov	1. Build on the start made in December 2020 to develop a vision of an enhanced and expanded Climate.gov, in response to the current Administration's Climate 21 Project Transition Memo. Share revised version with CPO Director and Deputy Director, and then OAR and NOAA Leadership, for awareness and approval.	Rebecca Lindsey Mary Lindsey Mike Myers Frank Niepold	12/01/22, #1 12/20/2023	Complete
2	Spell Out Goals for CEE	Update CEE strategic goals, objectives and metrics as part of CPO's strategic planning process. Current strategic goals are to: 1. Promote awareness and support for CPO's investments in climate science & services. 2. Brand and position NOAA as a leading provider of climate science & services. 3. Increase awareness and use of NOAA's climate data and services. 4. Build literacy among the climate-interested public. 5. Offer training, professional development, and capacity building to help build a climate-ready workforce, both within and outside of the Federal government. 6. Scale up and accelerate the pace of climate adaptation and mitigation action nationwide. 7. Build climate literacy among formal and informal educators and students to enrich the STEM pipeline. 8. Annually support student interns, scholars, fellows, and postdocs while promoting diversity, equity, inclusion, and accessibility in NOAA and CPO.	Todd Christenson David Herring	10/01/22, #1-#8 10/1/22	Complete
3	Give CEE More Prominence in New Strategic Plan	1. CEE will work with the DO to ensure summary highlights of our strategic goals, objectives, and accomplishments are included in the next CPO Strategic Plan. 2. CEE will co-host a series of half- or whole-day strategic planning sessions with the DO and CPO's other divisions	Amber Liggett John Coggin	11/01/22, #1 and #2 11/1/23	Complete

		to discuss ways of working more synergistically together to communicate about CPO's goals and accomplishments, and to help CPO achieve its goals.			
4	Address CEE Resource Issues	1. Evaluate whether or not CEE's scope of work should be reduced. If not, then pursue co-funding opportunities in consultation with Leadership and other CPO Divisions.	David Herring	10/01/22, #1 6/1/2023	On Track/At Risk
5	Adopt Contemporary Engagement Models and Research in Science Communication	1. Continue to evolve our communication and engagement approaches in evidence-based ways.	David Herring Frank Niepold	10/01/22, Open-ended & Ongoing	On Track
6	Advance Marketplace of Climate Information	1. Continue to co-invest in collaborative, synergistic "ecosystem-based" approaches, such as the Climate-Smart Communities Initiative, the Climate Resilience Information System, and citizen science programs (like UHI mapping) to advance the marketplace of climate information that is relevant for mitigation decisions and civil society planning efforts. (CEE interprets "mitigation" in this context to refer to avoiding and/or reducing the risks of climate-related hazards.)	Ned Gardiner LuAnn Dahlman	11/28/22, Open-ended & Ongoing	On Track
7	Re-examine Hot Items Approach	1. Consult with CPO and OAR Leadership to assess their value for / use of CPO Hot Items. Consider ways of extending utility and use of CPO Hot Items.	Amber Liggett & John Coggin	11/30/22, #1 07/06/2023	Complete
8	Provide Accessible and Relatable Framework for Resilience Planning	1. Refine the summary presentation of the StR on the CRT in order to make it more actionable. 2. Publish a new "Adaptation Practitioner's Guide," which prominently features the StR. Thus, the StR will be central to the new Climate-Smart Communities Initiative planned for launch in FY23.	Ned Gardiner LuAnn Dahlman	10/01/22, #1 and #2 6/30/23	Complete
AA4					

1	Leverage resources to address the increasing demands on products and services within AA4.	1. Continue integrated information systems coordination and leveraging efforts. 2. Address coordination and leveraging more broadly in the new CPO strategic plan	Juli Trtanj Veva Deheza	10/01/22, #1 and #2 9/30/2023	Complete
2	Consider Risk Areas as an Organizing Principle	1. Consider how to best organize CPO's Strategic Plan. 2. Analyze portfolio balance and partnerships and address misalignments to new strategic goals.	Virginia Selz	10/15/22, #1 - 8/30/2023; #2 - 9/30/2024	Complete
3	Adopt a systematic and strategic approach as to how Risk Areas are chosen and pursued	1. Identify how CPO will contribute to climate risk areas in the new CPO Strategic Plan.	Paul Hirschberg	10/01/22, #1 9/30/2023	Complete
4	Consider Compound, Cascading, or Otherwise More Complex risks within the Risk Areas Initiatives Context	1. Address cascading and compounding risks and impacts of climate change in the new CPO Strategic Plan.	Paul Hirschberg	10/15/22, #1 9/30/2023	Complete
5	Assess DEWS Staffing Model	1. Use the 2023 Reauthorization to bring NIDIS staffing up to the appropriate level after 10 years of flat funding. 2. As a result of flat funding, pause the expansion of new sector-related opportunities (e.g., public health) until adequate sustained resources are obtained. 3. As a result of flat funding, pause the establishment of any new NIDIS regional DEWS networks until adequate sustained resources are obtained.	Veva Deheza	10/01/22, Ongoing	On Track
6	Provide Feedback from NIDIS to Modelers Regarding Stakeholders' Needs	1. NIDIS will build on its current productive partnerships with NOAA's laboratories and programs (PSL, ARL, WPO) and strategically begin dialogues with GFDL and GSL to explore opportunities for informing science and modeling efforts based on stakeholder needs.	Veva Deheza	10/01/22, Ongoing	On Track
7	Align AA4 Activities to OAR Strategic Priorities.	1. Within CPO's new Strategic plan, appropriately link and communicate CPO's priorities to OAR, WWC and	Ben DeAngelo	10/15/22, 12/30/99	Complete

		NOAA strategies and priorities.			
8	Pilot efforts that support climate assessments driven directly by stakeholders	<ol style="list-style-type: none"> 1. Complete AMS tailored assessment project. 2. Contribute to USGCRP strategic plan regarding more tailored assessment products. 3. Work with CAP/RISA teams to deliver stakeholder-driven assessments. 	Dan Barrie	10/01/22, 12/30/99	Complete
AA5					
1	Reassess ASD Staff Workload	<ol style="list-style-type: none"> 1. Implement Smartsheets to help paper trail efficiency. 2. Onboard three mission critical ASD positions in FY23: a) Acquisition Management Specialist - Serve as POC for our growing contract demand; b) Grants Management Specialist - Conversion of a contract position will help expand duties to accommodate the growing demand of grants as our budget increases; c) Financial Management Specialist - Conversion of a contract position will help stabilize the budget team to accommodate the influx of funding. 3. Use ASD Team Lead meetings to continue to identify strengths and weaknesses within each team. 	Barbara Eubanks	08/01/22, #1 10/1/22 #2 8/31/23 #3 9/30/23	Complete
2	Consider Reducing Signature Routing Steps	<ol style="list-style-type: none"> 1. Implement Smartsheets to streamline business processes. Smartsheets will incorporate all financial actions including the programmatic spend plans. (Note: Smartsheets is software for collaboration and work management. It is used to assign tasks, track project progress, manage calendars, share documents, and manage other work using a tabular user interface). 	Diane Brown Kendra Hammond	07/04/22, 10/01/22	Complete
3	Improve Efficiency in the Interagency Transfer (IAT) Process	<ol style="list-style-type: none"> 1. ASD will become more efficient in G-Invoicing once we receive funding packages from outside federal agencies. 	Victoria Marin	08/31/22, 05/01/23	Complete

4	Align Strategic Plan with DEIA	<ol style="list-style-type: none"> 1. Incorporate DEIA Strategic Plan (2021) goals and objectives into next CPO strategic plan, 2. Leverage the strength of CPO programs and the expertise of the DEIA working group to identify areas where CPO can lead or be a force multiplier on existing DEIA efforts, 3. Partner with federal agencies to share lessons learned on methods to incorporate equity considerations into Notices of Funding Opportunities 	Todd Christenson	08/31/22, #1 - #3 9/30/23	Complete
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Appendix

Recommendations

AA1 R1: Obtain Research Community's Input on ESSM

AA1 R1 Response: CPO concurs with this recommendation. One of CPO's most important functions is to engage with the broad research and decision making communities to receive feedback on key scientific priorities for our funding opportunities. CPO will continue to use a comprehensive and competitive peer review process, involving high quality, rigorous and diverse review panels with members from the broad community, to ensure that the best science is funded to advance the CPO, OAR and NOAA priorities and missions. We agree that many aspects of Earth system prediction need further investigation on cutting-edge research.

Action Plan:

1. Issue a biennial community priorities survey to solicit input from the broad community on ESSM division priorities and function. Use survey input to guide program activities.
2. Engage the broad research communities, including continued support for the ESSM Council, in gathering inputs for CPO funding opportunities and consider opportunities (for new resources) and priorities of NOAA and the Administration for CPO research programs to evolve and expand.

Progress Notes:

1. We decided an RFA would be preferable to a survey because it will allow more inputs from the broader community. We are currently drafting the RFA and getting the necessary approvals, which will delay completion until 09/30/24.
2. CPO is currently discussing ways to broaden the community engagement in the FY24 NOFO discussions, and will continue using the existing mechanisms.

AA1 R2: Support University-based Research

AA1 R2 Response: CPO concurs with this recommendation. CPO programs are at the forefront of prioritizing NOAA resources spent on external/university research activities and complement OAR laboratory and CI research activities through the competitive process. CPO recognizes that basic and applied research topics often require 5 or more years of commitment to make high-quality, well-tested results that will advance complex Earth system problems. Funding from ESSM research grants support training and workforce development of undergraduate research interns, graduate students, early-, mid-, and senior-career researchers at universities. CPO will maintain, restore and expand the grants programs which have a strong component to support university-based research. CPO will serve as an advocate for the importance of external research, a reliable and fair competitive process, and engagement with the wider research community.

Action Plan:

1. Include the importance of continuous support for long-term research (e.g., field campaigns) in CPO's next strategic plan
2. Maintain and possibly expand the grants programs which have a strong component to support university-based research with funding through new initiatives such as the IRA

Progress Notes:

1. The importance of continuous support for long-term research (e.g., field campaigns) has been included in CPO's next strategic plan (Strategic Plan Objective: Expand and adapt grants programs, and business practices to catalyze emerging research areas with funding instruments that entrain the highest quality U.S. scientific expertise to respond to societal challenges; Fill gaps in understanding of Earth system processes not captured by observing and modeling systems, through targeted field campaigns and data analyses that are critical to representing climate variability and change in NOAA's decision-supporting models and data)
2. We have applied additional funding from the new initiatives (e.g., BIL, IRA, DRSA) to the external grants to support university-based research.

AA1 R3: Integrate Short-term Predictions and Long-term Earth system Projections

AA1 R3 Response: CPO concurs with this recommendation. Weather events are strongly influenced by climate variability and the changing climate is significantly a function of society's adaptation to weather and climate extreme events. Therefore, seamless integration across timescales in modeling and prediction is logical and desirable. This does not mean there will only be one Earth system model, or one single approach. The absence of complete integration across timescales is due to many factors that are out of CPO's control, and the value of diverse approaches to shared problems. CPO can facilitate the coordination and integration across programs, Line Offices, and operational centers, and prioritize integration in the funding activities. CPO will integrate seamless programmatic and scientific approaches into the emerging CPO strategic plan.

Action Plan:

1. Integrate seamless programmatic and scientific approaches into emerging CPO strategic plan.
2. CPO will engage with WPO and NWS STI on development of the Seasonal Forecast System, including exploring engagement with GFDL on the relevance of SPEAR to this NWS mission need.
3. CPO will encourage application of short timescale weather, and seasonal forecast systems and datasets in R&D projects in relevant solicitations.
4. CPO will engage with GFDL and the community on application of SPEAR to multi-annual and longer-timescale predictions and projections, and explore the possibility of the development of a multi-annual to decadal prediction capability at NOAA.

Progress Notes:

1. Complete (These are captured largely in Goals 1, 2, and 4 objectives),
2. Have had initial conversations with WPO Director and NWS STI staff about this; no activities to report yet
3. Using DRSA funds, we are exploring whether the Model Diagnostics Task Force software framework will be able to support UFS development
4. This has been significantly advanced through MAPP's FY23 solicitation on projections and funding from MAPP's CCR-Projections and IRA funding.

AA1 R4: Focus on the Coupled Earth System

AA1 R4 Response: CPO concurs with this recommendation. An explicit focus on Operational S2S prediction is not within CPO's mission at the moment. ESSM programs are highly focused on Earth system model development and coupling from atmospheric composition, to ocean-atmosphere and land-atmosphere interactions, to ocean-biogeochemical interactions, which addresses NOAA's operational mandate for prediction of the coupled Earth system. ESSM is actively working to develop a new NOAA capability for multi-decadal projections services. An essential part of this activity is the view that equitable access to reliable, consistent climate projection products is essential for building broad societal resilience in the face of climate impacts. CPO is also critically involved in the Climate, Ecosystem, and Fisheries Initiative, which is developing seasonal to decadal predictions, and multi-decadal projections of the Marine Ecosystem conditions critical to the productivity of the Nation's fisheries.

Action Plan:

1. Include this seamless approach to Earth System science and modeling across timescales from weather to climate and across spatial scales from global to local in the new CPO Strategic Plan.
2. Support development of prediction and projection systems in service of the Climate, Ecosystems, and Fisheries initiative.

Progress Notes:

1. Complete (The strategic plan is time-scale agnostic and emphasizes "Pursue interdisciplinary science across Earth and human systems to further NOAA's approach to generating authoritative information for climate hazards and risks, socio-economic stressors, and mitigation and intervention approaches")
2. FY24 competitions: 1) MAPP forward-projections; 2) CVP/MAPP fisheries

AA1 R5: Foster Stronger Synergy between WPO and CPO

AA1 R5 Response: CPO concurs with this recommendation. WPO and CPO are engaging actively, and will have more coordination to improve the synergy. The potential collaboration areas include process studies, modeling (UFS and SPEAR) as sources of S2S2A prediction information, and air quality, and extremes. CPO and WPO will clarify their respective roles in those areas (for example, CPO support process studies across timescales, and CPO will support activities to facilitate integration between USF and SPEAR) and communicate the outcomes of the discussions to the research community and interagency partners. CPO will coordinate with WPO to embrace a seamless approach to Earth System science across timescales as a major strategic thrust of the new CPO Strategic Plan.

Action Plan:

1. CPO and WPO will develop and implement the “Seamless Weather to Climate and OAR Programs” strategy as part of their next generation strategic plans
2. Coordinate with WPO when needed to embrace a seamless approach to Earth System science across timescales from weather to climate and across spatial scales from global to local.
3. Communicate CPO and WPO’s respective roles in seamless Earth system modeling and cross-scale predictions to the research community and interagency partners at 2023 Fall AGU or 2024 AMS Town Hall meeting
4. Coordinate with WPO on wildfire smoke research, spanning laboratory, field measurements, process and global modeling as well as satellite applications, leveraging CPO’s long standing collaboration with OAR field campaigns and WPO’s support for National Air Quality Forecasting Capability (NAFC).

Progress Notes:

1. Will include “Seamless Weather to Climate and OAR Programs” strategy in the future roadmap
2. Ongoing
3. i) CPO attended the NOAA S2S meeting and communicate CPO respective role in the S2S space, and contribute to the external S2S meeting next Spring; ii) ESSM submitted an abstract to the S2S session organized by WPO at 2024 AMS Town Hall meeting to communicate CPO's role in S2S to the external community and interagency partners.
4. Ongoing and making process, including coordinating with WPO on proposal reviews related to wildfire smoke research

AA1 R6: Integrate ESSM Efforts and other Activity Areas and LOs

AA1 R6 Response: CPO concurs with this recommendation. ESSM is actively engaged in the current CPO Risk Area teams and the future strategy for the CPO Risk Area initiative. ESSM currently aligns and integrates itself with other line offices through NOAA initiative (including budget initiative) development and execution. Recent examples include Precipitation Prediction Grand Challenge (PPGC), Climate Ecosystems Fisheries Initiative, Geostationary Extended Observations (GeoXO), and receives input through an annual survey to FMC Directors. ESSM programs will continue to work with CSI programs in planning for joint NOFOs. ESSM will work with CPO leadership and CSI to explore possibilities and mechanisms to work with CSI, CEE, NIDIS, NIHHIS, CPO Risk Teams, and other LOs.

Action Plan:

1. Organize the second ESSM-CSI Round Table to identify areas and format (e.g., joint NOFOs) for collaborations with CSI research programs (RISAs, AdSci), given that RISAs are 5 year grants projects with fixed work plans (Target Date: 09/30/2023)
2. ESSM will work with CSI, CEE, NIDIS, NIHHIS, CPO Risk Teams, other LOs and CPO leadership to develop a clear strategy for better integration in support of NOAA's Climate Ready Nation.

Progress Notes:

1. The CPO Director's office is now holding regular bi-weekly strategic discussion meetings focused on increasing collaboration and integration across CPO, including NOFO priorities and integrated systems in support of NOAA's Climate Ready Nation and addressing societal challenges including drought, heat, mitigation and fire.
2. This additional planning meeting has taken the place of this activity.

AA2 R1: Strategically Leverage CSI

AA2 R1 Response: CPO concurs with the recommendation for "strategic leveraging," which, for CSI is a matter of leveraging externally (civil society, mostly community level) and internally (CPO and other parts of NOAA). This framing prioritizes CPO/CSI for innovative social science as well as a connection at local, state, Tribal, and regional scales, emphasizing DEIJ and CPO's contribution to a CRN. CSI has historically sought innovative connections with other CPO and OAR programs, building alignment between science, services development and wide adaptation planning needs. We are eager to pursue both further the collaboration with marine ecosystems research, Sea Grant, NMFS, NOS and CPO programs.

Action Plan:

1. Continue to look for unique opportunities, in partnership with CPO leadership, to engage in ways that enhance our ability to advance social and interdisciplinary science that serves stakeholders, particularly the most vulnerable, whether in blended funding opportunities (e.g. the Marine Ecosystems competition) or other joint collaborative ventures

2. CSI will look to the CAP Theory of Change (from RISA Program Theory, Final Recommendations, Award # SUBAWD001601), new progress in evaluation in the CAP, and planning to be undertaken for Adaptation Science as sources for leveraging opportunities and contributing to a Climate Ready Nation Progress Notes:

1. The BIL and IRA mechanisms implemented through CAP/RISA have provided unique opportunities to promote social science through collaborations, specifically on compound risks from flooding and wildfire in frontline communities, testing and evaluating the scalability and transferability of methods of engagement important for integrating knowledge into adaptation planning for flooding and wildfire. (award process completed).

1. All FY 23 CSI NOFOs invest in aspects of research methods and partnership development important to equitable adaptation approaches and implementation (eg CAFA has included a new separate element on understanding the elements of resilience of frontline fishing communities, the impacts of climate change on fisheries-based food systems, and barriers and opportunities to advance adaptation (completed) 1. CSI/CPO is supporting a CSI social scientist on detail as a Science Advisor to NOAA Deputy Administrator Jainey Bavishi

2. CAP/RISA TOC continues as an important source of guiding CAP development, and in communicating the unique long-term investment of CAP, including in a set of Capitol Hill briefings

AA2 R2: Extend CSI efforts and connectivity across NOAA and other federal climate efforts

AA2 R2 Response: CPO concurs with the recommendation. RISA is highly connected to corresponding agency's regional networks—DOI CASCs and USDA Hubs—at both the regional and national levels. CSI program leads are engaged with numerous NSF scoping activities including CoPE, and leadership summit to develop joint efforts across NSF directorates. CSI regularly coordinates with FEMA and EDA through our point person—Summer Morlock—we review many climate, adaptation, and resilience documents and offer connection points for FEMA and NOAA programs. We have an active relationship with NIST exploring disruptions and resilience of small and medium businesses from extreme weather and climate disasters.

Action Plan:

1. As the whole-of-government approach to adaptation and resilience expands, CSI will seek to expand opportunities to invest in collaborative and regionally relevant (transformative) resilience science and related efforts.

Progress Notes:

1. CAP is funding 8 awards in FY23 that stem from a CAP NOFO focused on building national (transformative) adaptation capacity by leveraging the network for CAP teams to test, scale, and transfer knowledge across regions. These projects deliberately bring in additional partners, from the community scale up to federal partners such as the Army Corps of Engineers, NOAA Sea Grant, NOAA NOS, NSF and FEMA.

AA2 R3: Explore Strategies to Enable Implementation and Scaling of Climate Solutions

AA2 R3 Response: CPO concurs with this recommendation. CSI appreciates the value of research opportunities to widen uptake and embeddedness of climate adaptation; and targets mainstream social and economic planning as a result. We support research to scale up and impact society through implemented policy, methods, and societal/behavioral changes, and we are working to advance evaluation of these methods.

Action Plan:

1. Advertise the SBIR and STTR opportunities in our community. Through the AdSci Community of Practice, PIs advance research and engagement strategies that broaden and diversify adaptation pathways particularly accessible to lower income communities, including evaluation of how these strategies can be mainstreamed.
2. Continue funding the widely appealing climate adaptation monograph series to serve as a launching point for future research on capacity building, particularly where connected to accessible funding.
3. Leverage sustained research projects, emphasizing their growing partners and constituencies. Widen the use of findings to build on existing successes and ensure that the lessons learned are documented, shared, and relevant in neighboring settings.

Progress Notes:

1. AdSci CoP has been created. A Forum was held May 2022. Another convening of the CoP is planned for Jan 2024. Additionally, a webinar series is planned for Nov/Dec 2023.
2. Two additional monographs are underway- one focusing on NBS and another one focused on transportation. Expected to be completed by Fall/Winter 2024. (ongoing)
3. Efforts are underway to leverage research projects by a process of reviewing final reports that have been submitted to the AdSci program. Through this review process, attention is given to what was accomplished by these funded research projects, the lessons learned throughout the study period, the partners who aided in the study, and the impact on society beyond science and technology. This effort of data mining will be used to strategically plan our future investments for climate research within and outside the US. The recently-released Rural Capacity Mapping is an example of resource funding by several places, including AdSci, that is now being used to convey wide disparity in geographical experience and also used by communities to advocate for resources. It is increasingly used by federal and state agencies to more deliberately invest in communities that would otherwise be left behind.

AA2 R4: Develop Strategies for Long-term Viability, Sustainability, and Scaling of each RISA Beyond Initial Five-year Support.

AA2 R4 Response: CPO concurs with the recommendation to strategize ways to scale investments and lengthen the duration of team awards, but we cannot guarantee the indefinite sustainability of individual teams. Most RISA teams are around for more than a decade, even when teams switch within a region after a competition. Innovation through competition versus gains in capacity building/stability will likely always be a tradeoff in the program, but there will certainly be ways to capitalize on scaling. The program has expressed interest in having a minimum of ten year cooperative agreements, but we would need Congressional authorizing language for a period of that length.

Action Plan:

1. The Program will build up capacity through the addition of 2-year regional positions and collaborative planning activities while full teams are stood-up as well as funding cross-regional projects to scale and test tools and methods in different parts of the U.S. 2. We will work with NOAA lawyers and legislative affairs specialists for a model of ten-year cooperative agreements

Progress Notes:

1. CAP has two regional positions in place and a third soon to be in place. Collaborative planning activities have been funded in 5 regions.
2. NOAA does not legally allow CAP to put awards in place for a duration of longer than 5 years. So far NOAA/OAR has not supported the program in seeking authorizing language that would allow for awards longer than 5 years.

AA2 R5: Sustain and Expand AdSci and International Grants Programs

AA2 R5 Response: CPO concurs with this recommendation. The AdSci Program, including its international work, supports a CSI portfolio that combines place-based, longer term investments with an agile and fully open research solicitation and program mechanism. This dual investment strategy allows CSI to support adaptation research/capacity building activities that respond to the needs of key partners at the local, national (including NOAA) and international levels (e.g. PREPARE.).

Action Plan:

1. Increase the visibility of and build on current internal NOAA and external partnerships (including DoS and USAID) to support adaptation research that expands NOAA's engagement with and reach into transformative pathways of change and resilience. We will be working with partners on adaptation pathways that emphasize benefits for at-risk populations.
2. Execute an innovative Adaptation Sciences grants competition focused on climate resilience in island jurisdictions that is open to U.S. and non-U.S. PIs and partners.
3. Integrate CSI's international strategy in CPO's next strategic plan.

Progress Notes:

1. (complete): Adaptation Sciences' program management co-chairs the Interagency Working group on Climate Information Services for the President's Emergency Plan for Adaptation and Resilience (PREPARE) with USAID and DoS in order to identify and advance research that will help foster the integration of climate information in adaptation and resilience planning and implementation. In this role, we have co-convened interagency dialogues throughout 2023 that are focused on key regions (e.g., Africa) and sectors (e.g., infrastructure) in order to identify priorities and opportunities to tackle key challenges together. In addition, the Adaptation Sciences Program has expanded its partnership with DoS focused on island resilience, and supported the convening of two global scale Communities of Practice in April 2023 through the Local2030 Islands Network. 1 & 2. (complete): The Adaptation Sciences Program successfully conducted a funding competition in FY 23 to support interdisciplinary adaptation research activities to identify and better understand evolving climate risks, vulnerabilities, and adaptive capacity, and to foster the integration of this knowledge into adaptation and resilience planning for islands in the Caribbean and the Pacific. The following regions were included as potential areas of focus: Region A (Caribbean): Antigua and Barbuda, The Bahamas, Barbados, Belize, Dominica, Dominican Republic, Grenada, Jamaica, St. Kitts and Nevis, St Lucia, St. Vincent and the Grenadines, and Trinidad and Tobago, Puerto Rico and the U.S. Virgin Islands; and/or Region B (Pacific): the Federated States of Micronesia, Fiji, Kiribati, Maldives, Marshall Islands, Mauritius, Mauru, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu, and Vanuatu, Hawaii, American Samoa, Guam, the Northern Mariana Islands. This funding competition leverage funds from the U.S. Department of State through the NOAA Resilience Initiative, an interagency partnership designed to harness NOAA's scientific and technical expertise to support the whole-of-government approach to international adaptation. Out of the 11 projects recommended for funding, two are supported by the U.S.

Department of State. In this sense, the funding competition supported items #1 and #2.

3. The CPO Strategic plan includes a focus on collaboration from the local to the global scale, and comments provided in the review period suggested enhancing international collaboration in subgoals 2.9 and 2.10. We hope this will be incorporated in the final version.

AA1 R6: Expand Engagement in Food Systems and Associated Communities

AA1 R6 Response: CPO concurs with this recommendation. CPO will expand engagement to support food , specifically to include ocean-based food sources, which will depend in part on expanding research on the evolving climate adaptation issues facing fisheries and fishing communities. In FY23, the CAFA Program’s federal funding opportunity includes a focus on participatory research that advances understanding of climate adaptation and resilience of frontline fishing communities.

Action Plan:

1. Explore avenues for supporting fishing community adaptation information needs and avenues to connect to NOAA-wide and federal efforts on knowledge systems and related support to advance future food systems.
2. Expand partnerships with NOS and relevant USDA offices on aquaculture, seafood health and competitiveness, in the context of health and well-being of populations living along the coast

Progress Notes:

1. The Climate and Fisheries Adaptation Program (CAFA) FY23 Funding competition solicited proposals to advance the understanding of climate adaptation and resilience of frontline fishing communities, including proposals to "improve the understanding of climate change impacts on fisheries-based food systems, including the benefits, costs and cultural implications to fishing community well-being and economic viability, and barriers and opportunities to advance adaptation" Funded projects will be announced in Winter 2023. NOAA is in the final stages of processing these proposals and the CAFA program will share more details when they become available.
2. With funding provided by the U.S. Department of State, CPO expanded existing partnerships with the NOS Marine Protected Areas Center and the National Sea Grant Program Office designed to provide technical assistance and support for island regions, in partnership with the Local2030 Islands Network.

AA3 R1: Develop Vision for Climate.gov

AA3 R1 Response: CPO concurs with the recommendation. Now is a good time for us to re-evaluate – in partnership with NOAA leadership, partner agencies (e.g., USGCRP & the FGDC), the current Administration, and our stakeholders – Climate.gov's scope, style, audience focus, and vision; and, in particular, whether that vision should be expanded to encompass climate science and services from all across the federal landscape. Both our agency and the climate communications landscape have changed since Climate.gov was first launched more than a decade ago.

Action Plan:

1. Build on the start made in December 2020 to develop a vision of an enhanced and expanded Climate.gov, in response to the current Administration's Climate 21 Project Transition Memo. Share revised version with CPO Director and Deputy Director, and then OAR and NOAA Leadership, for awareness and approval.

Progress Notes:

After deliberations among the CEE Division members, discussions with CPO leadership, discussion in the CPO Planning Workshop in Sept. 2023, and discussions with Ko Barrett, the decision was made to continue with the branding "NOAA Climate.gov" with the mission of branding and positioning NOAA as a leading, authoritative climate science and services agency. Requests have been made to fully fund NOAA Climate.gov (\$6M per year) in order for it to fulfill the full scope of its mission (for example, see this NOAA transition memo). As usual, we will continue working across CPO and NOAA to ensure broad representation of the agency's and grantees' climate science & services work, products, and expertise (with credits & outlinks) are communicated clearly to our public. And, as applicable and relevant, we will continue taking the "high road" where there's opportunity to highlight/link to other agencies' climate science and services.

AA3 R2: Spell Out Goals for CEE

AA3 R2 Response: CPO concurs with this recommendation. We think we have good and appropriate goals; however, it's possible we have too many goals and should narrow our focus. We should revisit our strategic goals, objectives and metrics. (See next column for details.)

Action Plan:

Update CEE strategic goals, objectives and metrics as part of CPO's strategic planning process. Current strategic goals are to:

1. Promote awareness and support for CPO's investments in climate science & services.
2. Brand and position NOAA as a leading provider of climate science & services.
3. Increase awareness and use of NOAA's climate data and services.
4. Build literacy among the climate-interested public.
5. Offer training, professional development, and capacity building to help build a climate-ready workforce, both within and outside of the Federal government.
6. Scale up and accelerate the pace of climate adaptation and mitigation action nationwide.
7. Build climate literacy among formal and informal educators and students to enrich the STEM pipeline.
8. Annually support student interns, scholars, fellows, and postdocs while promoting diversity, equity, inclusion, and accessibility in NOAA and CPO.

Progress Notes:

In December 2022, the CEE Division consolidated its list of main goals into these five:

1. Foster awareness of, support for, and collaborations with CPO's work on climate science & services.
2. Brand and position NOAA as the nation's leading provider of climate science, data, & services.
3. Advance climate literacy among the public, educators, and students.
4. Provide training to grow and enhance the nation's climate ready workforce.
5. Inform and support actions that build climate resilience and reduce carbon pollution.

AA3 R3: Give CEE More Prominence in New Strategic Plan

AA3 R3 Response: CPO concurs with this recommendation. There are two dimensions to this recommendation: (1) include recognition of CEE's products and services (e.g., Climate.gov, the Toolkit, etc.) in CPO's Strategic Plan; and (2) more prominently dovetail CEE's capabilities within the larger set of CPO goals and objectives.

Action Plan:

1. CEE will work with the DO to ensure summary highlights of our strategic goals, objectives, and accomplishments are included in the next CPO Strategic Plan.
2. CEE will co-host a series of half- or whole-day strategic planning sessions with the DO and CPO's other divisions to discuss ways of working more synergistically together to communicate about CPO's goals and accomplishments, and to help CPO achieve its goals.

Progress Notes:

1. CPO took a different approach in developing its new Strategic Plan by developing four main goals and interweaving the work of CPO's divisions and programs among all goals, as relevant and applicable. Products and work tasks of the CEE Division show up under multiple goals, particularly Goal 3, which is focused on building public climate literacy--a main goal of the CEE Division.
2. The CPO Director's office is now holding regular bi-weekly strategic discussion meetings focused on increasing collaboration and integration across CPO, including communication.

AA3 R4: Address CEE Resource Issues

AA3 R4 Response: CPO concurs with this recommendation. Pursuant to our response to the recommendation in Row 17 (above), the CPO DO and CEE should consider whether any of the current goals should be removed from CEE's scope of work. If so, that would help ameliorate our resource issue. Or, if all eight of those goals should remain or if goals should be expanded, then CEE recommends a 4-pronged approach: (1) demonstrate how CEE's work aligns with the priorities of the current Administration, Congress, NOAA, CPO (also relevant to our response in Row 18, above), and the USGCRP; (2) pursue opportunities to grow CEE's budget (including by seeking a portion of NOAA's new BIL and IRA funds to allow CEE to sustain/enhance/expand its activities); (3) consider co-funding models in which other CPO divisions / programs help carry the cost burden of certain activities, like web services; and (4) cultivate partnerships with other Federal and non-Fed entities who share / co-invest in our mission.

Action Plan:

1. Evaluate whether or not CEE's scope of work should be reduced. If not, then pursue co-funding opportunities in consultation with Leadership and other CPO Divisions.

Progress Notes:

This recommendation has been addressed to some extent. Specifically, CEE received funding increases in FY22 and FY23 from several sources which enabled CEE to sustain and expand its scope of work. Specifically, CEE received...

1. \$500k per year for 5 years (FY22-FY26) in BIL funds to support CMRA and CRIS development.
2. \$2.8M per year for 4 years (FY23-FY26) in IRA funds to support the Climate Smart Communities Initiative.
3. \$1.7M per year for 4 years (FY23-FY26) in IRA funds to support the Climate Ready Workforce program.
4. \$75k in FY23 from NIHHS to support web development work.

Note: The "At Risk" status was selected for this item to flag two issues: (1) these new funds may likely be temporary and were specifically allocated to fund new initiatives, and not to fully fund older, previous tasks; and (2) the cost to fully support CRIS is estimated to be \$4M per year whereas only \$500k has been allocated. So, some risk remains.

AA3 R5: Adopt Contemporary Engagement Models and Research in Science Communication

AA3 R5 Response: CPO concurs with this recommendation. This is what CEE currently does; but we agree we should continue to evolve our communication and engagement approaches in evidence-based ways. Approaches we currently use to guide and inform our strategies include: (1) literature reviews of documented best practices; (2) statistics on views and visits to our websites and social media channels; (3) stakeholder listening sessions and user feedback sessions; and (4) our own unique "Quality of Relationship" (QoR) metric, which measures awareness, trust, satisfaction, usability/use, and control mutuality. For example, we have done a QoR assessment of Climate.gov on three occasions.

Action Plan:

1. Continue to evolve our communication and engagement approaches in evidence-based ways.

Progress Notes:

CEE's investments in and use of research into best practices in communication, education, and engagement is always ongoing. CEE continues to review the published literature to learn and keep current, and we fund new studies to address specific relevant research questions. Here are several research projects that CEE has funded/co-funded in the last 2 years (there are many more examples from previous years):

1. CEE hosted a 4-workshop series in 2023 with the Goodman Center on Storytelling, best practices in designing/delivering presentations, effective meetings (for people who hate meetings), and how to make a fast pitch--all guided and informed by evidence.
2. Funded Margaret Orr, PhD student at George Mason, in 2022 to author a report to CEE, titled "Moderation of Misinformation Comments on Social Media; Benefits for NOAA's Climate.gov Social Media and their Audience"
3. Funded two sets of stakeholder feedback sessions in FY22 and FY23 regarding the U.S. Climate Resilience Toolkit, designed to help guide and inform the site's redesign.
4. Co-funded a new study by NASEM in FY23, titled "Education for Thriving in a Changing Climate"
5. Funded a study by Karen Akerlof in 2018 on Congressional use of scientific information in planning & policymaking.

AA3 R6: Advance Marketplace of Climate Information

AA3 R6 Response: CPO concurs with this recommendation. This is what CEE does. Developing the Steps to Resilience (StR) framework is an excellent example of advancing the marketplace of climate information. The StR is being used by dozens of local, regional, state, and federal government entities in resilience planning. Also, many NOAA Environmental Literacy Grant-funded projects directly employ the StR. The open-source Climate Explorer tool offers downscaled climate projections for every US county; and collaborators in the U.S. Forest Service leveraged its source code to develop their own spin-off 'Climate By Forests' tool. Our team launched the national Urban Heat Island (UHI) mapping initiative, which is now managed and sustained by NIHHS. Most recently, we led developmental efforts for CMRA and continue to guide the evolution of CRIS.

Action Plan:

1. Continue to co-invest in collaborative, synergistic "ecosystem-based" approaches, such as the Climate-Smart Communities Initiative, the Climate Resilience Information System, and citizen science programs (like UHI mapping) to advance the marketplace of climate information that is relevant for mitigation decisions and civil society planning efforts. (CEE interprets "mitigation" in this context to refer to avoiding and/or reducing the risks of climate-related hazards.)

Progress Notes:

CEE has been / is exploring ways to advance the marketplace of climate information that is relevant for mitigation decisions and civil society planning efforts that are much needed by the public. CEE has been / is co-investing in collaborative, synergistic "ecosystem-based" approaches, such as the Climate-Smart Communities Initiative, the Climate Resilience Information System, and citizen science programs (like UHI mapping) to advance the marketplace of climate information that is relevant for mitigation decisions and civil society planning efforts. Consider these recent examples:

1. Four new white papers co-funded and published under the CCRE cooperative agreement grant (online here)
2. Led development and publication of the A Practitioners Guide to Implementing the Steps to Resilience (online here)
3. Funded a new pilot citizen science project in Wilmington, NC, in 2023 to map coastal flooding during a king tide event
4. Funded Keith Dixon, NOAA/GFDL, to develop a new "Consumer Report on Downscaled Climate Projections"

AA3 R7: Re-examine Hot Items Approach

AA3 R7 Response: CPO concurs with this recommendation. The weekly CPO Hot Items newsletter informs senior leadership in CPO, OAR, and NOAA about significant forthcoming CPO and grantee accomplishments (e.g., publications, milestones, and events). Hot Items works synergistically with other parts of our communication strategy, including the OAR Situational Awareness Report; web stories for CPO, OAR, Climate.gov, and NOAA.gov sites; and an ability to produce a highlight summary of accomplishments at the end of fiscal years. The panelists raise good questions: should we place more emphasis on quality over quantity? And are there other ways of extending the use and reach of our CPO Hot Items? Currently, OAR Communications is evaluating the future strategic plan and use of Hot Items across the Line Office. We will seek feedback from Dr. Steve Thur, the new AA for OAR.

Action Plan:

1. Consult with CPO and OAR Leadership to assess their value for / use of CPO Hot Items. Consider ways of extending utility and use of CPO Hot Items.

Progress Notes:

CEE personnel interviewed OAR and CPO Leadership as well as OAR Comms Managers to assess its weekly Hot Items Reports' scope, style and frequency. We made modest changes based on their feedback and updated CPO staff about our findings and new guidance during the July 2023 CPO All-Hands meeting; followed up with an email restating the guidance, which is also posted on the CPO Google Site.

AA3 R8: Provide Accessible and Relatable Framework for Resilience Planning

AA3 R8 Response: CPO concurs with this recommendation. We have good evidence the Steps to Resilience (StR) framework (<https://toolkit.climate.gov/#steps>) is being used by government entities (at all levels) and adaptation practitioners – our primary target audiences. We agree there is room for improvement. We just developed and published a new Climate Adaptation Practitioner’s Guide, featuring the StR; and we are working on new web design concepts to make the StR more engaging in the CRT website based on users’ feedback. The state of North Carolina adopted the StR in a risk assessment we co-authored. Regional leaders in the Chicago region used the StR to publish one of the nation’s first regional climate plans. Collaborators and grantees of our program have published guidance on funding & finance, centering equity in adaptation & resilience, monitoring & evaluation, and Nature-based Solutions. Each of these themes is prominent within the revamped StR “Practitioner’s Guide.”

Action Plan:

1. Refine the summary presentation of the StR on the CRT in order to make it more actionable.
2. Publish a new "Adaptation Practitioner's Guide," which prominently features the StR. Thus, the StR will be central to the new Climate-Smart Communities Initiative planned for launch in FY23.

Progress Notes:

1. Summary presentation of the StR on the CRT is currently being refined, with a focus on how Community Champions can use the Steps to take action. Updated content will show up on the CRT site, coincident with the launch of NCA5, or when the CRT site redesign goes live in Q3 of FY24.
2. Implementing the Steps to Resilience: A Practitioner's Guide is a user-friendly report containing a set of procedures to accompany each phase of the U.S. Climate Resilience Toolkit’s Steps to Resilience (StR). This document aims to support climate service practitioners as they develop and implement equity-centered climate resilience plans in their communities.

AA4 R1: Leverage resources to address the increasing demands on products and services within AA4.

AA4 R1 Response: CPO concurs with this recommendation. This is a core principle and objective of all activities under AA4. For example, the Integrated Information Systems leverage capabilities and investments of other agencies to deliver products and services identified by user defined demands. In addition, AA4 activities are also meaningfully engaged in existing formal interagency mechanisms.

Action Plan:

1. Continue integrated information systems coordination and leveraging efforts.
2. Address coordination and leveraging more broadly in the new CPO strategic plan

Progress Notes:

1) NIDIS and NIHHIS has been tasked by NOAA leadership to coordinate the hazard teams (drought, heat) under the NOAA Climate Ready Nation. This provides an additional mechanism to strengthen existing cross-NOAA and interagency coordination.

2) NIDIS and NIHHIS has proactively initiated a cross-CPO dialogue on how these Integrated Information Systems can inform research activities and how CPO science can be better integrated into the work of NIDIS and NIHHIS.

AA4 R2: Consider Risk Areas as an Organizing Principle

AA4 R2 Response: CPO concurs with this recommendation. Consistent with the NOAA Strategic Plan, Climate Ready Nation and Weather, Water and Climate Strategy Strategies, CPO will consider how to best organize its new Strategic Plan (including using risk areas as an organizing principle) as it plans and develops the Plan in the context of the OAR, WWC and NOAA Strategic Plans. CPO will also analyze its portfolio balance and partnerships to ensure they are properly aligned with the goals and objectives of the new plan.

Action Plan:

1. Consider how to best organize CPO's Strategic Plan.
2. Analyze portfolio balance and partnerships and address misalignments to new strategic goals.

Progress Notes:

1) CPO considered, but did not organize its strategic plan around topical areas. CPO's strategic plan focuses on high-level goals that can be applied to multiple topical/risk/societal challenge areas. CPO is considering risk areas or societal challenge areas individually as part of its road mapping exercise. CPO's strategic plan and its responsiveness to the CPO program review recommendations report was positively reviewed by NOAA Climate Working Group. CPO will hold its roadmap planning workshop in Fall 2023. (See row 28).

2) CPO has developed strategic plan roadmaps with a focus on the five Risk Areas: Extreme Heat, Health and Compounding Hazards, Droughts, Floods, Water Availability and Quality, Coastal Changes and Inundation, Changes in Marine and Freshwater Ecosystems and Climate Mitigation under its new Common Purpose around Interconnected Climate Societal Challenges and Compounded, Cascading Climate Risks" framework.

AA4 R3: Adopt a systematic and strategic approach as to how Risk Areas are chosen and pursued

AA4 R3 Response: CPO concurs with this recommendation. The selection of the current four risk areas occurred through a deliberative process, matching CPO's capabilities and mission areas with key priorities identified by the scientific community (including in the 4th National Climate Assessment). CPO will revisit how and which risk areas are chosen and pursued as part of the development of CPO's new strategic plan.

Action Plan:

1. Identify how CPO will contribute to climate risk areas in the new CPO Strategic Plan.

Progress Notes:

CPO has completed this action through a set of activities and outputs.

1) CPO's new Strategic Plan includes a goal and objectives addressing climate risks

Goal 1: Advance the science foundation for climate change adaptation, resilience, and mitigation Advance the Nation's Earth system and social science capabilities, while working collaboratively across communities, to support adaptive capacity and inform societal responses to climate risks and impacts, and climate change mitigation efforts. CPO investments lead to better knowledge of climate variability and change, including its complex, cascading, and compounding risks and impacts on communities, to inform impactful adaptation and mitigation strategies.

Obj. 1.3 Pursue interdisciplinary science across Earth and human systems to further NOAA's approach to generating authoritative information for climate hazards and risks, socio-economic stressors, and mitigation and intervention approaches

Obj. 1.5 Generate new information and data on the socio-economic dimensions of climate change, including impacts, risks, and opportunities, in order to inform relevant and implementable adaptation and mitigation strategies

2.6 Advance interdisciplinary research relevant to decision-making that crosses disciplines and sectors to improve risk assessments, decision-based applications and actions

2) CPO has developed a "Common Purpose around Interconnected Climate Societal Challenges and Compounded, Cascading Climate Risks" framework has developed strategic plan roadmaps to address five Risk Areas: Extreme Heat, Health and Compounding Hazards, Droughts, Floods, Water Availability and Quality, Coastal Changes and Inundation, Changes in Marine and Freshwater Ecosystems and Climate Mitigation.

AA4 R4: Consider Compound, Cascading, or Otherwise More Complex risks within the Risk Areas Initiatives Context

AA4 R4 Response: CPO concurs with this recommendation. Per the NOAA Strategic Plan, Weather, Water and Climate Strategy and OAR Strategy, CPO will consider and develop interdisciplinary and integrated research approaches that look across Earth systems and social sciences to understand the complex, cascading and compounding risks and impacts of climate change as we develop risk areas approaches under CPO's new Strategic Plan.

Action Plan:

1. Address cascading and compounding risks and impacts of climate change in the new CPO Strategic Plan.

Progress Notes:

CPO has completed this action through a set of activities and outputs.

Goal 1: Advance the science foundation for climate change adaptation, resilience, and mitigation Advance the Nation's Earth system and social science capabilities, while working collaboratively across communities, to support adaptive capacity and inform societal responses to climate risks and impacts, and climate change mitigation efforts. CPO investments lead to better knowledge of climate variability and change, including its complex, cascading, and compounding risks and impacts on communities, to inform impactful adaptation and mitigation strategies. Additionally, CPO's new Common Purpose framework will address climate challenges and risks from different perspectives and make necessary connections across disciplines and programs.

AA4 R5: Assess DEWS Staffing Model

AA4 R5 Response: CPO concurs with this recommendation and agrees that there is not currently sufficient NIDIS staff to adequately address needs by communities and sectors. NIDIS has recently conducted an internal assessment of our staffing model and are making adjustments as needed. Our intent is to ensure that NIDIS staff has the capacity to effectively address the growing number of demands at regional and national scales, in alignment with our 2022-2026 Strategic Plan, in particular those geographies that are most impacted by drought (e.g. Western U.S.).

Action Plan:

1. Use the 2023 Reauthorization to bring NIDIS staffing up to the appropriate level after 10 years of flat funding.
2. As a result of flat funding, pause the expansion of new sector-related opportunities (e.g., public health) until adequate sustained resources are obtained.
3. As a result of flat funding, pause the establishment of any new NIDIS regional DEWS networks until adequate sustained resources are obtained.

Progress Notes:

NIDIS is continuing to do the following:

1. Use the 2023 Reauthorization to bring NIDIS staffing up to the appropriate level after 10 years of flat funding.
2. As a result of flat funding, pause the expansion of new sector-related opportunities (e.g., public health) until adequate sustained resources are obtained.
3. As a result of flat funding, pause the establishment of any new NIDIS regional DEWS networks until adequate sustained resources are obtained.

AA4 R6: Provide Feedback from NIDIS to Modelers Regarding Stakeholders' Needs

AA4 R6 Response: CPO concurs with this recommendation. NIDIS has demonstrated its ability to directly inform research and modeling efforts internally within CPO and NOAA as well as the broader scientific community, and has plans to expand these efforts. Examples include our close collaboration with the CPO MAPP program, where the FY23 MAPP-NIDIS competition was developed based on stakeholder needs documented by NIDIS, and inclusion of the modeling community in our national-level dialogues on flash drought and soil moisture. This transfer of needs to the scientific community also takes place within the regional DEWS networks on an ongoing basis.

Action Plan:

1. NIDIS will build on its current productive partnerships with NOAA's laboratories and programs (PSL, ARL, WPO) and strategically begin dialogues with GFDL and GSL to explore opportunities for informing science and modeling efforts based on stakeholder needs.

Progress Notes:

1. NIDIS is constantly working in this area. Recent accomplishments include the national convening and compilation of researchers and practitioners to inform NOAA research and modeling efforts on (1) rapid onset 'flash' drought, and (2) drought assessment in a changing climate. Future opportunities include (1) NIDIS engagement in NOAA S2S efforts, led by the OAR Weather Program Office, to connect to stakeholder needs, and (2) bringing forward stakeholder feedback to the broader NOAA research and modeling enterprise throughout the new cross-NOAA Climate Ready Nation team focusing on drought, which includes GFDL and PSL.

AA4 R7: Align AA4 Activities to OAR Strategic Priorities.

AA4 R7 Response: CPO concurs with this recommendation. CPO will be articulating connection with the new NOAA Strategic Plan, WWCB Strategy and OAR Strategy in the next CPO strategic plan. A foundation of the plan will be to engage and work with stakeholder/user communities to understand and enable the provision of their climate-related information needs and to help them apply this information in their decision making.

Action Plan:

1. Within CPO's new Strategic plan, appropriately link and communicate CPO's priorities to OAR, WWC and NOAA strategies and priorities.

Progress Notes:

1. CPO worked with OAR on OAR societal challenges priorities and they reflect the importance of climate change and CPO's risk areas with particular emphasis on extreme heat and drought.

AA4 R8: Pilot efforts that support climate assessments driven directly by stakeholders

AA4 R8 Response: CPO concurs with this recommendation and is already pursuing work and efforts to explore more tailored, user-driven assessment products, such as through the AMS assessment project, under USGCRP, and through CAP/RISA regional teams.

Action Plan:

1. Complete AMS tailored assessment project.
2. Contribute to USGCRP strategic plan regarding more tailored assessment products.
3. Work with CAP/RISA teams to deliver stakeholder-driven assessments.

Progress Notes:

1. Completed AMS tailored assessment project.
2. Contributed to USGCRP strategic plan regarding more tailored assessment products.
3. Worked with CAP/RISA teams to deliver stakeholder-driven assessments.
4. Contributing to plans for more tailored assessments under USGCRP as part of the next NCA6 cycle.

AA5 R1: Reassess ASD Staff Workload

AA5 R1 Response: CPO concurs with this recommendation. Over the past few years we have addressed this issue by creating four teams that target major transactional areas such as HR, budget, contracting and grants. This new hierarchical structure has helped to streamline the workflow process. We have established first and second line points of contacts for each of our transaction items that eliminates the single point of failure.

Action Plan:

1. Implement Smartsheets to help paper trail efficiency.
2. Onboard three mission critical ASD positions in FY23: a) Acquisition Management Specialist - Serve as POC for our growing contract demand; b) Grants Management Specialist - Conversion of a contract position will help expand duties to accommodate the growing demand of grants as our budget increases; c) Financial Management Specialist - Conversion of a contract position will help stabilize the budget team to accommodate the influx of funding.
3. Use ASD Team Lead meetings to continue to identify strengths and weaknesses within each team.

Progress Notes:

1. 10/1/22 - In Progress for HR Smartsheets.
2. 8/31/23 - Completed
3. 9/30/23 - Initiated in FY22 and is Ongoing.

AA5 R2: Consider Reducing Signature Routing Steps

AA5 R2 Response: CPO concurs with this recommendation. We have already considered the routing form. It was created to document approvals and/or initiate tasks of every financial action that ASD processes. Each staff member listed on the form has a different role in the processing of the action. Only three staff members are assigned approvals in grants online while the other staff listed are either approving the initiated expenditure, verifying accounting codes and availability of funds or documenting when the action has been submitted to the Grants Management Division for approval. This is vital for CPO record keeping. The signature routing process will be sped up by the implementation of Smartsheets.

Action Plan:

1. Implement Smartsheets to streamline business processes. Smartsheets will incorporate all financial actions including the programmatic spend plans. (Note: Smartsheets is software for collaboration and work management. It is used to assign tasks, track project progress, manage calendars, share documents, and manage other work using a tabular user interface).

Progress Notes:

1. Completed 10/1/22 - Smartsheets was implemented to streamline business processes. Smartsheets incorporates all financial actions including the programmatic spend plans.

AA5 R3: Improve Efficiency in the Interagency Transfer (IAT) Process

AA5 R3 Response: CPO concurs with this recommendation. The IAT process is a NOAA-wide process that CPO must follow. ASD continues to process agreements in the most timely manner possible given this NOAA-wide process. Starting in FY23, a new system - G-Invoicing- will be in place to provide more efficiency in the clearance process. G-Invoicing will streamline the steps in an effort to ultimately provide the swiftest turn around and thus making it easier to send funds from/to outside agencies for mutually beneficial work.

Action Plan:

1. ASD will become more efficient in G-Invoicing once we receive funding packages from outside federal agencies.

Progress Notes:

1. CPO and DOE completed first reimbursable agreement in G-Invoicing resulting in the transfer of \$750K for FY23 and a total agreement amount of \$2.2M.

AA5 R4: Align Strategic Plan with DEIA

AA5 R4 Response: CPO concurs with this recommendation. CPO is targeting spring 2023 for completion and release of its new strategic plan, however the DEIA components have largely been completed by CPO's DEIA Working Group. The goals and objectives from this DEIA Strategic Plan will be incorporated in the CPO strategic plan. CPO has robust existing and planned initiatives to address DEIA more broadly which addresses the White House's Justice40 initiative. Having incorporated SASH into the annual NOFO, CPO is well placed to develop strategies to address equity in the solicitation process.

Action Plan:

1. Incorporate DEIA Strategic Plan (2021) goals and objectives into next CPO strategic plan,
2. Leverage the strength of CPO programs and the expertise of the DEIA working group to identify areas where CPO can lead or be a force multiplier on existing DEIA efforts,
3. Partner with federal agencies to share lessons learned on methods to incorporate equity considerations into Notices of Funding Opportunities

Progress Notes:

1. Many of the goals and objectives developed as part of the CPO DEI Strategic Plan have been incorporated into the CPO Strategic Plan, representing the breadth of CPO's activities in this space.
2. CPO continues to support the White House's Justice40 initiative through several key actions, including the IRA-funded Climate Ready Workforce program designed to create Climate Ready jobs which build community resilience, in particular in underserved communities. NIDIS and others continue to build relationships with the Tribal Nations to ensure understanding of and resilience to the impacts of drought. CPO staff continue to serve on the EEO Advisory Council and the ODIAC, which provide guidance on EEO and DEI related issues to OAR leadership.
3. The language of the NOFO has been refined to make it more clear and accessible for first time applicants and DEIA statements are now required for all proposals. CPO staff are working to develop criteria to evaluate DEIA-related components. CPO staff also participate in the DEIJ in Grantmaking Working Group, which shares best practices across NOAA and with other agencies.