Ocean Monitoring

Autonomous Scientific Monitoring

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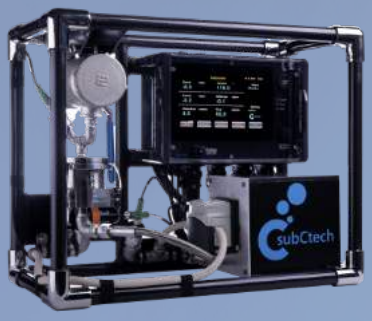
clean seas
turn the tide on plastic



Microplastic Sampler

©Boris Herrmann Racing

Cruise meets citizen science for Ships of Opportunity

Modular, easy to use and reliable monitoring and sampling systems for all vessel and cruise ship sizes. Highlighting your efforts for sustainable cruises.

www.subCtech.com
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unesco
Intergovernmental Oceanographic Commission

2021 2030 United Nations Decade of Ocean Science for Sustainable Development

subCtech
Subsea Technologies

Assets

Autonomous scientific instruments on cruise ships

- Highlighting your efforts for sustainable cruises
- Being an important partner to the scientific community (e.g. climate change studies)
- Our observation technology can be part of the entertainment program (for interested guests)
- Your activities would be recognized by important intergovernmental organisations such as WMO or UNESCO

WORLD METEOROLOGICAL ORGANIZATION

OceanOPS

United Nations Educational, Scientific and Cultural Organization

Intergovernmental Oceanographic Commission

Citizen science for passengers - fully autonomous

- Autonomous Underway Measurement Systems (autonomy for several month)
- Measuring of all typical parameters of the ocean surface and meteorological data
- Latest sensors: offering highest precision and accuracy and ROBUSTNESS at the same time
- Automatic: water supply, calibration, cleaning, diagnosis, processing, recording, transmission

Setup on cruise-ship:

Interactive infotainment

Passenger display

OceanPack™

Technology

SubCtech provides a versatile and cost efficient platform with its OceanPack™ measuring system. It consists of a vast number of high-end SubCtech products.

OceanPack™ RACK

Classical "FerryBox"-design, flexible, expandable

- Robust, versatile standard 19" racks
- Water system fully removable for easy service
- CO_2 tolerant debubbler for gas analysis: mBubbler®
- Built in NetDI® data logger
- The data logger highlights data automatically with quality flags
- Auto-zeroing calibration for long-time high-accuracy operations
- Easy integration of instrumentation via NetDI® data management system
- connected simultaneously via up to 30 serial interfaces
- Expandable via optional RS485 bus

OceanPack™ CUBE

Compact, versatile measurement system

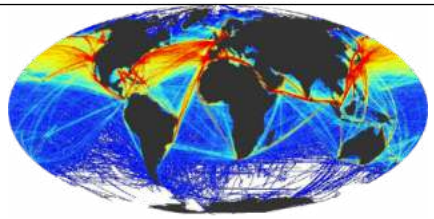
- 19-inch rack format allows the mounting of 19-inch standard frames
- Touch Screen: the new 7"touch screen enables an intuitive control of the device
- Matching flight-case for fast and safe transportation
- Internal sea-water pump for below or above the waterline installations
- NetDI® data logger, robust Flat-Membrane-Equilibrator

OceanPack™ RACE

Highly mobile, extremely robust

- *P*CO_2 ocean-lab + optional Air-CO_2
- 24 V DC power supply, <30 W operation, <14 W standby
- 15 kg lightweight mechanical frame
- Up to 10 sensors/analysers
- Calibration-free sensors with integrated automatic self-calibration unit
- Integrated small debubbler (mBubbler®) for gas-tolerant de-airing
- Anti-Fouling design

Technology	OceanPack™ flow-through systems (also known as FerryBox or Underway System) with NetDI® for manifold measurement platforms: research vessels, ships of opportunity, platforms, racing yachts etc.
Sensors	Nearly any oceanographic sensor can be integrated into OceanPack™ (e.g. *p*CO_2, SST, SSS, D.O., algae). In addition, external devices can be included: nutrient analyzers, water samplers, meteorological stations, GPS, Air-CO_2 analysers - up to 30 sensors/analysers
Calibration	All provided sensors are mostly calibration free for approx. 1 year. The SubCtech analysers incorporate a fully automatic self-calibration (e.g. for achieving SOCAT conform quality data)
Storage	Self-recording on 32 GB SD cards, data download via USB or telemetrical via modem
Pump	Self-priming, low-power consuming sea water pump, corrosion free
Debubbling	Integrated debubbler (mBubbler®) unit for gas-tolerant de-airing, works up to ± 30° roll angel



References

Citizen science for passengers - benefits

- Track record since 2009
- Real-time telemetry to the dashboard
- Raw data! No hidden gaps or peaks
- Public dashboard. Everyone sees everything
- Open data access directly to climate models
- **It is interesting. It's transparent. It's open.**

RAW and SOCAT data by Max Planck Institute for Meteorology (Peter Landschützer) and GEOMAR (Toste Tanhua), "Seaexplorer - Yacht Club de Monaco" Vendée Globe 2020-2021.

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Xue Long 2 © PRIC

FS Polarstern © private

North Pole © admship.ru

- Complete systems
- Lowest maintenance
- Robustness for harsh environments
- Long-term deployments
- Autonomous operation

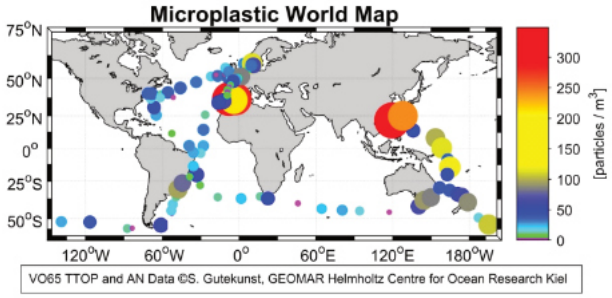
- Fully integrated gas analyser
- Automatic calibration and referencing
- Small and lightweight design
- Open design for a multitude of sensors
- OceanView™ Windows® software

Microplastic Sampler

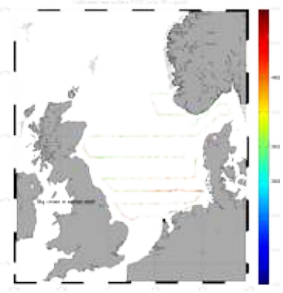
clean seas
turn the tide on plastic

Sailing meets Science™ - Microplastic Automatic Sampler

- Robust, versatile and compact water proof design
- Highest efficiency sampling, even at high speeds of 30 kn and more
- On board sampler: smallest size, low weight and low power consumption (size like a shoebox)



Racing Yacht "Malizia"



North Sea data: 1.5 Mio. Datasets by NIOZ

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