

Monitoring Marine Energy with an Adaptable Monitoring Package

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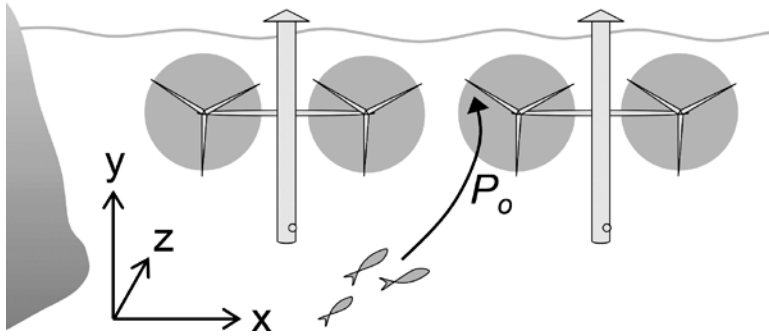
UNIVERSITY OF
ALASKA
FAIRBANKS

Oregon State
University

UNIVERSITY *of*
WASHINGTON

Risk Assessment Tools

Two options:



Models
(Hammar et al. 2012)



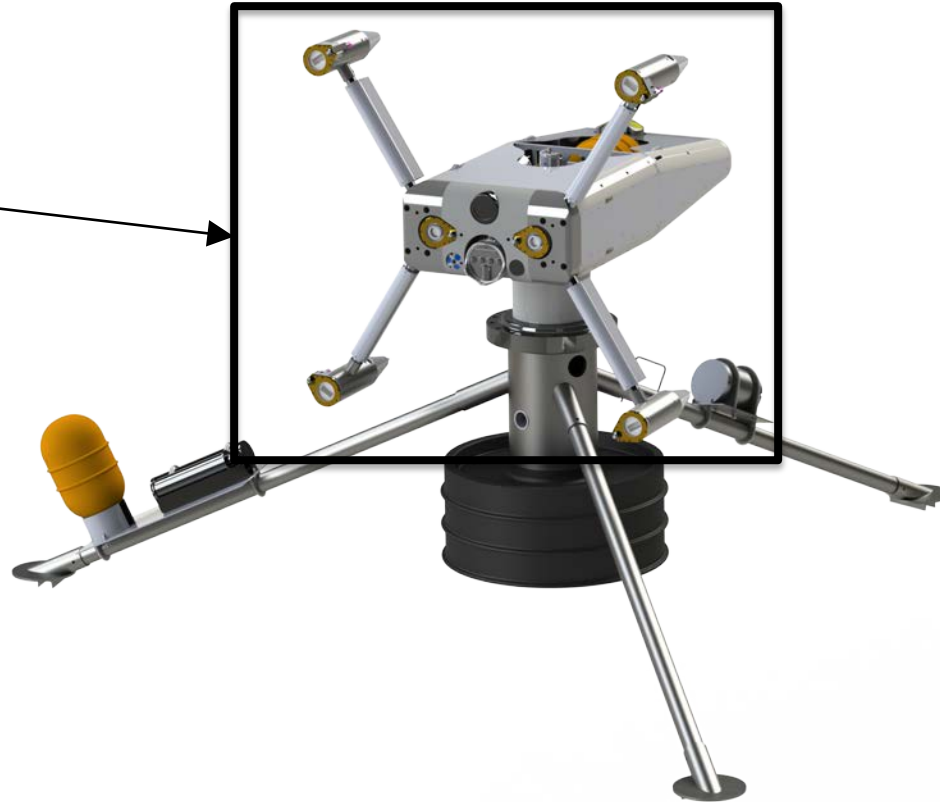
Monitoring

Monitoring Checklist

- Deployable at high-energy sites
- Must not alter the environment
- Detect rare events

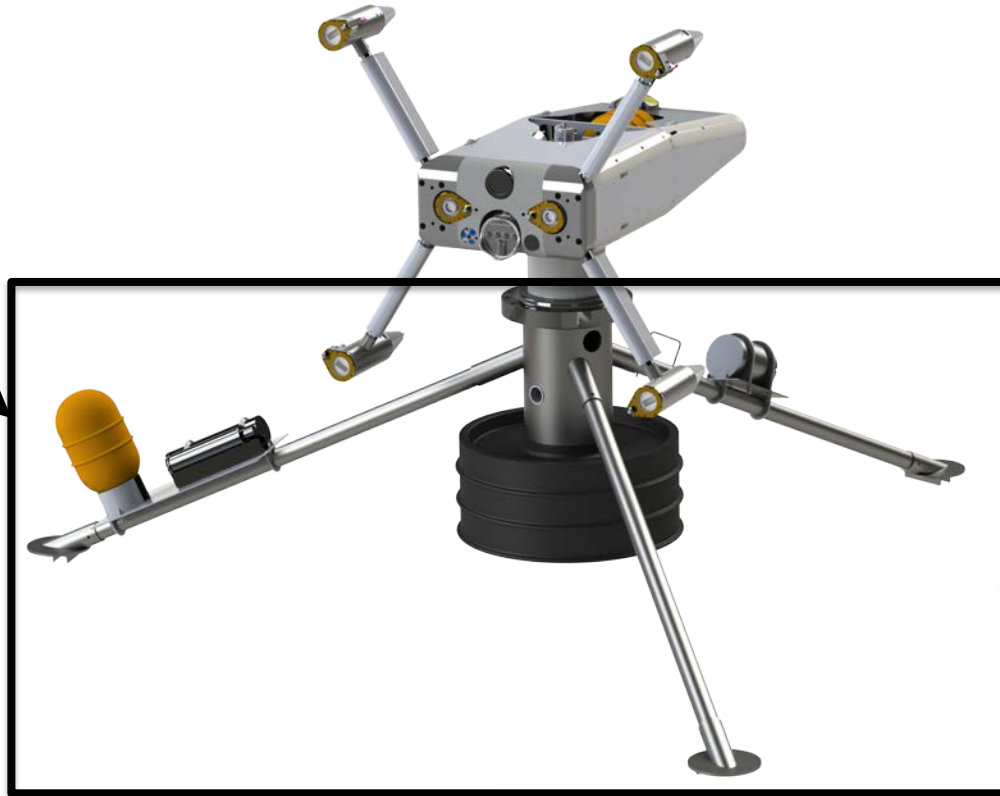
Adaptable Monitoring Package

Adaptable
Monitoring
Package

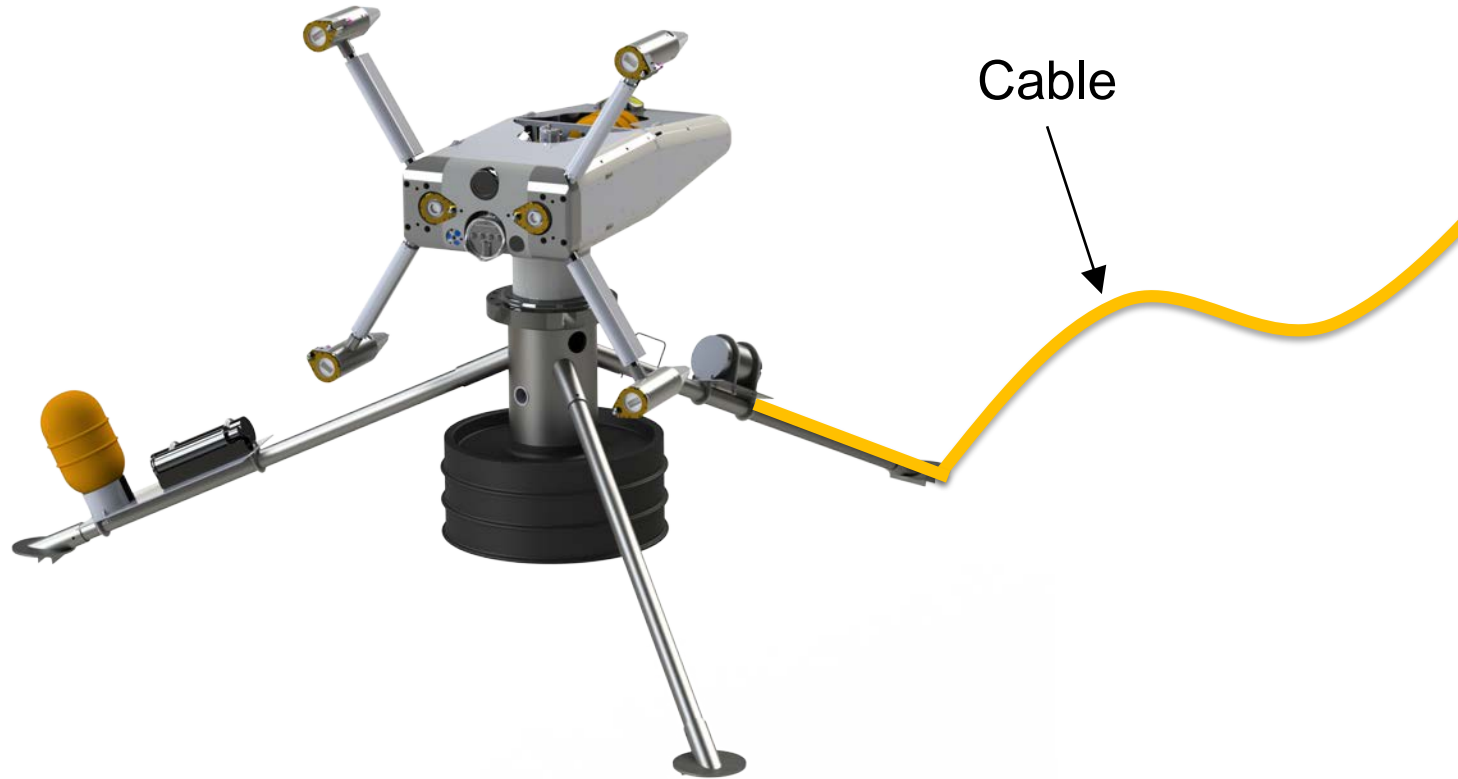


Adaptable Monitoring Package

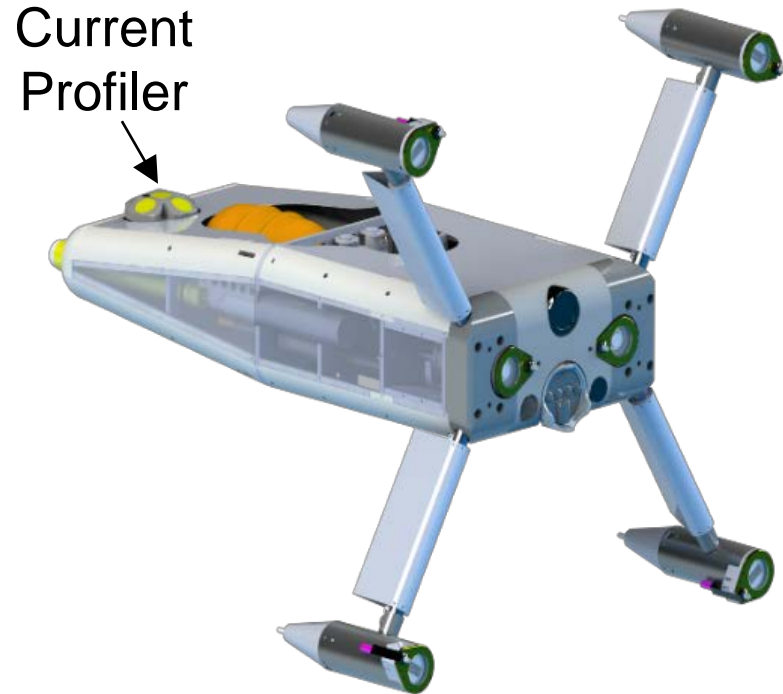
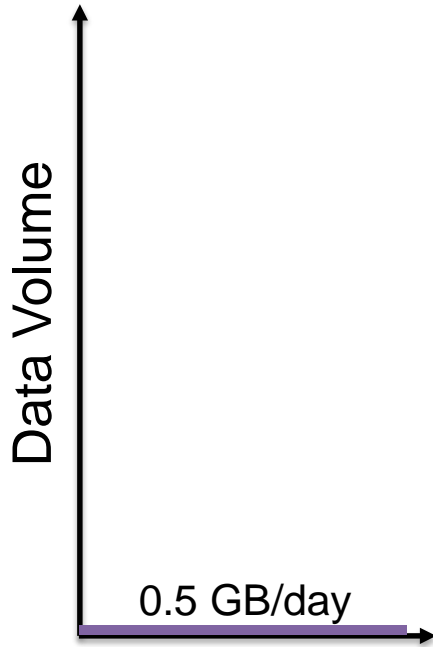
Docking
Station



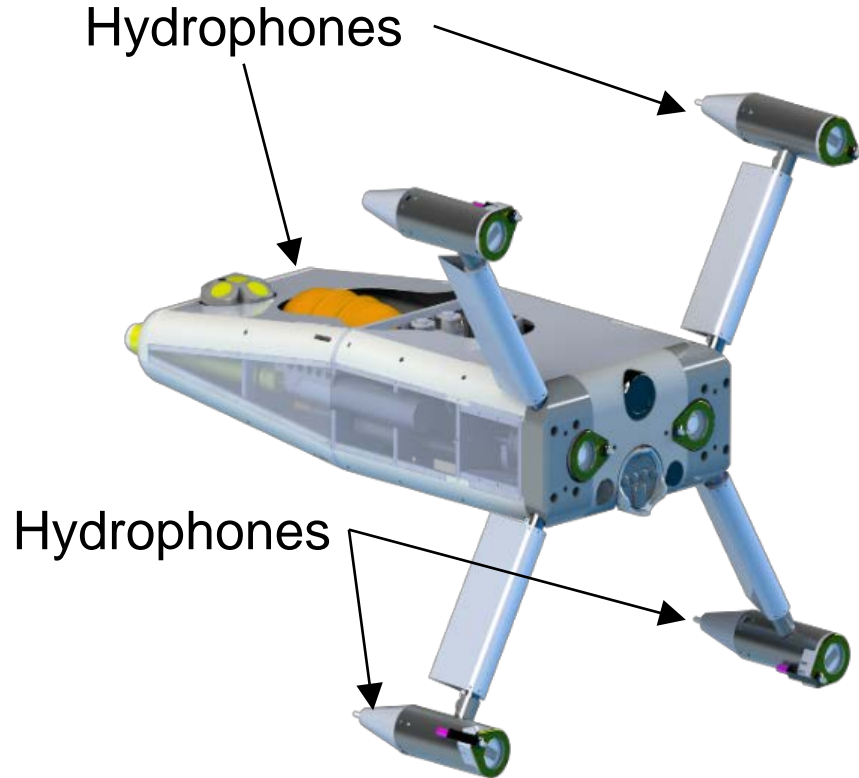
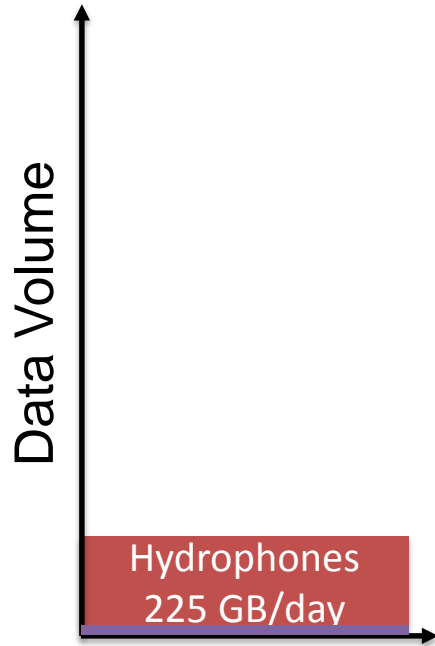
Adaptable Monitoring Package



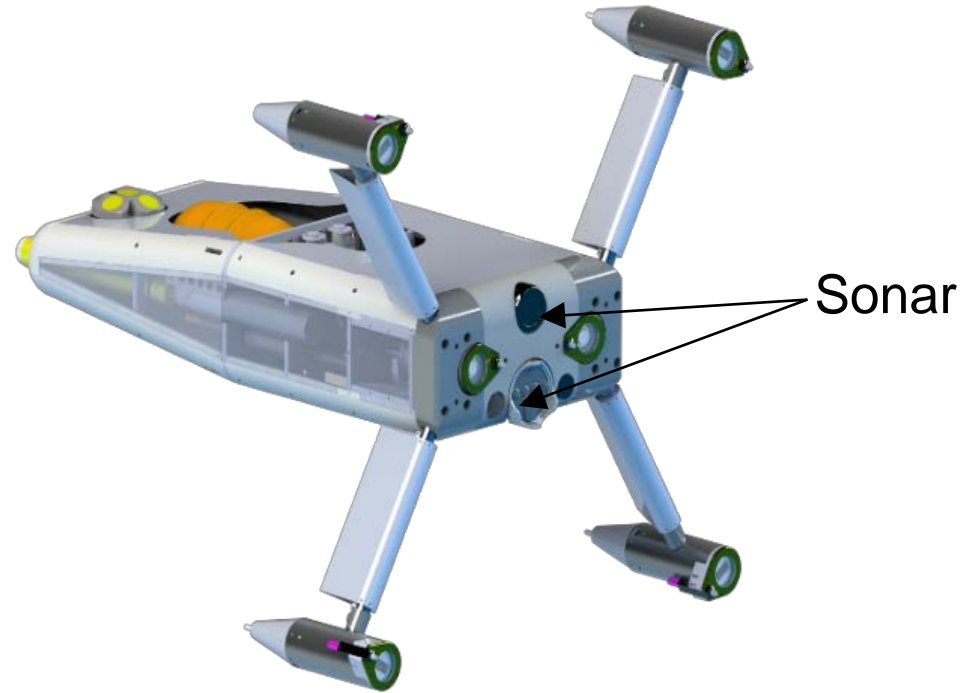
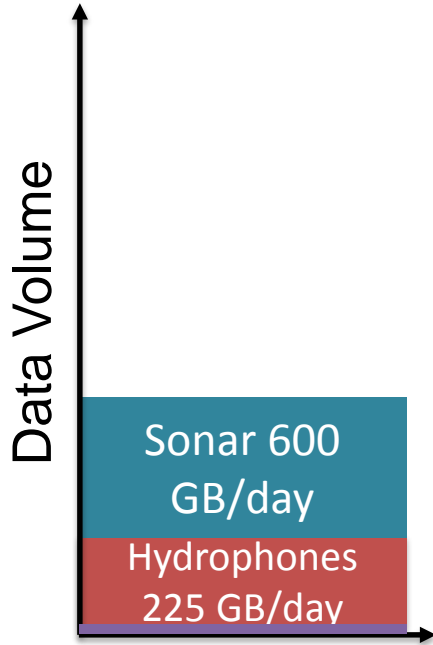
Adaptable Monitoring Package



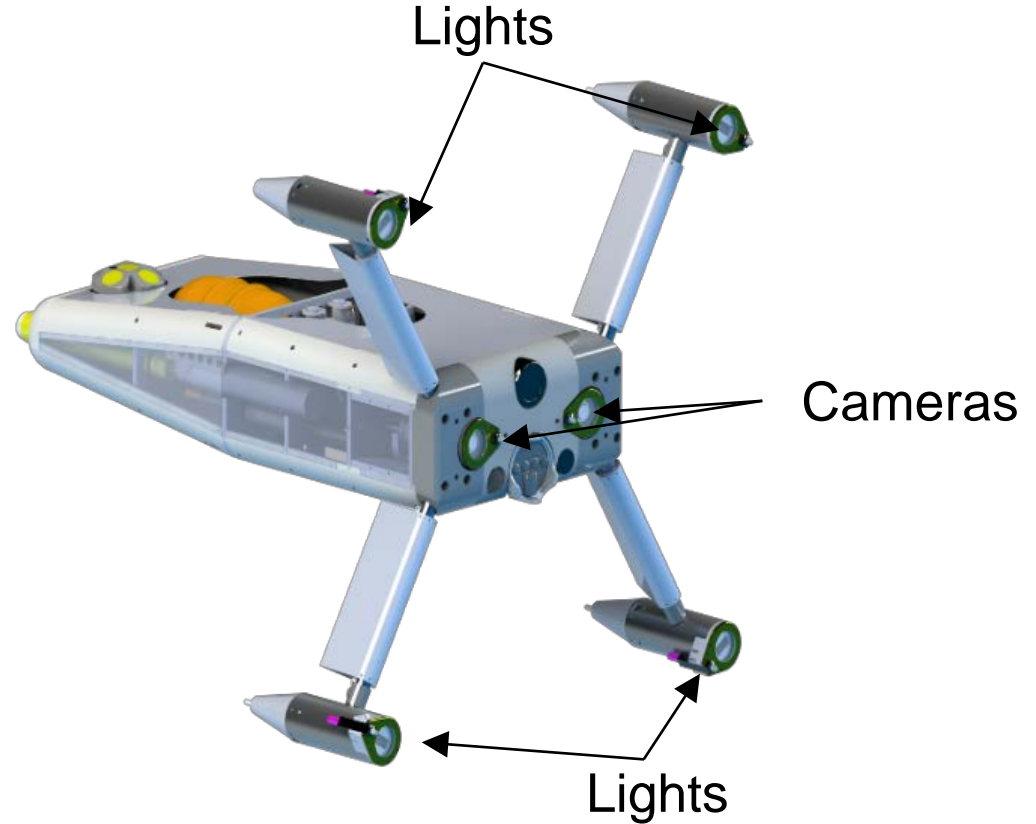
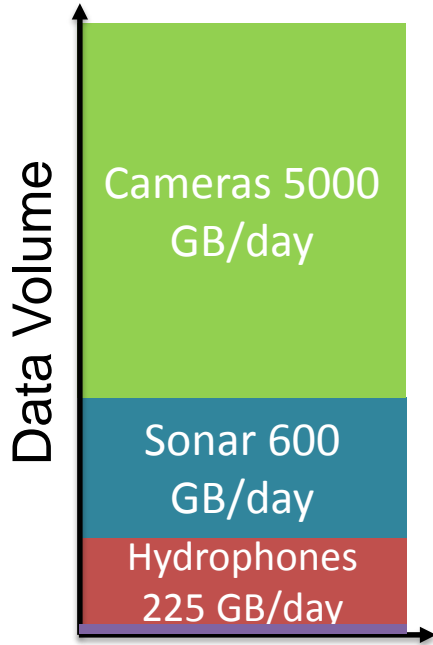
Adaptable Monitoring Package



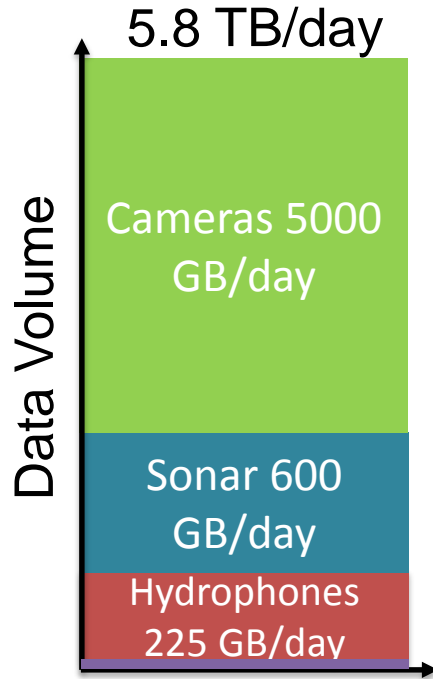
Adaptable Monitoring Package



Adaptable Monitoring Package



Adaptable Monitoring Package



Monitoring Checklist

- Survivability at high-energy sites
- Must not alter the environment
- Detect rare events
- Avoid accruing unmanageable volumes of data

Data Collection Options

Continuous Data
Collection



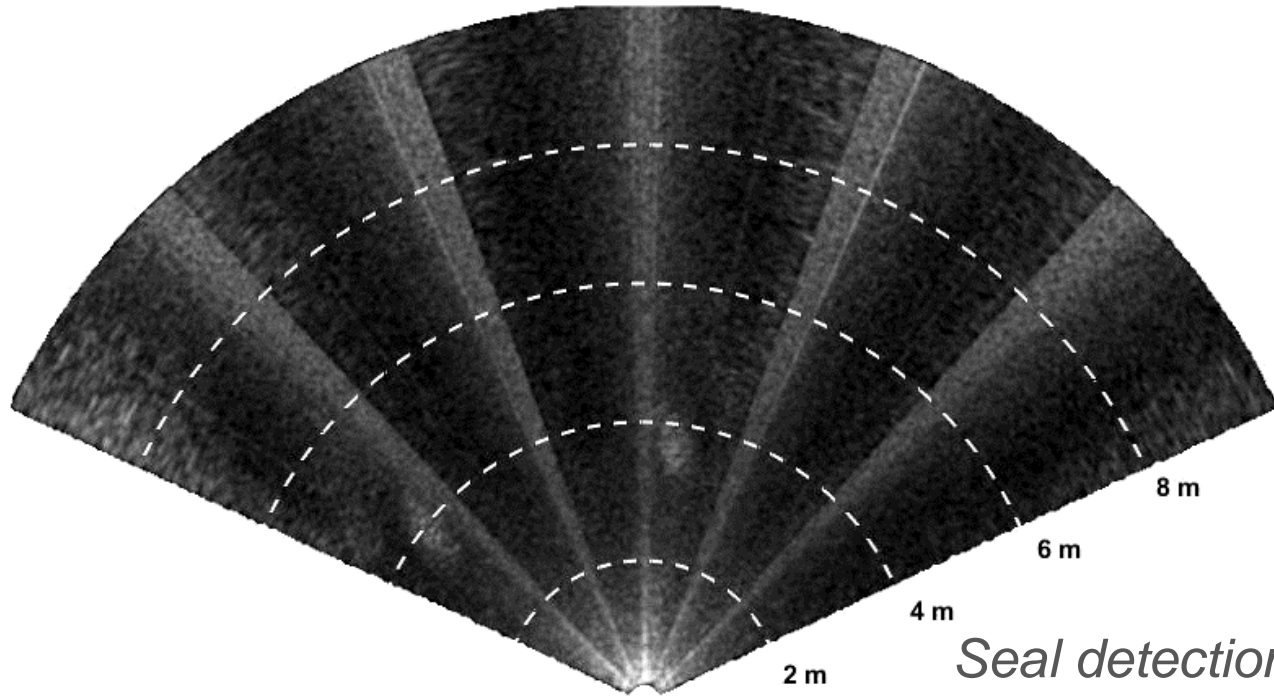
Duty Cycle



Real-time
Detection

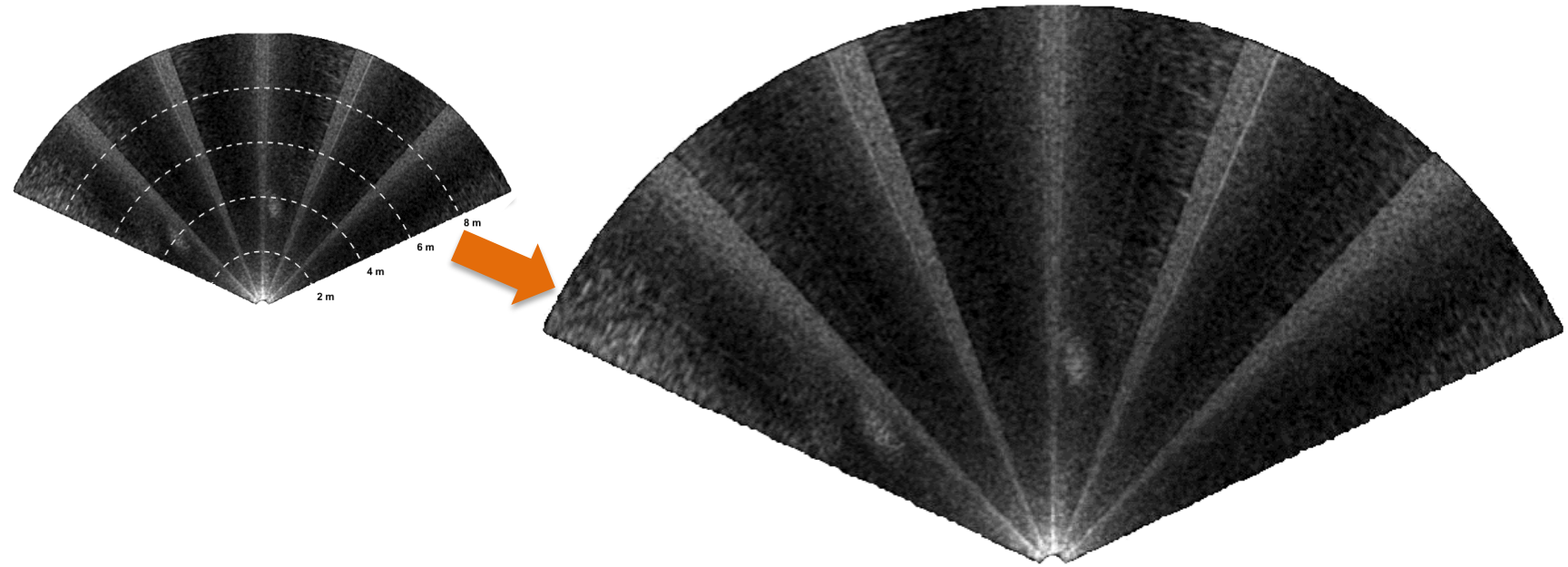


Real-Time Processing



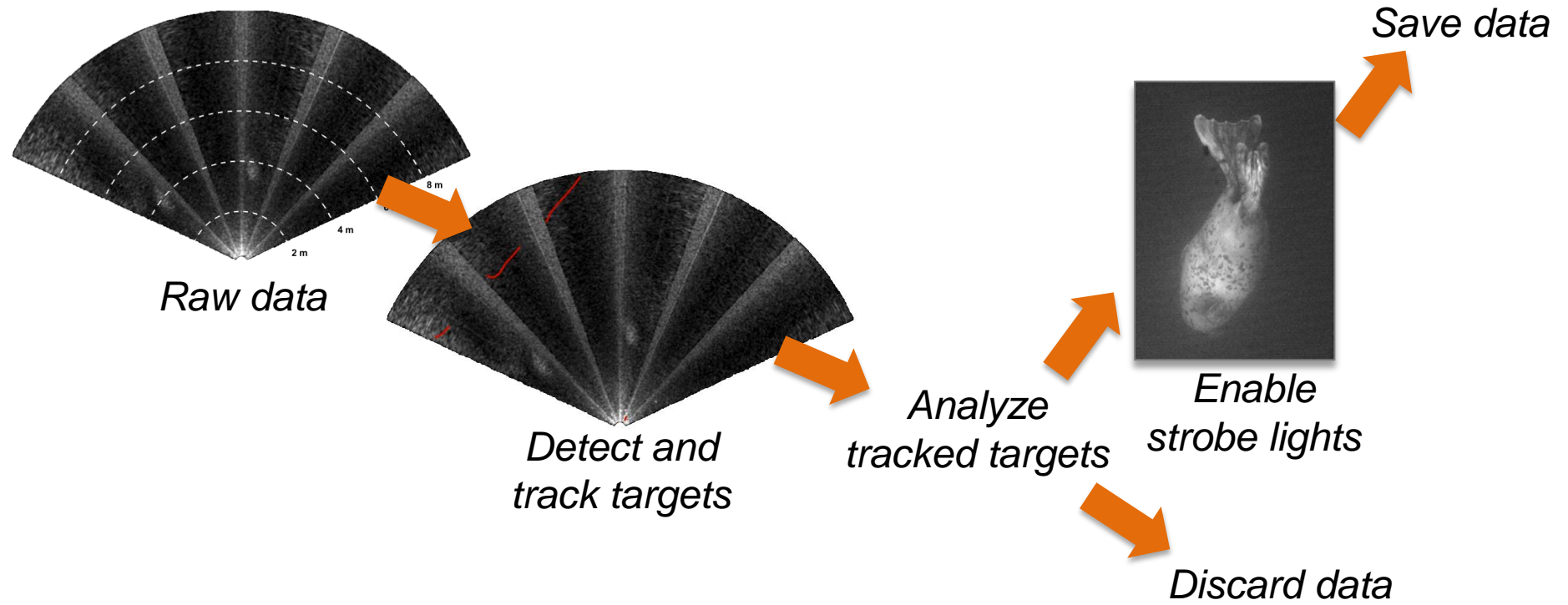
*Seal detection on
acoustic camera*

Real-Time Processing

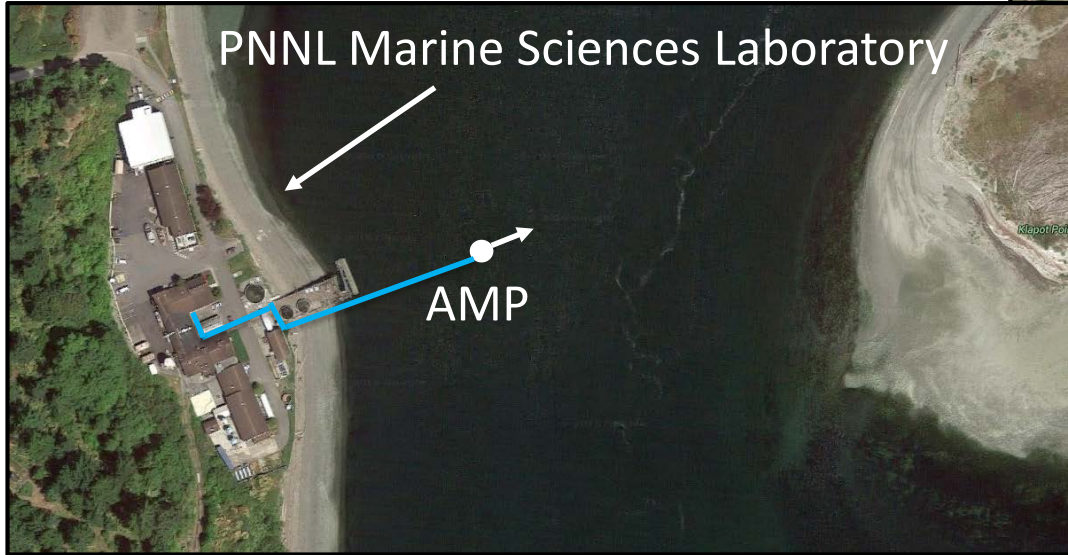


*Detect and
track targets*

Real-Time Processing

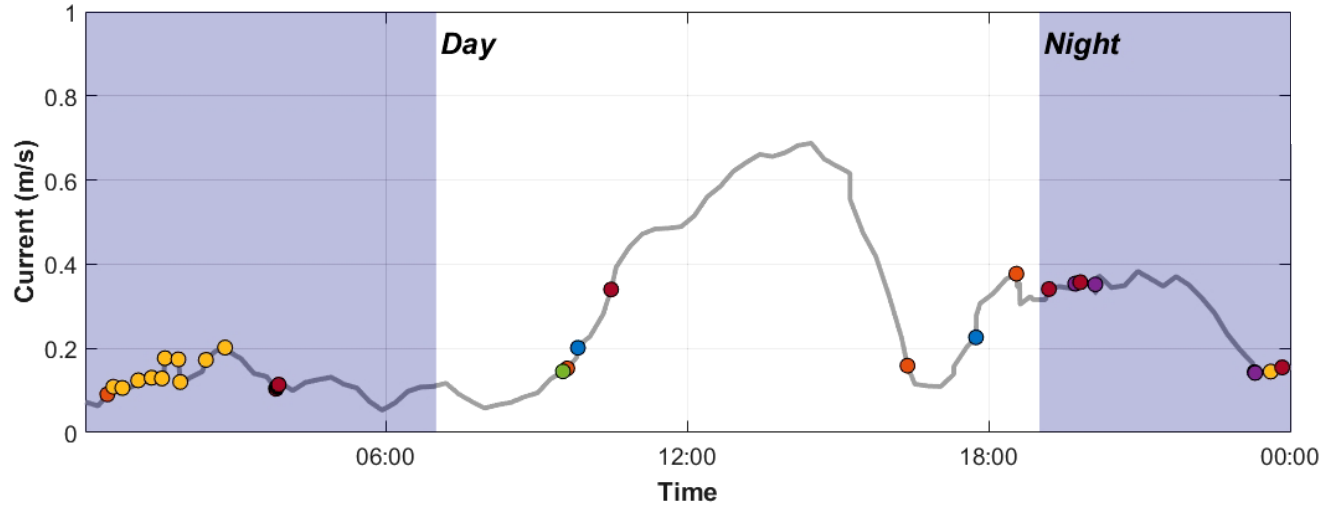


System Testing










Sequim Bay Results

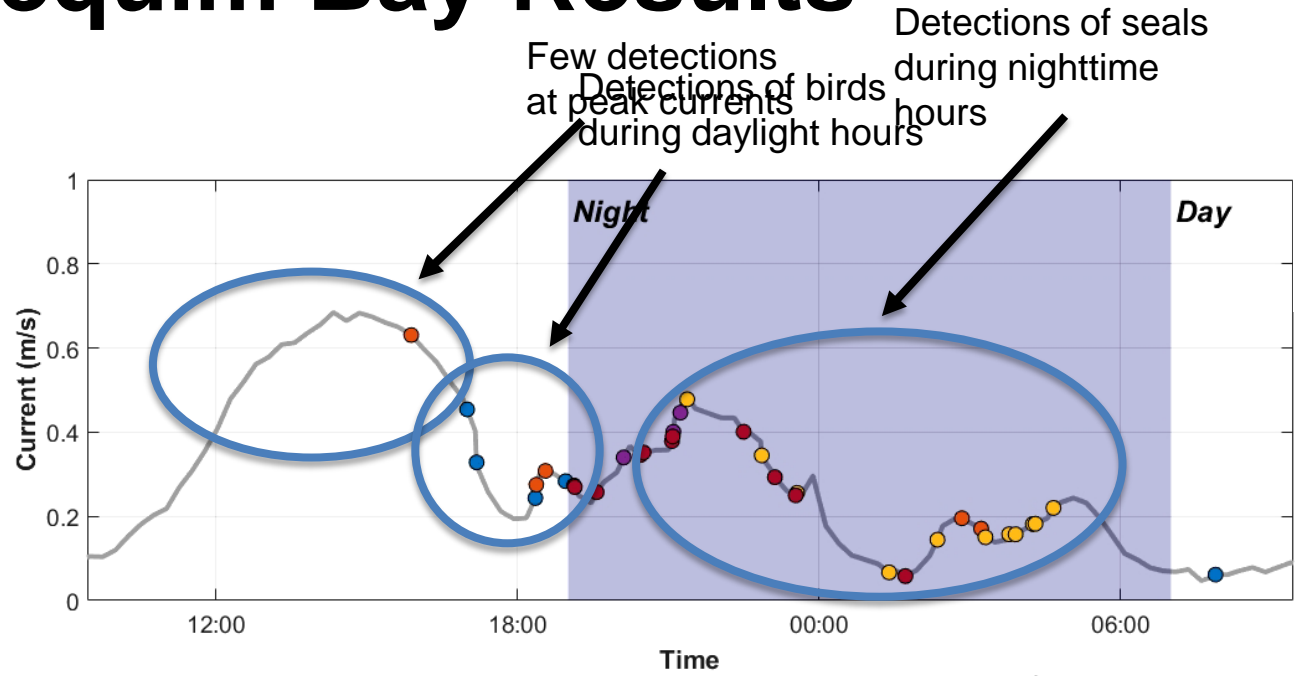
- Bird
- Bubbles
- Kelp
- Seal
- Fish School
- Unknown
- False Positive



Four days of manually reviewed triggered data acquisition

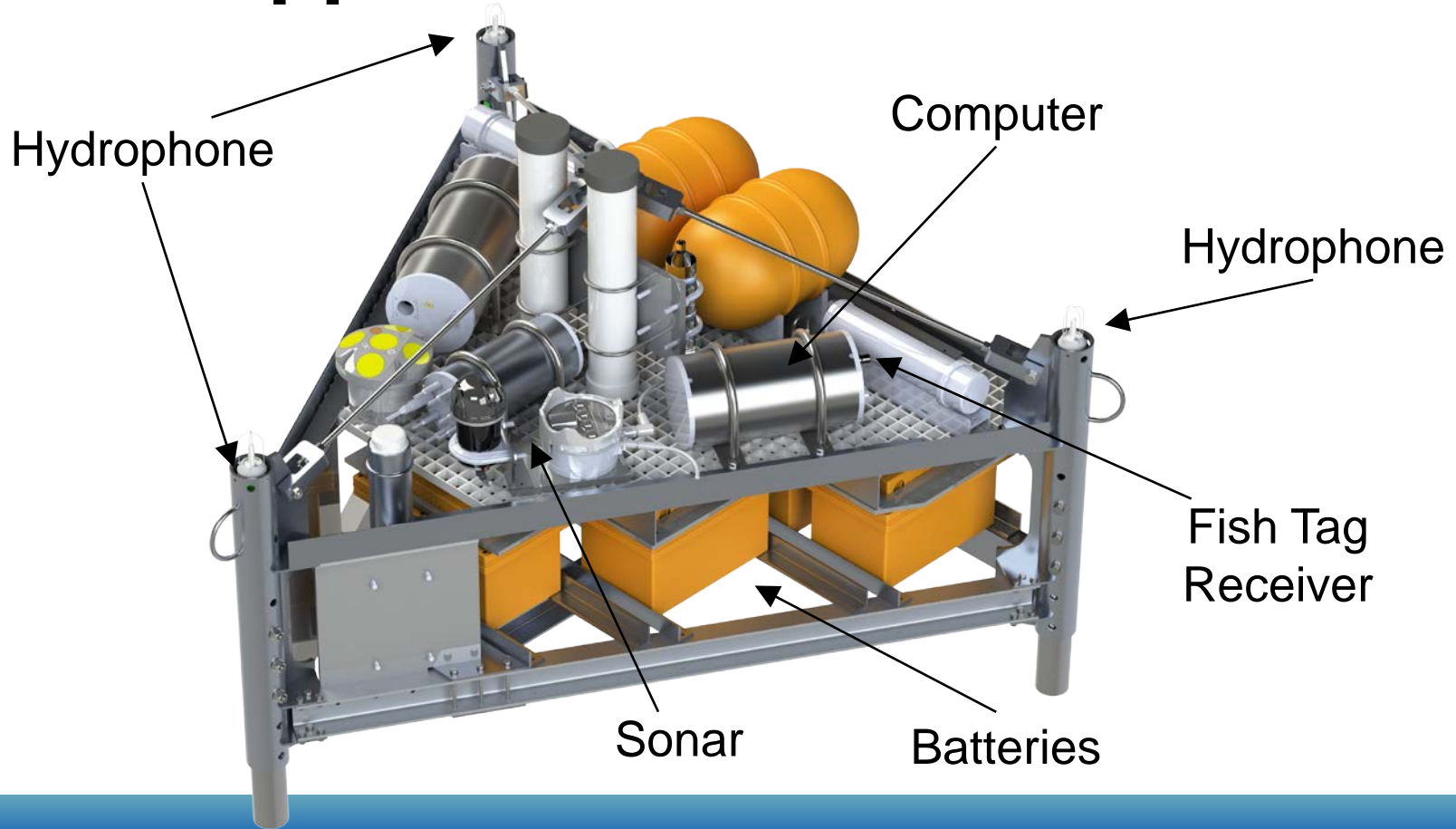
Sequim Bay Results

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Four days of manually reviewed triggered data acquisition

Future Applications – “AutoAMP”



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Future Applications – Wave Energy

- Integration with Wave Energy Converter
- Real-time monitoring without power cable



Conclusions

- Monitoring is needed to assess environmental risk of marine energy converters
- The AMP has been developed to meet this need
- Future development will adapt the AMP to meet test site requirements

Acknowledgements

- *The AMP Team:* James Joslin, Paul Murphy, , Andy Stewart, Paul Gibbs, Chris Siani, Tim McGinnis



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