

Black Swift **SØ**™

Air Deployed UAS

Advanced Unmanned Aircraft Systems (UAS) Engineered for Precision Atmospheric Thermodynamic Measurements

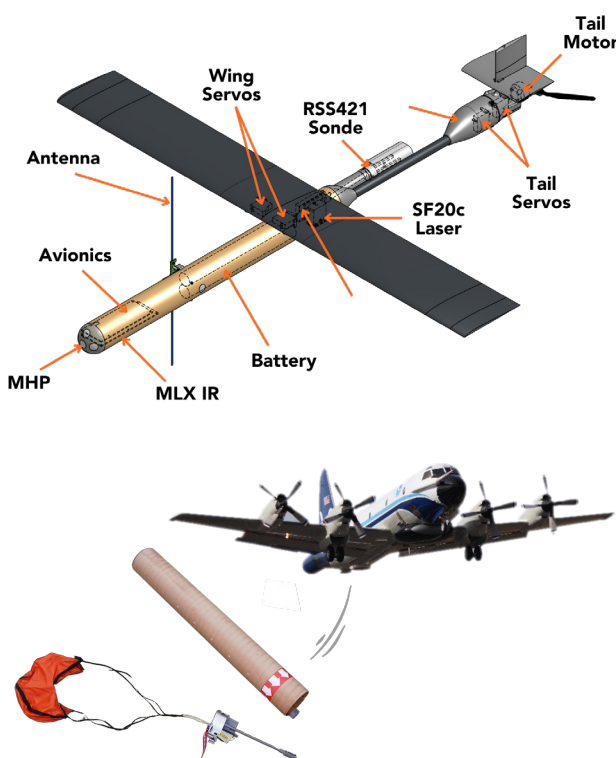
The Black Swift SØ™ is an advanced unmanned aircraft designed and manufactured entirely in the USA. The SØ is purpose-built for autonomous flights in extreme conditions, including deployment in hurricanes. Its compact, yet rugged aerial platform makes it perfect for determining the thermodynamics of the atmosphere.

At 1.2 kg (2.6 lbs), the Black Swift Technologies SØ™ UAS is the lightest UAS platform ever used to successfully sample a tropical cyclone. With a maximum flight endurance of 100 minutes, it integrates a robust sensor suite to swiftly capture upper air parameters such as air temperature, wind speed and direction, dewpoint, and atmospheric pressure. Its state-of-the-art avionics support fully autonomous operations with minimal training, featuring automated sampling patterns and scripting for streamlined "launch-and-forget" missions.

Intended to be launched from a P3 drop tube, the SØ features a pivotable wing design, enabling precise deep-stall landings and a vertical descent accuracy of 3 meters (10 ft). The SØ facilitates rapid ascent and descent for comprehensive 3-dimensional wind profiles at multiple altitudes. The Black Swift SØ air deployed flies where manned aircraft cannot, able to communicate up to 125 nautical miles (231 km) and fly for over 100 minutes in treacherous conditions, 25 minutes at 10 meters (32.8 ft) above the sea surface.

Aircraft Design Parameters

- Highly maneuverable and aggressive control to allow flights in very high winds.
- Efficient, low drag design to enable climbs up to 4572 m (15,000 ft) (AGL) on a single battery.
- Compact size for easy handling and deployment.
- Can fly up to 257.5 kph (160 mph) winds with heavy precipitation.



The P3 drop tube and parachute used during air deployment. Upon exiting the drop tube, the swivel wing design of the SØ allows for a seamless transition to flight.

Black Swift **SØ**

Precision Performance Without Boundaries



The interface of the atmosphere and the ocean is critical in understanding how a tropical cyclone works, how it gets its energy, and how the momentum of the storm is transferred to the sea.

Uncrewed aircraft systems like the Black Swift SØ™ UAS are proving themselves to be the platform of choice to gather this information.

Aircraft Specifications

Wingspan:	91.4 cm (36 in)
Wing Area:	411.48 cm ² (162 in ²)
Weight:	1250 g (2.75 lbs)
Cruise Speed:	17 m/s (38 mph)
Max Endurance:	110 minutes
Relative Wind Velocity Resolution:	0.38 m/s
Relative Wind Velocity Accuracy:	± 0.48 m/s
Temperature Range:	-40° to 85°C
Temperature Accuracy:	± 0.3°C
Barometric Pressure Resolution:	0.012 mbar
Barometric Pressure Accuracy:	1.5 mbar
Relative Humidity Range:	0-100% RH
Humidity Accuracy at 21°C:	± 3% RH
Magnetic Field Sensitivity:	13 nT
Accelerometer Resolution:	0.002 m/s ²
Gyroscope Resolution:	0.6°/sec

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