



# Unmanned Systems (UxS) Update

## Enhance NOAA Strategic Investment and Use of UxS

John McDonough - July 11, 2019

NOAA Lead:  
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Assistant Secretary of Commerce for Oceans and  
Atmosphere / Deputy NOAA Administrator



# Context: Moving Towards a NOAA UxS Program

## Establish Unmanned Systems Operations Program



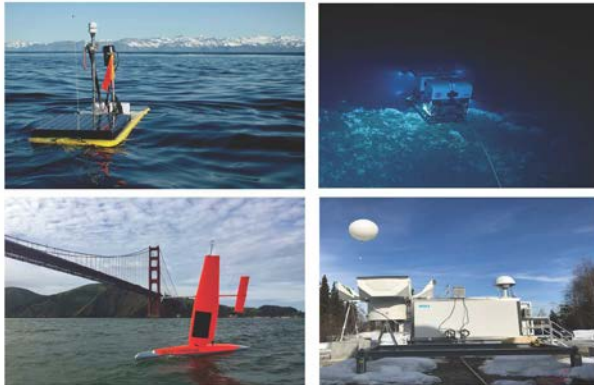
(FY 2020 Request +\$4,000,000)

The FY 2020 President's Budget builds on bipartisan Congressional actions, such as the *Commercial Engagement Through Ocean Technology Act of 2018*, to enhance the Blue Economy. The budget establishes an Unmanned Systems (UxS) Operations Program to provide centralized UxS support and guidance across NOAA within the Office of Marine and Aviation Operations (OMAO). This implements the Executive Order on *Maintaining American Leadership in Artificial Intelligence* and helps the cloud capabilities to process, archive, and assimilate priority data identified by the AI research community.

NOAA currently has more than 100 UxS, including aerial and marine systems that serve as force multipliers to increase NOAA's ability to collect data in many sectors, and are particularly valuable in remote and extreme environments. Unmanned systems complement observations from satellite, ships, aircraft, balloons, and surface-based sensors. Rapidly evolving UxS technology is invaluable in supporting NOAA mission requirements such as hydrographic and habitat mapping, marine mammal population and fishery stock assessments, and oceanographic and atmospheric observations that improve forecasting of extreme weather events.

A centralized UxS program will be used for NOAA's management and standardization of safety, training, inspections, and operational reviews. It will also manage the agency's acquisitions, operations, and maintenance to ensure that platforms are standardized, efficiently meet NOAA requirements, and are in compliance with Federal requirements. NOAA will coordinate with labs and programs within all line offices that have extensive experience in unmanned marine systems and remotely operated vehicle research and development, to create a more organized and cost-effective corporate operation in OMAO. This will enable NOAA to take full advantage of available UxS technologies and will facilitate and standardize the training and certification of UxS engineers, technicians and operators within NOAA and across other federal agencies, academic institutions, and industries.

This investment underpins a NOAA goal to increase the economic contributions of the Blue Economy and furthers the Department of Commerce strategic goals of accelerating American leadership, enhancing job creation, and strengthening U.S. economic and national security.



Left top image: A NOAA Carbon Wave Glider collecting data in Prince William Sound in Alaska to help scientists better understand how melting glaciers may be intensifying ocean acidification in a region with conditions already conducive to acidification.

Right top image: NOAA's remotely operated vehicle Deep Discoverer surveys large amounts of stony coral at the top of the crest of Richardson Ridge on June 21, 2018.

Left bottom image: Saldrone Inc. works with NOAA scientists to integrate 18 sensors into the drone capable of collecting measurements such as air and water temperature, wave height, salinity, carbon dioxide concentration, fish abundance and the presence of marine mammals.

Right bottom image: First test of the radiosonde, weather balloon, released from an auto-launcher on April 11, 2018 in Fairbanks, AK.

- **\$4M in FY20 PresBud for NOAA UxS Program**
  - centralized, cost-effective support within OMAO
  - standardized safety, training, inspections, operational reviews
  - support acquisition, ops, and maintenance to ensure Fed compliance and meet NOAA requirements
- **Builds on bipartisan Cong. actions, e.g. *Commercial Engagement Through Ocean Technology Act of 2018 (CENOTE)***
- **Underpins a NOAA goal to increase economic contributions of the Blue Economy**

# Building Blocks

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**NOAA UxS Roadmap (2015)**

**NOAA UAS Policy and Handbook**

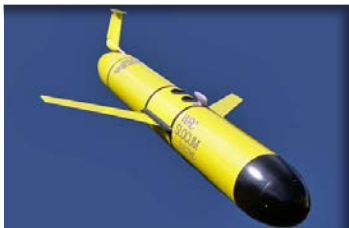
**UAS and UMS Symposium Proceedings**

**Current Systematic UxS Operations:**

**Integrated Ocean Observing System (IOOS)**

**Office of Coast Survey Unmanned Strategy**

**NOAA and Partner Facilities**



# Key Driver

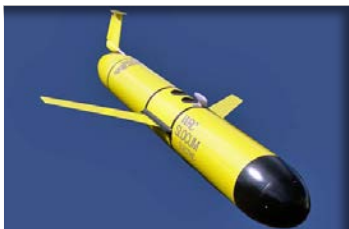
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## **S. 2511 - Commercial Engagement Through Ocean Technology Act of 2018 (CENOTE)**

**Requires OMAO and OAR to lead NOAA coordination of research, assessment & acquisition**

**Requires NOAA to coordinate with the Navy, academia, industry**

**Authorizes co-location of NOAA, Navy, academia**



# Update: since May 1st

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- **OMAO's Charles "Charly" Alexander detailed to Adm Galluadet to support developing a NOAA UxS Strategy**
- **Two products targeted for completion by Sept 30:**
  - NOAA UxS Strategy Paper
  - NOAA UxS Implementation Plan
- **Draft outline for Strategy Paper w/Goals, Objectives completed**
- **30+ NOAA SMEs recruited as writing team (inc. UxS EOB)**
- **Draft narrative for Strategy Paper in progress**



# Two-part Planning Process

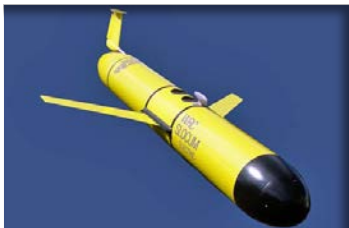
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## Strategy Paper

- 6 - 10 pg narrative describing NOAA vision, goals, and supporting objectives
- First draft in progress - final anticipated by Sept 30

## Implementation Plan

- Detailed plan based on Strategy Framework (goals/objectives) looking out at least 36-months
- Will include milestones/resource requirements, and will be scalable
- Target completion Sept 30

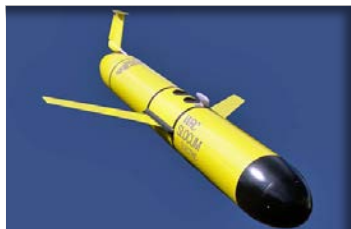


# Conclusion: where we're headed

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*by establishing a NOAA UxS Program consistent with CENOTE, NOAA will:*

- ✓ Consolidate core functions to ensure an efficient organizational structure to advance UxS across the agency.
- ✓ Advance research and innovation at NOAA by using UxS.
- ✓ Accelerate UxS Research-to-Operations.
- ✓ Strengthen and expand UxS partnerships inside and outside of NOAA.
- ✓ Promote a NOAA workforce that is proficient in all aspects of UxS.
- ✓ Transform the agency by exponentially increasing its capability and efficiency through use of UxS in virtually every NOAA mission area.



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