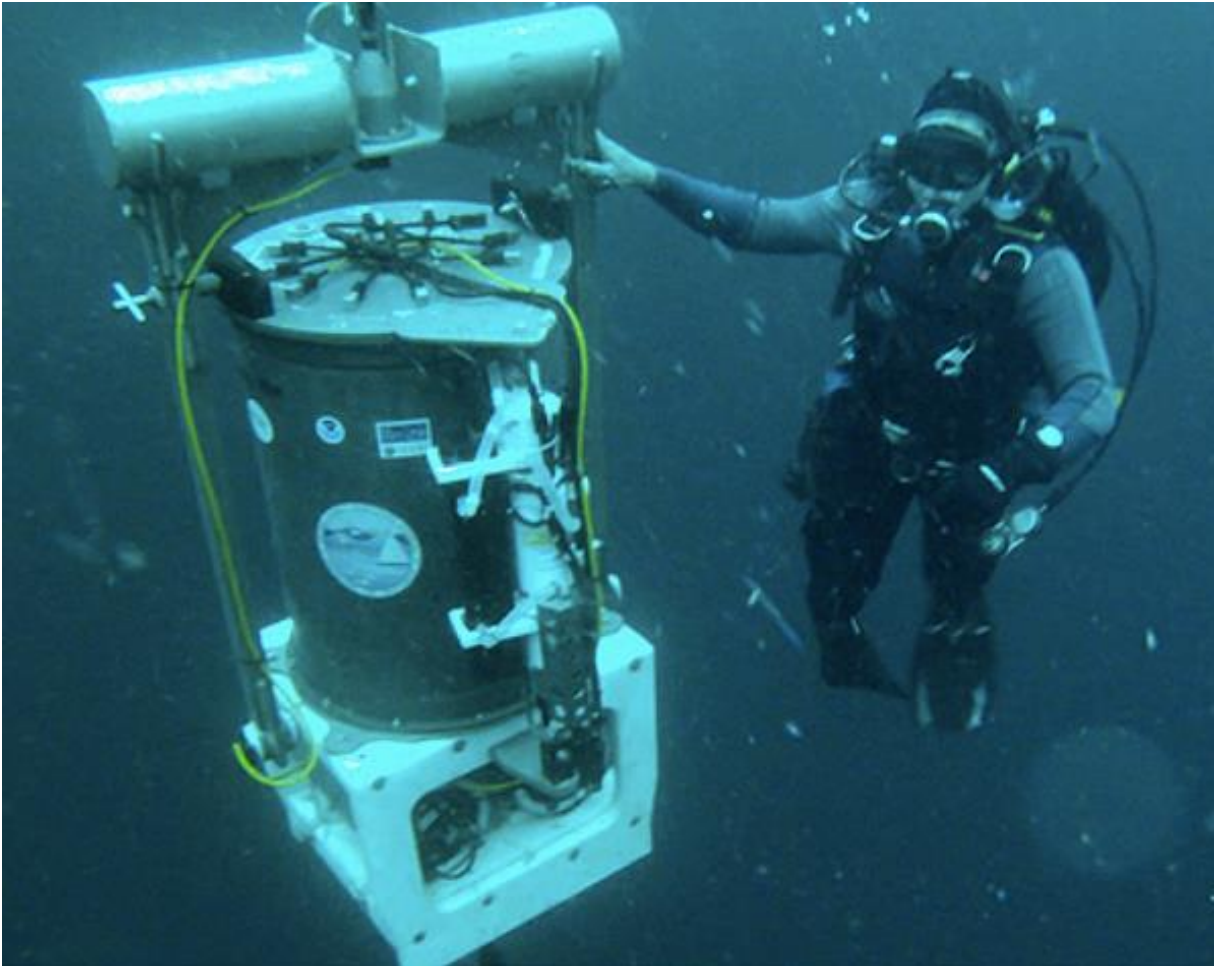
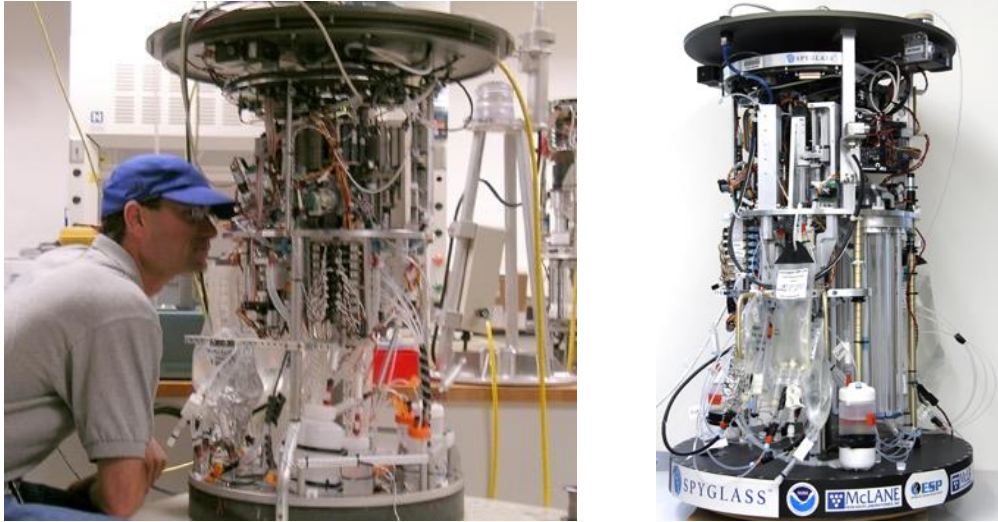




# The Environmental Sample Processor

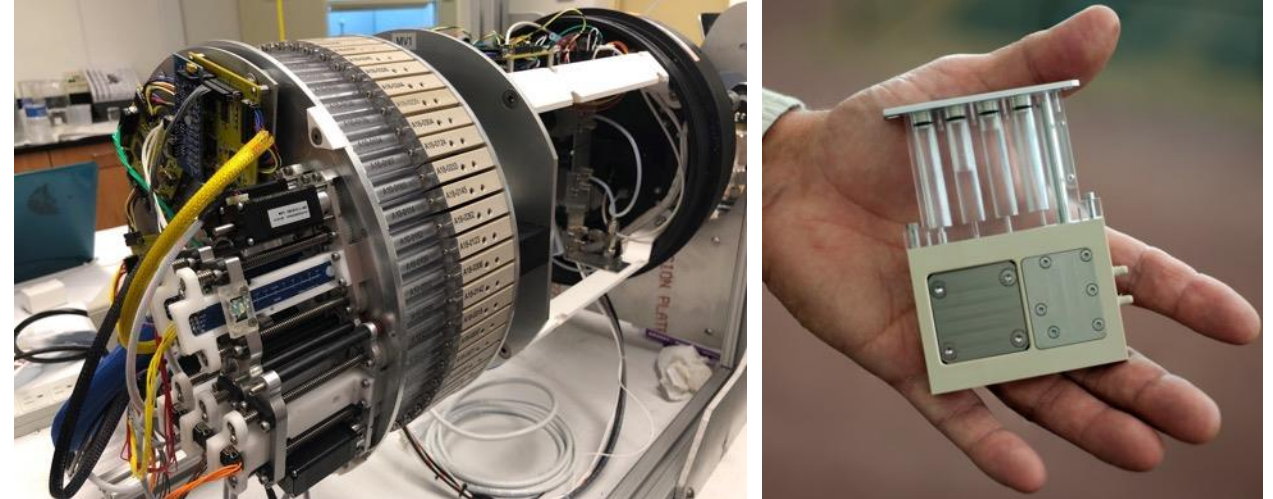


## 2nd Generation ESP (2G-ESP)



- Sample filter archiving (e.g. RNAlater)
- In-situ analysis
  - DNA/RNA/Protein extraction
  - Sandwich Hybridization Arrays
  - cELISA Arrays
  - qPCR

## 3<sup>rd</sup> Generation ESP (3G-ESP)

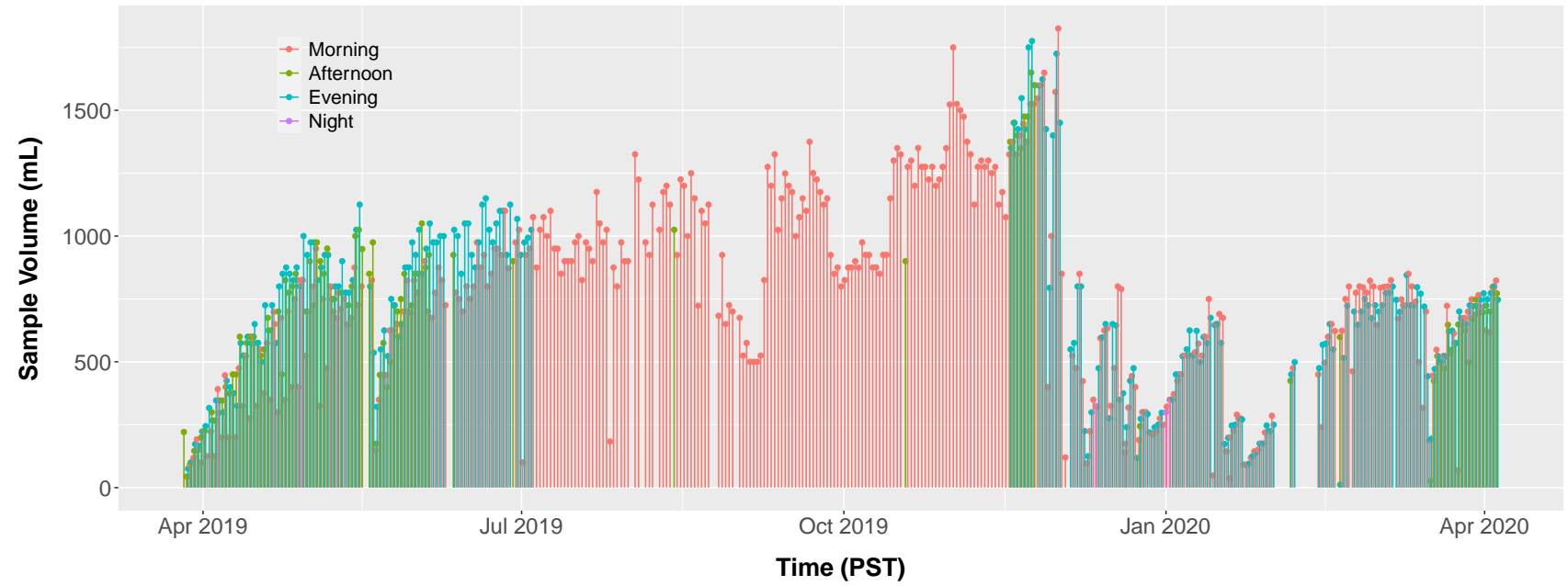


- 2 Types of Cartridges
  - Archival Cartridge
  - Lysis Cartridge
- Interface for in-situ analysis modules
  - Surface Plasmon Resonance
  - PCR
  - Minlon

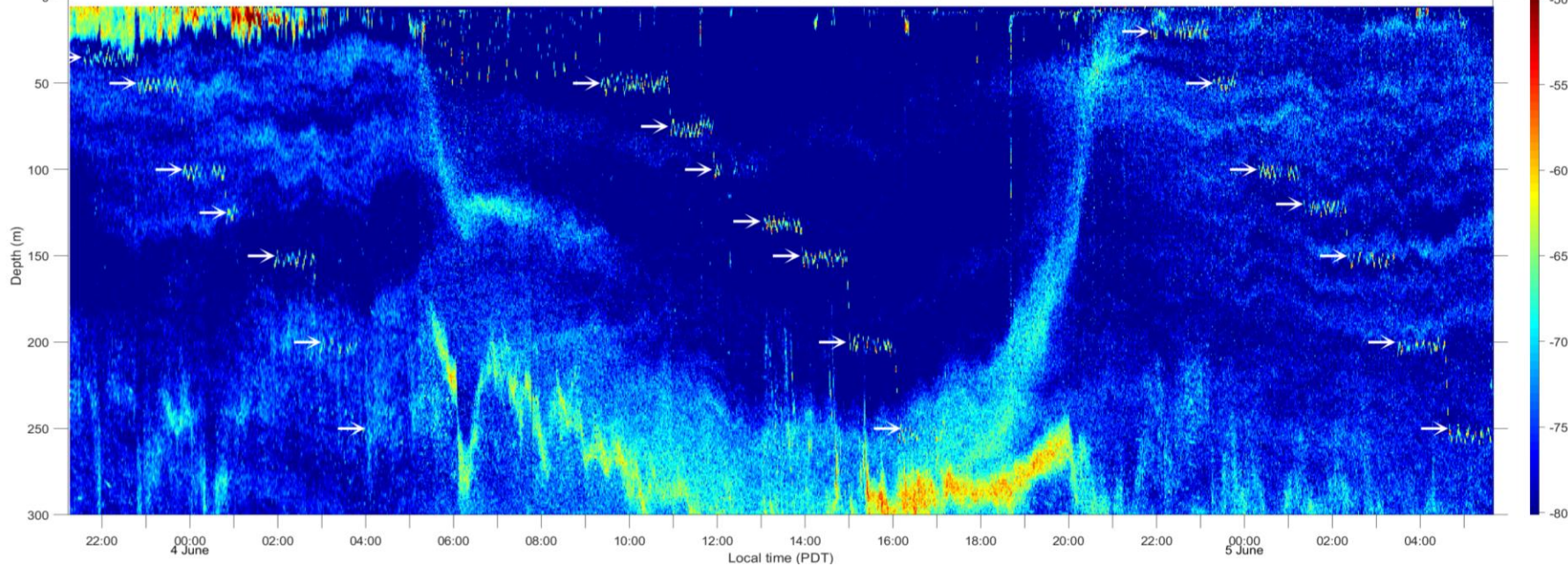
# Land Based Freshwater High Frequency Unattended Sampling



Scott Creek ESP Sample Volumes



Echogram of seabed-mounted echosounder from 3-June 21:13 to 5-June 05:40 (PDT)



# Oceanic Vertical Migration Study - Spatial and Temporal Observations with LRAUV-ESP

