

Ambio

Electronic Supplementary Material

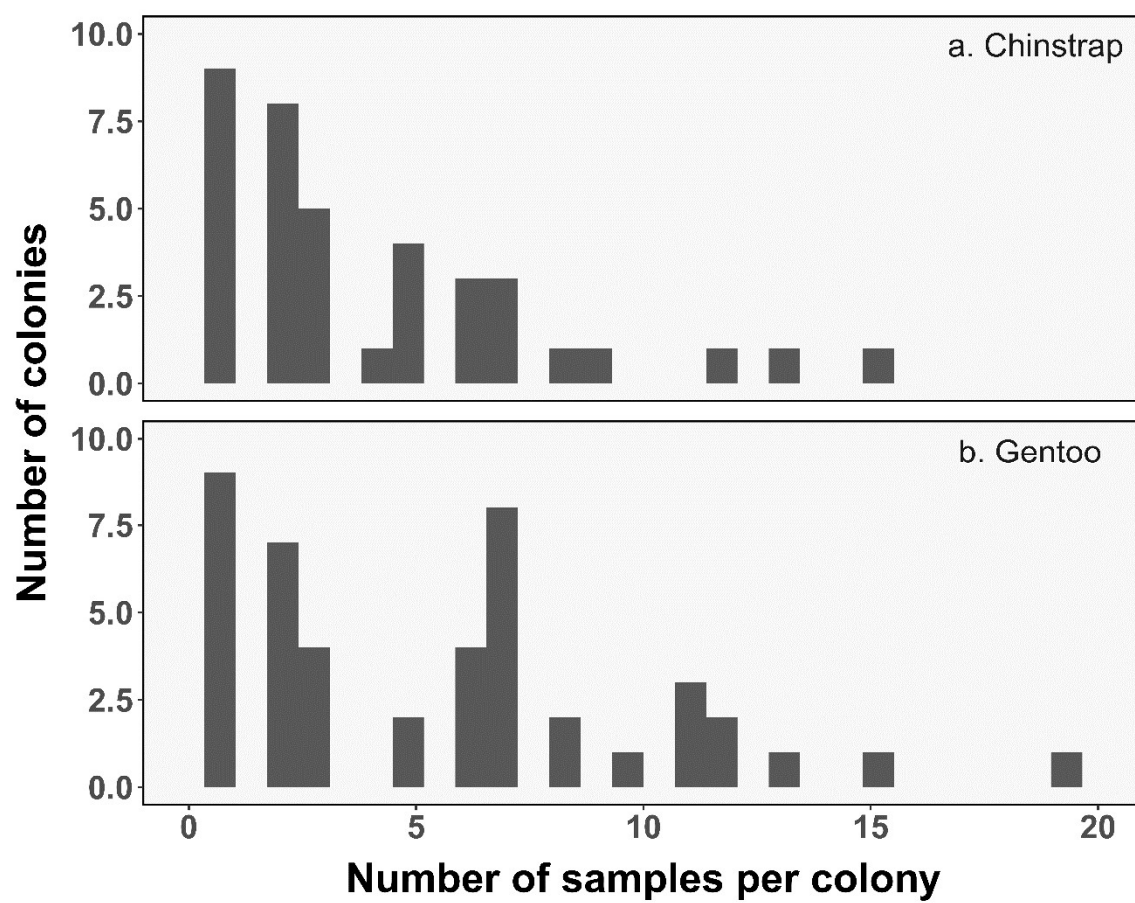
This supplementary material has not been reviewed

**Title: Antarctic krill fishery effects over penguin populations under adverse climate conditions:
Implications for the management of fishing practices**

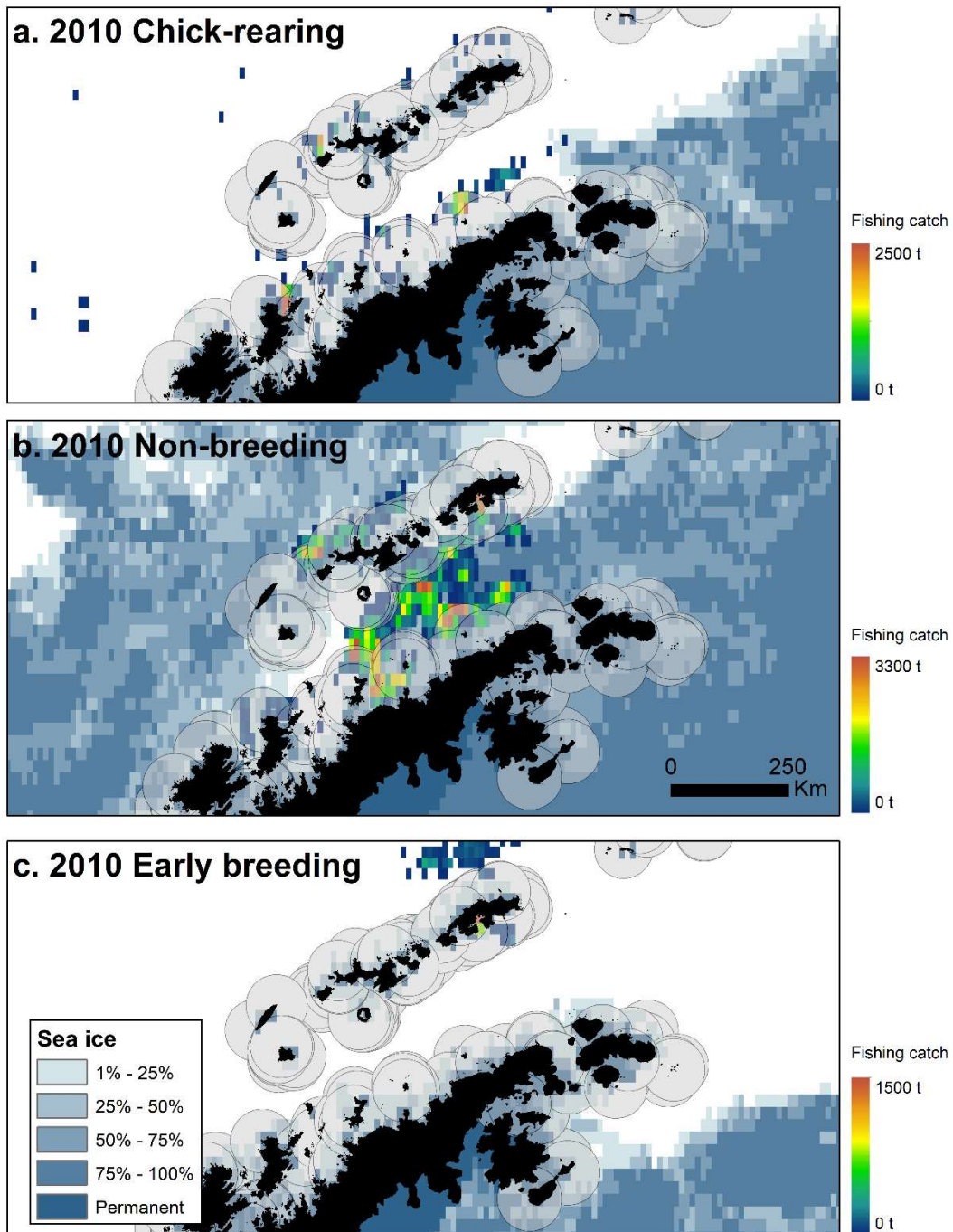
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Lucas Krüger, Magdalena F. Huerta, Francisco Santa Cruz, César A. Cárdenas

Appendix S1. Summary of number of breeding pair counts for chinstrap (*Pygoscelis antarctius*) and gentoo (*P. papua*) penguins breeding along the western Antarctic Peninsula.



Appendix S2. Example of variability of Antarctic Krill (*Euphausia superba*) fishing catch and sea ice cover overlapped by the 30km radius around penguin breeding colonies in the Western Antarctic Peninsula during the year 2010. Data accumulated by period of Pygoscelid penguins breeding cycle, approximately as: Chick-Rearing (January to March), Non-breeding (April to September) and Early Breeding (October to December).



Appendix S3. Data used for analysis. Counts (number of pairs) of Chinstrap (*Pygoscelis antarcticus*) and Gentoo (*P. papua*) penguin populations during November and December in the Western Antarctic Peninsula, from the MAPPPD application (<http://www.penguinmap.com/>), total fishing catch (tonnes) within a 30-km radius from each colony and the Southern Annular Mode (SAM) during winter.

| Species | Colony ID | Long | Lat | year | Fishing Catch | SAM | Count | std λ |
|-----------|-----------|----------|----------|------|---------------|--------|-------|---------------|
| Chinstrap | AITC | -59.7517 | -62.4071 | 2008 | 21.000 | 0.308 | 5620 | 0.02000 |
| Chinstrap | AITC | -59.7517 | -62.4071 | 2011 | 167.780 | -0.415 | 4047 | -0.09330 |
| Chinstrap | ARDL | -58.933 | -62.213 | 2014 | 3.000 | 0.063 | 15 | -0.02620 |
| Chinstrap | BAIL | -60.506 | -62.965 | 2011 | 2.019 | -0.415 | 50408 | -0.12330 |
| Chinstrap | BRIT | -55.213 | -61.278 | 2016 | 0.000 | 0.965 | 2869 | -0.01020 |
| Chinstrap | COBA | -61.6499 | -64.1795 | 2011 | 7.000 | -0.415 | 457 | -0.00950 |
| Chinstrap | CUVE | -62.626 | -64.684 | 2003 | 0.000 | 0.475 | 0 | -0.03130 |
| Chinstrap | CUVE | -62.626 | -64.684 | 2005 | 0.000 | -0.222 | 0 | 0.00000 |
| Chinstrap | CUVE | -62.626 | -64.684 | 2009 | 0.000 | -0.942 | 0 | 0.00000 |
| Chinstrap | CUVE | -62.626 | -64.684 | 2011 | 0.000 | -0.415 | 1 | 0.00000 |
| Chinstrap | CUVE | -62.626 | -64.684 | 2015 | 3048.356 | 1.77 | 0 | -0.25000 |
| Chinstrap | DEEI | -59.7836 | -62.4229 | 2010 | 1253.403 | 2.695 | 0 | 0.00000 |
| Chinstrap | DELA | -62.1881 | -64.5643 | 2016 | 12052.796 | 0.965 | 108 | -0.03330 |
| Chinstrap | DREA | -64.2256 | -64.7254 | 1985 | 0.000 | 0.899 | 136 | 0.24770 |
| Chinstrap | DUPT | -62.8179 | -64.8049 | 2011 | 0.000 | -0.415 | 21 | 0.16670 |
| Chinstrap | DUPT | -62.8179 | -64.8049 | 2013 | 0.000 | -0.627 | 22 | 0.02380 |
| Chinstrap | ECKE | -61.6042 | -64.4309 | 2011 | 0.000 | -0.415 | 41 | 0.07330 |
| Chinstrap | ENTR | -60.5533 | -62.9981 | 2006 | 565.206 | -0.034 | 902 | 0.59360 |
| Chinstrap | ENTR | -60.5533 | -62.9981 | 2011 | 2.019 | -0.415 | 551 | -0.07780 |
| Chinstrap | ENTR | -60.5533 | -62.9981 | 2012 | 112.357 | 1.453 | 696 | 0.26320 |
| Chinstrap | ENTR | -60.5533 | -62.9981 | 2013 | 0.000 | -0.627 | 726 | 0.04310 |
| Chinstrap | ENTR | -60.5533 | -62.9981 | 2014 | 604.078 | 0.063 | 545 | -0.24930 |
| Chinstrap | ENTR | -60.5533 | -62.9981 | 2016 | 31.322 | 0.965 | 986 | 0.26670 |
| Chinstrap | FORT | -59.58 | -62.542 | 2011 | 15.000 | -0.415 | 983 | 0.01270 |
| Chinstrap | FORT | -59.58 | -62.542 | 2014 | 0.000 | 0.063 | 1054 | 0.02410 |
| Chinstrap | FORT | -59.58 | -62.542 | 2016 | 410.985 | 0.965 | 1451 | 0.18830 |
| Chinstrap | GAST | -61.827 | -64.4848 | 2010 | 0.000 | 2.695 | 353 | -0.00390 |
| Chinstrap | GAST | -61.827 | -64.4848 | 2012 | 5777.608 | 1.453 | 225 | -0.18130 |
| Chinstrap | GEOR | -62.6696 | -64.6694 | 1997 | 0.000 | -0.023 | 397 | 0.03660 |
| Chinstrap | GEOR | -62.6696 | -64.6694 | 1998 | 0.000 | 2.482 | 327 | -0.17630 |
| Chinstrap | GEOR | -62.6696 | -64.6694 | 2004 | 0.000 | 0.613 | 269 | -0.02960 |
| Chinstrap | GEOR | -62.6696 | -64.6694 | 2005 | 0.000 | -0.222 | 246 | -0.08550 |
| Chinstrap | GEOR | -62.6696 | -64.6694 | 2006 | 0.000 | -0.034 | 260 | 0.05690 |
| Chinstrap | GEOR | -62.6696 | -64.6694 | 2008 | 0.000 | 0.308 | 256 | -0.00770 |
| Chinstrap | GEOR | -62.6696 | -64.6694 | 2010 | 0.000 | 2.695 | 139 | -0.22850 |
| Chinstrap | GEOR | -62.6696 | -64.6694 | 2011 | 0.000 | -0.415 | 193 | 0.38850 |

| | | | | | | | | |
|-----------|------|----------|----------|------|-----------|--------|------|----------|
| Chinstrap | GEOR | -62.6696 | -64.6694 | 2013 | 0.000 | -0.627 | 229 | 0.09330 |
| Chinstrap | GEOR | -62.6696 | -64.6694 | 2014 | 220.429 | 0.063 | 232 | 0.01310 |
| Chinstrap | GEOR | -62.6696 | -64.6694 | 2015 | 3048.356 | 1.77 | 207 | -0.10780 |
| Chinstrap | GEOR | -62.6696 | -64.6694 | 2016 | 1063.160 | 0.965 | 189 | -0.08700 |
| Chinstrap | HALF | -59.918 | -62.596 | 2007 | 66.000 | -0.735 | 1732 | -0.05300 |
| Chinstrap | HALF | -59.918 | -62.596 | 2008 | 0.000 | 0.308 | 2023 | 0.16800 |
| Chinstrap | HALF | -59.918 | -62.596 | 2010 | 2816.824 | 2.695 | 2036 | 0.00320 |
| Chinstrap | HALF | -59.918 | -62.596 | 2011 | 0.000 | -0.415 | 1738 | -0.14640 |
| Chinstrap | HALF | -59.918 | -62.596 | 2012 | 2015.272 | 1.453 | 1928 | -0.10780 |
| Chinstrap | HALF | -59.918 | -62.596 | 2013 | 0.000 | -0.627 | 1818 | -0.13180 |
| Chinstrap | HALF | -59.918 | -62.596 | 2014 | 0.000 | 0.063 | 1937 | 0.06550 |
| Chinstrap | HALF | -59.918 | -62.596 | 2015 | 117.419 | 1.77 | 1915 | -0.01140 |
| Chinstrap | HALF | -59.918 | -62.596 | 2016 | 174.878 | 0.965 | 1903 | -0.10620 |
| Chinstrap | HANN | -60.6134 | -62.6545 | 1995 | 336.635 | -0.263 | 1281 | 0.23530 |
| Chinstrap | HANN | -60.6134 | -62.6545 | 1996 | 7002.635 | -1.026 | 1158 | -0.09600 |
| Chinstrap | HANN | -60.6134 | -62.6545 | 1997 | 3930.545 | -0.023 | 1138 | -0.01730 |
| Chinstrap | HANN | -60.6134 | -62.6545 | 1999 | 93.000 | 0.805 | 1061 | -0.03380 |
| Chinstrap | HANN | -60.6134 | -62.6545 | 2004 | 0.000 | 0.613 | 759 | -0.05690 |
| Chinstrap | HYDR | -61.6259 | -64.1454 | 2000 | 0.000 | 0.103 | 417 | -0.05180 |
| Chinstrap | HYDR | -61.6259 | -64.1454 | 2016 | 18353.806 | 0.965 | 1185 | 0.11510 |
| Chinstrap | JACP | -61.8342 | -64.5152 | 2012 | 3096.396 | 1.453 | 14 | -0.13160 |
| Chinstrap | JACP | -61.8342 | -64.5152 | 2017 | 3312.959 | 1.057 | 37 | 0.32860 |
| Chinstrap | MIDA | -61.1008 | -64.1685 | 2010 | 10.807 | 2.695 | 685 | -0.01710 |
| Chinstrap | ORNE | -62.673 | -64.662 | 1996 | 0.000 | -1.026 | 342 | -0.20650 |
| Chinstrap | ORNE | -62.673 | -64.662 | 1997 | 0.000 | -0.023 | 423 | 0.23680 |
| Chinstrap | ORNE | -62.673 | -64.662 | 1998 | 0.000 | 2.482 | 361 | -0.14660 |
| Chinstrap | ORNE | -62.673 | -64.662 | 1999 | 0.000 | 0.805 | 332 | -0.10270 |
| Chinstrap | ORNE | -62.673 | -64.662 | 2000 | 0.000 | 0.103 | 396 | -0.05940 |
| Chinstrap | ORNE | -62.673 | -64.662 | 2001 | 0.000 | 1.083 | 106 | -0.73230 |
| Chinstrap | ORNE | -62.673 | -64.662 | 2002 | 0.000 | -1.152 | 338 | 2.18870 |
| Chinstrap | ORNE | -62.673 | -64.662 | 2005 | 0.000 | -0.222 | 350 | 0.01180 |
| Chinstrap | ORNE | -62.673 | -64.662 | 2007 | 0.000 | -0.735 | 249 | -0.14430 |
| Chinstrap | ORNE | -62.673 | -64.662 | 2008 | 0.000 | 0.308 | 299 | 0.20080 |
| Chinstrap | ORNE | -62.673 | -64.662 | 2009 | 0.000 | -0.942 | 285 | -0.04680 |
| Chinstrap | ORNE | -62.673 | -64.662 | 2010 | 0.000 | 2.695 | 253 | -0.11230 |
| Chinstrap | ORNE | -62.673 | -64.662 | 2012 | 1395.037 | 1.453 | 310 | 0.11260 |
| Chinstrap | ORNE | -62.673 | -64.662 | 2015 | 3048.356 | 1.77 | 353 | 0.04620 |
| Chinstrap | ORNE | -62.673 | -64.662 | 2016 | 1063.160 | 0.965 | 298 | -0.15580 |
| Chinstrap | PCHA | -64.026 | -65.067 | 2007 | 0.000 | -0.735 | 11 | -0.09030 |
| Chinstrap | PCHA | -64.026 | -65.067 | 2008 | 0.000 | 0.308 | 17 | 0.54550 |
| Chinstrap | PCHA | -64.026 | -65.067 | 2009 | 0.000 | -0.942 | 17 | 0.00000 |
| Chinstrap | PCHA | -64.026 | -65.067 | 2010 | 0.000 | 2.695 | 12 | -0.40000 |
| Chinstrap | PCHA | -64.026 | -65.067 | 2012 | 0.000 | 1.453 | 22 | -0.06000 |
| Chinstrap | PCHA | -64.026 | -65.067 | 2013 | 0.000 | -0.627 | 12 | -0.45450 |
| Chinstrap | PCHA | -64.026 | -65.067 | 2014 | 0.000 | 0.063 | 25 | 0.38890 |

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|-----------|------|----------|----------|------|-----------|--------|------|----------|
| Chinstrap | PCHA | -64.026 | -65.067 | 2016 | 0.000 | 0.965 | 16 | -0.18000 |
| Chinstrap | PENG | -57.9269 | -62.102 | 1980 | 0.000 | -1.871 | 7581 | 0.07410 |
| Chinstrap | PENG | -57.9269 | -62.102 | 2000 | 273.762 | 0.103 | 3296 | -0.03130 |
| Chinstrap | PENG | -57.9269 | -62.102 | 2002 | 0.000 | 0.475 | 2672 | -0.06310 |
| Chinstrap | PENG | -57.9269 | -62.102 | 2010 | 13201.300 | 2.695 | 3017 | 0.01840 |
| Chinstrap | PENG | -57.9269 | -62.102 | 2017 | 2.241 | 1.057 | 2537 | -0.02270 |
| Chinstrap | PETE | -64.137 | -65.176 | 2004 | 0.000 | 0.613 | 0 | 0.00000 |
| Chinstrap | PETE | -64.137 | -65.176 | 2005 | 0.000 | -0.222 | 0 | 0.00000 |
| Chinstrap | PETE | -64.137 | -65.176 | 2006 | 0.000 | -0.034 | 0 | 0.00000 |
| Chinstrap | PETE | -64.137 | -65.176 | 2007 | 0.000 | -0.735 | 0 | 0.00000 |
| Chinstrap | PETE | -64.137 | -65.176 | 2008 | 0.000 | 0.308 | 0 | 0.00000 |
| Chinstrap | PETE | -64.137 | -65.176 | 2009 | 0.000 | -0.942 | 0 | 0.00000 |
| Chinstrap | PING | -60.9857 | -64.1435 | 2013 | 14143.675 | -0.627 | 3079 | -0.02010 |
| Chinstrap | PING | -60.9857 | -64.1435 | 2014 | 4714.537 | 0.063 | 3524 | 0.11060 |
| Chinstrap | PING | -60.9857 | -64.1435 | 2015 | 28671.114 | 1.77 | 3657 | -0.05550 |
| Chinstrap | PING | -60.9857 | -64.1435 | 2016 | 7601.086 | 0.965 | 3143 | -0.14060 |
| Chinstrap | PING | -60.9857 | -64.1435 | 2017 | 36341.174 | 1.057 | 3217 | -0.09910 |
| Chinstrap | PRES | -61.2001 | -62.7255 | 2007 | 2572.473 | -0.735 | 7 | -0.34780 |
| Chinstrap | PRES | -61.2001 | -62.7255 | 2011 | 234.320 | -0.415 | 0 | -0.25000 |
| Chinstrap | RENI | -59.81 | -62.609 | 2013 | 0.000 | -0.627 | 234 | -0.11260 |
| Chinstrap | RENI | -59.81 | -62.609 | 2014 | 0.000 | 0.063 | 243 | 0.03850 |
| Chinstrap | ROBE | -59.383 | -62.45 | 2014 | 0.000 | 0.063 | 3283 | 0.09050 |
| Chinstrap | ROBE | -59.383 | -62.45 | 2016 | 0.000 | 0.965 | 2889 | -0.06120 |
| Chinstrap | RUGG | -59.816 | -62.601 | 2012 | 2503.471 | 1.453 | 1664 | 0.07080 |
| Chinstrap | RUGG | -59.816 | -62.601 | 2013 | 0.000 | -0.627 | 1439 | -0.13520 |
| Chinstrap | RUGG | -59.816 | -62.601 | 2014 | 0.000 | 0.063 | 1515 | 0.05280 |
| Chinstrap | SELV | -62.5691 | -64.6405 | 2009 | 0.000 | -0.942 | 146 | 0.04890 |
| Chinstrap | SELV | -62.5691 | -64.6405 | 2011 | 0.000 | -0.415 | 183 | 0.12670 |
| Chinstrap | SELV | -62.5691 | -64.6405 | 2012 | 1469.037 | 1.453 | 133 | -0.27320 |
| Chinstrap | SELV | -62.5691 | -64.6405 | 2013 | 0.000 | -0.627 | 103 | -0.28470 |
| Chinstrap | SELV | -62.5691 | -64.6405 | 2014 | 840.401 | 0.063 | 220 | 1.13590 |
| Chinstrap | SELV | -62.5691 | -64.6405 | 2015 | 3542.193 | 1.77 | 118 | -0.46360 |
| Chinstrap | SELV | -62.5691 | -64.6405 | 2016 | 5298.539 | 0.965 | 59 | -0.50000 |
| Chinstrap | SHIR | -60.7874 | -62.4575 | 1998 | 6880.495 | 2.482 | 7581 | -0.00470 |
| Chinstrap | SHIR | -60.7874 | -62.4575 | 1999 | 1378.199 | 0.805 | 7744 | 0.02150 |
| Chinstrap | SHIR | -60.7874 | -62.4575 | 2000 | 8724.272 | 0.103 | 7212 | -0.06870 |
| Chinstrap | SHIR | -60.7874 | -62.4575 | 2001 | 6620.092 | 1.083 | 6606 | -0.08400 |
| Chinstrap | SHIR | -60.7874 | -62.4575 | 2002 | 981.000 | -1.152 | 5868 | -0.11170 |
| Chinstrap | SHIR | -60.7874 | -62.4575 | 2003 | 6275.619 | 0.475 | 5636 | -0.03950 |
| Chinstrap | SHIR | -60.7874 | -62.4575 | 2004 | 31.000 | 0.613 | 4907 | -0.12930 |
| Chinstrap | SHIR | -60.7874 | -62.4575 | 2005 | 822.550 | -0.222 | 4849 | -0.01180 |
| Chinstrap | SHIR | -60.7874 | -62.4575 | 2006 | 19637.116 | -0.034 | 4544 | -0.06290 |
| Chinstrap | SHIR | -60.7874 | -62.4575 | 2007 | 5325.909 | -0.735 | 3032 | -0.33270 |
| Chinstrap | SHIR | -60.7874 | -62.4575 | 2008 | 197.000 | 0.308 | 4026 | 0.32780 |
| Chinstrap | SHIR | -60.7874 | -62.4575 | 2009 | 1076.710 | -0.942 | 4339 | 0.07770 |

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|-----------|------|----------|----------|------|-----------|--------|------|----------|
| Chinstrap | SHIR | -60.7874 | -62.4575 | 2010 | 5018.592 | 2.695 | 4127 | -0.04890 |
| Chinstrap | SPIG | -62.554 | -64.635 | 2009 | 0.000 | -0.942 | 546 | 0.07720 |
| Chinstrap | SPIG | -62.554 | -64.635 | 2010 | 0.000 | 2.695 | 450 | -0.17580 |
| Chinstrap | SPIG | -62.554 | -64.635 | 2011 | 0.000 | -0.415 | 315 | -0.30000 |
| Chinstrap | SPIG | -62.554 | -64.635 | 2012 | 1469.037 | 1.453 | 509 | 0.10890 |
| Chinstrap | SPIG | -62.554 | -64.635 | 2013 | 0.000 | -0.627 | 484 | -0.04910 |
| Chinstrap | SPIG | -62.554 | -64.635 | 2014 | 840.401 | 0.063 | 592 | 0.22310 |
| Chinstrap | SPIG | -62.554 | -64.635 | 2016 | 5298.539 | 0.965 | 496 | -0.08110 |
| Chinstrap | SPIP | -62.558 | -64.625 | 2009 | 0.000 | -0.942 | 148 | -0.22080 |
| Chinstrap | SPIP | -62.558 | -64.625 | 2012 | 1469.037 | 1.453 | 44 | -0.23420 |
| Chinstrap | SPIP | -62.558 | -64.625 | 2015 | 3578.844 | 1.77 | 310 | 2.01520 |
| Chinstrap | SPIP | -62.558 | -64.625 | 2016 | 5298.539 | 0.965 | 332 | 0.07100 |
| Chinstrap | SPTR | -62.5622 | -64.6358 | 2009 | 0.000 | -0.942 | 13 | -0.41450 |
| Chinstrap | SPTR | -62.5622 | -64.6358 | 2011 | 0.000 | -0.415 | 40 | 1.03850 |
| Chinstrap | SPTR | -62.5622 | -64.6358 | 2012 | 1469.037 | 1.453 | 20 | -0.52380 |
| Chinstrap | SPTR | -62.5622 | -64.6358 | 2013 | 0.000 | -0.627 | 80 | 3.00000 |
| Chinstrap | SPTR | -62.5622 | -64.6358 | 2015 | 3542.193 | 1.77 | 112 | 0.20000 |
| Chinstrap | SPTR | -62.5622 | -64.6358 | 2016 | 5298.539 | 0.965 | 135 | -0.16670 |
| Chinstrap | TETR | -60.734 | -63.918 | 2013 | 6159.115 | -0.627 | 209 | 0.07730 |
| Chinstrap | TETR | -60.734 | -63.918 | 2016 | 358.701 | 0.965 | 361 | 0.24240 |
| Chinstrap | TETR | -60.734 | -63.918 | 2017 | 15661.086 | 1.057 | 285 | -0.21050 |
| Chinstrap | TURR | -57.9514 | -62.0875 | 2012 | 169.560 | 1.453 | 46 | -0.12900 |
| Chinstrap | TURR | -57.9514 | -62.0875 | 2015 | 149.533 | 1.77 | 18 | -0.20290 |
| Chinstrap | TURR | -57.9514 | -62.0875 | 2016 | 2.230 | 0.965 | 9 | -0.50000 |
| Chinstrap | USEF | -62.864 | -64.717 | 2008 | 0.000 | 0.308 | 186 | 0.43080 |
| Chinstrap | USEF | -62.864 | -64.717 | 2010 | 0.000 | 2.695 | 175 | -0.02960 |
| Chinstrap | USEF | -62.864 | -64.717 | 2015 | 1235.395 | 1.77 | 138 | -0.04230 |
| Chinstrap | WATE | -62.8581 | -64.8236 | 1997 | 0.000 | -0.023 | 8 | 0.00000 |
| Chinstrap | WATE | -62.8581 | -64.8236 | 1998 | 0.000 | 2.482 | 4 | -0.50000 |
| Chinstrap | WATE | -62.8581 | -64.8236 | 2008 | 0.000 | 0.308 | 4 | 0.00000 |
| Chinstrap | WATE | -62.8581 | -64.8236 | 2012 | 160.330 | 1.453 | 4 | 0.00000 |
| Chinstrap | WATE | -62.8581 | -64.8236 | 2013 | 0.000 | -0.627 | 3 | -0.25000 |
| Chinstrap | WATE | -62.8581 | -64.8236 | 2015 | 841.409 | 1.77 | 3 | 0.00000 |
| Chinstrap | WATE | -62.8581 | -64.8236 | 2016 | 0.000 | 0.965 | 2 | -0.33330 |
| Gentoo | AITC | -59.7517 | -62.4071 | 2003 | 203.829 | 0.475 | 1486 | 0.06560 |
| Gentoo | AITC | -59.7517 | -62.4071 | 2005 | 208.320 | -0.222 | 1998 | 0.17230 |
| Gentoo | AITC | -59.7517 | -62.4071 | 2006 | 5977.422 | -0.034 | 1639 | -0.17970 |
| Gentoo | AITC | -59.7517 | -62.4071 | 2007 | 322.971 | -0.735 | 1383 | -0.15620 |
| Gentoo | AITC | -59.7517 | -62.4071 | 2008 | 21.000 | 0.308 | 2210 | 0.59800 |
| Gentoo | AITC | -59.7517 | -62.4071 | 2009 | 10.000 | -0.942 | 1900 | -0.14030 |
| Gentoo | AITC | -59.7517 | -62.4071 | 2010 | 1253.403 | 2.695 | 1319 | -0.30580 |
| Gentoo | AITC | -59.7517 | -62.4071 | 2011 | 167.780 | -0.415 | 2213 | 0.67780 |
| Gentoo | AITC | -59.7517 | -62.4071 | 2014 | 0.000 | 0.063 | 1916 | -0.04470 |
| Gentoo | AITC | -59.7517 | -62.4071 | 2015 | 0.000 | 1.77 | 1828 | -0.04590 |
| Gentoo | AITC | -59.7517 | -62.4071 | 2017 | 1959.419 | 1.057 | 1704 | -0.03390 |

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|--------|------|------------|------------|------|---------|--------|------|----------|
| Gentoo | ALMI | -62.8667 | -64.8833 | 1996 | 0.000 | -1.026 | 9 | 0.12500 |
| Gentoo | ALMI | -62.8667 | -64.8833 | 1997 | 0.000 | -0.023 | 6 | -0.33330 |
| Gentoo | ALMI | -62.8667 | -64.8833 | 2006 | 0.000 | -0.034 | 128 | 1.66670 |
| Gentoo | ALMI | -62.8667 | -64.8833 | 2008 | 0.000 | 0.308 | 153 | 0.09770 |
| Gentoo | ALMI | -62.8667 | -64.8833 | 2009 | 0.000 | -0.942 | 165 | -0.14060 |
| Gentoo | ALMI | -62.8667 | -64.8833 | 2011 | 0.000 | -0.415 | 189 | 0.07270 |
| Gentoo | ALMI | -62.8667 | -64.8833 | 2012 | 0.000 | 1.453 | 162 | -0.14290 |
| Gentoo | ALMI | -62.8667 | -64.8833 | 2013 | 0.000 | -0.627 | 164 | 0.01230 |
| Gentoo | ALMI | -62.8667 | -64.8833 | 2014 | 0.000 | 0.063 | 126 | -0.36040 |
| Gentoo | ALMI | -62.8667 | -64.8833 | 2015 | 0.000 | 1.77 | 204 | 0.00000 |
| Gentoo | ALMI | -62.8667 | -64.8833 | 2016 | 0.000 | 0.965 | 170 | -0.16670 |
| Gentoo | BENE | -62.701 | -64.7671 | 2007 | 0.000 | -0.735 | 1098 | 0.71560 |
| Gentoo | BENE | -62.701 | -64.7671 | 2011 | 0.000 | -0.415 | 1088 | -0.00230 |
| Gentoo | BENE | -62.701 | -64.7671 | 2013 | 0.000 | -0.627 | 706 | -0.17560 |
| Gentoo | BENE | -62.701 | -64.7671 | 2014 | 105.629 | 0.063 | 694 | -0.01700 |
| Gentoo | BENE | -62.701 | -64.7671 | 2015 | 999.951 | 1.77 | 1311 | 0.88900 |
| Gentoo | BENE | -62.701 | -64.7671 | 2016 | 790.897 | 0.965 | 396 | -0.00020 |
| Gentoo | BROW | -56.905 | -63.5222 | 2000 | 0.000 | 0.103 | 756 | 0.22530 |
| Gentoo | BROW | -56.905 | -63.5222 | 2001 | 0.000 | 1.083 | 450 | -0.40480 |
| Gentoo | BROW | -56.905 | -63.5222 | 2003 | 0.000 | 0.475 | 200 | -0.27780 |
| Gentoo | BROW | -56.905 | -63.5222 | 2004 | 0.000 | 0.613 | 267 | 0.33500 |
| Gentoo | BROW | -56.905 | -63.5222 | 2005 | 0.000 | -0.222 | 247 | -0.33240 |
| Gentoo | BROW | -56.905 | -63.5222 | 2006 | 0.000 | -0.034 | 444 | 0.79760 |
| Gentoo | BROW | -56.905 | -63.5222 | 2008 | 0.000 | 0.308 | 432 | -0.01350 |
| Gentoo | BROW | -56.905 | -63.5222 | 2009 | 24.840 | -0.942 | 276 | -0.50180 |
| Gentoo | BROW | -56.905 | -63.5222 | 2012 | 0.000 | 1.453 | 598 | 0.03720 |
| Gentoo | BROW | -56.905 | -63.5222 | 2014 | 0.000 | 0.063 | 355 | -0.20320 |
| Gentoo | BROW | -56.905 | -63.5222 | 2015 | 0.000 | 1.77 | 676 | 0.90420 |
| Gentoo | BROW | -56.905 | -63.5222 | 2016 | 0.000 | 0.965 | 640 | -0.20600 |
| Gentoo | BROW | -56.905 | -63.5222 | 2017 | 0.000 | 1.057 | 695 | -0.02250 |
| Gentoo | BRYE | -62.927222 | -64.889722 | 2010 | 0.000 | 2.695 | 505 | 0.00980 |
| Gentoo | BRYE | -62.927222 | -64.889722 | 2011 | 0.000 | -0.415 | 558 | 0.10500 |
| Gentoo | BRYE | -62.927222 | -64.889722 | 2012 | 0.000 | 1.453 | 223 | -0.60040 |
| Gentoo | BRYE | -62.927222 | -64.889722 | 2013 | 0.000 | -0.627 | 397 | 0.78030 |
| Gentoo | BRYE | -62.927222 | -64.889722 | 2014 | 0.000 | 0.063 | 599 | 0.50880 |
| Gentoo | BRYE | -62.927222 | -64.889722 | 2016 | 0.000 | 0.965 | 515 | -0.07010 |
| Gentoo | BRYE | -62.927222 | -64.889722 | 2017 | 0.000 | 1.057 | 527 | 0.02330 |
| Gentoo | BRYs | -62.95 | -64.9 | 2008 | 0.000 | 0.308 | 979 | 0.09840 |
| Gentoo | BRYs | -62.95 | -64.9 | 2010 | 0.000 | 2.695 | 722 | -0.13130 |
| Gentoo | BRYs | -62.95 | -64.9 | 2011 | 0.000 | -0.415 | 745 | 0.03190 |
| Gentoo | BRYs | -62.95 | -64.9 | 2012 | 0.000 | 1.453 | 586 | -0.21340 |
| Gentoo | BRYs | -62.95 | -64.9 | 2013 | 0.000 | -0.627 | 820 | 0.39930 |
| Gentoo | BRYs | -62.95 | -64.9 | 2014 | 0.000 | 0.063 | 884 | 0.07800 |
| Gentoo | BRYs | -62.95 | -64.9 | 2016 | 0.000 | 0.965 | 719 | -0.09330 |
| Gentoo | CIER | -60.96 | -64.157 | 2010 | 10.807 | 2.695 | 2680 | 0.08710 |

| | | | | | | | | |
|--------|------|----------|----------|------|----------|--------|------|----------|
| Gentoo | CUVE | -62.626 | -64.684 | 2003 | 0.000 | 0.475 | 5990 | 0.03590 |
| Gentoo | CUVE | -62.626 | -64.684 | 2005 | 0.000 | -0.222 | 6294 | 0.02540 |
| Gentoo | CUVE | -62.626 | -64.684 | 2008 | 0.000 | 0.308 | 6878 | 0.03090 |
| Gentoo | CUVE | -62.626 | -64.684 | 2009 | 0.000 | -0.942 | 6468 | -0.05960 |
| Gentoo | CUVE | -62.626 | -64.684 | 2010 | 0.000 | 2.695 | 990 | -0.84690 |
| Gentoo | CUVE | -62.626 | -64.684 | 2011 | 0.000 | -0.415 | 4170 | 3.21210 |
| Gentoo | CUVE | -62.626 | -64.684 | 2012 | 1391.037 | 1.453 | 5950 | -0.06090 |
| Gentoo | CUVE | -62.626 | -64.684 | 2013 | 0.000 | -0.627 | 7007 | 0.17760 |
| Gentoo | CUVE | -62.626 | -64.684 | 2014 | 220.429 | 0.063 | 9176 | 0.30950 |
| Gentoo | CUVE | -62.626 | -64.684 | 2015 | 3048.356 | 1.77 | 9648 | 0.05140 |
| Gentoo | DAMO | -63.4968 | -64.8149 | 2005 | 0.000 | -0.222 | 2273 | 0.05960 |
| Gentoo | DAMO | -63.4968 | -64.8149 | 2007 | 0.000 | -0.735 | 2055 | -0.04800 |
| Gentoo | DAMO | -63.4968 | -64.8149 | 2008 | 0.000 | 0.308 | 1934 | -0.05890 |
| Gentoo | DAMO | -63.4968 | -64.8149 | 2009 | 0.000 | -0.942 | 1928 | -0.10660 |
| Gentoo | DAMO | -63.4968 | -64.8149 | 2010 | 0.000 | 2.695 | 131 | -0.93210 |
| Gentoo | DAMO | -63.4968 | -64.8149 | 2011 | 0.000 | -0.415 | 2091 | 0.20520 |
| Gentoo | DAMO | -63.4968 | -64.8149 | 2012 | 0.000 | 1.453 | 2240 | 0.07130 |
| Gentoo | DAMO | -63.4968 | -64.8149 | 2013 | 0.000 | -0.627 | 2299 | 0.02630 |
| Gentoo | DAMO | -63.4968 | -64.8149 | 2014 | 0.000 | 0.063 | 1954 | -0.15010 |
| Gentoo | DAMO | -63.4968 | -64.8149 | 2016 | 0.000 | 0.965 | 2209 | -0.06860 |
| Gentoo | DAMO | -63.4968 | -64.8149 | 2017 | 0.000 | 1.057 | 1835 | -0.16930 |
| Gentoo | DANC | -62.5938 | -64.734 | 1999 | 0.000 | 0.805 | 2300 | 0.06600 |
| Gentoo | DANC | -62.5938 | -64.734 | 2006 | 0.000 | -0.034 | 2506 | 0.01280 |
| Gentoo | DANC | -62.5938 | -64.734 | 2007 | 0.000 | -0.735 | 2084 | -0.16840 |
| Gentoo | DANC | -62.5938 | -64.734 | 2008 | 0.000 | 0.308 | 2213 | 0.06190 |
| Gentoo | DANC | -62.5938 | -64.734 | 2009 | 0.000 | -0.942 | 3632 | 0.64120 |
| Gentoo | DANC | -62.5938 | -64.734 | 2011 | 0.000 | -0.415 | 696 | -0.40420 |
| Gentoo | DANC | -62.5938 | -64.734 | 2012 | 1331.037 | 1.453 | 2665 | 0.13550 |
| Gentoo | DANC | -62.5938 | -64.734 | 2013 | 0.000 | -0.627 | 2707 | 0.01580 |
| Gentoo | DANC | -62.5938 | -64.734 | 2014 | 149.042 | 0.063 | 2868 | 0.05950 |
| Gentoo | DANC | -62.5938 | -64.734 | 2015 | 2964.196 | 1.77 | 3409 | 0.04960 |
| Gentoo | DANC | -62.5938 | -64.734 | 2016 | 914.965 | 0.965 | 2680 | -0.22900 |
| Gentoo | DANC | -62.5938 | -64.734 | 2017 | 0.000 | 1.057 | 2242 | -0.16340 |
| Gentoo | DOBE | -63.4968 | -64.8149 | 2007 | 0.000 | -0.735 | 165 | -0.04420 |
| Gentoo | DOBE | -63.4968 | -64.8149 | 2008 | 0.000 | 0.308 | 157 | -0.04850 |
| Gentoo | DOBE | -63.4968 | -64.8149 | 2009 | 0.000 | -0.942 | 183 | -0.01610 |
| Gentoo | DOBE | -63.4968 | -64.8149 | 2010 | 0.000 | 2.695 | 109 | -0.40440 |
| Gentoo | DOBE | -63.4968 | -64.8149 | 2012 | 0.000 | 1.453 | 167 | 0.06420 |
| Gentoo | DOBE | -63.4968 | -64.8149 | 2013 | 0.000 | -0.627 | 193 | 0.15570 |
| Gentoo | DOBE | -63.4968 | -64.8149 | 2014 | 0.000 | 0.063 | 183 | -0.05180 |
| Gentoo | DOBE | -63.4968 | -64.8149 | 2015 | 0.000 | 1.77 | 12 | -0.93440 |
| Gentoo | DUPT | -62.8179 | -64.8049 | 2011 | 0.000 | -0.415 | 185 | -0.61860 |
| Gentoo | DUPT | -62.8179 | -64.8049 | 2013 | 0.000 | -0.627 | 291 | 0.28650 |
| Gentoo | FORT | -59.58 | -62.542 | 2011 | 15.000 | -0.415 | 720 | 0.12940 |
| Gentoo | FORT | -59.58 | -62.542 | 2014 | 0.000 | 0.063 | 837 | 0.05420 |

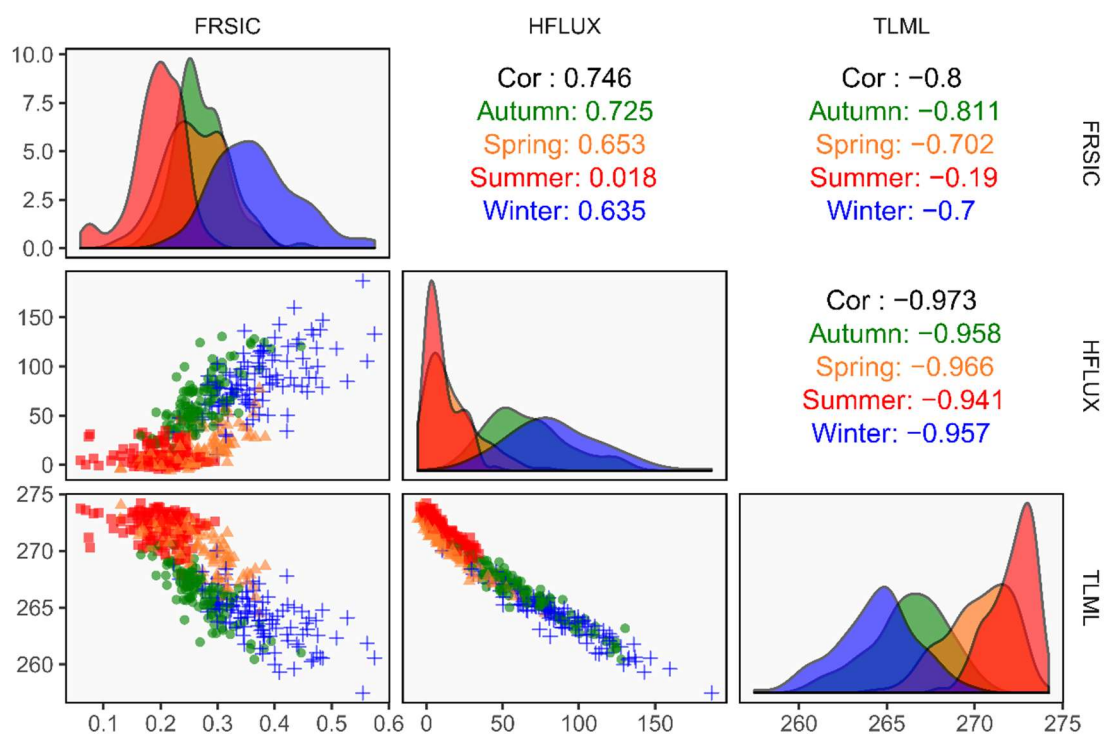
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|--------|------|----------|----------|------|-----------|--------|------|----------|
| Gentoo | FORT | -59.58 | -62.542 | 2016 | 410.985 | 0.965 | 654 | -0.10930 |
| Gentoo | GALE | -64.2399 | -65.2476 | 2012 | 0.000 | 1.453 | 369 | 0.74190 |
| Gentoo | GEOR | -62.6696 | -64.6694 | 2005 | 0.000 | -0.222 | 2464 | 0.23510 |
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| Gentoo | GEOR | -62.6696 | -64.6694 | 2011 | 0.000 | -0.415 | 2408 | 1.07940 |
| Gentoo | GEOR | -62.6696 | -64.6694 | 2013 | 0.000 | -0.627 | 2824 | 0.08640 |
| Gentoo | GEOR | -62.6696 | -64.6694 | 2014 | 220.429 | 0.063 | 3187 | 0.12850 |
| Gentoo | GEOR | -62.6696 | -64.6694 | 2016 | 1063.160 | 0.965 | 3949 | 0.11950 |
| Gentoo | GLAN | -63.9591 | -65.0911 | 2006 | 0.000 | -0.034 | 100 | 0.01390 |
| Gentoo | GLAN | -63.9591 | -65.0911 | 2008 | 0.000 | 0.308 | 49 | -0.25500 |
| Gentoo | GLAN | -63.9591 | -65.0911 | 2010 | 0.000 | 2.695 | 63 | 0.14290 |
| Gentoo | GOUR | -57.3074 | -63.1969 | 1997 | 0.000 | -0.023 | 1350 | 0.21080 |
| Gentoo | GOUR | -57.3074 | -63.1969 | 2004 | 0.000 | 0.613 | 1885 | 0.05660 |
| Gentoo | HERO | -54.6083 | -63.3944 | 2015 | 0.000 | 1.77 | 999 | 0.19190 |
| Gentoo | HUMP | -63.8637 | -65.0557 | 2008 | 0.000 | 0.308 | 20 | -0.30000 |
| Gentoo | HUMP | -63.8637 | -65.0557 | 2010 | 0.000 | 2.695 | 16 | -0.10000 |
| Gentoo | HUMP | -63.8637 | -65.0557 | 2014 | 0.000 | 0.063 | 28 | 0.18750 |
| Gentoo | HURW | -60.406 | -62.674 | 2010 | 691.600 | 2.695 | 0 | 0.25000 |
| Gentoo | JONA | -56.6834 | -63.5425 | 2001 | 0.000 | 1.083 | 120 | -0.10000 |
| Gentoo | JONA | -56.6834 | -63.5425 | 2016 | 0.000 | 0.965 | 45 | -0.04170 |
| Gentoo | JOUB | -64.3992 | -64.7744 | 1997 | 0.000 | -0.023 | 1405 | -0.11910 |
| Gentoo | JOUB | -64.3992 | -64.7744 | 1998 | 1315.350 | 2.482 | 1437 | -0.06990 |
| Gentoo | JOUB | -64.3992 | -64.7744 | 1999 | 10.400 | 0.805 | 1501 | 0.04450 |
| Gentoo | JOUB | -64.3992 | -64.7744 | 2001 | 0.000 | 1.083 | 837 | -0.25100 |
| Gentoo | JOUB | -64.3992 | -64.7744 | 2002 | 0.000 | -1.152 | 1556 | 0.85900 |
| Gentoo | JOUB | -64.3992 | -64.7744 | 2004 | 0.000 | 0.613 | 1306 | -0.08030 |
| Gentoo | JOUB | -64.3992 | -64.7744 | 2005 | 0.000 | -0.222 | 1409 | 0.07890 |
| Gentoo | JOUB | -64.3992 | -64.7744 | 2006 | 0.000 | -0.034 | 1282 | -0.09010 |
| Gentoo | JOUB | -64.3992 | -64.7744 | 2007 | 0.000 | -0.735 | 1276 | -0.00470 |
| Gentoo | JOUB | -64.3992 | -64.7744 | 2008 | 0.000 | 0.308 | 1144 | -0.10340 |
| Gentoo | JOUB | -64.3992 | -64.7744 | 2009 | 0.000 | -0.942 | 1402 | -0.05210 |
| Gentoo | JOUB | -64.3992 | -64.7744 | 2010 | 0.000 | 2.695 | 543 | -0.64300 |
| Gentoo | JOUB | -64.3992 | -64.7744 | 2011 | 0.000 | -0.415 | 1056 | -0.03210 |
| Gentoo | JOUB | -64.3992 | -64.7744 | 2012 | 0.000 | 1.453 | 1178 | 0.00510 |
| Gentoo | JOUB | -64.3992 | -64.7744 | 2013 | 0.000 | -0.627 | 1265 | 0.07390 |
| Gentoo | JOUB | -64.3992 | -64.7744 | 2014 | 0.000 | 0.063 | 1228 | -0.02920 |
| Gentoo | JOUB | -64.3992 | -64.7744 | 2015 | 0.000 | 1.77 | 1116 | -0.17030 |
| Gentoo | JOUB | -64.3992 | -64.7744 | 2016 | 0.000 | 0.965 | 1030 | -0.07710 |
| Gentoo | JOUB | -64.3992 | -64.7744 | 2017 | 0.000 | 1.057 | 986 | -0.12970 |
| Gentoo | LLAN | -58.446 | -62.176 | 2010 | 14319.696 | 2.695 | 4814 | 0.38130 |
| Gentoo | LLAN | -58.446 | -62.176 | 2013 | 0.000 | -0.627 | 6123 | 0.09060 |
| Gentoo | LOCK | -63.484 | -64.8231 | 2010 | 0.000 | 2.695 | 627 | -0.06000 |
| Gentoo | LOCK | -63.484 | -64.8231 | 2011 | 0.000 | -0.415 | 596 | -0.04940 |
| Gentoo | LOCK | -63.484 | -64.8231 | 2012 | 0.000 | 1.453 | 554 | -0.07050 |

| | | | | | | | | |
|--------|------|------------|-----------|------|-----------|--------|------|----------|
| Gentoo | LOCK | -63.484 | -64.8231 | 2013 | 0.000 | -0.627 | 517 | -0.06680 |
| Gentoo | LOCK | -63.484 | -64.8231 | 2014 | 0.000 | 0.063 | 613 | 0.18570 |
| Gentoo | LOCK | -63.484 | -64.8231 | 2016 | 0.000 | 0.965 | 548 | -0.05300 |
| Gentoo | LOOK | -55.205 | -61.278 | 2015 | 0.000 | 1.77 | 209 | -0.04060 |
| Gentoo | LOUB | -63.9265 | -65.0776 | 2008 | 0.000 | 0.308 | 170 | -0.28750 |
| Gentoo | MIKK | -60.7762 | -63.8964 | 2013 | 6388.159 | -0.627 | 1262 | 0.59340 |
| Gentoo | MIKK | -60.7762 | -63.8964 | 2014 | 1256.385 | 0.063 | 700 | -0.44530 |
| Gentoo | MIKK | -60.7762 | -63.8964 | 2015 | 1984.806 | 1.77 | 860 | -0.06620 |
| Gentoo | MIKK | -60.7762 | -63.8964 | 2016 | 383.488 | 0.965 | 1104 | -0.08080 |
| Gentoo | MIKK | -60.7762 | -63.8964 | 2017 | 15676.086 | 1.057 | 1153 | -0.08640 |
| Gentoo | MOOT | -64.078 | -65.2062 | 2006 | 0.000 | -0.034 | 101 | 0.36490 |
| Gentoo | MOOT | -64.078 | -65.2062 | 2008 | 0.000 | 0.308 | 224 | 0.55660 |
| Gentoo | MOOT | -64.078 | -65.2062 | 2009 | 0.000 | -0.942 | 323 | 0.44200 |
| Gentoo | NEKO | -62.5327 | -64.8383 | 2002 | 0.000 | -1.152 | 1072 | 0.08020 |
| Gentoo | NEKO | -62.5327 | -64.8383 | 2003 | 0.000 | 0.475 | 1088 | 0.01490 |
| Gentoo | NEKO | -62.5327 | -64.8383 | 2004 | 0.000 | 0.613 | 1009 | -0.07260 |
| Gentoo | NEKO | -62.5327 | -64.8383 | 2005 | 0.000 | -0.222 | 1101 | 0.00460 |
| Gentoo | NEKO | -62.5327 | -64.8383 | 2006 | 0.000 | -0.034 | 1153 | -0.11380 |
| Gentoo | NEKO | -62.5327 | -64.8383 | 2007 | 0.000 | -0.735 | 957 | -0.17000 |
| Gentoo | NEKO | -62.5327 | -64.8383 | 2008 | 0.000 | 0.308 | 892 | -0.20990 |
| Gentoo | NEKO | -62.5327 | -64.8383 | 2009 | 0.000 | -0.942 | 1270 | -0.11250 |
| Gentoo | NEKO | -62.5327 | -64.8383 | 2010 | 0.000 | 2.695 | 442 | -0.65200 |
| Gentoo | NEKO | -62.5327 | -64.8383 | 2011 | 0.000 | -0.415 | 1097 | -0.13690 |
| Gentoo | NEKO | -62.5327 | -64.8383 | 2012 | 1109.627 | 1.453 | 1135 | 0.03460 |
| Gentoo | NEKO | -62.5327 | -64.8383 | 2013 | 0.000 | -0.627 | 1013 | -0.27750 |
| Gentoo | NEKO | -62.5327 | -64.8383 | 2014 | 105.629 | 0.063 | 1660 | 0.26620 |
| Gentoo | NEKO | -62.5327 | -64.8383 | 2015 | 961.260 | 1.77 | 1149 | -0.30780 |
| Gentoo | NEKO | -62.5327 | -64.8383 | 2016 | 790.897 | 0.965 | 1145 | -0.24020 |
| Gentoo | NOBL | -63.4335 | -64.7849 | 2010 | 0.000 | 2.695 | 24 | 0.16320 |
| Gentoo | NOBL | -63.4335 | -64.7849 | 2015 | 0.000 | 1.77 | 28 | 0.03330 |
| Gentoo | ONEI | -63.090132 | -64.81622 | 2013 | 0.000 | -0.627 | 342 | 0.18250 |
| Gentoo | ORNE | -62.673 | -64.662 | 2005 | 0.000 | -0.222 | 41 | 2.11110 |
| Gentoo | ORNE | -62.673 | -64.662 | 2007 | 0.000 | -0.735 | 58 | 0.20730 |
| Gentoo | ORNE | -62.673 | -64.662 | 2009 | 0.000 | 0.308 | 58 | 0.00000 |
| Gentoo | ORNE | -62.673 | -64.662 | 2010 | 0.000 | 2.695 | 103 | 0.38790 |
| Gentoo | ORNE | -62.673 | -64.662 | 2012 | 1395.037 | 1.453 | 141 | 0.18450 |
| Gentoo | ORNE | -62.673 | -64.662 | 2015 | 3048.356 | 1.77 | 348 | 0.48940 |
| Gentoo | ORNE | -62.673 | -64.662 | 2016 | 1063.160 | 0.965 | 483 | 0.38790 |
| Gentoo | PCHA | -64.026 | -65.067 | 2008 | 0.000 | 0.308 | 842 | -0.31710 |
| Gentoo | PCHA | -64.026 | -65.067 | 2009 | 0.000 | -0.942 | 640 | -0.23990 |
| Gentoo | PCHA | -64.026 | -65.067 | 2010 | 0.000 | 2.695 | 248 | -0.87310 |
| Gentoo | PCHA | -64.026 | -65.067 | 2013 | 0.000 | -0.627 | 1257 | 0.04180 |
| Gentoo | PCHA | -64.026 | -65.067 | 2014 | 0.000 | 0.063 | 1805 | 0.25780 |
| Gentoo | PCHA | -64.026 | -65.067 | 2016 | 0.000 | 0.965 | 1585 | -0.06090 |
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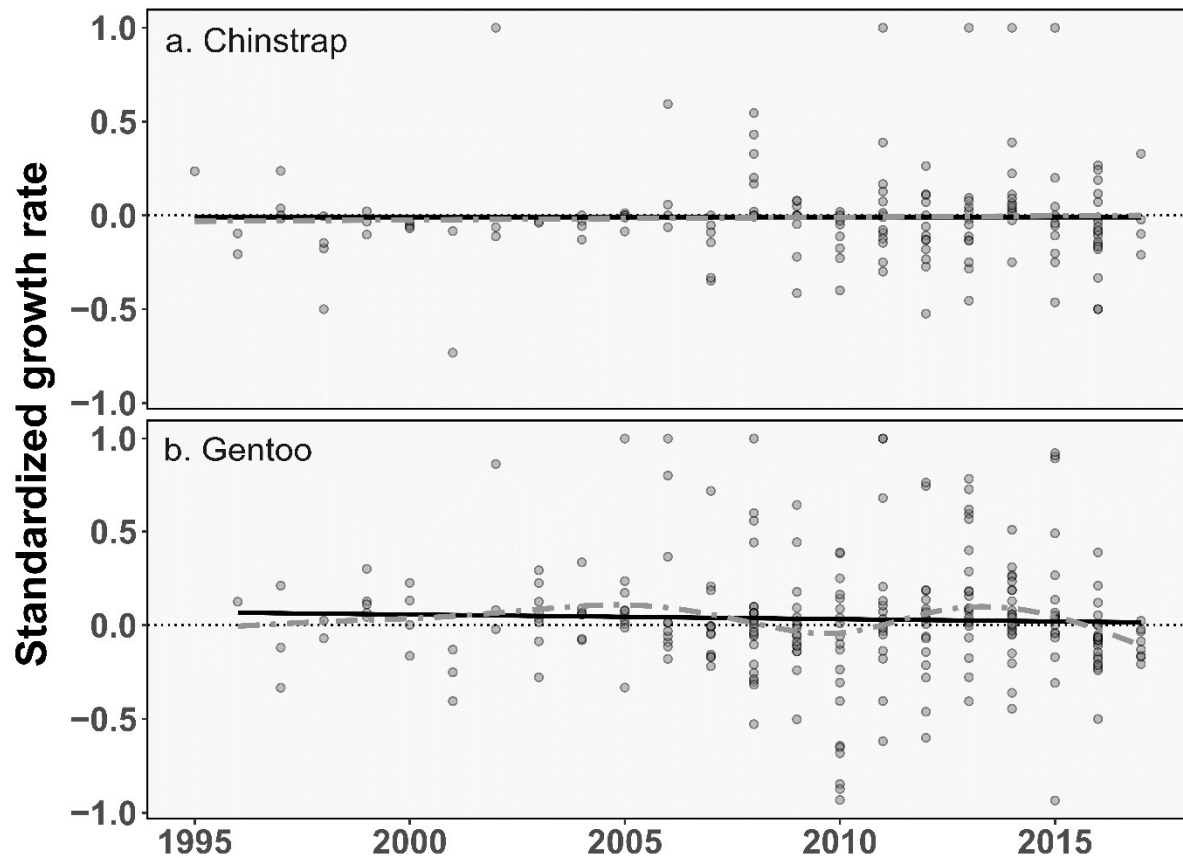
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|--------|------|----------|----------|------|-----------|--------|------|----------|
| Gentoo | PETE | -64.137 | -65.176 | 2004 | 0.000 | 0.613 | 2265 | 0.05590 |
| Gentoo | PETE | -64.137 | -65.176 | 2005 | 0.000 | -0.222 | 2438 | 0.07640 |
| Gentoo | PETE | -64.137 | -65.176 | 2006 | 0.000 | -0.034 | 2293 | -0.05950 |
| Gentoo | PETE | -64.137 | -65.176 | 2007 | 0.000 | -0.735 | 2719 | 0.18580 |
| Gentoo | PETE | -64.137 | -65.176 | 2008 | 0.000 | 0.308 | 2897 | 0.06550 |
| Gentoo | PETE | -64.137 | -65.176 | 2009 | 0.000 | -0.942 | 3020 | 0.04250 |
| Gentoo | PLEN | -64.0556 | -65.104 | 1999 | 0.000 | 0.805 | 1577 | 0.12670 |
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| Gentoo | PLEN | -64.0556 | -65.104 | 2003 | 1.000 | 0.475 | 2170 | 0.12480 |
| Gentoo | PLEN | -64.0556 | -65.104 | 2008 | 0.000 | 0.308 | 2251 | 0.00750 |
| Gentoo | PLEN | -64.0556 | -65.104 | 2009 | 0.000 | -0.942 | 2301 | 0.02220 |
| Gentoo | PLEN | -64.0556 | -65.104 | 2010 | 0.000 | 2.695 | 731 | -0.68230 |
| Gentoo | PLEN | -64.0556 | -65.104 | 2012 | 0.000 | 1.453 | 2795 | 0.08570 |
| Gentoo | PLEN | -64.0556 | -65.104 | 2014 | 0.000 | 0.063 | 3026 | 0.04130 |
| Gentoo | ROBE | -59.383 | -62.45 | 2014 | 0.000 | 0.063 | 910 | -0.00330 |
| Gentoo | ROBE | -59.383 | -62.45 | 2016 | 0.000 | 0.965 | 917 | -0.06500 |
| Gentoo | RONE | -62.6436 | -64.6884 | 2007 | 0.000 | -0.735 | 328 | -0.00970 |
| Gentoo | RONE | -62.6436 | -64.6884 | 2008 | 0.000 | 0.308 | 155 | -0.52740 |
| Gentoo | RONE | -62.6436 | -64.6884 | 2012 | 1391.037 | 1.453 | 271 | 0.18710 |
| Gentoo | RONE | -62.6436 | -64.6884 | 2013 | 0.000 | -0.627 | 161 | -0.40590 |
| Gentoo | RONE | -62.6436 | -64.6884 | 2015 | 3048.356 | 1.77 | 458 | 0.92240 |
| Gentoo | RONE | -62.6436 | -64.6884 | 2016 | 1063.160 | 0.965 | 392 | -0.14410 |
| Gentoo | SELV | -62.5691 | -64.6405 | 2009 | 0.000 | -0.942 | 429 | 0.09250 |
| Gentoo | SELV | -62.5691 | -64.6405 | 2011 | 0.000 | -0.415 | 416 | -0.01520 |
| Gentoo | SELV | -62.5691 | -64.6405 | 2012 | 1469.037 | 1.453 | 224 | -0.46150 |
| Gentoo | SELV | -62.5691 | -64.6405 | 2013 | 0.000 | -0.627 | 472 | 0.61640 |
| Gentoo | SELV | -62.5691 | -64.6405 | 2014 | 840.401 | 0.063 | 582 | 0.23310 |
| Gentoo | SELV | -62.5691 | -64.6405 | 2015 | 3542.193 | 1.77 | 737 | 0.26630 |
| Gentoo | SELV | -62.5691 | -64.6405 | 2016 | 5298.539 | 0.965 | 604 | -0.18050 |
| Gentoo | SHIR | -60.7874 | -62.4575 | 1998 | 6880.495 | 2.482 | 830 | 0.02470 |
| Gentoo | SHIR | -60.7874 | -62.4575 | 1999 | 1378.199 | 0.805 | 922 | 0.11080 |
| Gentoo | SHIR | -60.7874 | -62.4575 | 2000 | 8724.272 | 0.103 | 1043 | 0.13120 |
| Gentoo | SHIR | -60.7874 | -62.4575 | 2001 | 6620.092 | 1.083 | 907 | -0.13040 |
| Gentoo | SHIR | -60.7874 | -62.4575 | 2003 | 6275.619 | 0.475 | 751 | -0.08600 |
| Gentoo | SHIR | -60.7874 | -62.4575 | 2004 | 31.000 | 0.613 | 818 | 0.08920 |
| Gentoo | SHIR | -60.7874 | -62.4575 | 2005 | 822.550 | -0.222 | 807 | -0.01340 |
| Gentoo | SHIR | -60.7874 | -62.4575 | 2006 | 19637.116 | -0.034 | 781 | -0.03220 |
| Gentoo | SHIR | -60.7874 | -62.4575 | 2007 | 5325.909 | -0.735 | 610 | -0.21900 |
| Gentoo | SHIR | -60.7874 | -62.4575 | 2008 | 197.000 | 0.308 | 879 | 0.44100 |
| Gentoo | SHIR | -60.7874 | -62.4575 | 2009 | 1076.710 | -0.942 | 802 | -0.08760 |
| Gentoo | SHIR | -60.7874 | -62.4575 | 2010 | 5018.592 | 2.695 | 834 | 0.03990 |
| Gentoo | SKOT | -60.8089 | -63.9205 | 2013 | 3620.045 | -0.627 | 371 | 0.56540 |
| Gentoo | SKOT | -60.8089 | -63.9205 | 2014 | 1606.993 | 0.063 | 373 | 0.00540 |
| Gentoo | SKOT | -60.8089 | -63.9205 | 2015 | 2368.558 | 1.77 | 398 | 0.06700 |
| Gentoo | SKOT | -60.8089 | -63.9205 | 2016 | 282.253 | 0.965 | 482 | 0.21110 |

| | | | | | | | | |
|--------|------|----------|----------|------|-----------|--------|------|----------|
| Gentoo | SKOT | -60.8089 | -63.9205 | 2017 | 14089.085 | 1.057 | 382 | -0.20750 |
| Gentoo | SPIP | -62.558 | -64.625 | 2016 | 5298.539 | 0.965 | 1 | 0.00000 |
| Gentoo | SPTR | -62.5622 | -64.6358 | 2016 | 5298.539 | 0.965 | 7 | -0.50000 |
| Gentoo | USEF | -62.864 | -64.717 | 2008 | 0.000 | 0.308 | 1464 | 0.02230 |
| Gentoo | USEF | -62.864 | -64.717 | 2015 | 1235.395 | 1.77 | 1810 | 0.03380 |
| Gentoo | VERN | -64.2567 | -65.2453 | 2008 | 0.000 | 0.308 | 51 | 1.42860 |
| Gentoo | VERN | -64.2567 | -65.2453 | 2012 | 0.000 | 1.453 | 206 | 0.75980 |
| Gentoo | WATE | -62.8581 | -64.8236 | 2004 | 0.000 | 0.613 | 2122 | 0.06550 |
| Gentoo | WATE | -62.8581 | -64.8236 | 2008 | 0.000 | 0.308 | 2681 | 0.06590 |
| Gentoo | WATE | -62.8581 | -64.8236 | 2011 | 0.000 | -0.415 | 1242 | -0.17890 |
| Gentoo | WATE | -62.8581 | -64.8236 | 2012 | 160.330 | 1.453 | 1808 | -0.27940 |
| Gentoo | WATE | -62.8581 | -64.8236 | 2013 | 0.000 | -0.627 | 3118 | 0.72460 |
| Gentoo | WATE | -62.8581 | -64.8236 | 2015 | 841.409 | 1.77 | 3963 | 0.13550 |
| Gentoo | WATE | -62.8581 | -64.8236 | 2016 | 0.000 | 0.965 | 3115 | -0.21400 |
| Gentoo | YALO | -64.1564 | -65.2389 | 2009 | 0.000 | -0.942 | 23 | 0.17780 |
| Gentoo | YANK | -59.7687 | -62.5257 | 1999 | 153.000 | 0.805 | 4751 | 0.30010 |
| Gentoo | YANK | -59.7687 | -62.5257 | 2000 | 1177.620 | 0.103 | 3974 | -0.16350 |
| Gentoo | YANK | -59.7687 | -62.5257 | 2002 | 14.000 | -1.152 | 3804 | -0.02140 |
| Gentoo | YANK | -59.7687 | -62.5257 | 2003 | 52.329 | 0.475 | 4918 | 0.29280 |
| Gentoo | YANK | -59.7687 | -62.5257 | 2007 | 15.000 | -0.735 | 4817 | -0.00510 |
| Gentoo | YANK | -59.7687 | -62.5257 | 2013 | 0.000 | -0.627 | 4711 | -0.00370 |
| Gentoo | YANK | -59.7687 | -62.5257 | 2016 | 0.000 | 0.965 | 5466 | 0.05340 |

Appendix S4. Seasonal frequency distribution of Fractional Sea Ice Cover (FRSIC), Open Water Sensible Heat Flux (HFLUX) and Sea Level Air Temperature (TLML) in the Western Antarctic Peninsula, and Pearson Correlation (Cor) for each pair of variables.



Appendix S5. Temporal variation of the standardized population growth rate for chinstrap (*Pygoscelis antarctius*) and gentoo (*P. papua*) penguins breeding along the western Antarctic Peninsula. Data is for several populations in time, therefore populations are repeated in time, and this image does not reflect global trends of the species in the Western Antarctic Peninsula. The black solid line is a linear trend and the dashed grey is a loess fit line.



Appendix S6. Random effect of a Generalized Linear Mixed Model testing the probability of gentoo penguin population decrease between years as a response to Antarctic Krill (*Euphausia superba*) fishing and winter Southern Annular Mode SAM in the Western Antarctic Peninsula. Colony level intercept \pm standard deviation. Likelihood ratio test LRT=5.96, P=0.015. For colony names check the MAPPPD application (<http://www.penguinmap.com/>)

