ADVANCES IN AUTONOMOUS BATHYMETRY

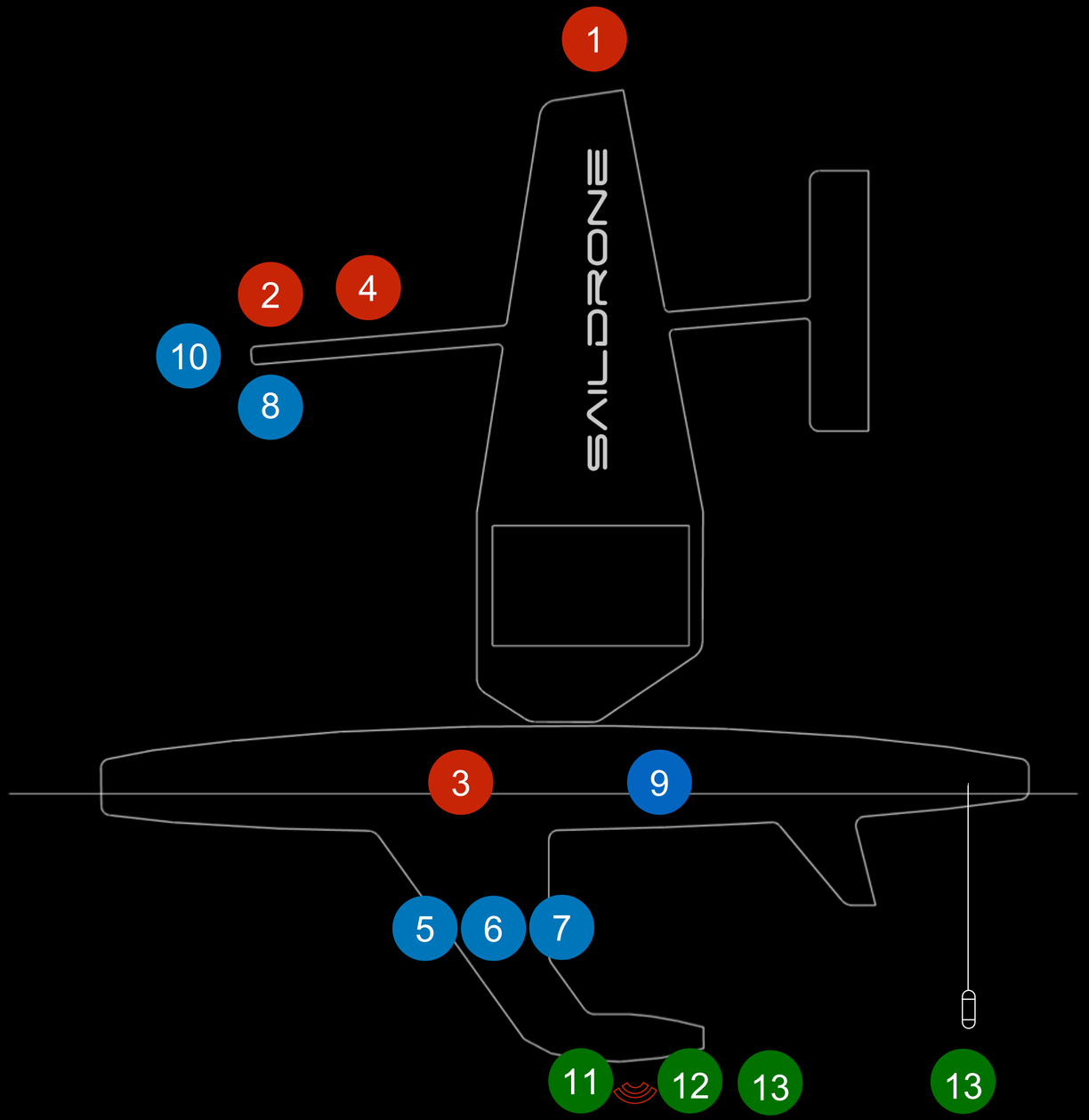
ACHIEVING PLANETARY COVERAGE WITHOUT CREW OR FUEL

SEBASTIEN DE HALLEUX, COO

SAILDRONE

SAILDRONE IS A WIND-POWERED USV DEVELOPED UNDER PUBLIC-PRIVATE PARTNERSHIP WITH NOAA, DESGINED FOR AUTONOMOUS MISSIONS OF UP TO 12 MONTHS IN ANY OCEANS

EACH USV CARRIES A STANDARD METOCEAN SENSOR SUITE MEASURING KEY OCEAN VARIABLES



Atmospheric Measurements

1	WIND	Gill Windmaster 3D 20Hz @ + 5.0 m
2	AT / RH	Rotronic HC2 - S3 @ + 2.2 m
3	PRESSURE	Vaisala BAROCAP PTB210 @ + 0.2 m
4	RADIATION	LICOR LI-192SA @ + 2.2 m

Ocean Measurements

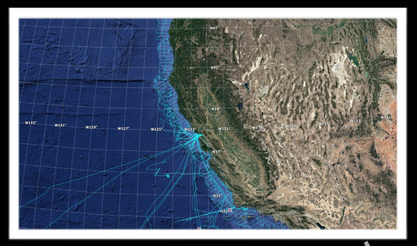
5	CTD	SBE 37 & RBR Conductivity @ -0.5 m
6	DO & TEMP	RBR Coda ODO & SBE 37 ODO @ -0.5m
7	CHL-A	Wetlabs ECO-FL-S G4 & Turner Cyclops-7F
8	SKIN SST	Heitronics CT15.2 @ +2.2 m
9	WAVES	Dual GPS aided IMU - VN 300
10	CAMERAS	Sky, Sea and Horizon Cameras

Acoustics otpions

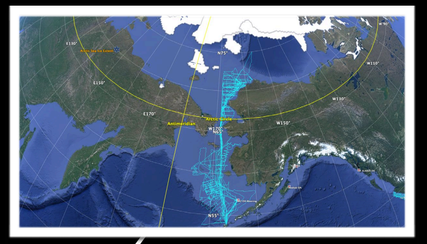
11	ADCP	Teledyne RDI Workhorse 300 kHz @ -2.0 m
12	ECHO-SOUNDER	SIMRAD WBT Mini (EK80) @ -2.0 m
13	MULTI-BEAM	Norbit iWBMS multibeam + winch SVP

100+ SAILDRONES ARE ACTIVELY COLLECTING IN-SITU OCEAN DATA ON A GLOBAL BASIS

OVER 500,000 NAUTICAL MILES OF SUCCESSFUL OPERATIONS IN EXTREME ENVIRONMENTS

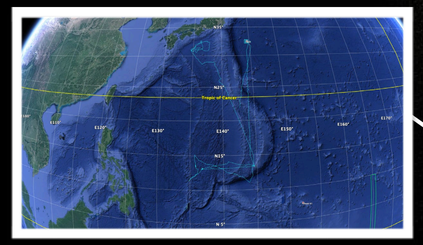


US West Coast
Fish stock assessment
bathymetry, oil spill
and metocean monitoring



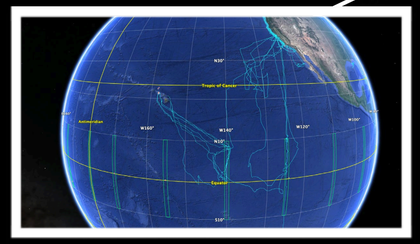
US Arctic
Fish stock assessment
Bathymetry, metocean

North Atlantic
Current, carbon, hurricane
monitoring

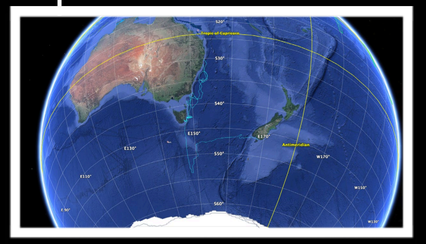


Western Trop. Pacific
Current, biogeochemistry,
typhoon monitoring

Gulf of Mexico
Oil spill, hypoxia
and bathymetry

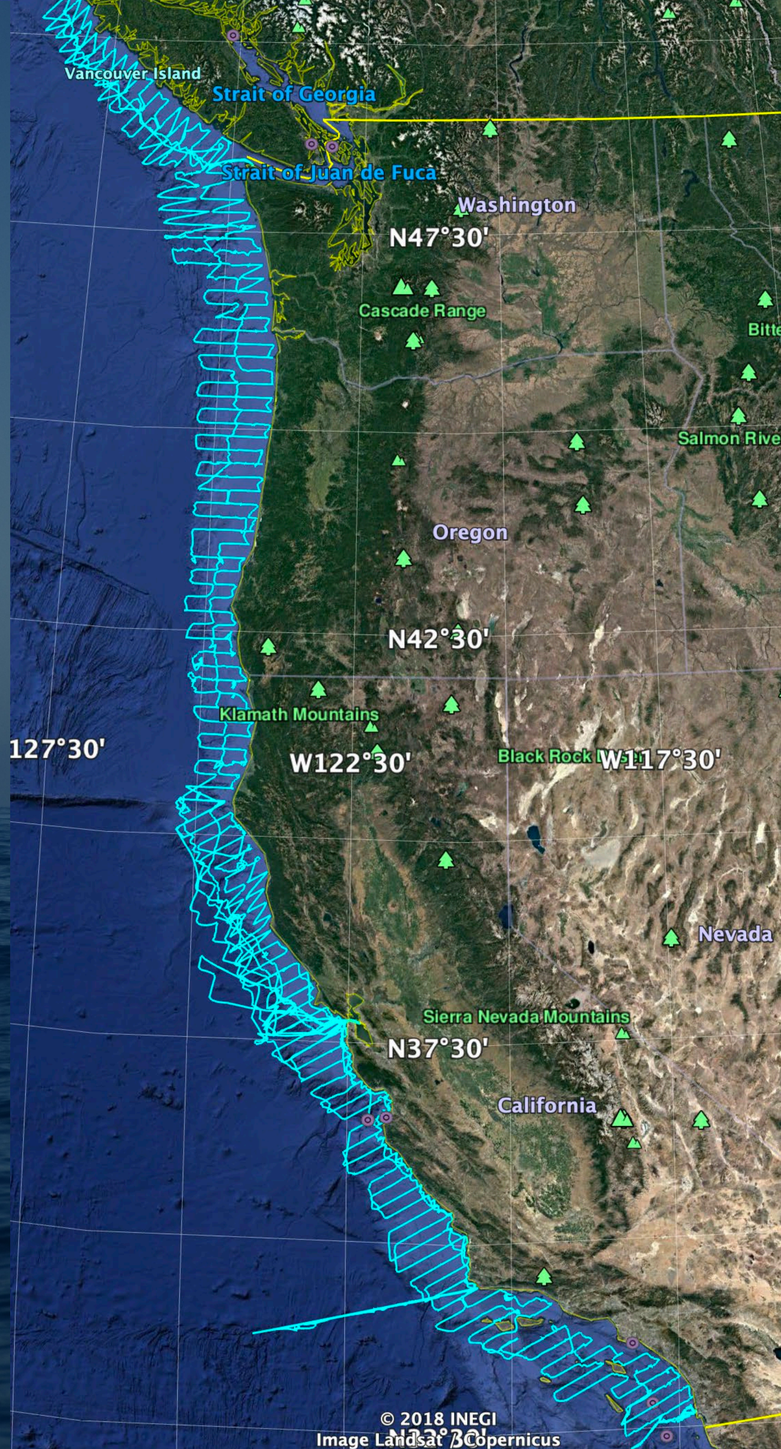


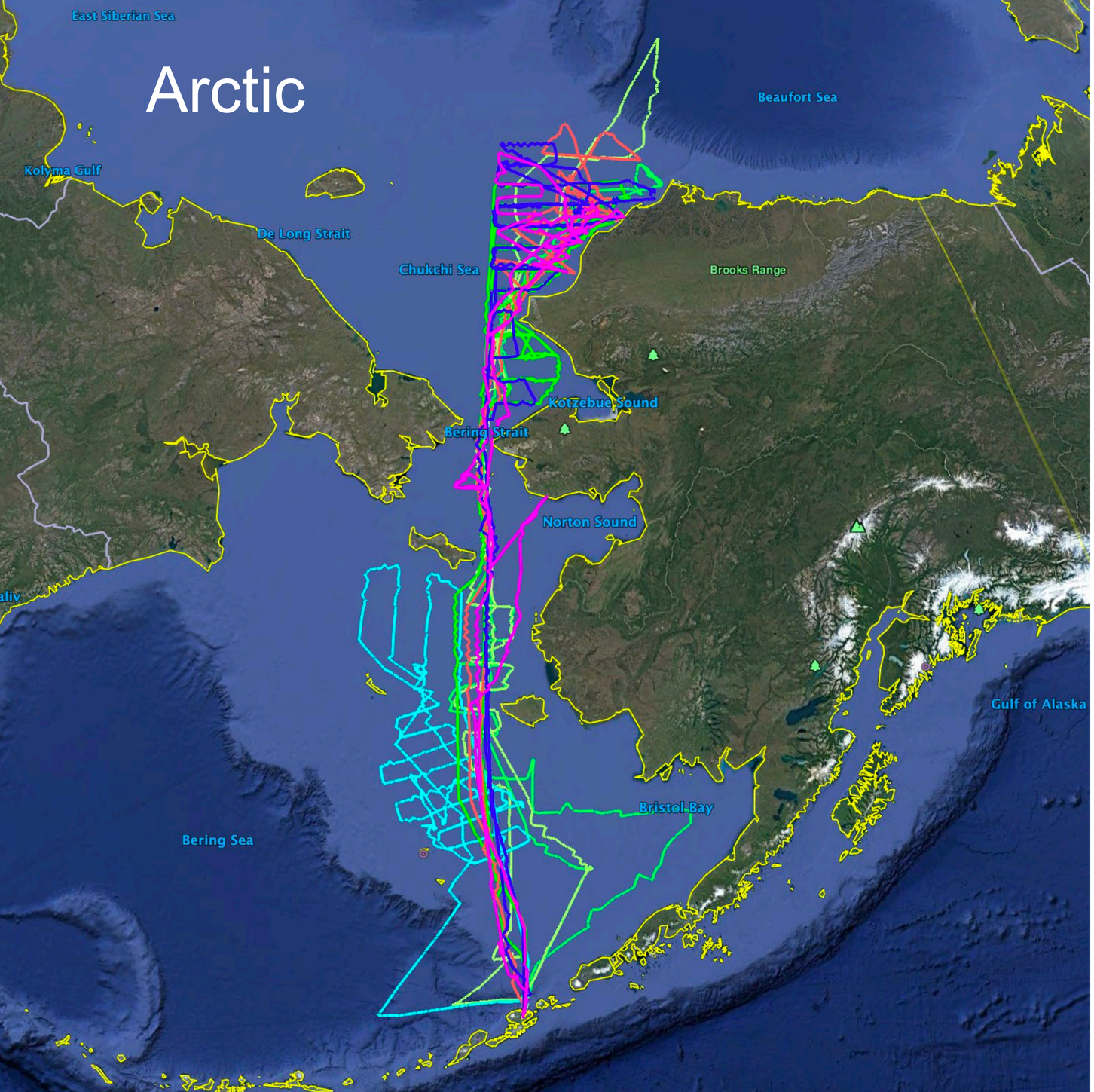
Eastern Tropical Pacific
Satellite cal/val, El Nino
monitoring, Shark tracking

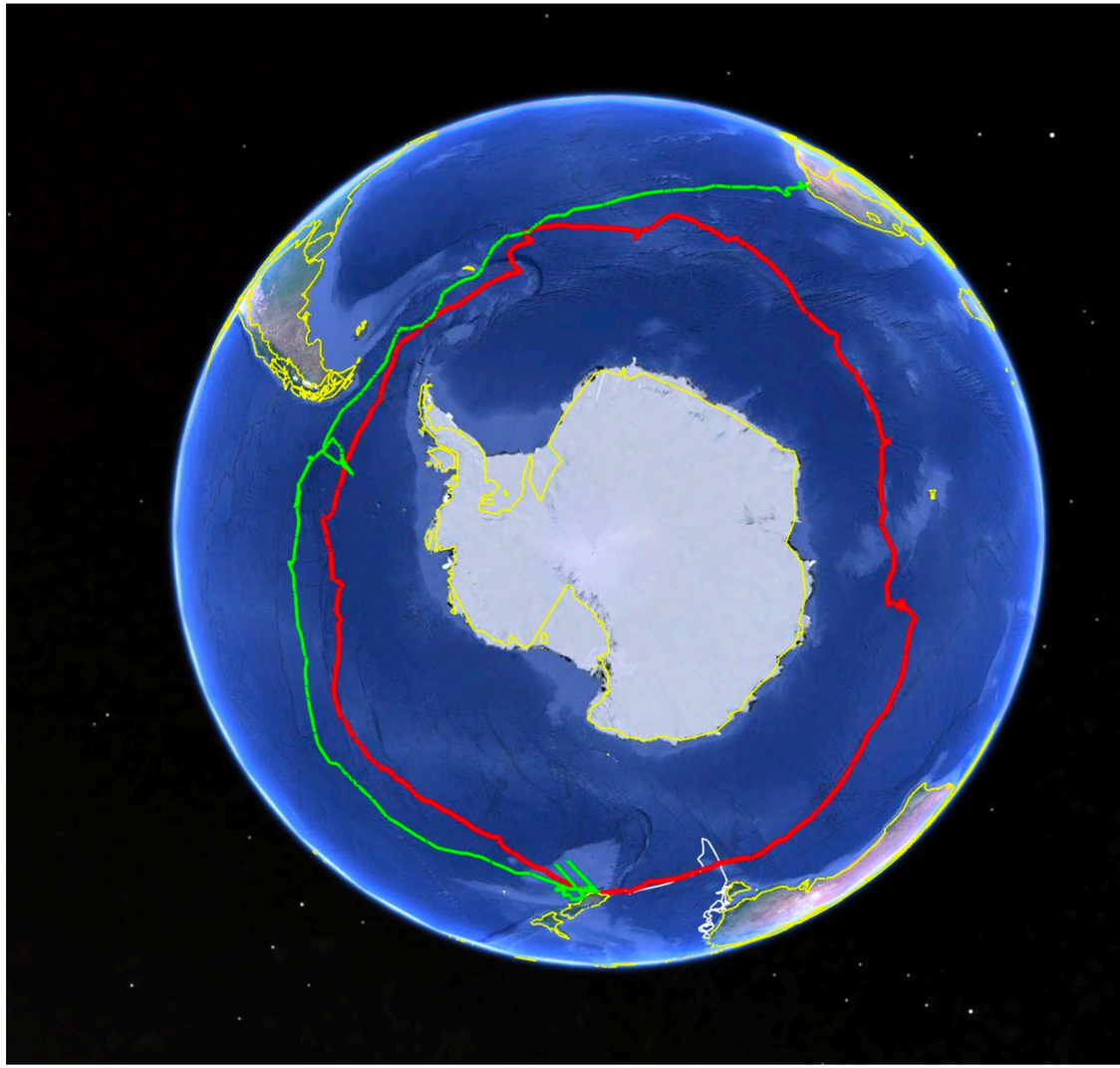


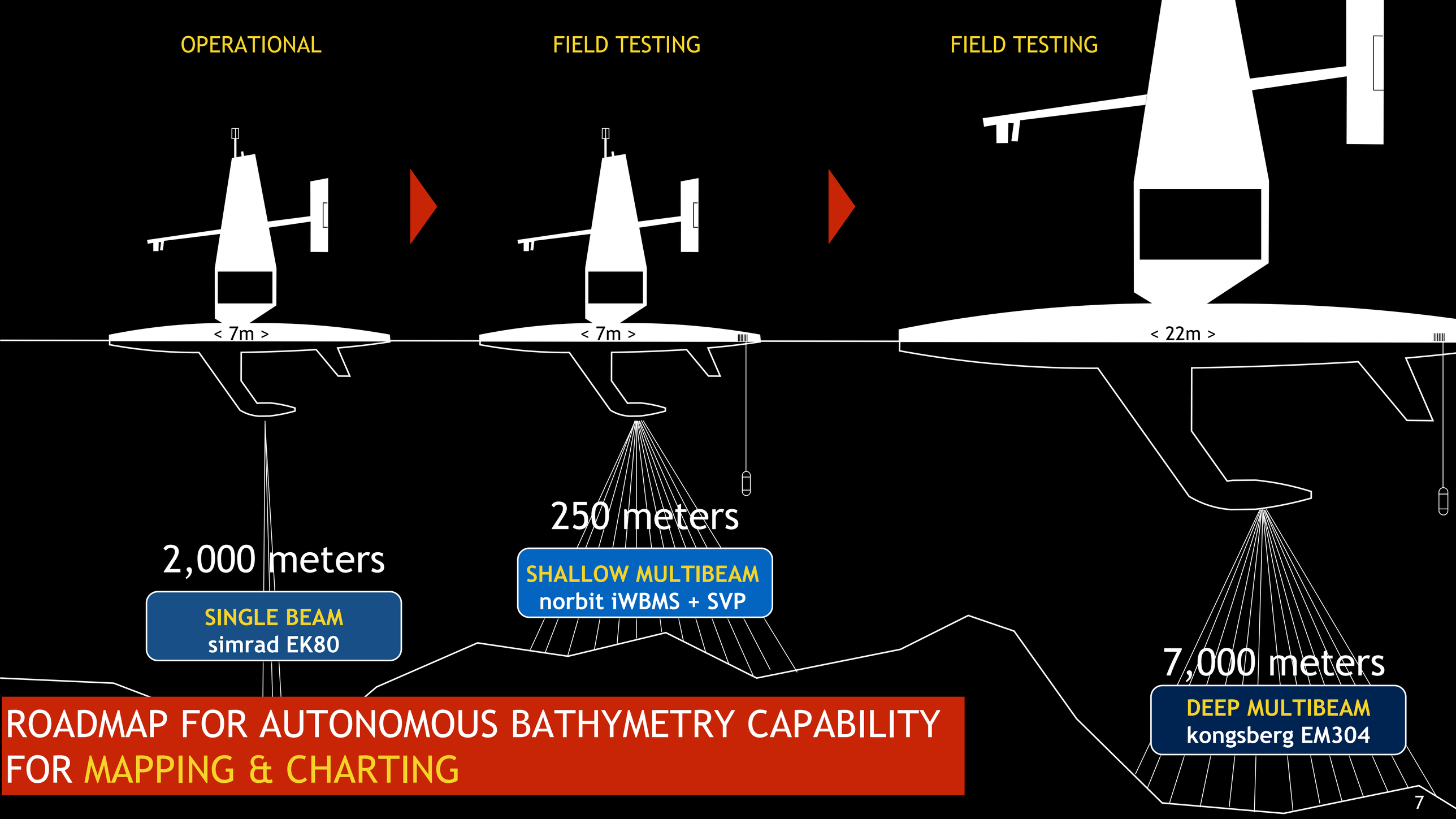
Southern Ocean
Australia, New Zealand
Antarctic Circumnavigation

ANNUAL ACOUSTIC SURVEY OF US WEST COAST



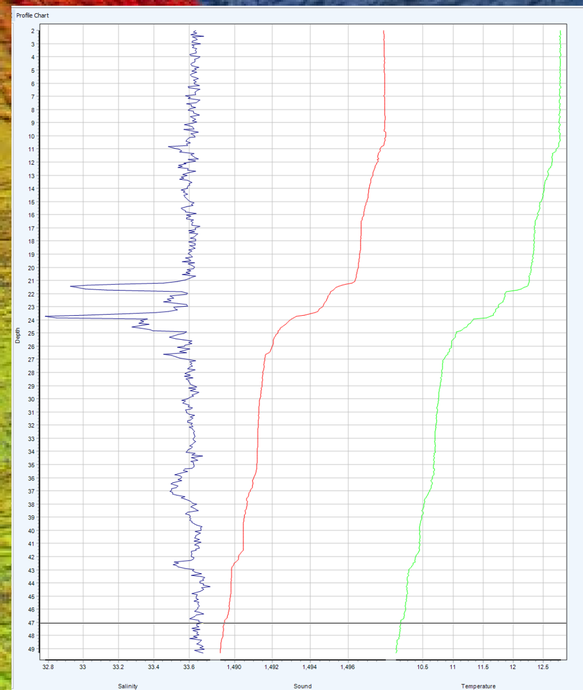

Arctic
East Siberian Sea
Beaufort Sea
Kolyma Gulf
De Long Strait
Chukchi Sea
Brooks Range
Kotzebue Sound
Bering Strait
Norton Sound
Gulf of Alaska
Bristol Bay
Bering Sea



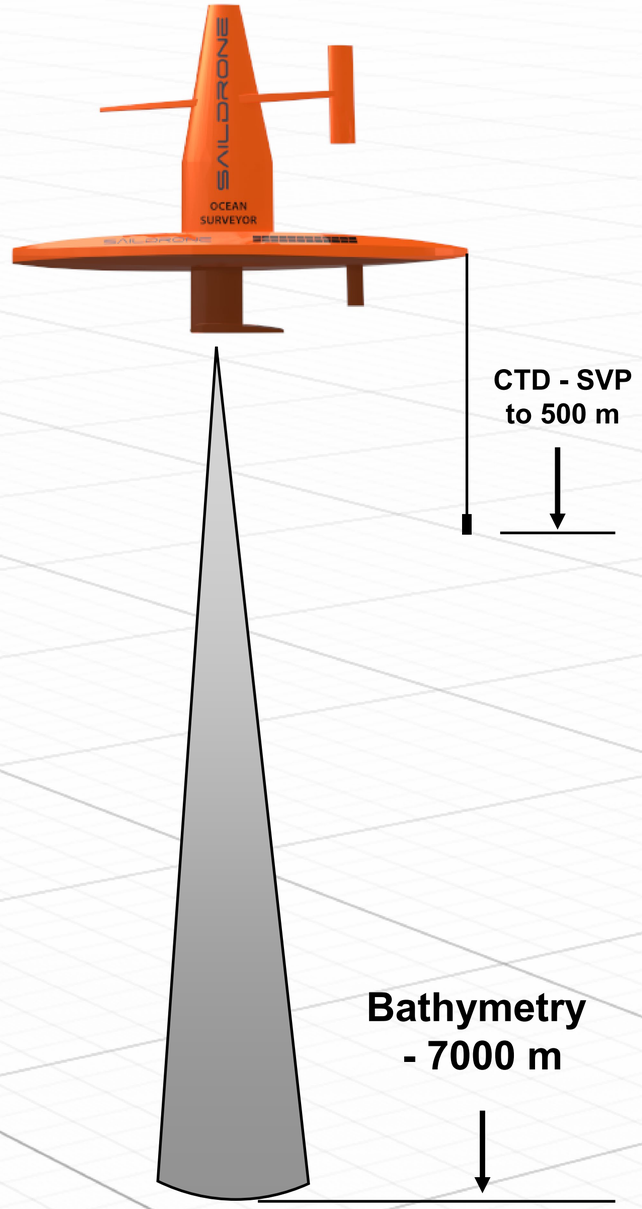


ROADMAP FOR AUTONOMOUS BATHYMETRY CAPABILITY FOR MAPPING & CHARTING

SMALL DRONE BATHYMETRY WITH SV PROFILER



SAILDRONE



SAILDRONE SURVEYOR

An unmanned, long endurance, multi beam system for deep ocean

Payloads:

- Kongsberg EM 304
- Kongsberg EM 2040
- SIMRAD EK80
- SIMRAD 150 kHz ADCP
- RDI Pinnacle 45 ADCP

Stats:

- Mapping Speed: 10 Knots
- Utilization: 330 Days / Yr
- Coverage: 5000 Sq km / day
  1.6m Sq km / Yr

Radar, visual and IR cameras @ 50 ft Elevation

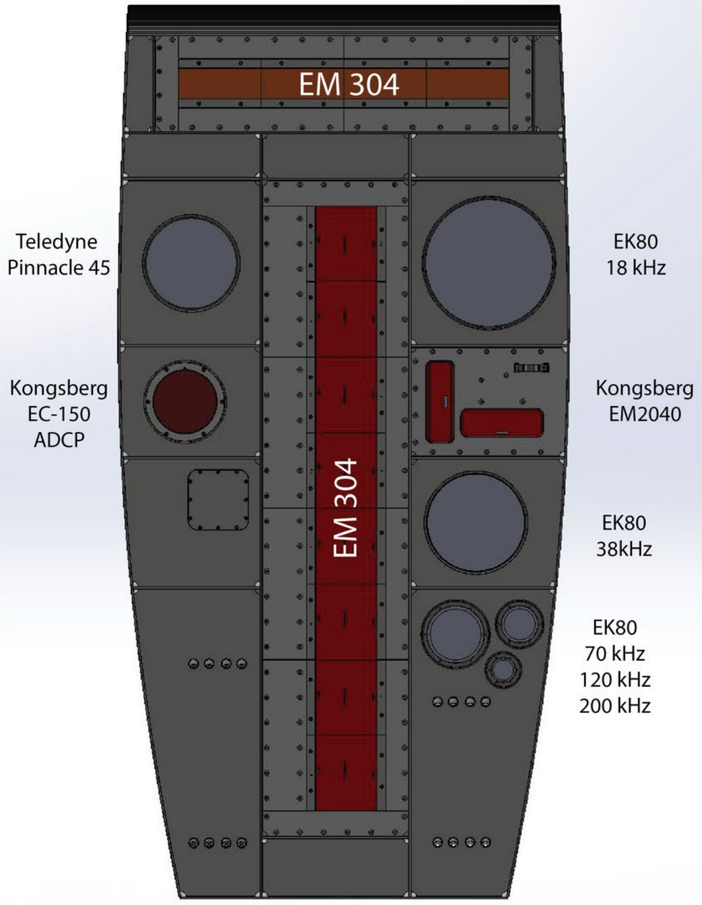
Person to scale

Remote Bridge, manned 24/7

- Conforms to COLREGS
- Onboard processing of bathymetry data
- Processed data transferred in real time

Saildrone Surveyor Specifications:

Length	22m
Draught:	3m
Survey Speed:	10 Knots
Transit Speed:	15 Knots
Continuous Operation:	6 Months
Depth Capability:	7000 meters



SAILDRONE

SAILDRONE
OCEAN
SURVEYOR
SAILDRONE

A new era in bathymetry.....