

ROV SUBASTIAN

Schmidt Ocean Institute's
Remotely Operated Vehicle (ROV)
2019 Year end update



Introduction

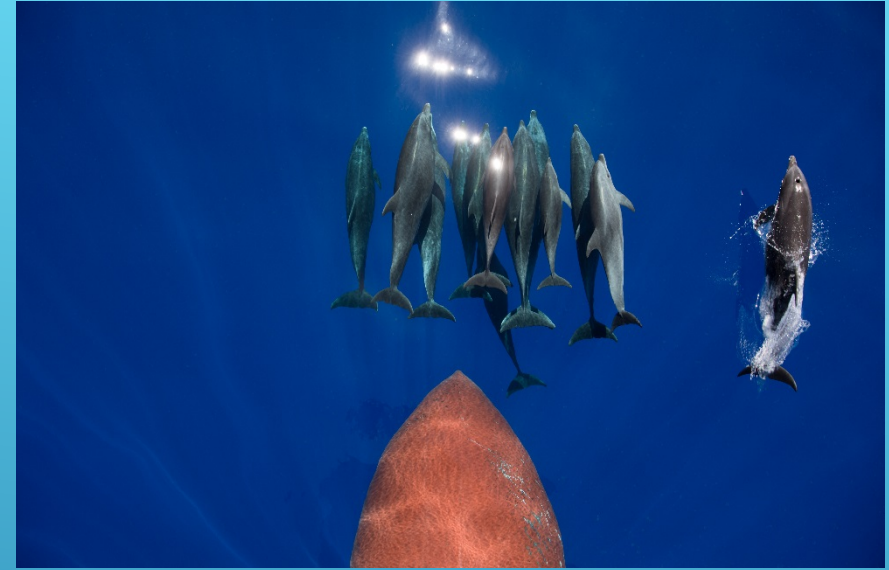
➤ Errol Campbell – ROV Manager

➤ Schmidt Ocean Institute

- Not for Profit Organization
- Goal to advance global marine research
- Provide state of the art operational, technological and information support
- Pioneering Ocean science and technology projects
- Share what we discover

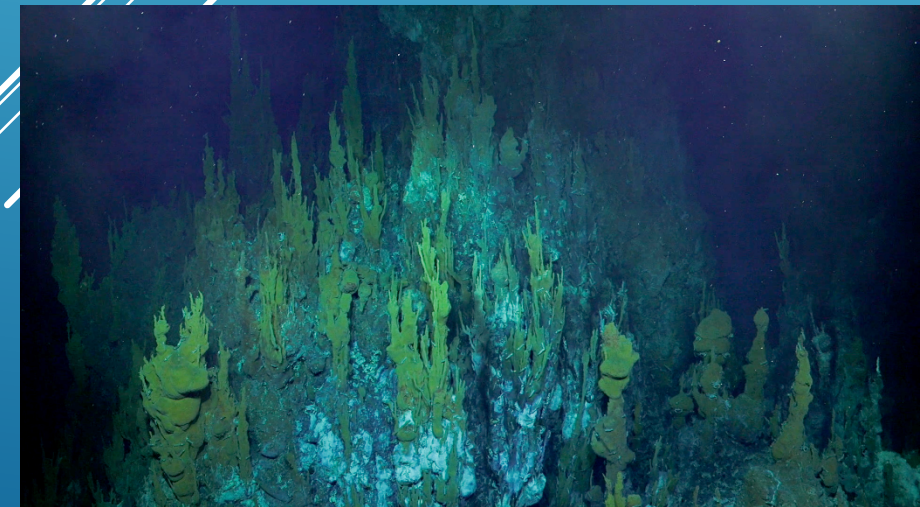
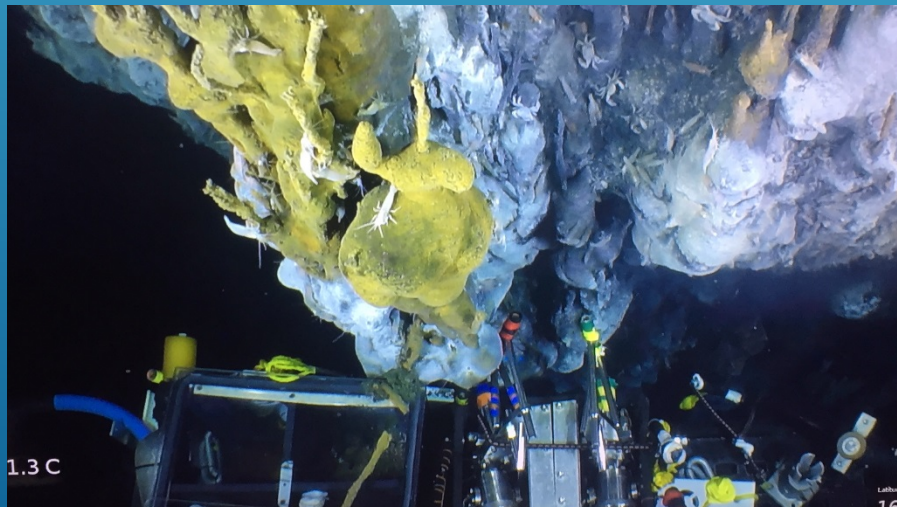
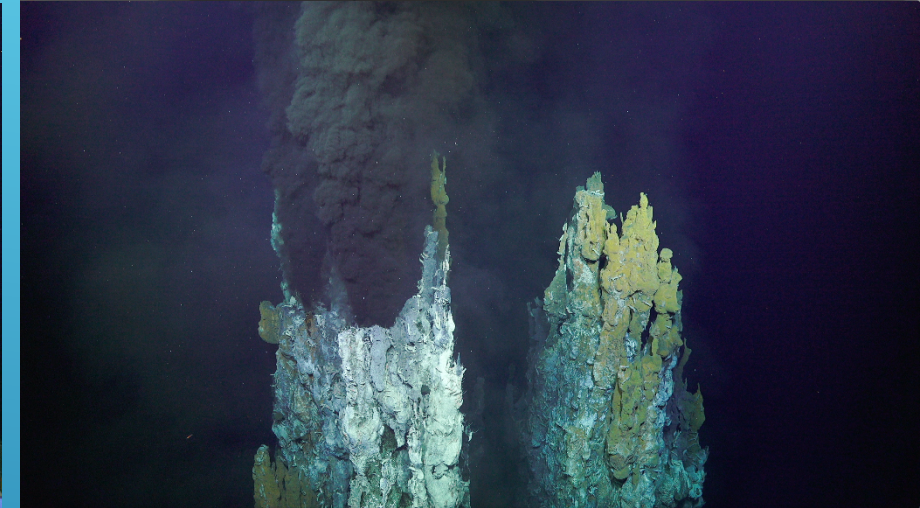
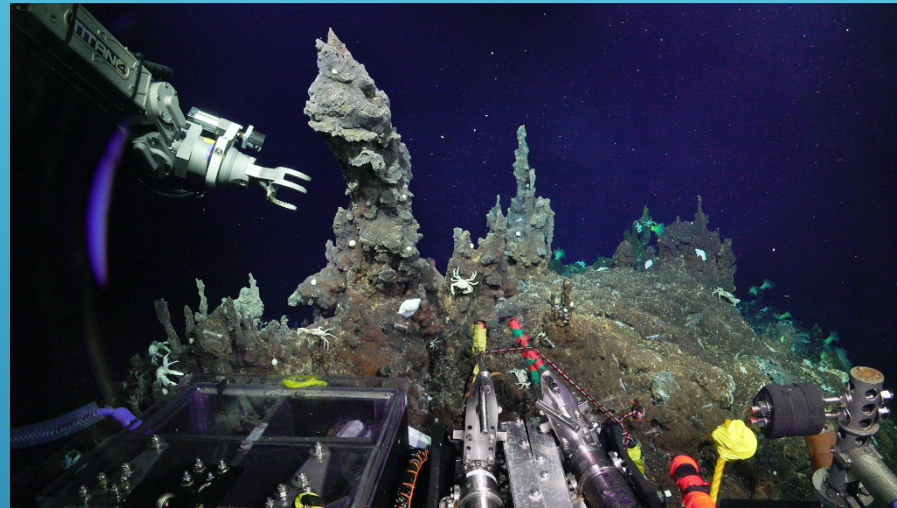
➤ ROV Subastian

- 4500m depth rating
- Development started in 2015
- Integrated onto R/V Falkor in summer of 2016
- Successfully completed 309 Dives to date



➤ Large array of calibrated sensors and tooling:

- Water samplers 2.5 & 5 L
 - Suction Sampler
 - Temp-Heat Probe
 - Bio-Boxes
 - Scoops
 - Rock Boxes
 - Mini-Temp Recorders
 - Push cores
 - O2 Sensors
 - CTD
 - PH
 - SV Probe
 - Mini IPS
 - Photomosaicing
- And the ability to integrate a vast array of other science sensors & samplers!



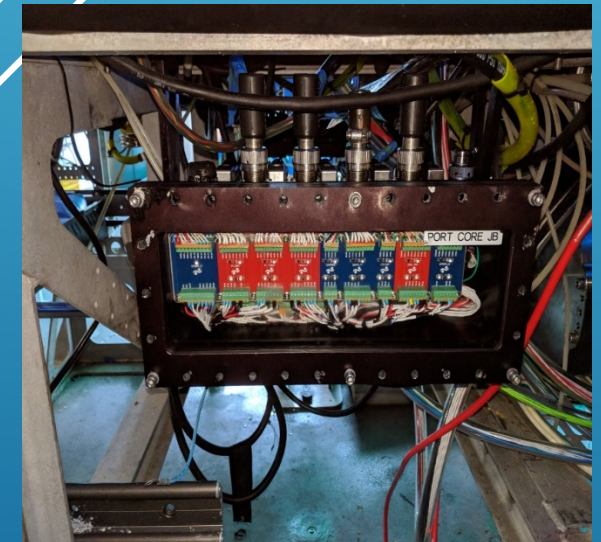
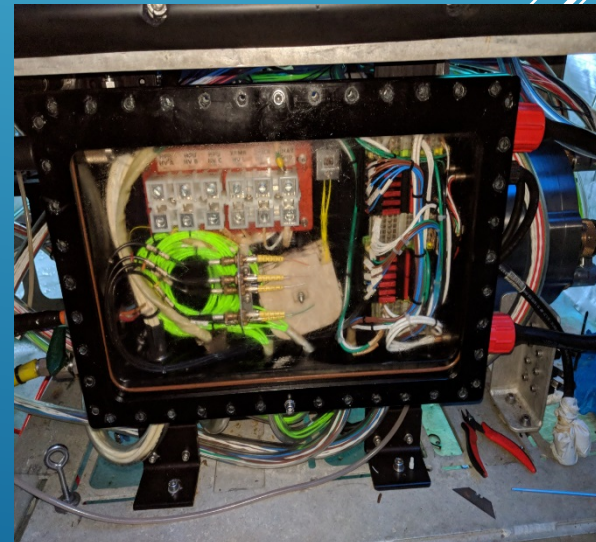
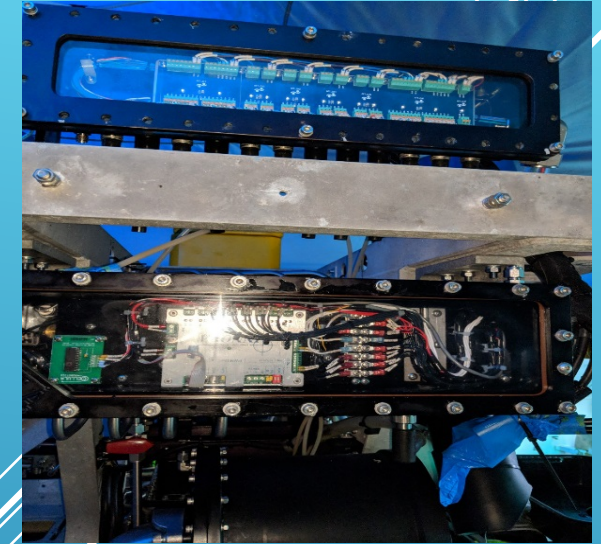
2019 R & M rebuild and upgrades

➤ Rebuild and Inspections

- Complete strip down, inspection & repair
- Structural inspection of frame & load path, thrusters, manipulators, all major components
- Science, equipment, tooling & sensors

➤ Upgrades

- HD “Gods Camera” system
- New 5700m Umbilical
- Replaced all ROV oil filled trunk cables
- Rewired all ROV junction boxes & installed new PCB's
- Installed Oil / Water Separator
- Science tooling & topside integration upgrades
- Rewired ROV Control Room



> Sea Trials

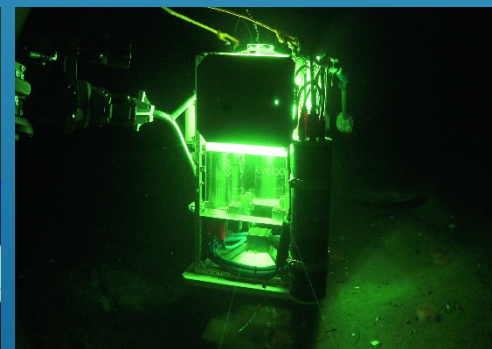
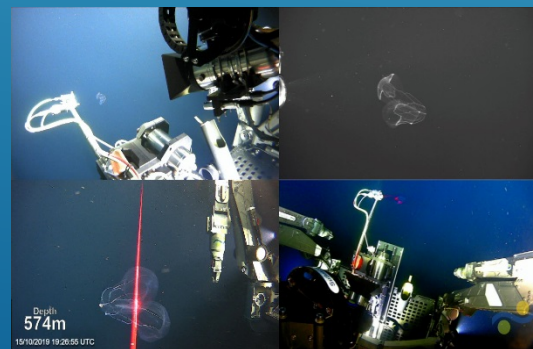
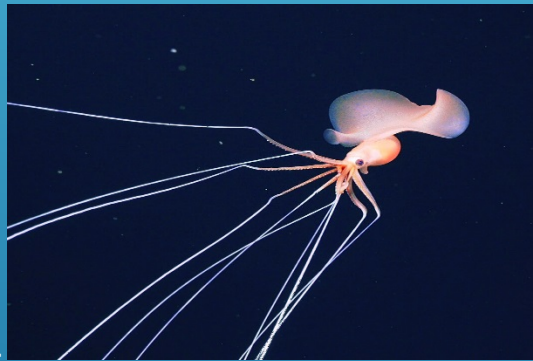
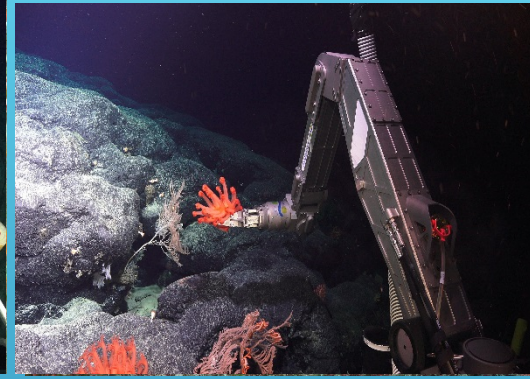
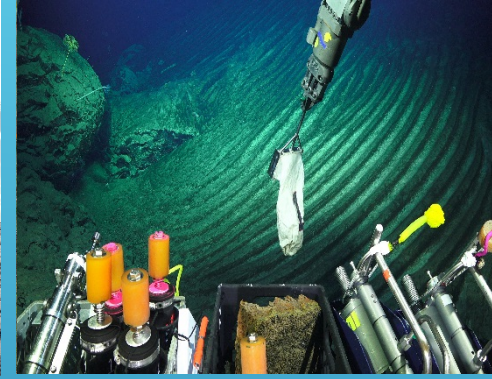
- Full system test dives & trials after rewiring the Top-Side Control Room, Replacing the main lift umbilical & replacing all ROV Subsea Trunk Wiring & PCB's
- Multiple Spin-out Dives of new 5700m Umbilical
- Tested new HD "Gods" Camera
- All Sensor calibration install & test
- 3D Printing of parts
- Test Low Latency ROV Remote Operation (VPN)
- Test the Meteorite Recovery Tool



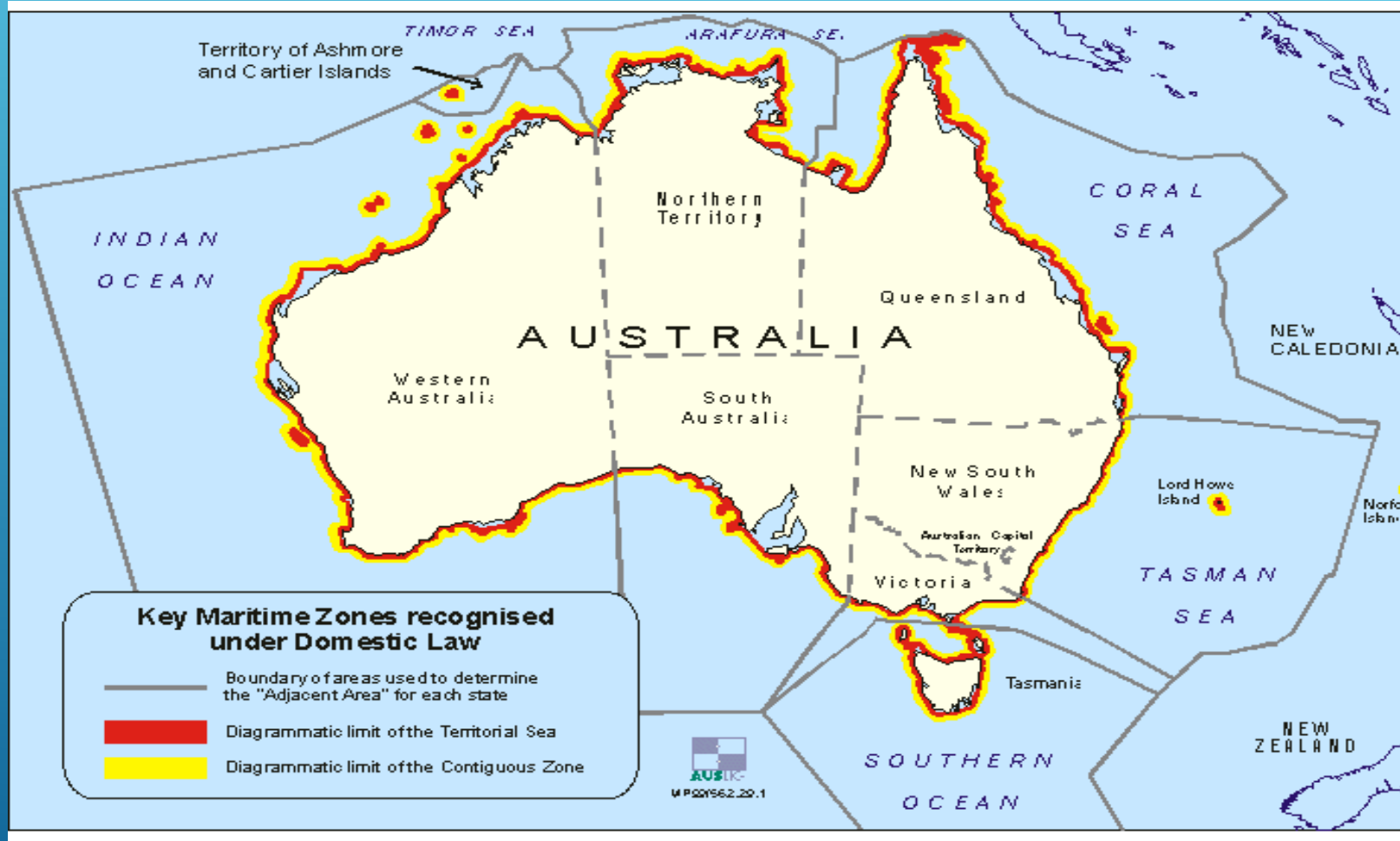
2019 ROV Science Missions

2019 ROV Science Missions

- Cordes – Cold Seeps – Costa Rica
- Joye - Hydrothermal Vents and Hydrocarbon Seeps - Manzanillo, Mexico
- Fries – Meteorite Recovery – OR
- Ruppel – “CaMMeRA” Cascadia Margin Methane Research Action
- Watling - Emperor Seamount chain – Hawaii
- Baco-Taylor – Seamounts & deep-sea Octocorals – Honolulu
- Phillips – Engineering Cruise - MBARI DeepPIV system



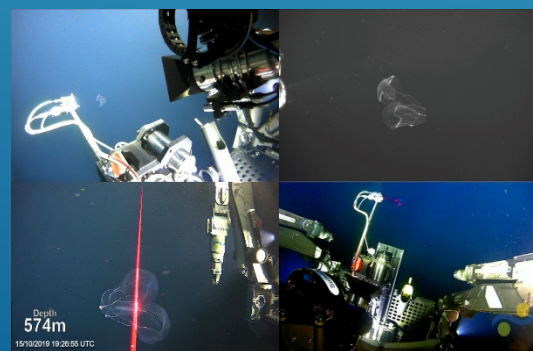
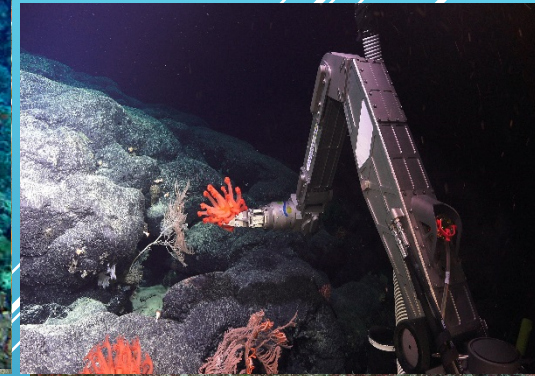
2020 AREA OF OPERATIONS CIRCUMNAVIGATION OF AUSTRALIA



2020 ROV Science Missions

➤ 2020 ROV Science Missions

- Trotter– Deep water coral
- Wilson – Deep water coral
- Miller – Mesophotic coral ecosystems
- Watt – Tsunami Hazards
- Galager - Detection and Classification of Micro- Nano- and Fiber Plastics
- Brook – Drowned reefs & deep water corals
- Hansel – Sniffing Stress - coral reef health
- Phillips – Engineering Cruise - MBARI DeepPIV system & RAD 2 Sampler



NUMBERS AND METRICS

2013-2019



309

ROV
Dives



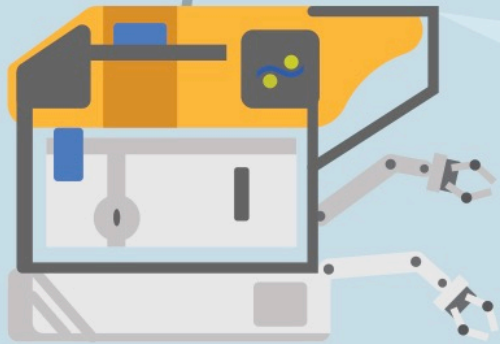
2406

ROV
Samples
Collected



1906

Hrs
livestreamed
on YouTube



NUMBERS AND METRICS

2013-2019



1,385

Science Days



>1mil

Sq Km mapped



863

Scientists from 165 Institutions in 30 Countries



289

Students



1,322

CTD Casts



323

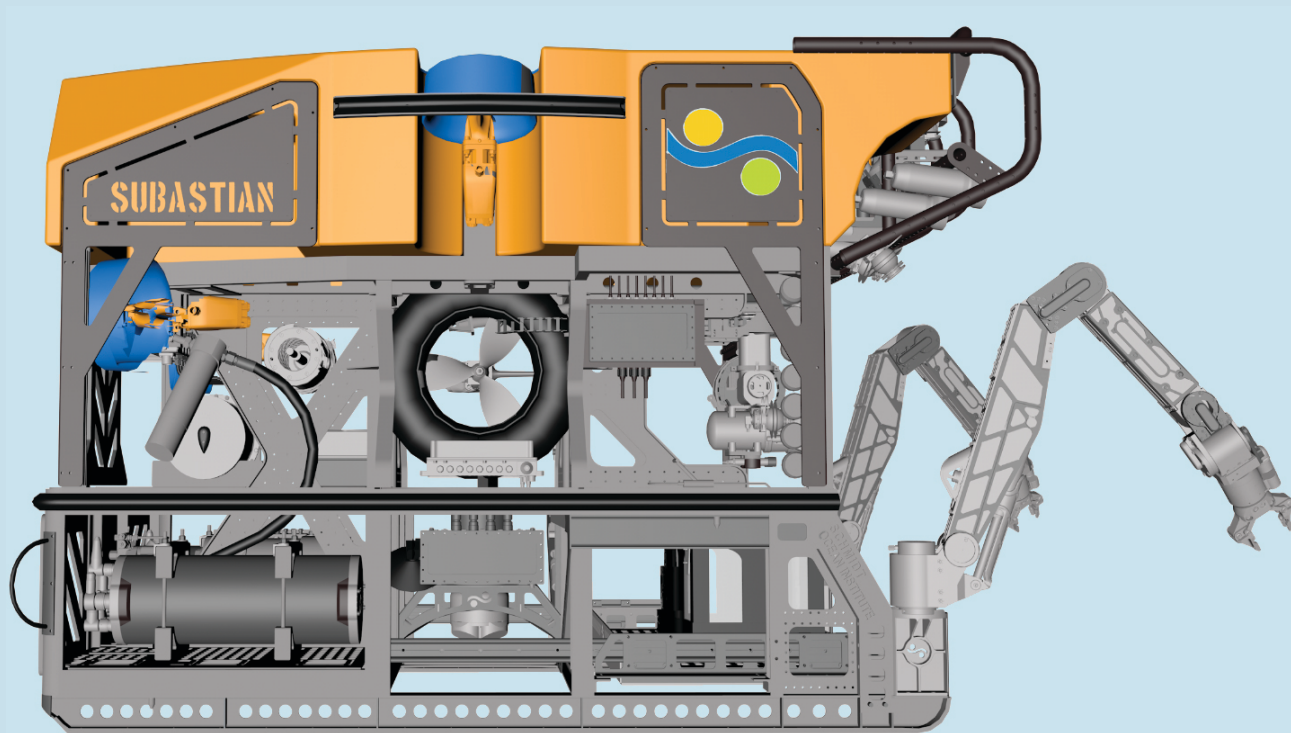
AUV Dives



36

UAVs Launched Totaling 31.3 Hours

ROV SUBASTIAN Proposed 2020 upgrades & additions.



- Upgraded Video System
- Greensea Control Upgrades
- 2 New Landers
- New Vibrocore System
- Subsea Microscope
- Hyperspectral imager
- New Bio Boxes
- New Blueview Sonar

THANK YOU!
www.schmidtocean.org

SUBASTIAN

- www.schmidtocean.org
- Livestreaming ROV Dives
- Facebook
- YouTube