Using a coordinated glider fleet to investigate drivers of a biological hotspot in the Western Antarctic Peninsula

Katherine Hudson, Matthew J. Oliver, Kim Bernard, Megan A. Cimino, William Fraser, Josh Kohut, Hank Statscewich, and Peter Winsor

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Introduction

Submarine canyons associated with biological hotspots

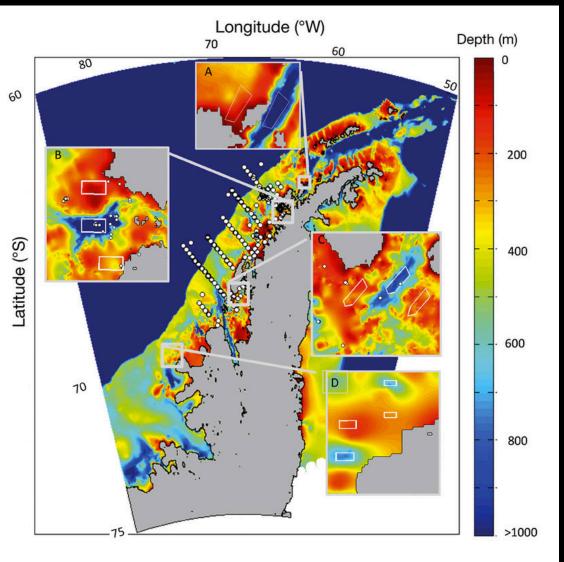






Images from WHOI.com, PBS.com, WWF.com, Oceana.com, and Britannica.com

Figure 1 from Kavanaugh et al., 2015



Methods

Three gliders deployed Jan –
 Feb 2015

Time-space aliasing

 Are the changes we observe due to changes in time or space?

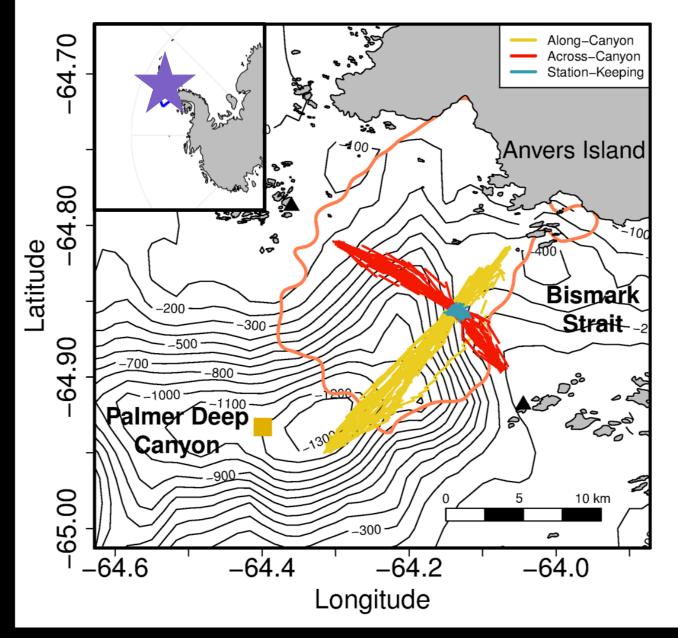


Figure 1 from Hudson et al., in review

Figure 2 from Hudson et al., in review

Station-Keeping

Along-Canyon

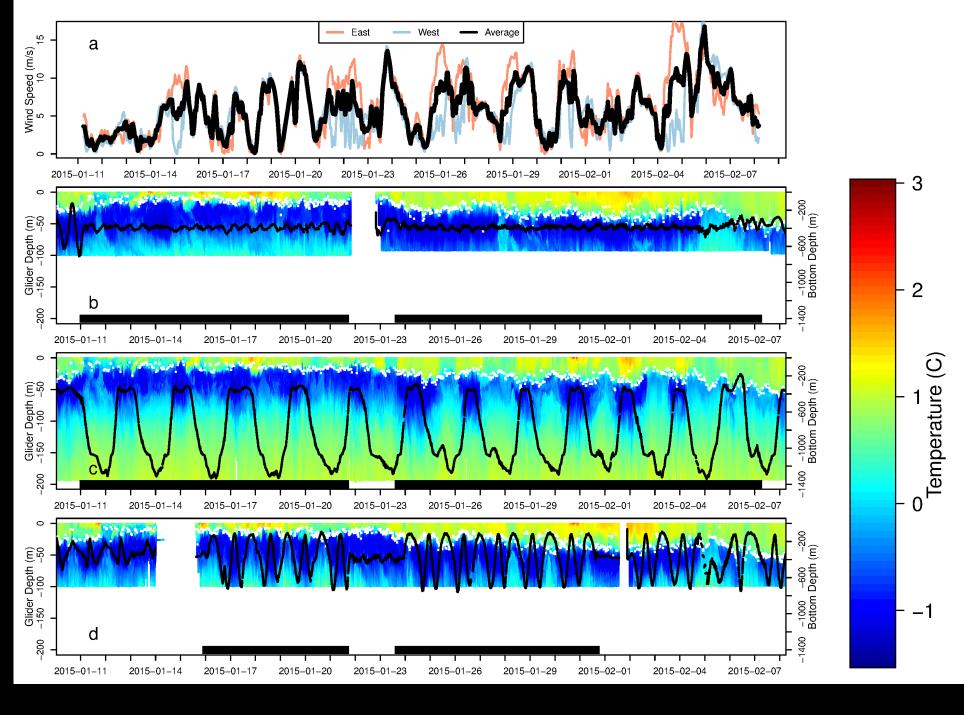


Figure S2 from Hudson et al., in review

Station-Keeping

Along-Canyon

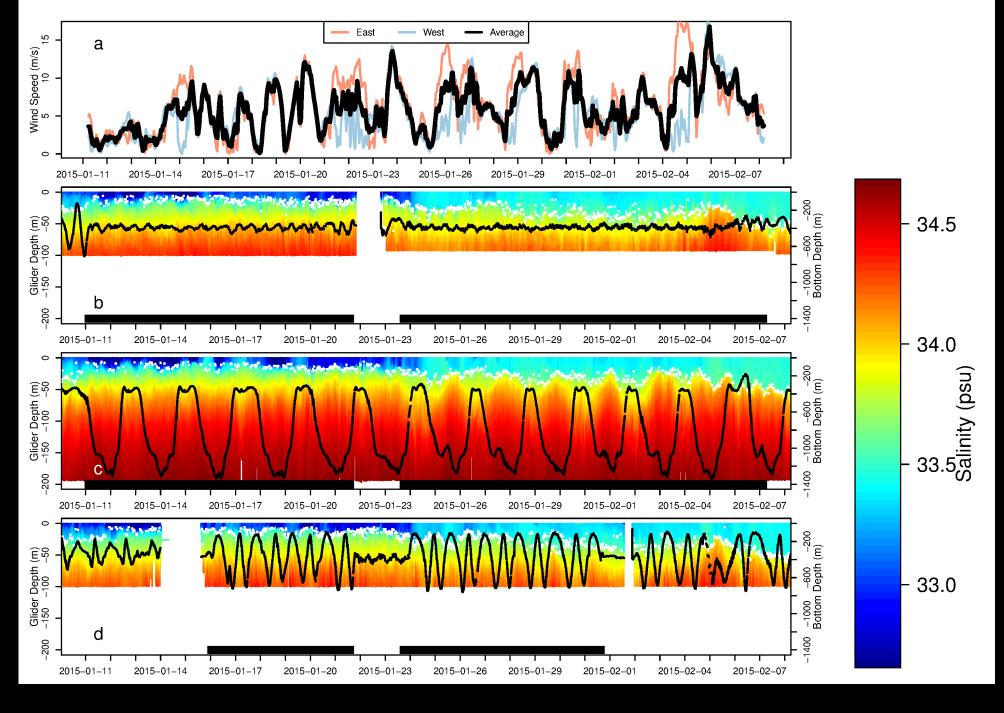
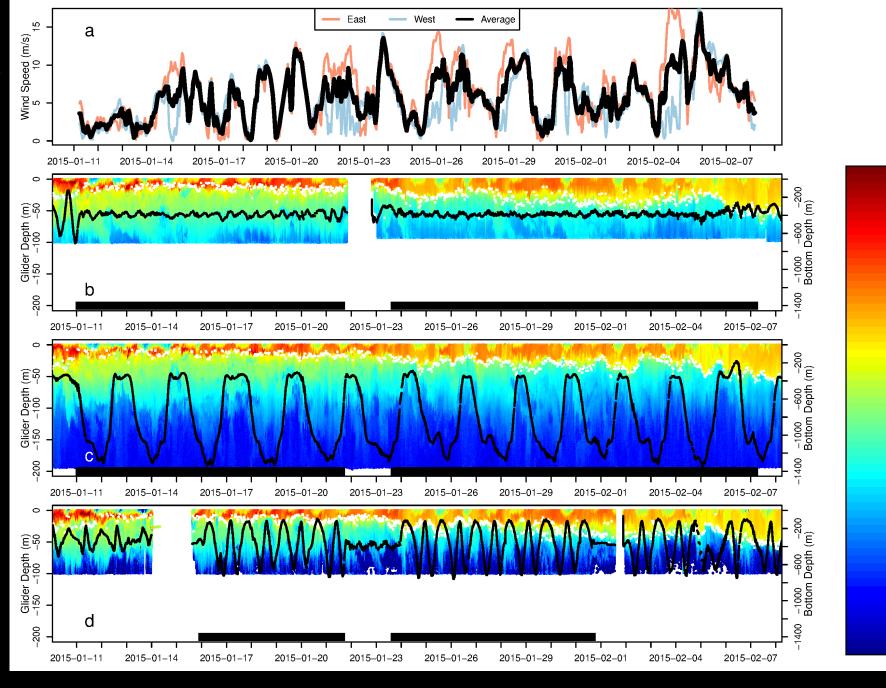


Figure S10 from Hudson et al., in review

Station-Keeping

Along-Canyon

Across-Canyon



- 20

- 10

5

3

0.5

0.3 0.2

- 0.1

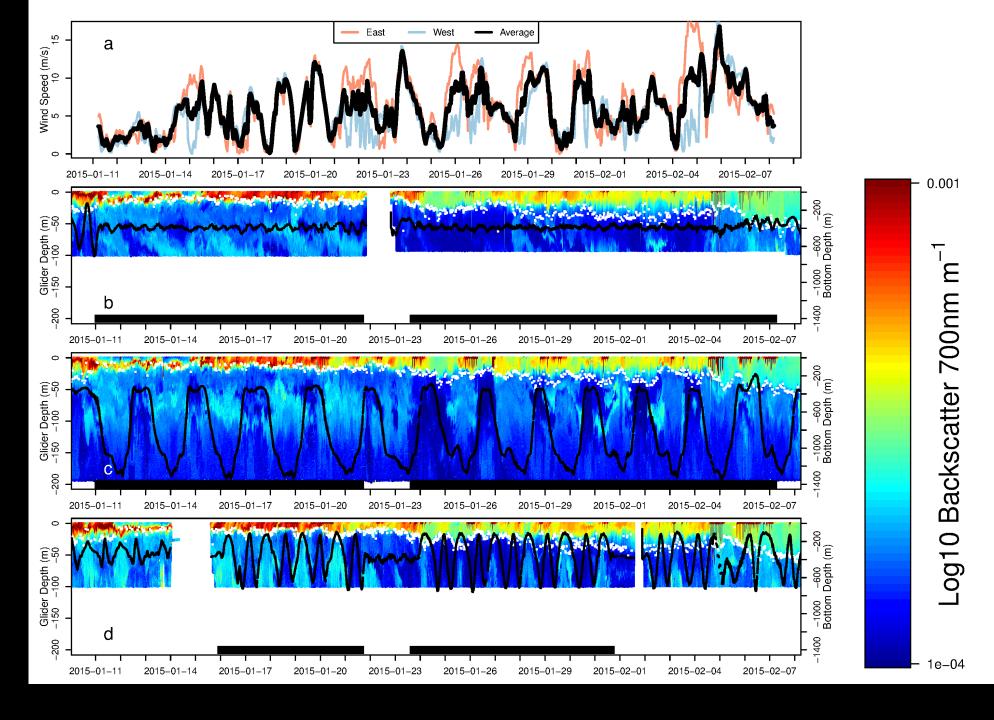
- 0.05

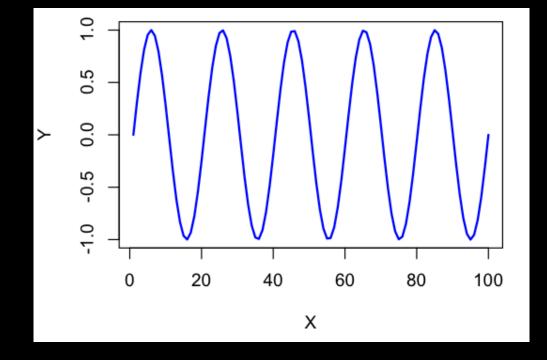
Chlorophyll mg m⁻³

Figure 4 from Hudson et al., in review

Station-Keeping

Along-Canyon





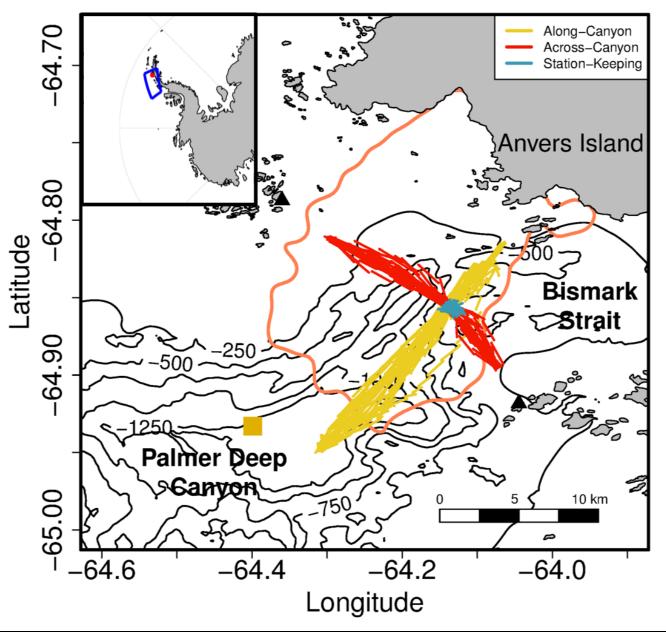
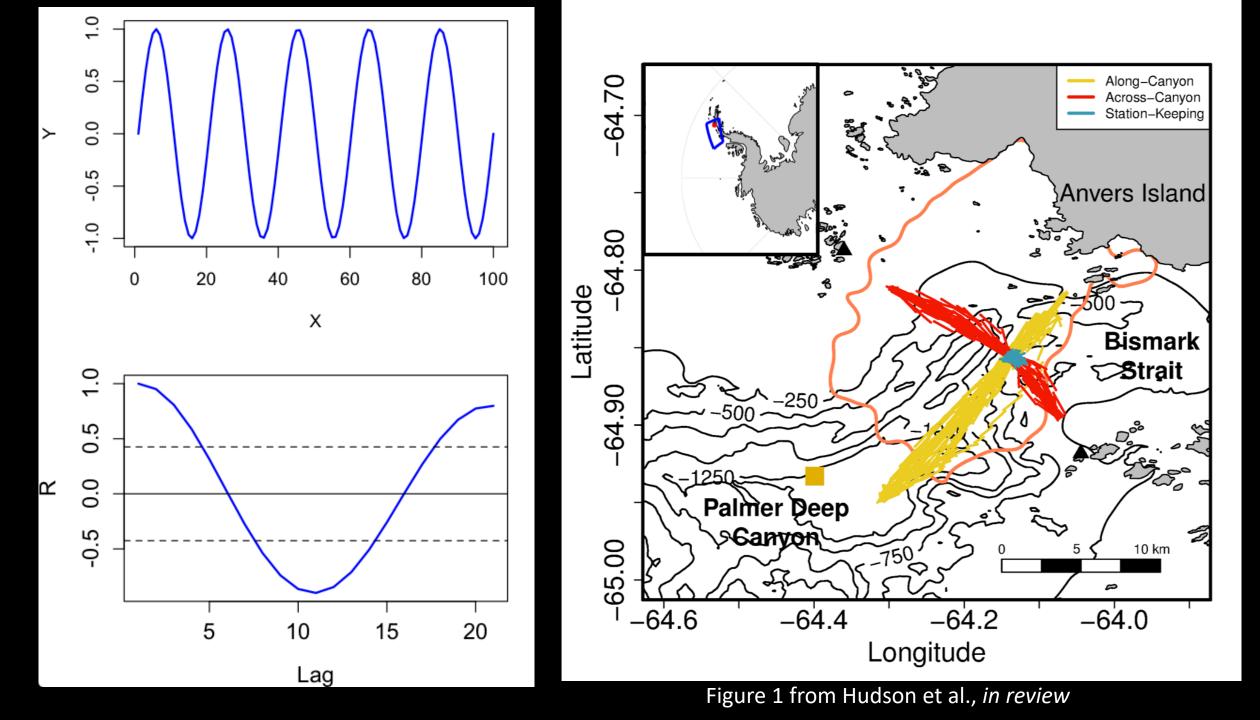
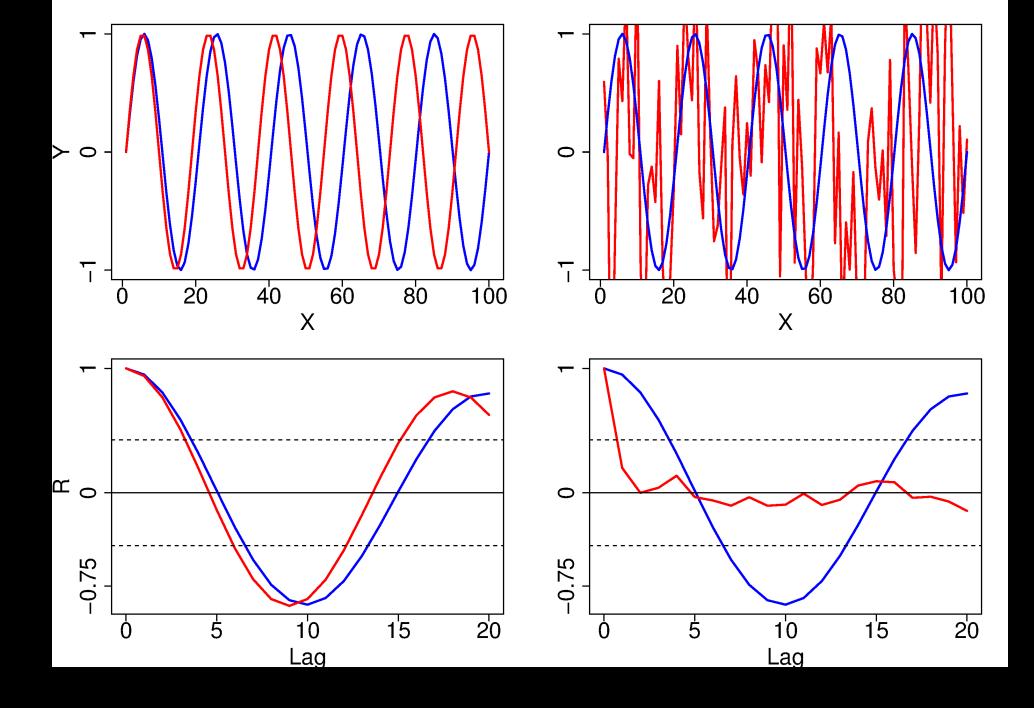
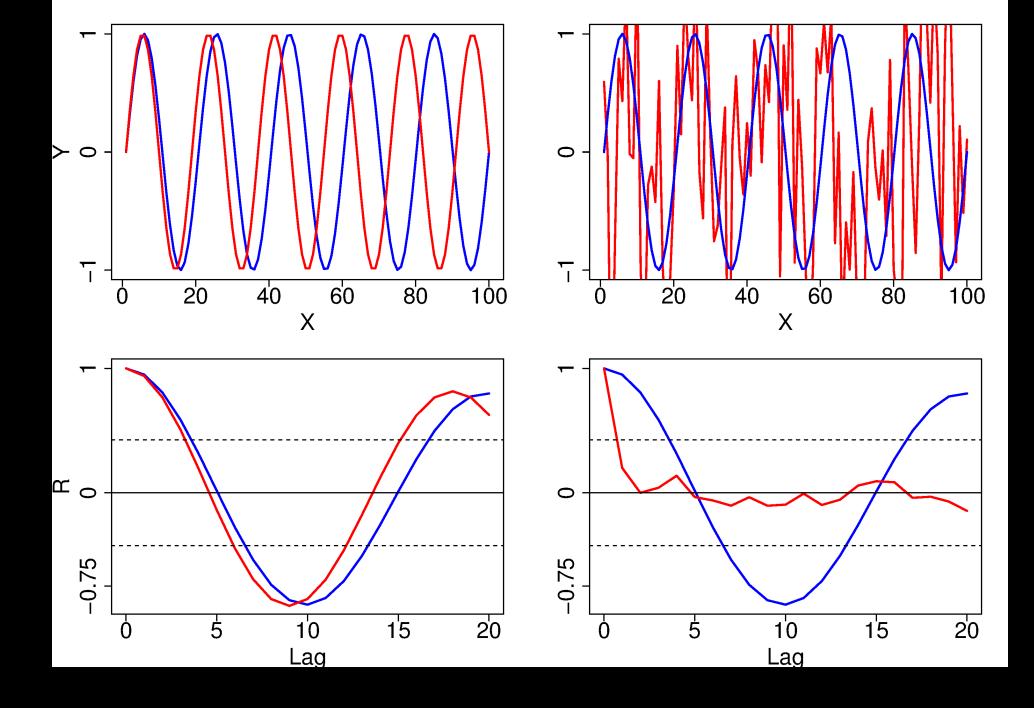


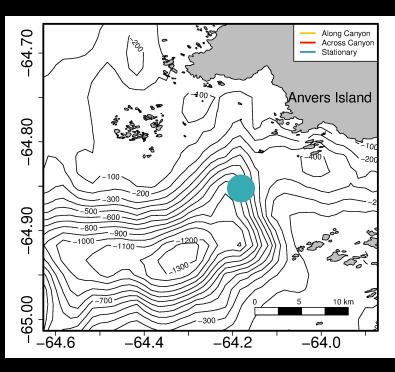
Figure 1 from Hudson et al., in review

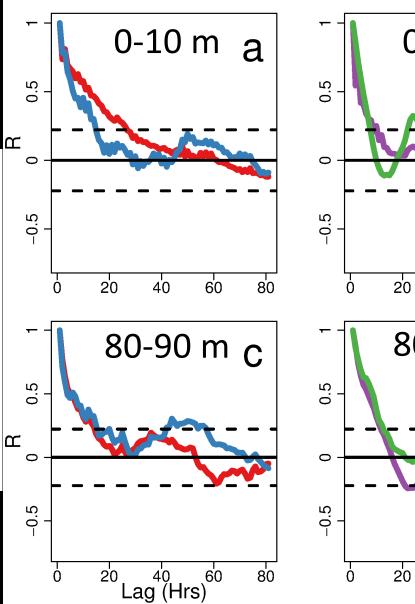


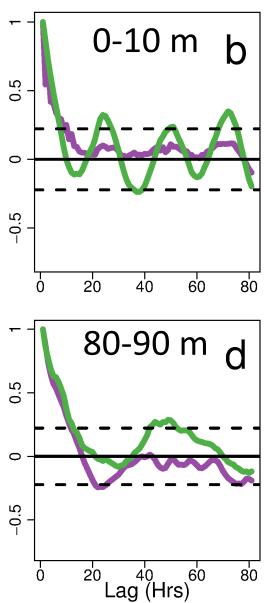


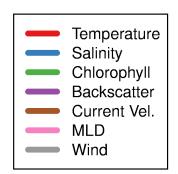


Station-Keeping









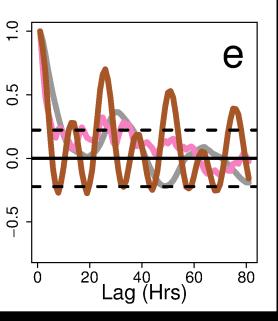
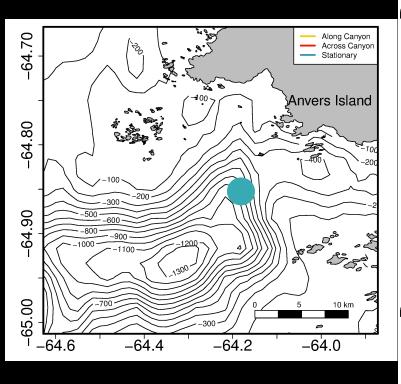


Figure 7 from Hudson et al., in review

Station-Keeping

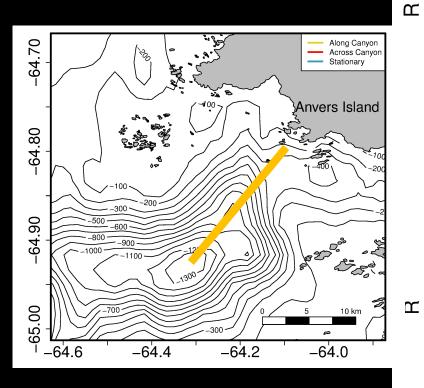


0-10 m 0.5 \square -0.5 -0.5 20 20 60 80 40 60 40 0.5 0.5 α 0 -0.5 80 80 60 Lag (Hrs) 60 Lag (Hrs)

Temperature Salinity Chlorophyll Backscatter Current Vel. MLD Wind 0.5 Lag (Hrs) 60 80 0

Figure 7 from Hudson et al., in review

Along-Canyon



0-10 m 0-10 m 0.5 0 0 -0.5 -0.520 80 80 60 20 60 40 40 80-90 m _C 80-90 m 0.5 0.5 0.5 0.0 0 0 -0.5 -0.580 20 20 Lag (Hrs) 60 80 Lag (Hrs) Lag (Hrs)

Temperature

Backscatter

Bathymetry Current Vel.

60

Salinity Chlorophyll

MLD Wind

Figure 8 from Hudson et al., in review

Along-Canyon

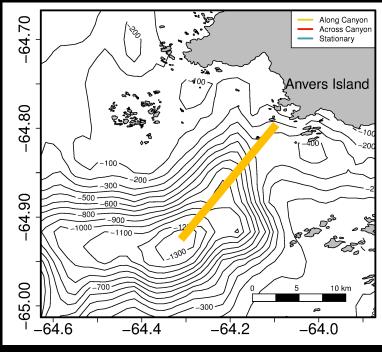


Figure 8 from Hudson et al., in review

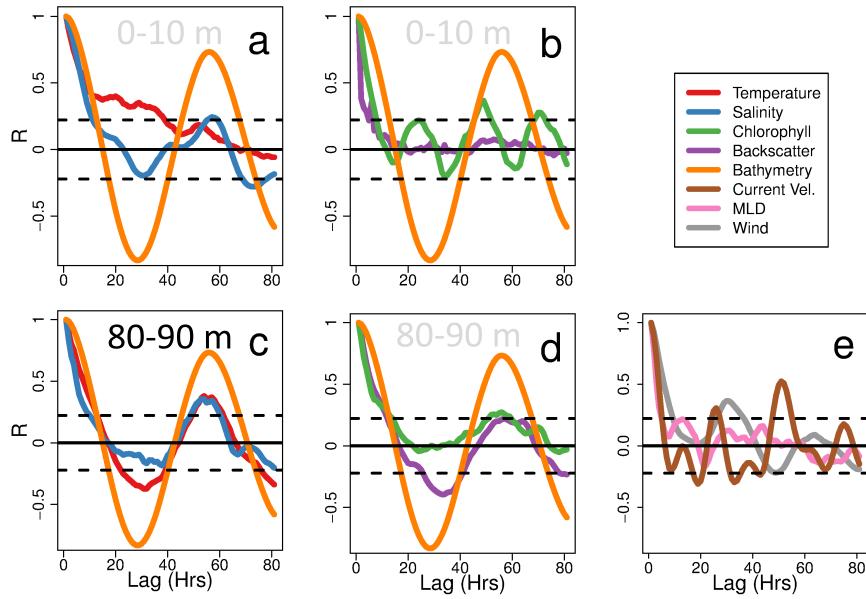
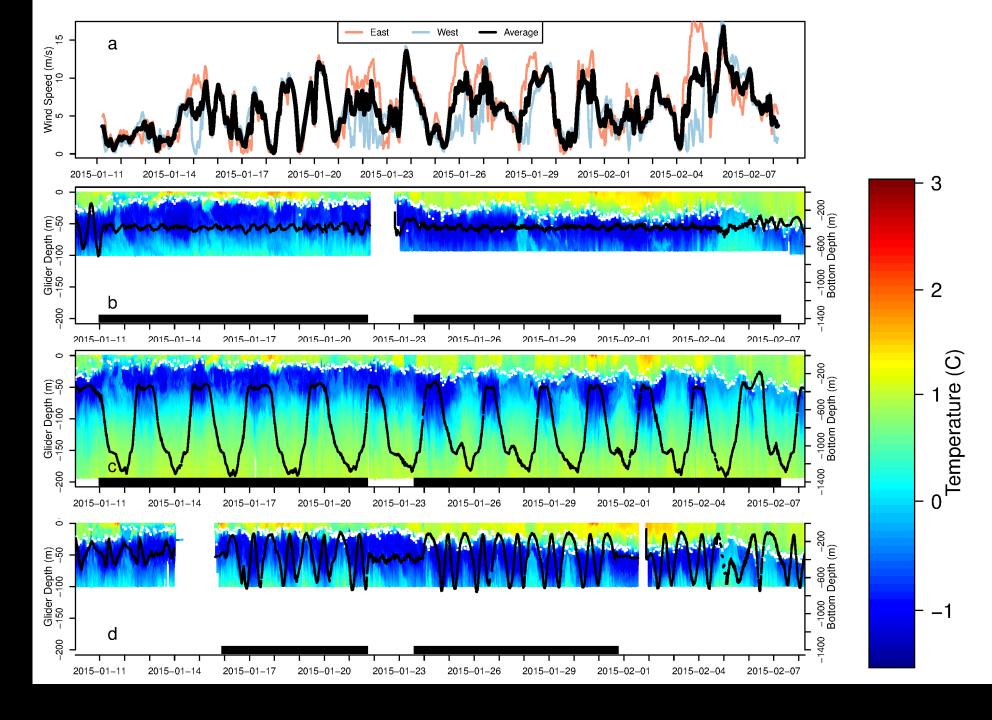


Figure 2 from Hudson et al., in review

Station-Keeping

Along-Canyon



Along-Canyon

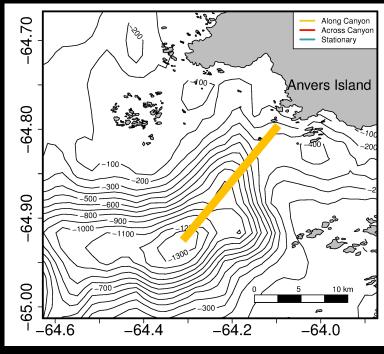


Figure 8 from Hudson et al., in review

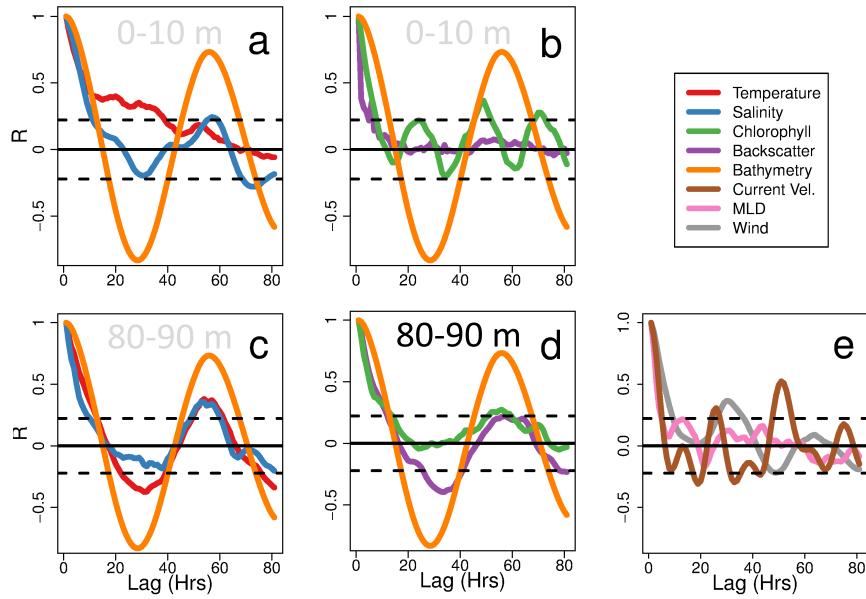
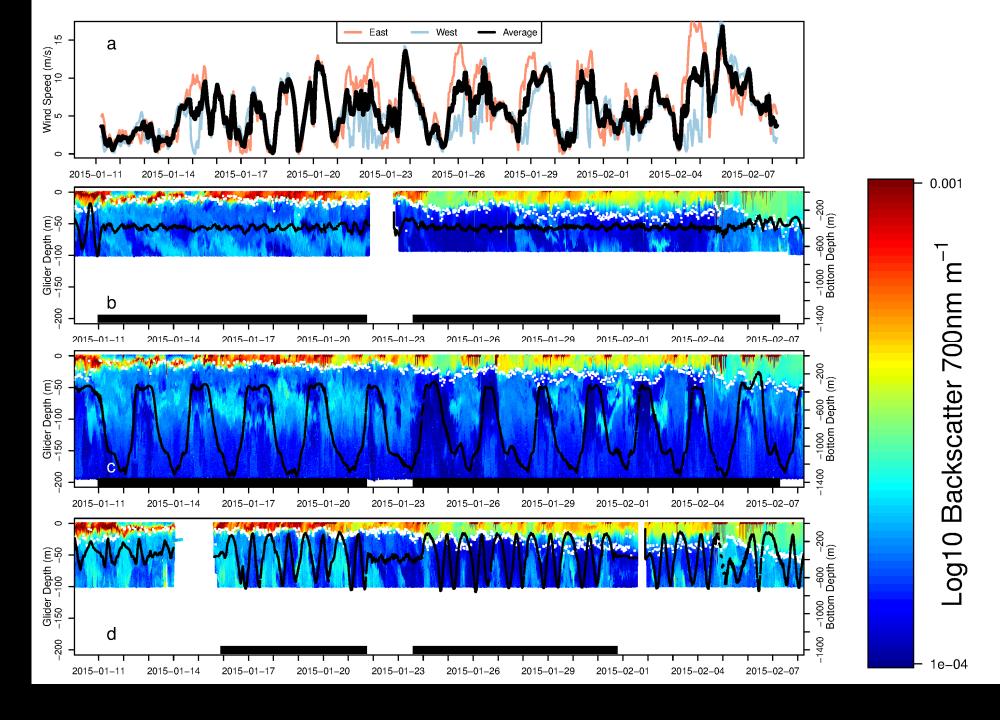
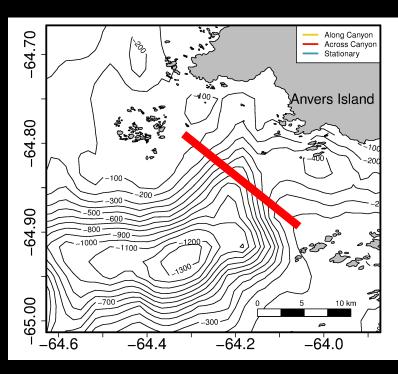


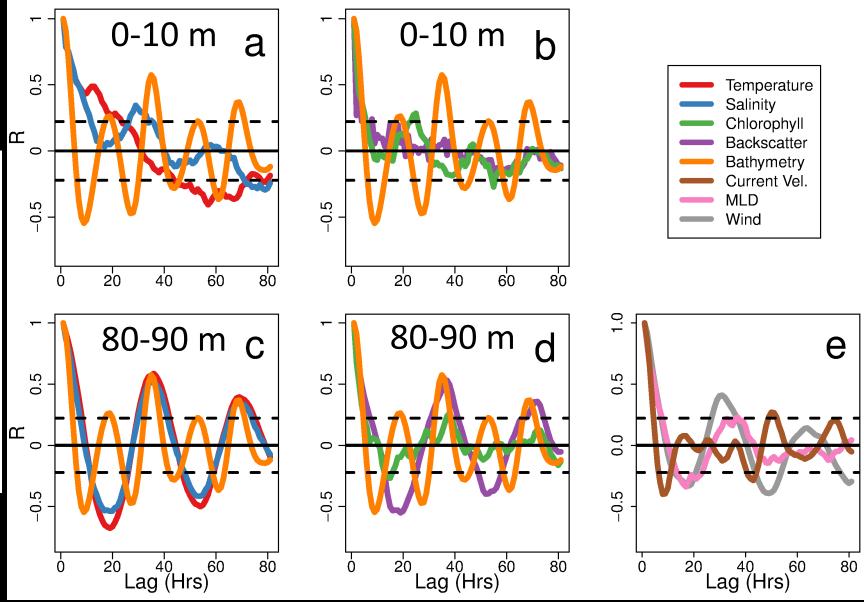
Figure 4 from Hudson et al., in review

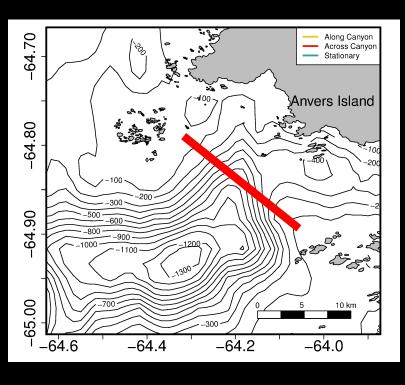
Station-Keeping

Along-Canyon









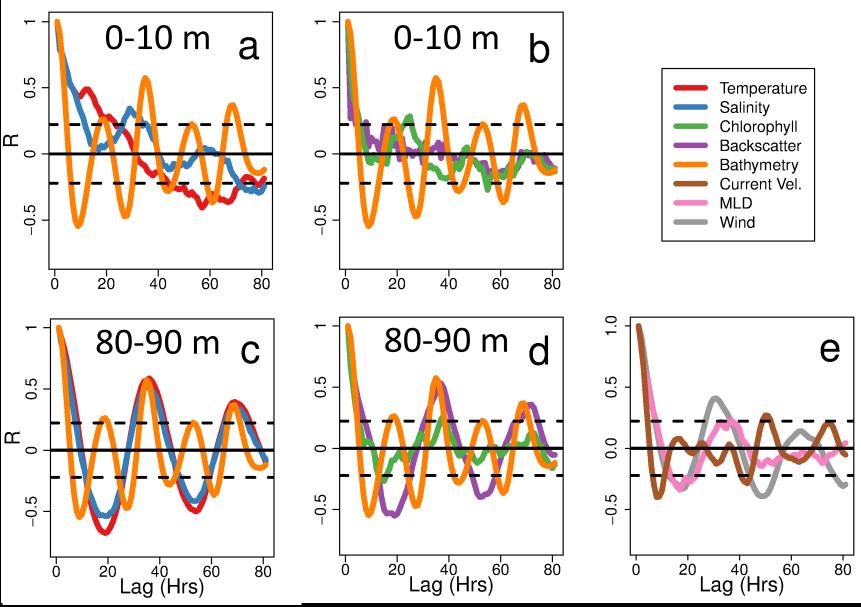
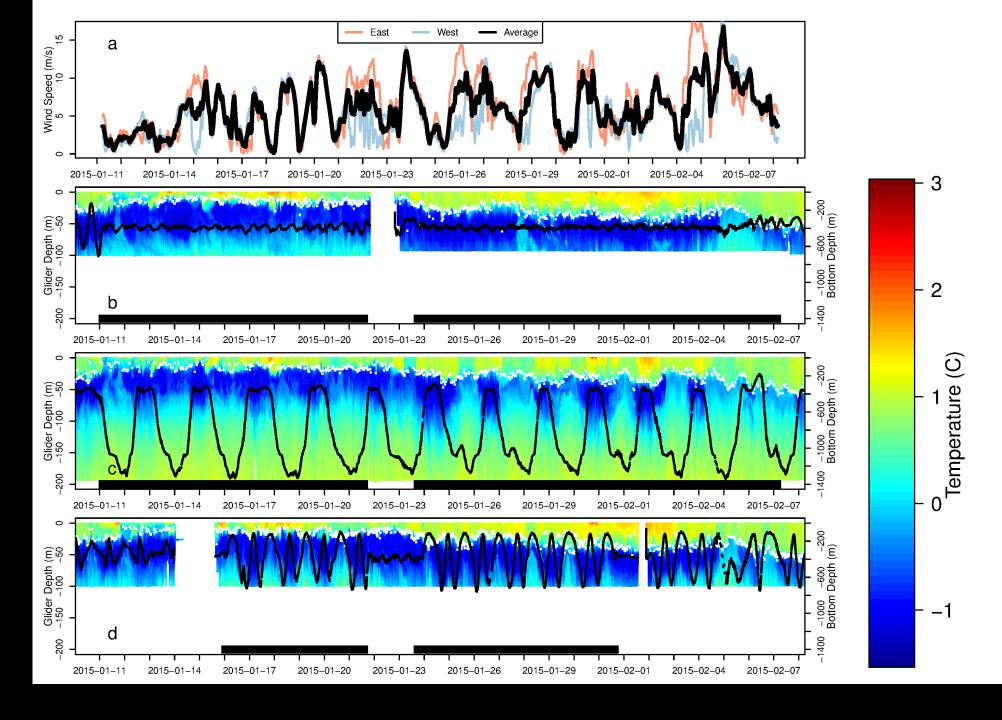
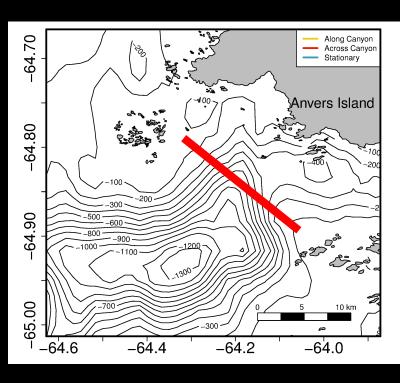


Figure 2 from Hudson et al., in review

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Along-Canyon





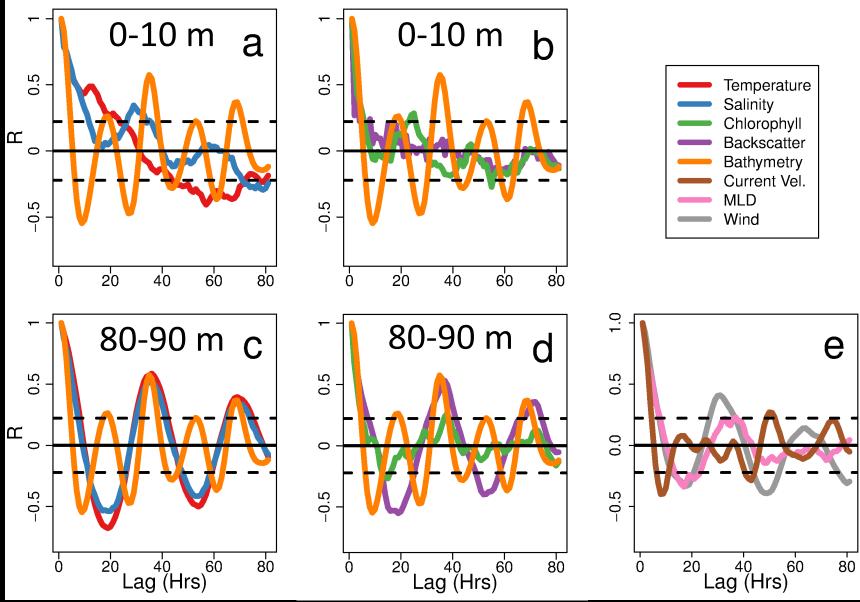
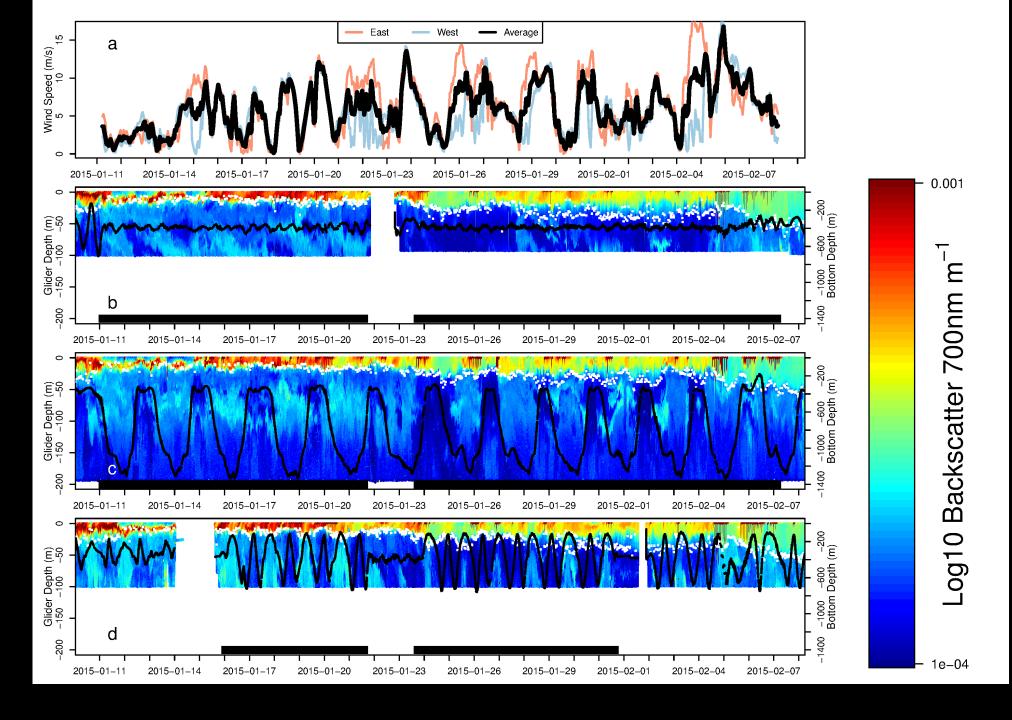
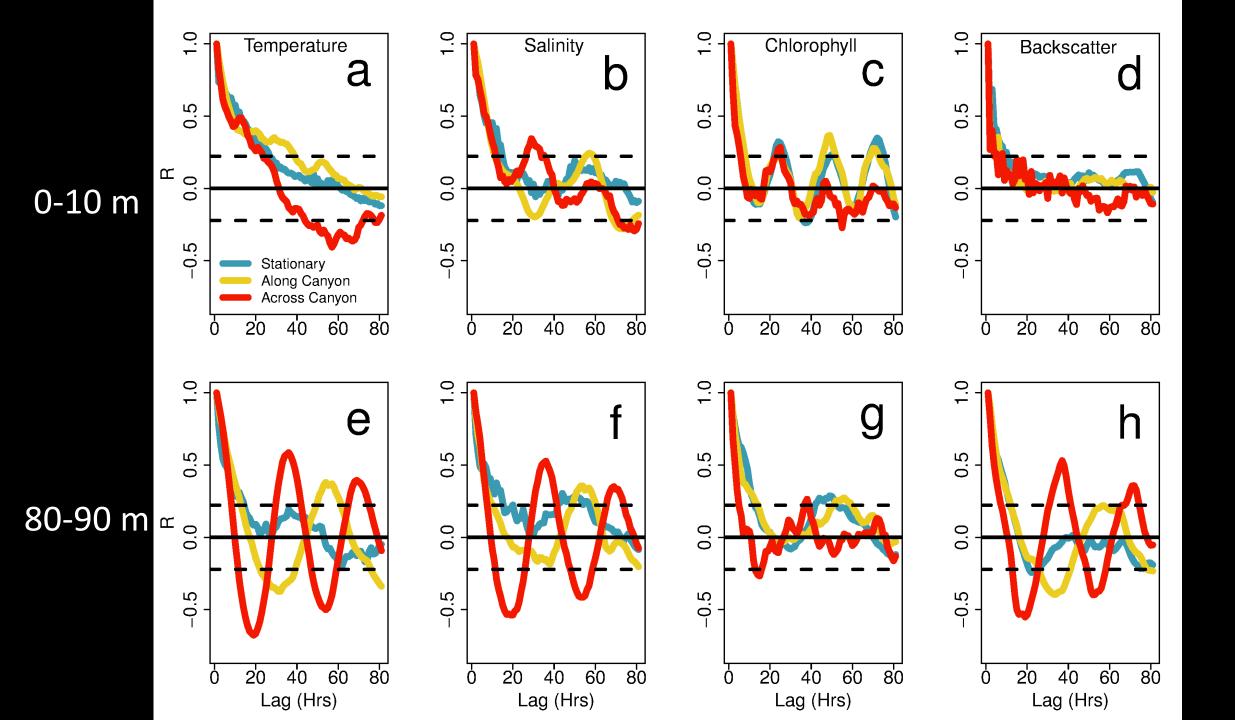


Figure 4 from Hudson et al., in review

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Questions?