Introduction to the NOAA Technology Partnerships Office

Michael Kruk

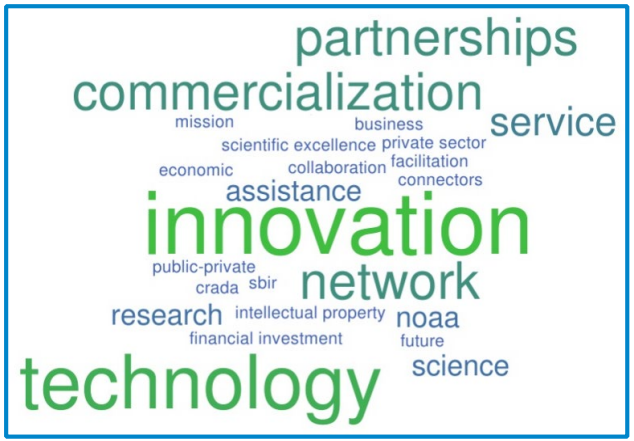
Deputy Director, TPO

NOAA TECHNOLOGY PARTNERSHIPS OFFICE

TPO fosters innovation, partnerships, and economic growth

TPO serves NOAA and U.S. businesses by:

- Investing in small business research and development
- Facilitating public-private partnerships
- Transferring NOAA innovations to commercial applications



TPO focuses on Research to Commercialization

- TPO is NOAA's primary interface with private-sector innovation
- TPO helps NOAA contribute new technologies to the commercial market and stimulate U.S. economic development
- R2C creates opportunities for private partners to:
  1. Increase the readiness level of a NOAA-developed technology
  2. Provide external expertise

TPO's programs are central to NOAA's innovation ecosystem

NOAA TECHNOLOGY PARTNERSHIPS OFFICE

Small Business Innovation Research (SBIR) Program	Technology Transfer Program

What is SBIR?

Congressionally mandated set-aside for small businesses to engage in federal R&D with potential for commercialization

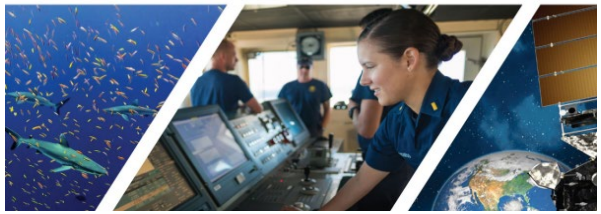
Program Goals:

- Meet federal **research and development** needs
- Increase private-sector **commercialization** of innovation derived from federal research and development funding
- Stimulate technological **innovation**
- Foster and encourage **participation** in innovation and entrepreneurship by women and socially/economically disadvantaged individuals

Program Structure: Three Phase Process

FY25 SBIR Phase I topic areas

- Extreme Events and Cascading Hazards
- Coastal Resilience
- The Changing Ocean
- Water Availability, Quality, and Risk
- Effects of Space Weather
- Monitoring and Modeling for Climate Change Mitigation



Weather, Water, and Climate Strategy
FY 2023-2027

Applicant Eligibility

- A Small Business Concern (SBC) or Company must be for profit, U.S. owned/operated, and less than 500 employees
- Proposed work must be done in the U.S.
- Focus on performing R&D, which will lead to a commercial product or service

SBIR tech improves NOAA hurricane research

- Area-I received SBIR funding from the Air Force in 2012 and 2013
- NOAA procured Altius-600 in 2019
- Drone is almost operational for hurricane research

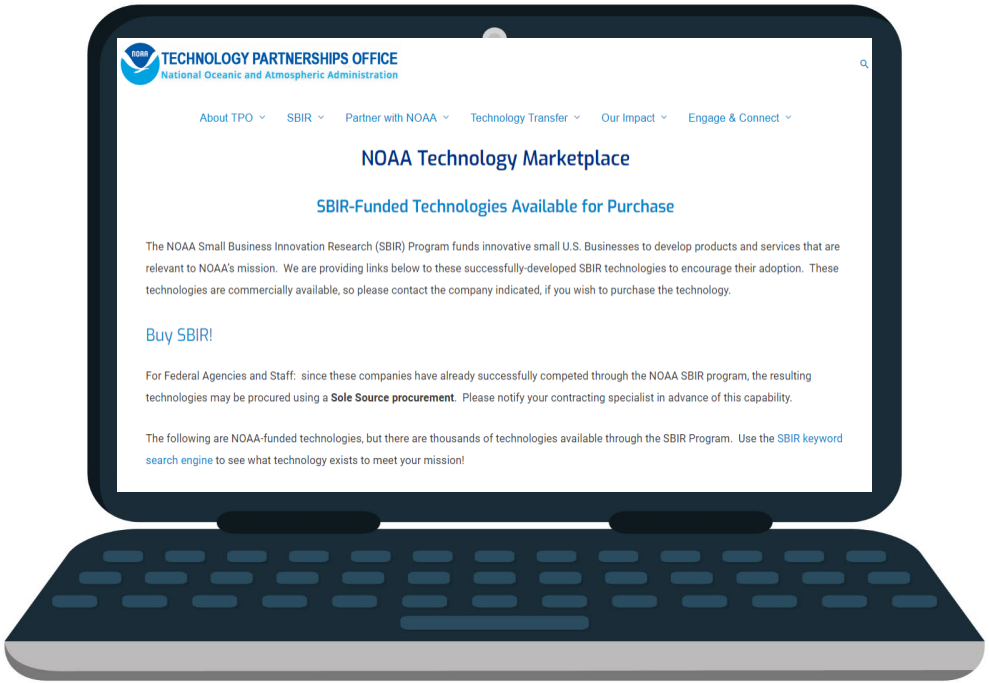
New Air-Launched Hurricane Drones Are Close to Operational

NOAA Hurricane Hunters are performing final tests on remote controlled drones that fly through the most dangerous parts of hurricanes.

By Thom Patterson FLYING June 3, 2022

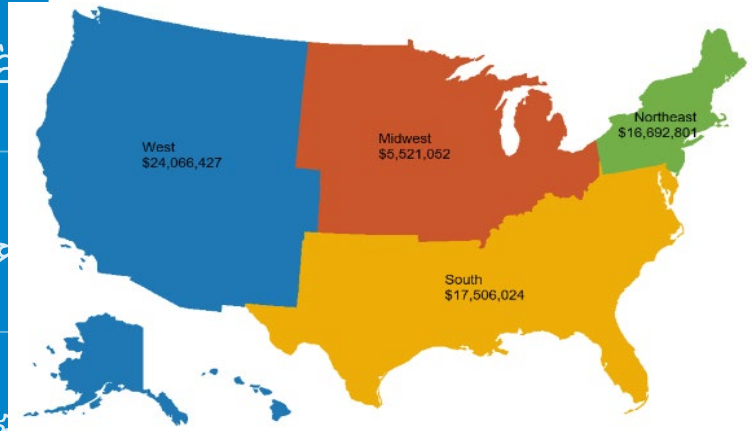
NOAA's Hurricane Hunter fleet includes two Lockheed WP-3D Orion turboprops. [Courtesy: NOAA]

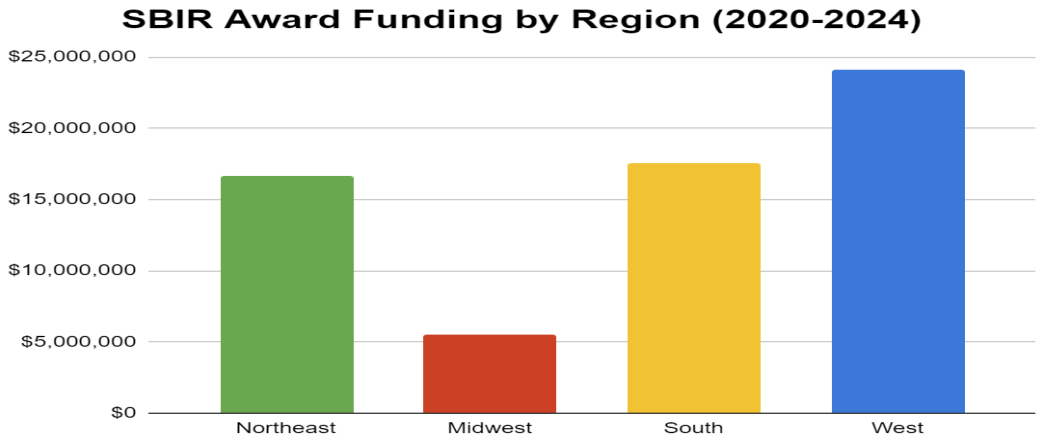
SBIR technologies are available for sole source procurement!



https://techpartnerships.noaa.gov/techtransfer/sbir-technology/

- View available technologies:
  - NOAA Technology Marketplace
  - SBIR.gov
- Participate in events to learn about available technologies





Northeast: Connecticut (CT), Maine (ME), Massachusetts (MA), New Hampshire (NH), Rhode Island (RI), Vermont (VT), New Jersey (NJ), New York (NY), and Philadelphia (PA)	**Total Funding (FYs 20-24): $16,692,801.00**	**Total # Awarded (FYs 20-24): 51**
Midwest: Illinois (IL), Indiana (IN), Michigan (MI), Ohio (OH), Wisconsin (WI), Iowa (IA), Kansas (KS), Minnesota (MN), Missouri (MO), Nebraska (NE), N. Dakota (ND), S. Dakota (SD)	**Total Funding (FYs 20-24): $5,521,052.00**	**Total # Awarded (FYs 20-24): 20**
South: Delaware (DE), Florida (FL), Georgia (GA), Maryland (MD), N.Carolina (NC), S. Carolina (SC), Virginia (VA), Washington D.C (DC), West Virginia (WV), Alabama (AL), Kentucky (KY), Mississippi (MS), Tennessee (TN), Arkansas (AR), Lousiana (LA), Oklahoma(OK), Texas (TX)	**Total Funding (FYs 20-24): $17,506,024.04**	**Total # Awarded (FYs 20-24): 58**
West: Arizona (AZ), Colorado (CO), Idaho (ID), Montana (MT), Nevada (NV), New Mexico (NM), Utah (UT), Wyoming (WY), Alaska (AK), California (CA), Hawaii (HI), Oregon (OR), Washington (WA)	**Total Funding (FYs 20-24): $24,066,427.00**	**Total # Awarded (FYs 20-24): 77**

Technology Transfer:

Increasing the impact of public investments in NOAA science

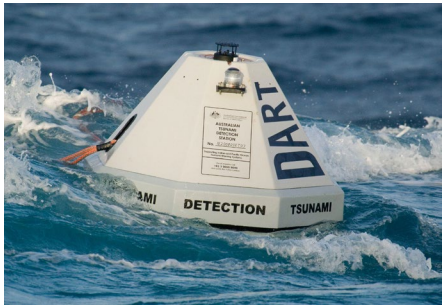
- Tech transfer means moving intellectual property from within NOAA to a secondary external user
  - Managing intellectual property, i.e. licenses (including open source), patents
  - Facilitating R&D partnership agreements
  - “Lab to market”
- Goal is to promote increased commercialization and use of NOAA’s innovative technologies
- Congressionally mandated

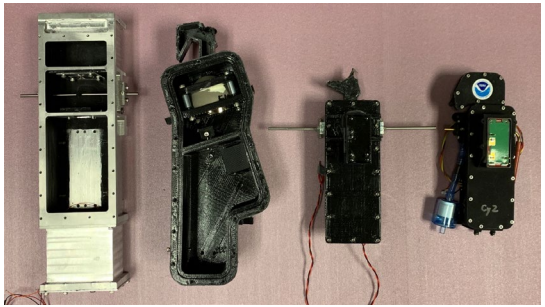
Protecting intellectual property

- Intellectual property (IP) is a public asset
  - Examples include software, hardware, and knowledge
- Protecting IP is a way to help NOAA-developed innovations have increased impact and use
- Different laws apply depending on whether IP is developed by federal employees, grantees, or contractors
- NOAA employees must disclose new technologies to TPO

Transitioning research from the lab to the public

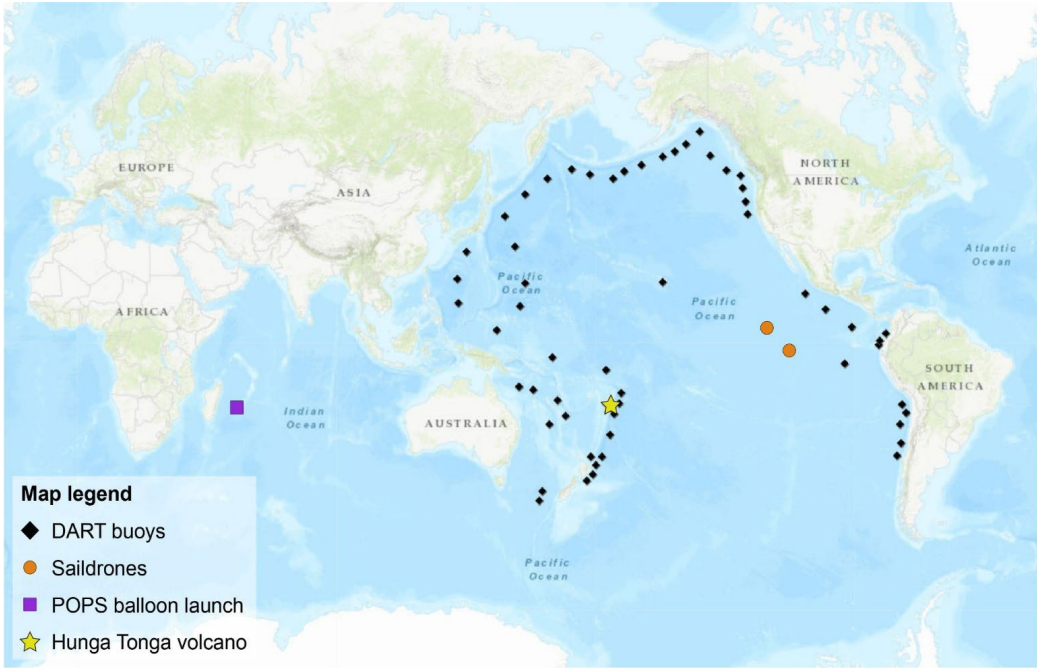
- **Protecting federal intellectual property helps NOAA ensure that our innovations are used and further developed in ways that best serve the U.S. public**
- TPO helps assess the commercial potential of NOAA inventions and transition technologies to the private sector
- Tools include licenses, open-source agreements, and patents





The NOAA Technology Transfer Program has global impacts

- DART buoys triggered tsunami alerts for coasts that were later flooded
- Saildrones collected data that
  will improve tsunami models
  and warnings
- Data from POPS devices will help us understand how volcanic explosions affect our atmosphere



Partnering with private-sector innovators to advance NOAA's R&D efforts

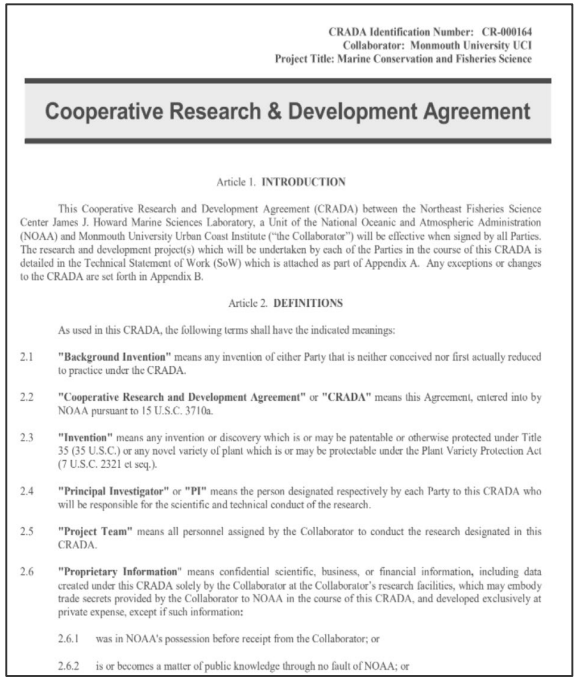
- TPO facilitates Cooperative Research and Development Agreements (CRADAs)
- Allow NOAA and non-Federal partners to share resources
- Public-private partnerships unlock enormous potential for collaborative problem-solving and innovation
- Stimulate technological development and generate broad economic value

Cooperative Research and Development Agreements (CRADAs)

- CRADA = a written agreement between a private company and a NOAA Lab, Center, or Office to work together on a project.
- One of the principal mechanisms used by NOAA to collaborate with non-federal partners to achieve the goals of technology transfer.

Key Elements of CRADAs

- Allow partners to share resources toward a common goal.
- NOAA can select partners and collaboratively develop
- Work done must align with the missions of NOAA and the lab/division/office.
- Work is done on a best effort basis.
- Protect proprietary information brought to, and resulting CRADA (not subject to FOIA disclosure for up to five years).
- Designed to be quick and efficient to develop and execute.
- Can be used to help speed up the commercialization of NOAA-developed technology.



CRADA Identification Number: CR-000164
Collaborator: Monmouth University UCI
Project Title: Marine Conservation and Fisheries Science

Cooperative Research & Development Agreement

Article 1. **INTRODUCTION**

This Cooperative Research and Development Agreement (CRADA) between the Northeast Fisheries Science Center James J. Howard Marine Sciences Laboratory, a Unit of the National Oceanic and Atmospheric Administration (NOAA) and Monmouth University Urban Coast Institute ("the Collaborator") will be effective when signed by all Parties. The research and development project(s) which will be undertaken by each of the Parties in the course of this CRADA is detailed in the Technical Statement of Work (SoW) which is attached as part of Appendix A. Any exceptions or changes to the CRADA are set forth in Appendix B.

Article 2. **DEFINITIONS**

As used in this CRADA, the following terms shall have the indicated meanings:

2.1 **"Background Invention"** means any invention of either Party that is neither conceived nor first actually reduced to practice under the CRADA.

2.2 **"Cooperative Research and Development Agreement"** or **"CRADA"** means this Agreement, entered into by NOAA pursuant to 15 U.S.C. 3710a.

2.3 **"Invention"** means any invention or discovery which is or may be patentable or otherwise protected under Title 35 (35 U.S.C.) or any novel variety of plant which is or may be protectable under the Plant Variety Protection Act (7 U.S.C. 2321 et seq.).

2.4 **"Principal Investigator"** or **"PI"** means the person designated respectively by each Party to this CRADA who will be responsible for the scientific and technical conduct of the research.

2.5 **"Project Team"** means all personnel assigned by the Collaborator to conduct the research designated in this CRADA.

2.6 **"Proprietary Information"** means confidential scientific, business, or financial information, including data created under this CRADA solely by the Collaborator at the Collaborator's research facilities, which may embody trade secrets provided by the Collaborator to NOAA in the course of this CRADA, and developed exclusively at private expense, except if such information:

2.6.1 was in NOAA's possession before receipt from the Collaborator; or

2.6.2 is or becomes a matter of public knowledge through no fault of NOAA; or

What do these partnerships look like?

Non-Federal partners can provide:

- Personnel
- Services
- Facilities
- Equipment
- Intellectual property
- Other resources
- **Funds (to reimburse NOAA for resources)**

NOAA can provide:

- Personnel
- Services
- Facilities
- Equipment
- Intellectual property
- Other resources
- **NOAA cannot provide funding**

These are not CRADAs

- Memorandum of Understanding / Memorandum of Agreement
- Contracts
- Grants, and other cooperative agreements
- Visiting scientist agreements
- Work for others

Examples of NOAA CRADAs

- Tomorrow.io - Testing new satellite data to see if the data can benefit NOAA operations

- Microsoft - Testing of microsoft's ground systems to ping NOAA spacecraft

- Saildrone - Worked with Saildrone to improve and test their technology

- Google - Big data project pilot

NWS Tech Transfer Success - iGage

- Instrument developed at the NWS Alaska Pacific River Forecast Center for water level sensing in remote locations.
- TPO transferred technology via CRADA to a small company (Stillwater Tech) for commercial manufacture.
- Stillwater improved design, increased availability to NOAA and customers.
- Transfer benefits NOAA, open science, a U.S. small business and the economy.

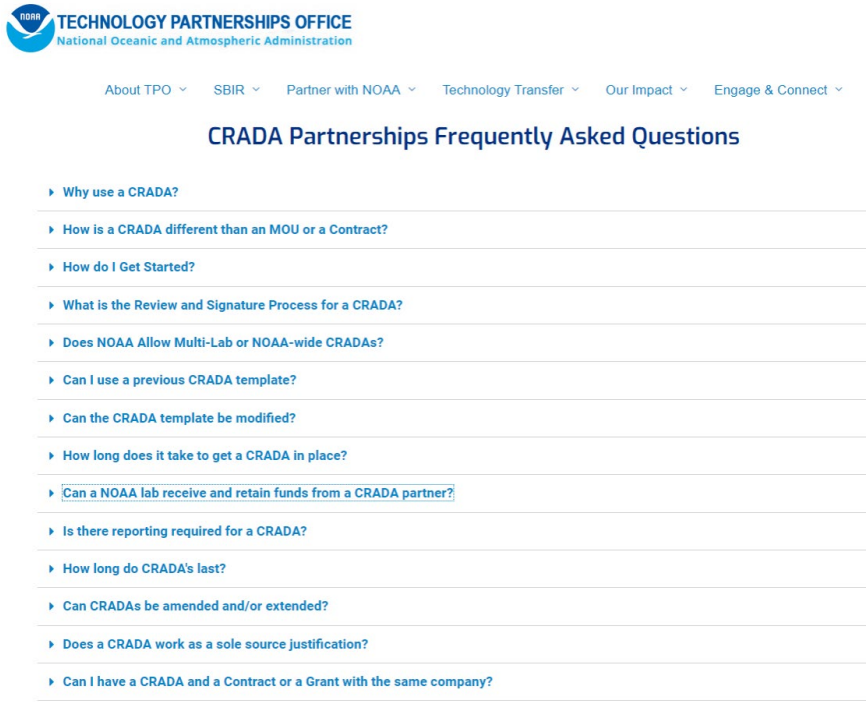
Facilities Use Agreements

- Using the CRADA authority, private or public sector partners can use NOAA facilities on a cost-reimbursable basis
- Quick and easy to develop
- Strong legal precedent; used by a large number of agencies
- Work completed must align to the mission of NOAA and the specific lab/division/office

The Ocean Technology Development Test Tank at the NOAA Southwest Fisheries Science Center

How to begin a CRADA partnership

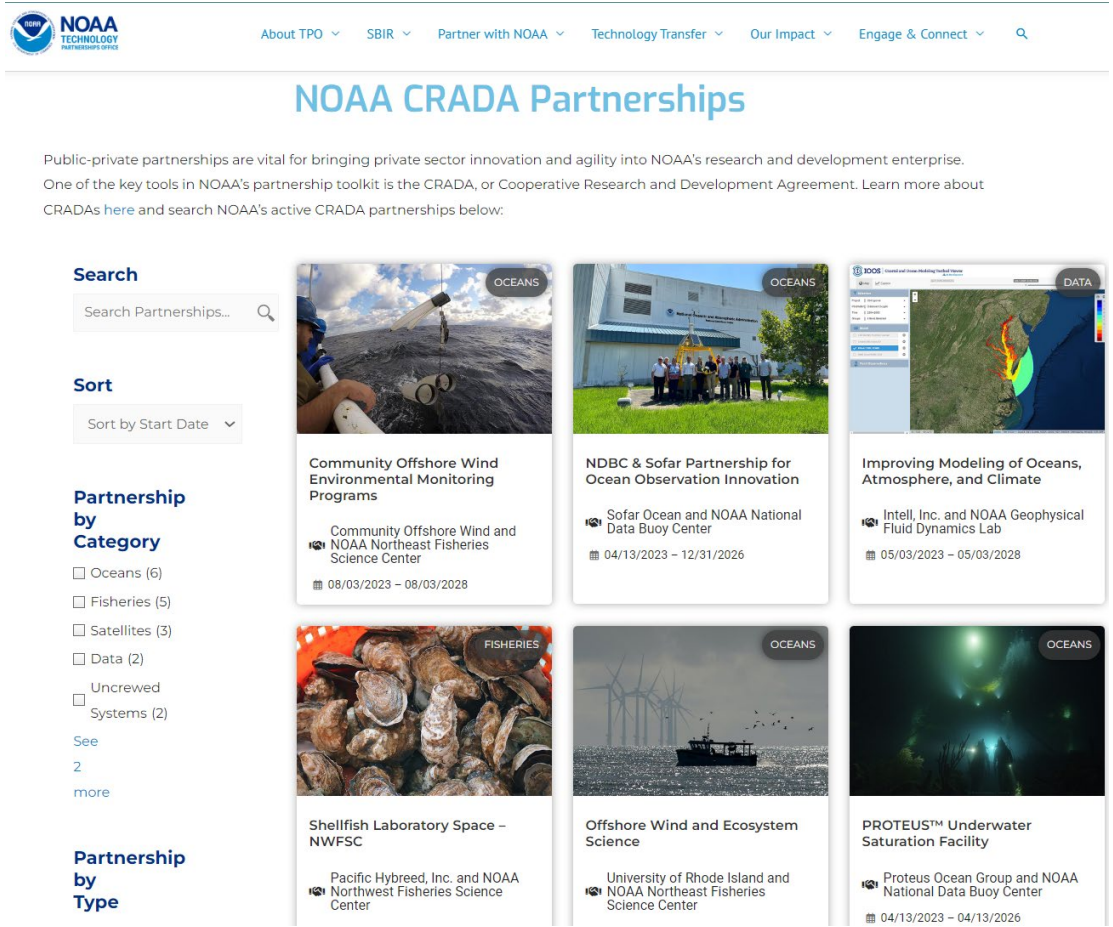
- Interested in starting a CRADA? Reach out to t2.noaa@noaa.gov
- The NOAA Tech Transfer team will provide guidance on whether the CRADA is the best option and next steps
- Learn more about CRADAs on the TPO website



https://techpartnerships.noaa.gov/partner-with-noaa/partnership-faqs/

View NOAA's ongoing CRADAs on TPO's website

https://techpartnerships.noaa.gov/partner-with-noaa/noaa-crada-partnerships/



Connect with us

- Email us at **noaa.t2@noaa.gov** or **noaa.sbir@noaa.gov** for specific questions about our programs.
- Visit our website: techpartnerships.noaa.gov
  - Browse the NOAA Technology Marketplace
  - Read NOAA SBIR success stories
  - Learn more about NOAA's CRADA partnerships
- Follow the NOAA Technology Partnerships Office on LinkedIn and on Twitter @NOAAinnovate.

NOAA TECHNOLOGY PARTNERSHIPS OFFICE