

Passive Acoustics for Ecosystem Monitoring

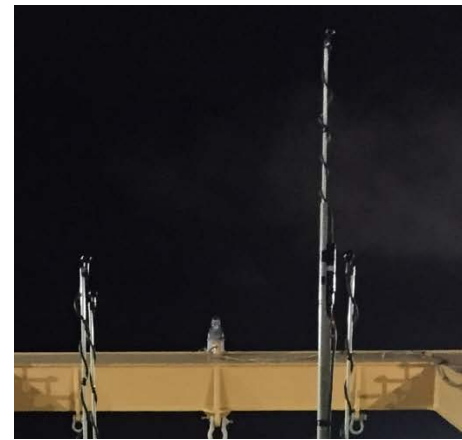
Kait Frasier, PhD

Scripps Whale Acoustic Lab, UC San Diego

cetus.ucsd.edu

Technologies

- Fixed seafloor sensors
 - Continuous recording at 200 or 320 kHz for >1 year
 - Flat, calibrated frequency response 0.01-160 kHz
 - Single or multi-channel
 - HARPS: Mooring and package configurations
- Towed arrays
- AUVs
- Acoustic tags



<http://www.unmannedsystemstechnology.com>



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What gets recorded?

- **Fauna**

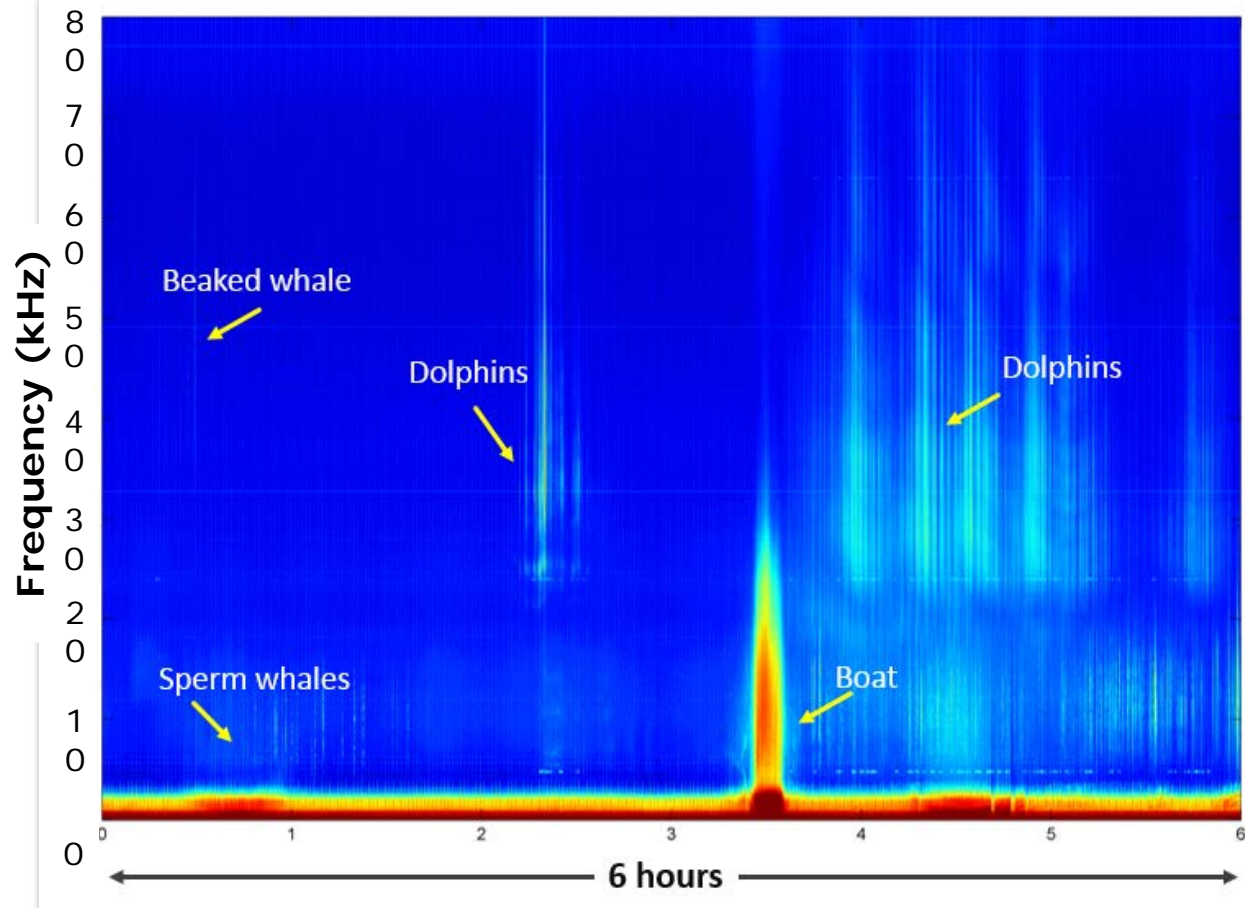
- Marine mammals (whales, dolphins, seals, etc...)
- Deep scattering layer
- Crustaceans
- Fish

- **Humans**

- Ships
- Sonar
- Seismic exploration
- Explosions
- Pingers, deterrents

- **Environment**

- Weather
- Seismic events



... and lots of mystery sounds.

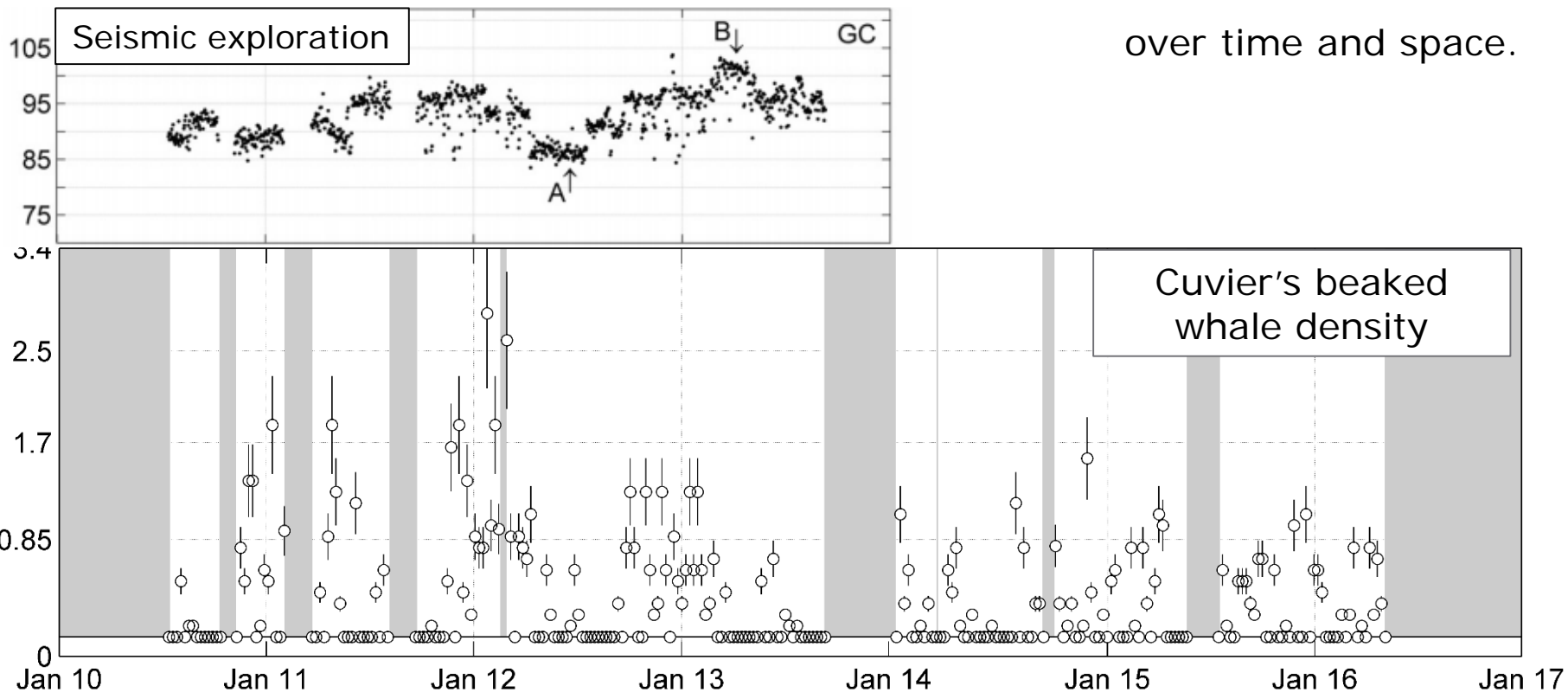
Applications: Oil & Ecosystems

Passive acoustic monitoring can

establish baselines

quantify shifts

observe interactions





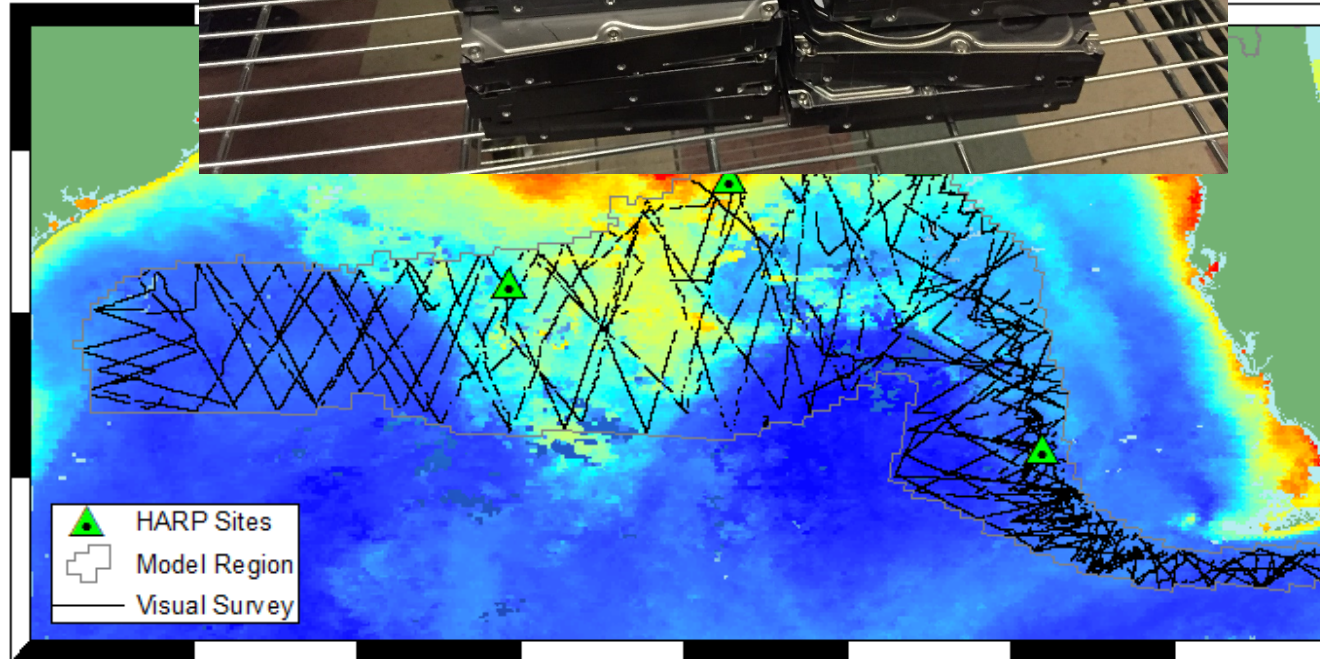
Challenges (a.k.a. Opportunities)

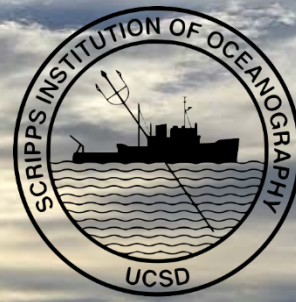
- **Hardware**

- Battery life vs. storage
- Flow and self-noise
- Getting the data back
- On board processing vs. data versatility

- **Data**

- Petabyte scale data
- Data storage and sharing
- Machine learning
- Cloud computing





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