**Supplementary material for Kinzey *et al*. glider simulation**

**Supplementary Table S1**. Trackline lengths (km) with krill acoustic energy data available for simulated glider sampling in the Bransfield Strait (BS) and Cape Shirreff (CS) strata, proportions of cells in each stratum with acoustic energies greater than zero (p>0), and proportions of the total energy located in 0.1% of the cells comprising each dataset (p0.001). One half of the total trackline lengths were sampled by each replicate glider in horizontal units of 100 m.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Year | BS length  (km) | CS length  (km) | BS  (p>0) | CS  (p>0) | BS  (p0.001) | CS  (p0.001) |
| 2001 | 376.2 | 1207.8 | 0.11 | 0.08 | 0.91 | 0.94 |
| 2002 | 610.2 | 1162.8 | 0.11 | 0.12 | 1 | 0.99 |
| 2003 | 657.0 | 1459.8 | 0.09 | 0.22 | 0.97 | 0.9 |
| 2004 | 513.0 | 1281.6 | 0.03 | 0.08 | 1 | 0.96 |
| 2005 | 887.4 | 1306.8 | 0.12 | 0.28 | 0.89 | 0.96 |
| 2006 | 792.0 | 1384.2 | 0.49 | 0.38 | 0.8 | 0.92 |
| 2007 | 943.2 | 1369.8 | 0.08 | 0.17 | 0.95 | 0.84 |
| 2008 | 909.0 | 1387.8 | 0.22 | 0.32 | 0.89 | 0.92 |
| 2009 | 975.6 | 1582.2 | 0.32 | 0.29 | 0.91 | 0.94 |
| 2010 | 0 | 0 | NA | NA | NA | NA |
| 2011 | 1008.0 | 1524.6 | 0.30 | 0.35 | 0.9 | 0.84 |
| Mean | 767.2 | 1366.7 | 0.19 | 0.23 | 0.92 | 0.92 |

**Supplementary Table S2**. Trackline distances at seven maximum dive depths for one descent-ascent dive cycle calculated by trigonometry (‘trig’) and in 100 m horizontal cell increments (‘bins’).

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Maximum Glider Depth (m) | 150 | 200 | 300 | 400 | 500 | 700 | 1000 |
| Distance (km)/ dive (trig) | 0.7 | 0.9 | 1.4 | 1.7 | 2.1 | 2.9 | 4.2 |
| Distance (km)/ dive (bins) | 0.7 | 0.9 | 1.4 | 1.8 | 2.3 | 3.2 | 4.5 |

**Supplementary Table S3**. Numbers of glider sampling dives in each year in the Bransfield Strait (BS) and Cape Shirreff (CS) strata at maximum depths of 150 m and 1000 m.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Year | BS 150 m | BS 1000 m | CS 150 m | CS 1000 m |
| 2001 | 134 | 20 | 431 | 67 |
| 2002 | 218 | 33 | 415 | 64 |
| 2003 | 234 | 36 | 521 | 81 |
| 2004 | 183 | 28 | 458 | 71 |
| 2005 | 316 | 49 | 465 | 72 |
| 2006 | 282 | 44 | 493 | 76 |
| 2007 | 336 | 52 | 488 | 76 |
| 2008 | 323 | 50 | 495 | 77 |
| 2009 | 347 | 54 | 564 | 87 |
| 2010 | NA | NA | NA | NA |
| 2011 | 359 | 56 | 543 | 84 |
| mean | 273.2 | 42.2 | 487.3 | 75.5 |



Figure S1. Horizontal distance covered per maximum dive depth calculated from trigonometry (‘exact distance’) and from number of bins sampled (‘binned distance’) for one dive cycle.



Figure S2. Number of dive cycles (‘N dives’) and the horizontal distance (‘Distance (km)’ measured in units of 100 m bins) covered by gliders descending to different maximum diving depths in meters (colored lines). Half of the total distances covered are sampled along descending depth ranges on the downward portion of the 150 m dives, with decreasing proportions of the total trackline sampled as the maximum dive depth increases.