



SAILDRONE EXPLORER

Autonomous uncrewed vehicle for ocean and climate data collection

The world's most capable,
proven and trusted USVs



“USVs fill a unique niche with the ability to survey regions for extended periods where ships do not routinely operate, opening up new opportunities for filling persistent gaps in the ocean observing system with high-quality pCO_2 and meteorological observations.”

—Adrienne J. Sutton, Nancy L. Williams, Bronte Tilbrook
(2021) *Constraining Southern Ocean CO_2 Flux Uncertainty Using Uncrewed Surface Vehicle Observations*. *Geophysical Research Letters*, vol. 48, issue 3. Feb. 16, 2021.
doi.org/10.1029/2020GL091748

Autonomous Collection of Ocean and Climate Data Extreme Duration Missions up to 12 Months in the Open Ocean

**Fisheries | Metocean Data Collection
Ecosystem Monitoring | Satellite
Calibration & Validation**

Saildrone is a US small business that designs, manufactures, and operates a fleet of the world's most capable, proven, and trusted uncrewed surface vehicles (USVs).

The Saildrone Explorer is a 23-foot (7 m) vehicle powered by wind and solar energy capable of extreme-duration missions over 12 months in the open ocean, while producing a minimal carbon footprint. Sailing at an average speed up to three knots, the Explorer carries a suite of scientific sensors for the collection of ocean data.

The impressive capabilities of Saildrone's autonomous vehicles have been proven in numerous operational missions for science, ocean mapping, and maritime security, covering over 500,000 nautical miles from the Arctic to the Antarctic. The Saildrone fleet has logged more than 10,000 days at sea in some of the most extreme weather conditions on the planet.

PAYLOAD OPTIONS

Metocean

- Salinity
- Temperature
- Dissolved oxygen
- Chlorophyll-a
- Skin temperature
- Wind speed & direction
- Wave height & period

Carbon

- Atmospheric CO_2
- Dissolved pCO_2

Fisheries

- Ocean currents
- Fish biomass
- Backscatter

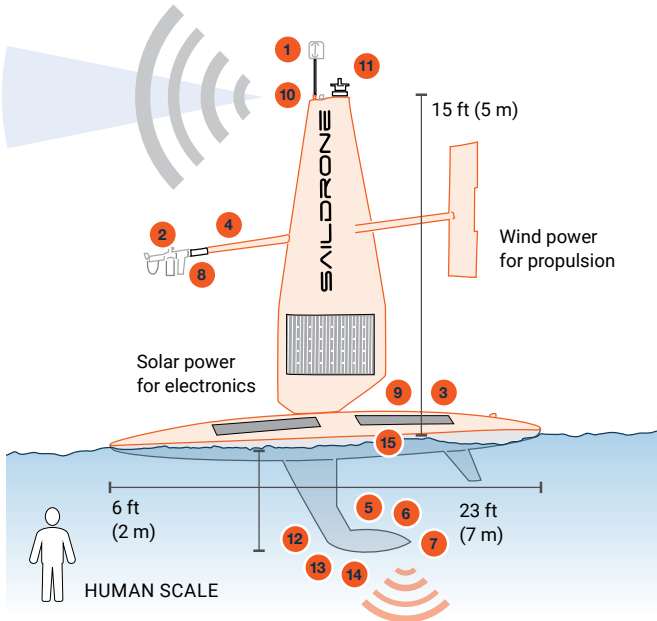
ENVIRONMENTALLY FRIENDLY

MACHINE LEARNING CAPABILITIES

SECURE DATA PORTAL

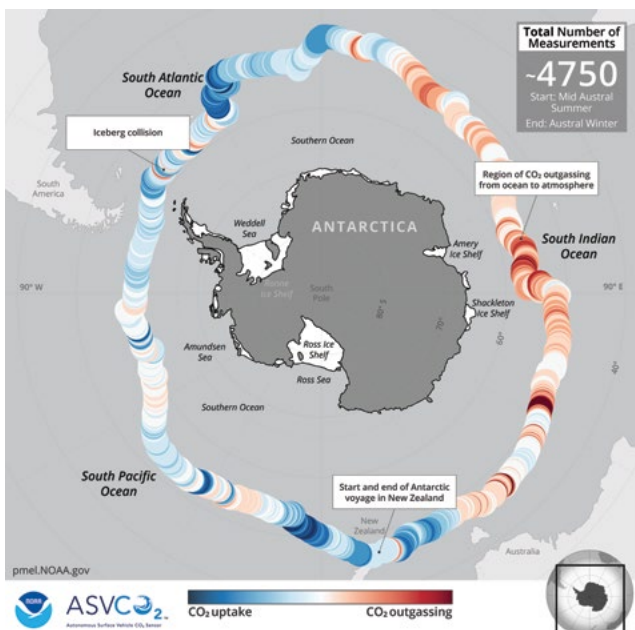


AMERICAN MADE, OWNED,
AND OPERATED



VEHICLE SPECIFICATIONS

Hull length:	23 ft (7 m)
Wing height:	15 ft (5 m)
Draft:	6 ft (2 m)
Propulsion:	Wind (Saildrone wing)
Average speed:	3 knots
Endurance:	12+ months
Range:	Unlimited



PAYLOAD OPTIONS

No.	Variable	Sensor
1	Wind speed & direction	Gill Windmaster 3D Ultrasonic 20Hz @ + 5.2 m
2	Air temp & humidity	Rotronic HC2 - S3 with rad shield @ + 2.3 m
3	Barometric pressure	Vaisala Barocap PTB210 @ +0.2 m
4	Photosynthetically active radiation	LI-COR LI-192SA @ +2.6 m
5	Salinity & temperature	Seabird SBE 37 @ -1.5 m
6	Dissolved oxygen	Seabird SBE 37 ODO @ -1.5 m
7	Chlorophyll-a	Wetlabs ECO-FL-S G4 @ -0.5 m
8	Skin temperature	Heitronics CT 15.10 @ +2.3
9	Wave height & period	Dual GPS aided IMU
15	Carbon	NOAA PMEL ASVCO2 (pCO2) Atmospheric & dissolved pCO2
10	AIS transceiver	
11	Smart camera array	360° High-resolution optical cameras with ML target detection
12	Ocean currents	Teledyne RDI Workhorse ADCP 300 kHz @ -1.9 m
13	Fish biomass	Simrad WBT Mini (EK80) @ -1.9 m
14	Bathymetry	Shallow single-beam: Airmar DT800
		Deep single-beam: Teledyne Echotrac E20
		Deep single-beam: Simrad WBT Mini

ATMOSPHERIC

OCEAN

MDA

ACOUSTIC

MISSION EXAMPLE

Collecting CO₂ measurements during the world's first Antarctica circumnavigation

Sailing over 13,670 miles in 196 days, the SAILDRONE Explorer survived freezing temperatures, 50-foot waves, 80 mph winds, and collisions with giant icebergs to make history as the first autonomous vehicle to circumnavigate the Southern Ocean.