

SEASONAL AND DIEL CYCLES OF FIN WHALE ACOUSTIC OCCURRENCE NEAR ELEPHANT ISLAND, ANTARCTICA

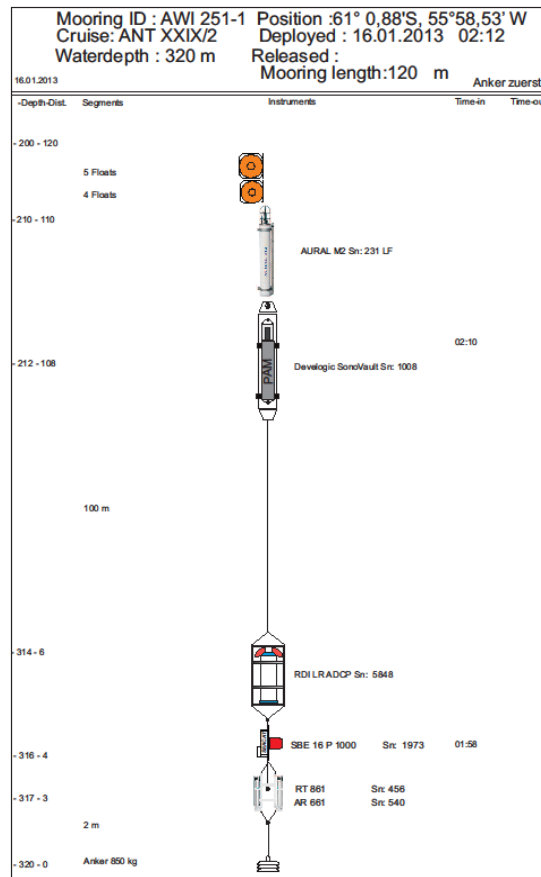
-Electronic Supplement-

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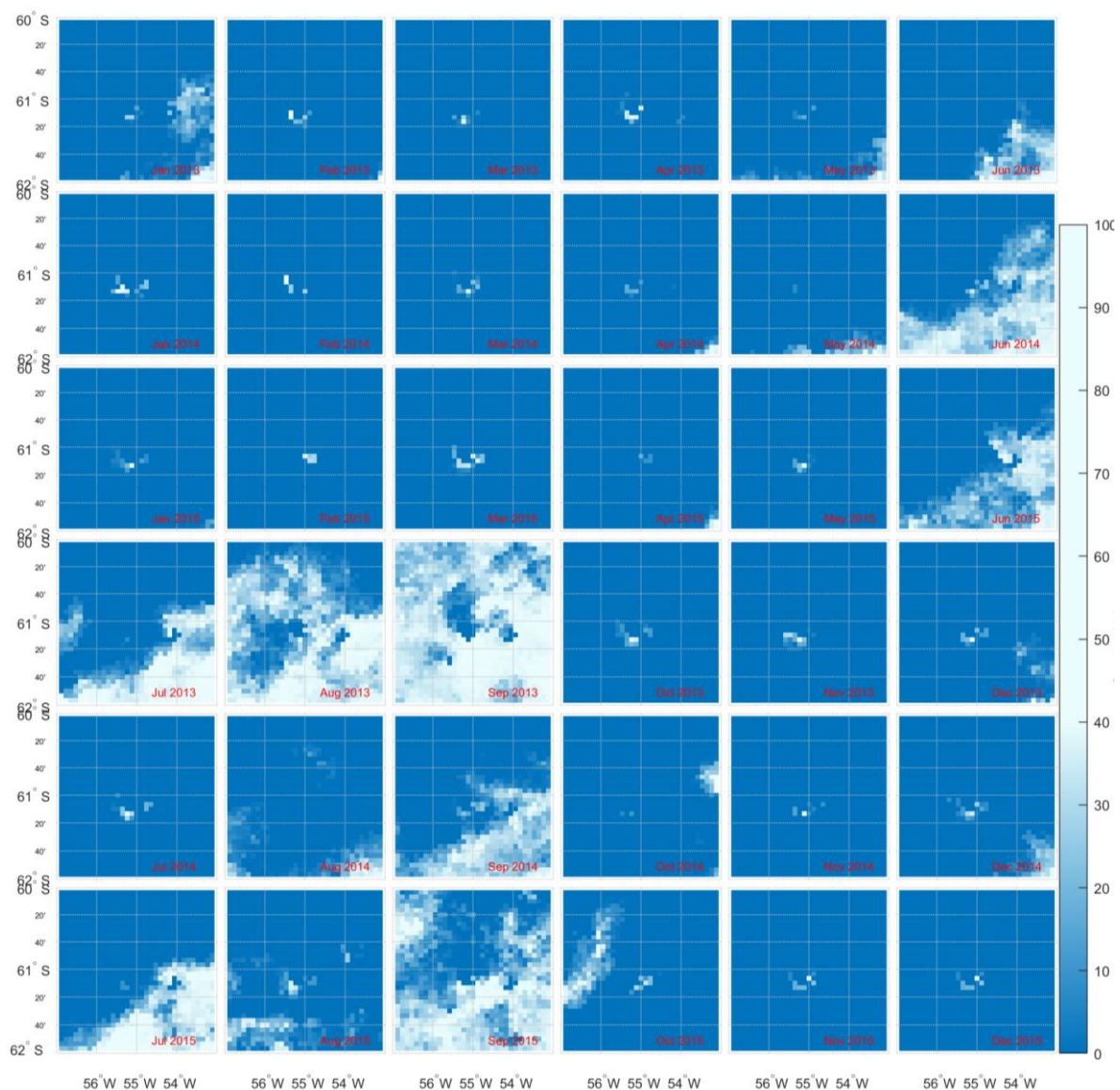
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Supplement Table S1: List of cetacean sightings collected during Polarstern expedition ANT-XXVIII/4 from March 14 to April 08, 2012: EI = Elephant Island, JI = Joinville Island, SSI = South Shetland Island, (taken from Burkhardt & Lanfredi (2012)).

<i>Species</i>	<i>Study Areas</i>			<i>Total</i>
	EI	JI	SSI	
<i>Fin whale</i>	116	4	35	155
<i>Humpback whale</i>	1	6	1	8
<i>Antarctic minke whale</i>	0	2	0	2
<i>Killer whale</i>	0	1	0	1
<i>undefined large whale</i>	57	2	16	75
<i>undefined small whale</i>	1	0	0	1
<i>Undefined whale</i>	2	4	0	6
<i>Total</i>	177	19	52	248

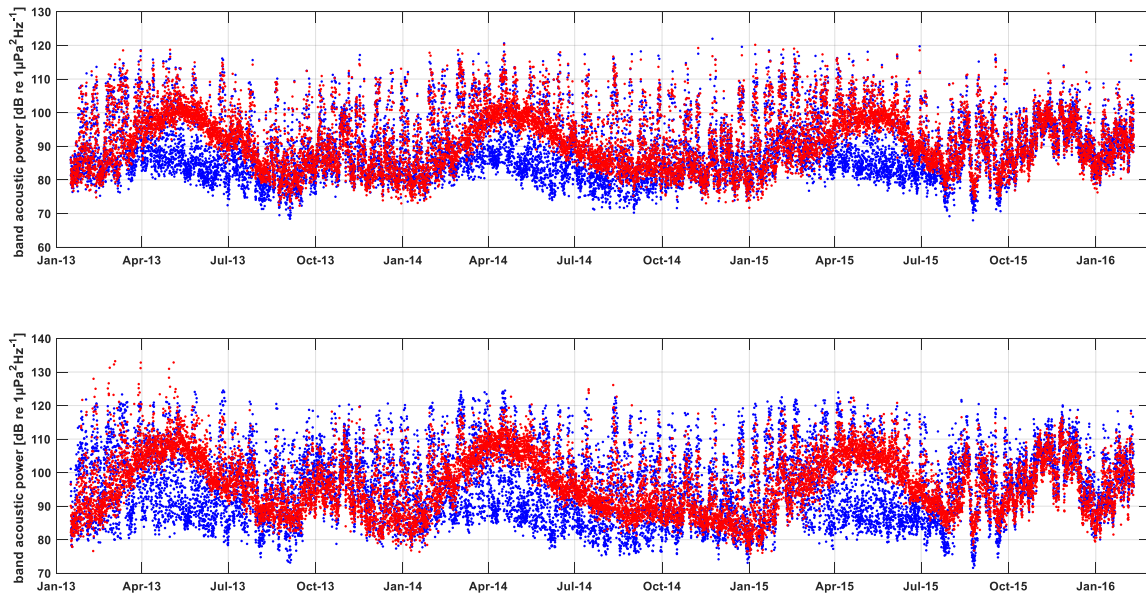
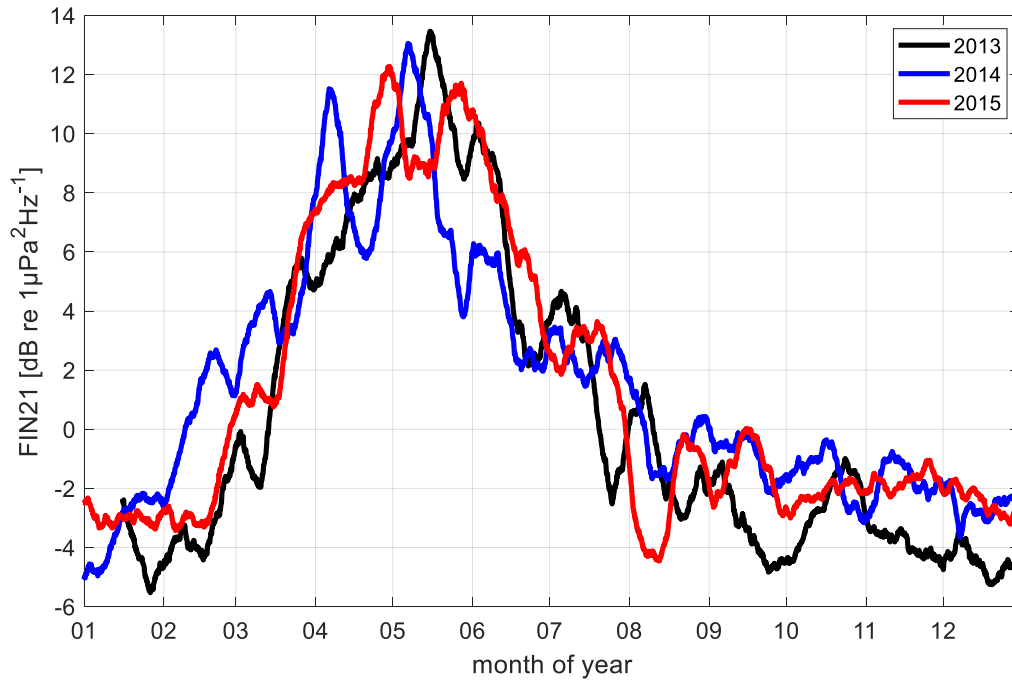


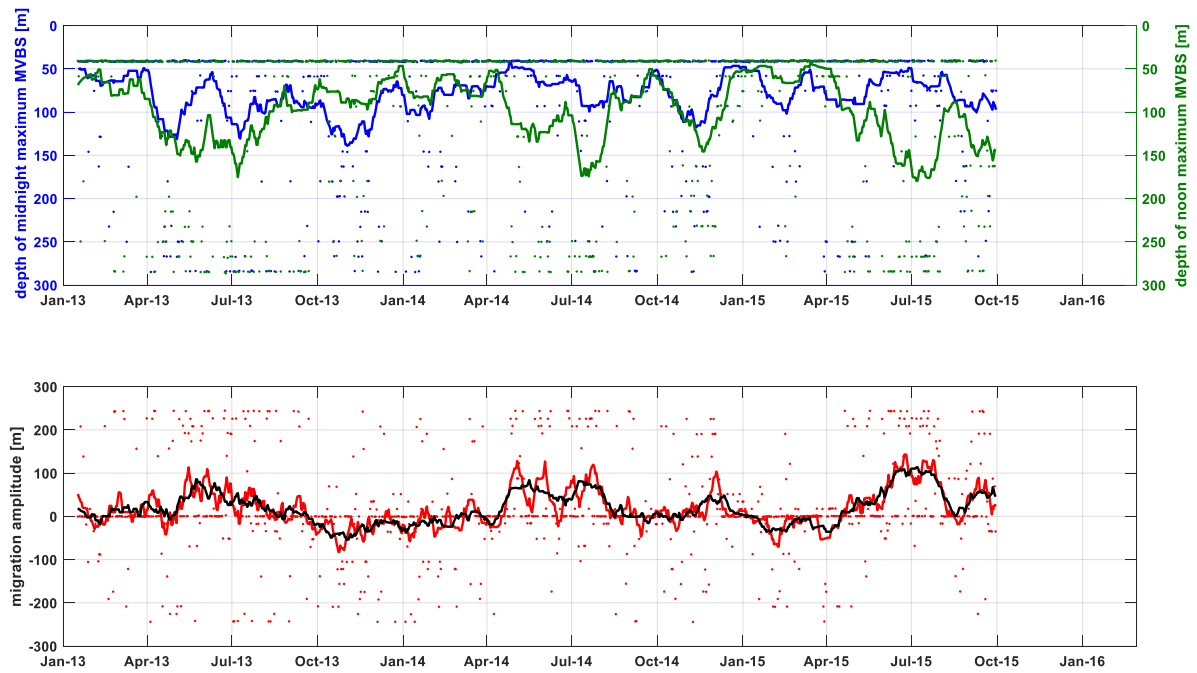
Supplement Figure S1: Schematic of mooring AWI 251-1 deployed near Elephant Island on January 16, 2013 and recovered on February 10, 2016. Two acoustic recording devices of type Aural (deployment depth = 210 m) and SonoVault (deployment depth = 212 m) and an upward looking ADCP (deployment depth = 314 m) were attached. Mooring elements were connected using steel shackles and rings.



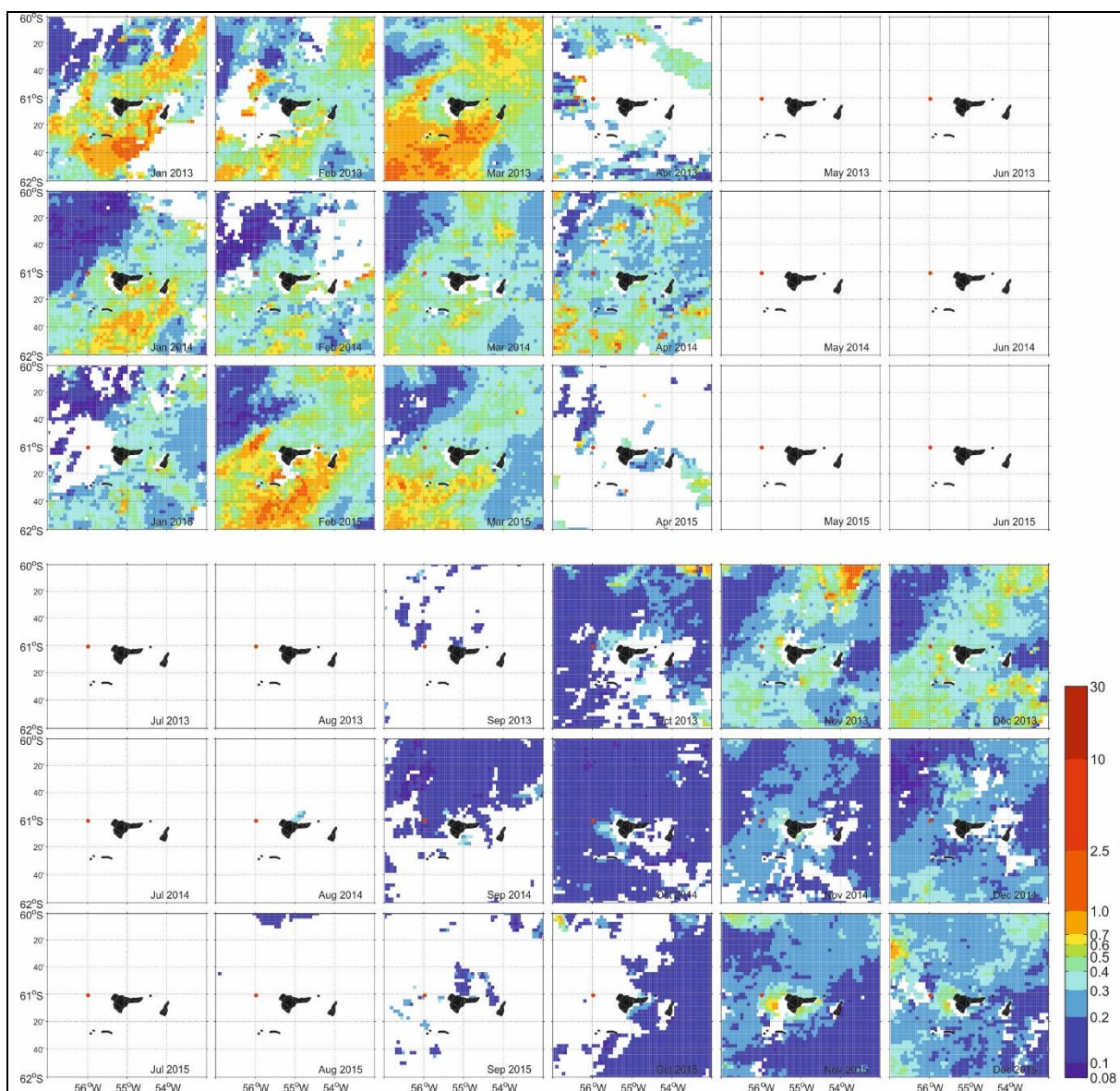
Supplement Figure S2: Monthly averaged sea ice concentration in percent for the period January 2013 - December 2015. Daily satellite sea ice concentration data was processed and provided by the University of Bremen* at a resolution of 6.25 km × 6.25 km. Map created using Arndt et al. (2013a), Arndt et al. (2013b) and Greene et al. (2017).

* <https://seaice.uni-bremen.de/sea-ice-concentration/amsre-amsr2/>



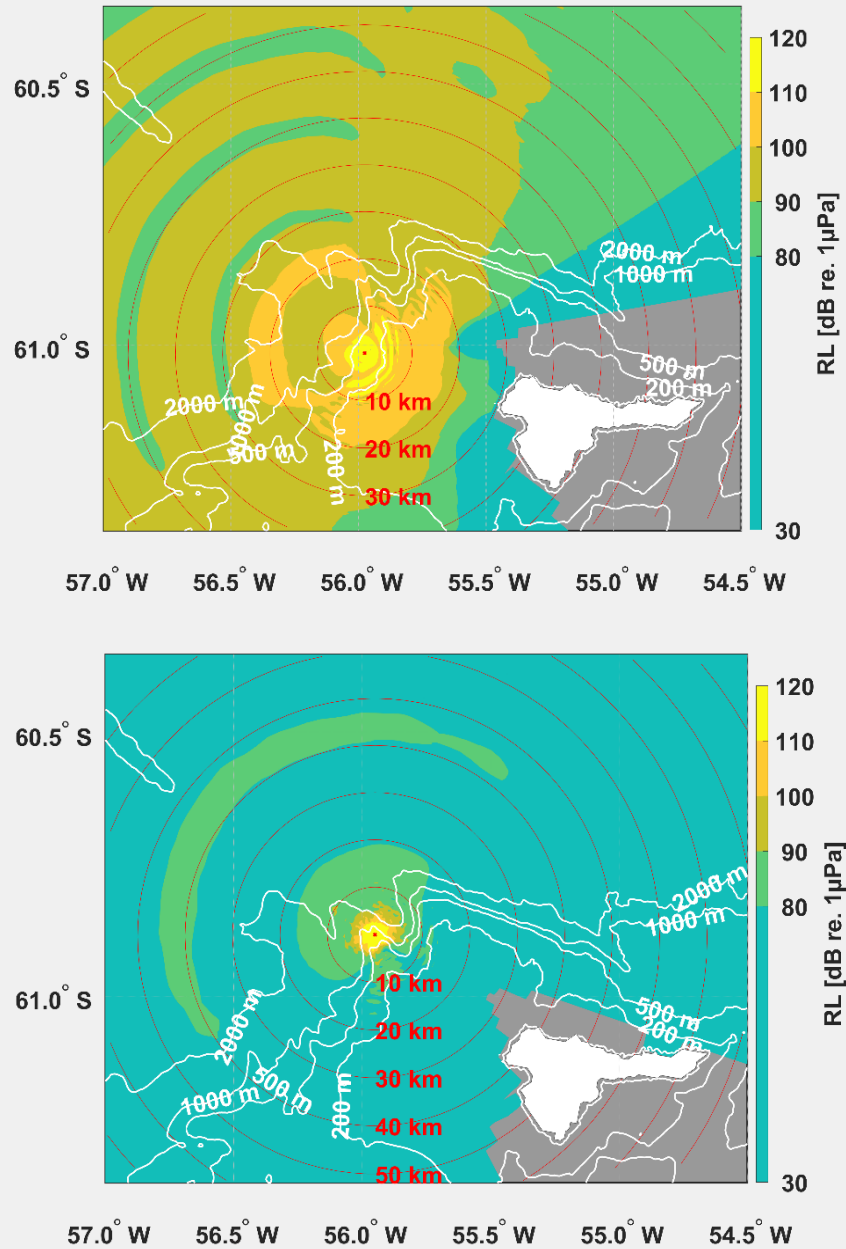


Supplement Figure S5: Top panel: Daily depths of noon (green points) and midnight (blue points) maximum backscatter. Lines: 30-day running means thereof. Bottom panel: Daily (points) migration amplitude (noon minus midnight values) of maximum backscatter depths. Red line: 14-day running mean; black line: 30-day running mean.

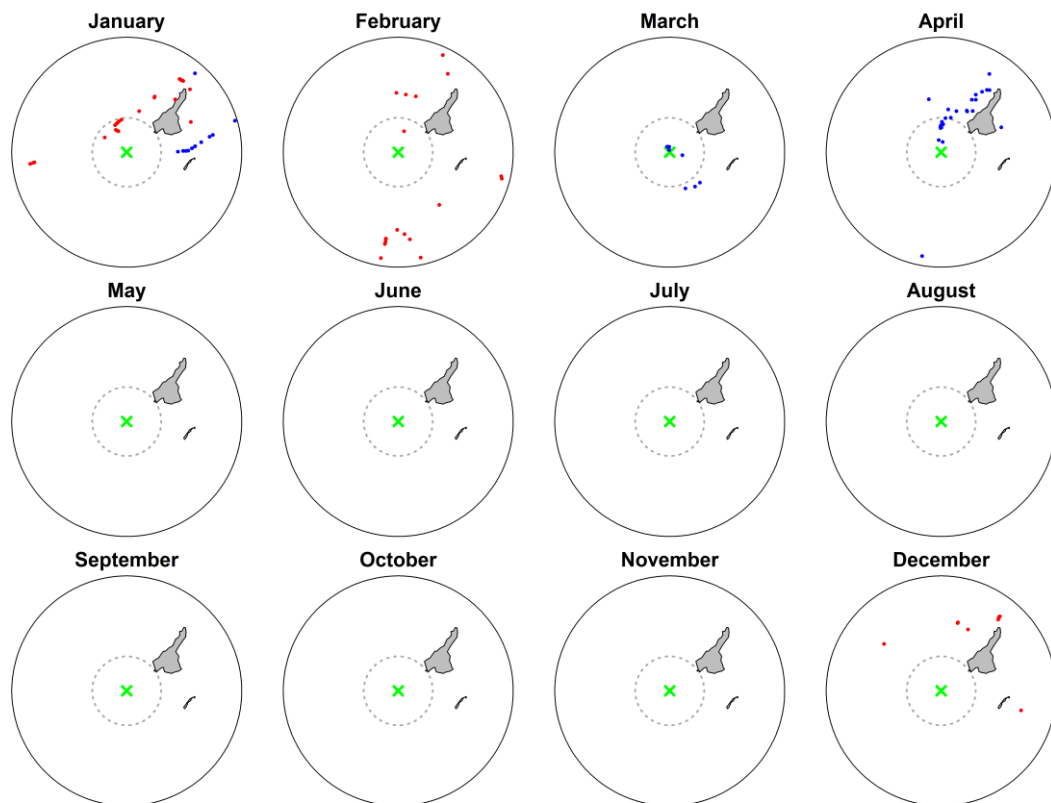


Supplement Figure S6: Monthly composites of (sea surface) Chlorophyll a concentration in mg/m^3 for the period January 2013-December 2015. Data extracted from Ocean Colour CCI data base* (OC-CCIv3.1). The mooring location is indicated by a red dot near 61°S 56°W.

* <https://www.oceancolour.org/browser/>



Supplement Figure S7: Received levels at a depth of 21 m from a virtual source of SL = 180 dB re 1 μ Pa between 18-22 Hz placed at the recorder position EI-AWI (210 m depth, top graph) and EI-Scripps (750 m depth, bottom graph). The configuration serves as proxy for the reverse true situation, i.e. a source at 21 m and the recorder at 210/750 m depth, respectively. Calculations used sound speed profile 001 (summer conditions) collected by Argo float (AWI 0246, WMO 7900409) on 16 Jan 2013 at 60°02.142'S 57°29.25'W. Map created using Arndt et al. (2013a), Arndt et al. (2013b) and Greene et al. (2017).



Supplement Figure S8: Fin whale sightings available to us since 2000 in a 30 km radius (dashed grey circle) and 100 km radius (solid black circle) around our recording site off Elephant Island indicated by the green cross. Blue dots = sightings RV Polarstern (n=45), red dots = sightings from various sources (n=66)*. Figure provided by Ahmed El-Gabbas.

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* (Inaturalist (n=1), OBIS-SEAMAP (n=18), Scheidat, M.; Herr, H. (2018): Aerial cetacean survey Southern (n=5), Herr, H.; Viquerat, S.; Siebert, U. (2018): Ship based cetacean survey Southern Ocean 2016. (n=26), SOWER (n=16)

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