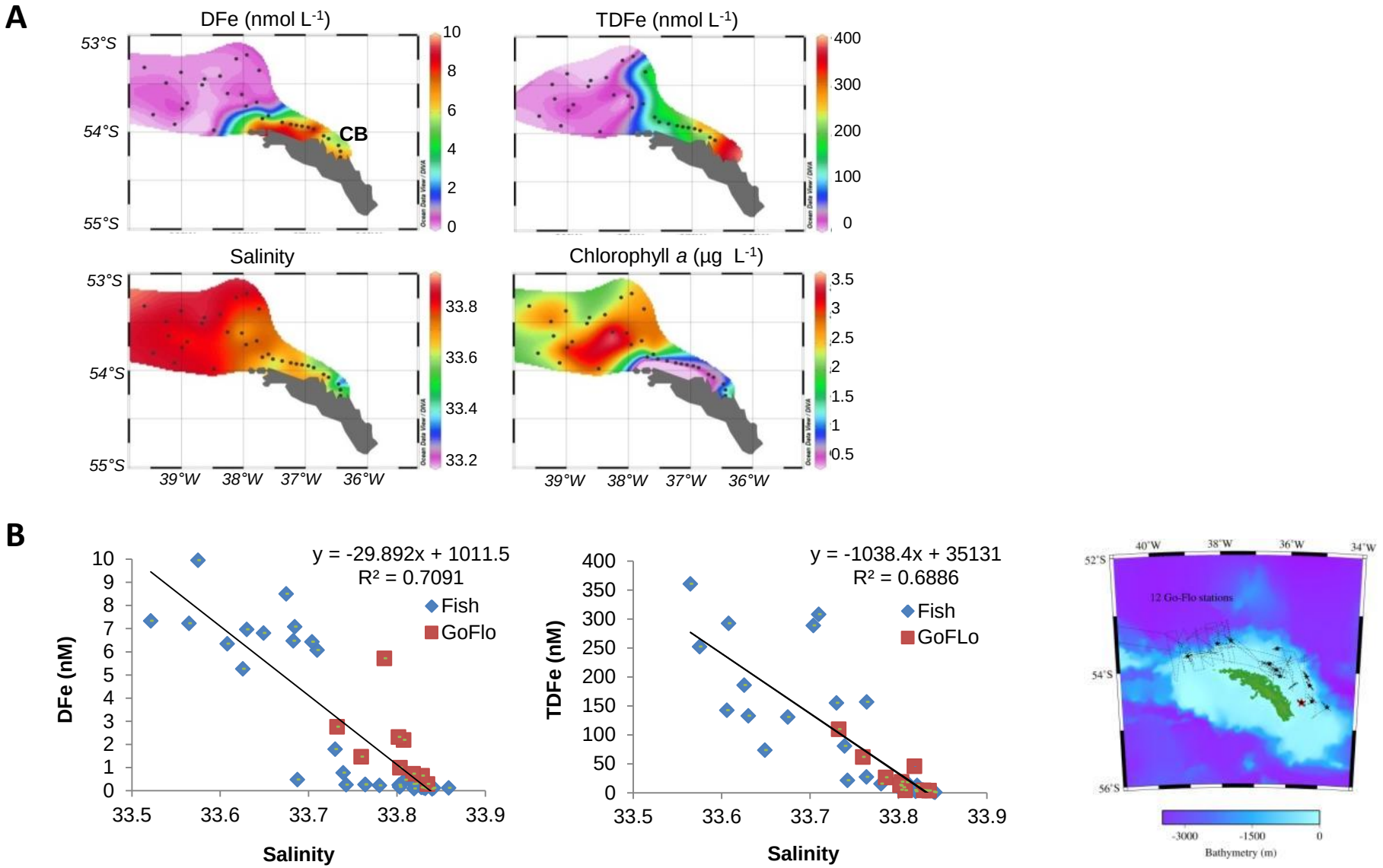

Fig. S1, Related to Fig. 1. Dissolved and total dissolvable iron concentrations north of South Georgia (study period: 25th Dec 2010 – 19th Jan 2011).
A, Concentrations of dissolved iron (< 0.2 µm, DFe) and total dissolvable iron (unfiltered, TDFe), salinity and chlorophyll *a* in surface waters from major glacial outlets at Cumberland Bay (CB) across the northern shelf and downstream of the island.. **B**, Relationship between DFe- and TDFe concentration and salinity in surface waters ('Fish', station locations in Fig. S1A) or at 20 m water depth ('GoFlo', station locations to the right).

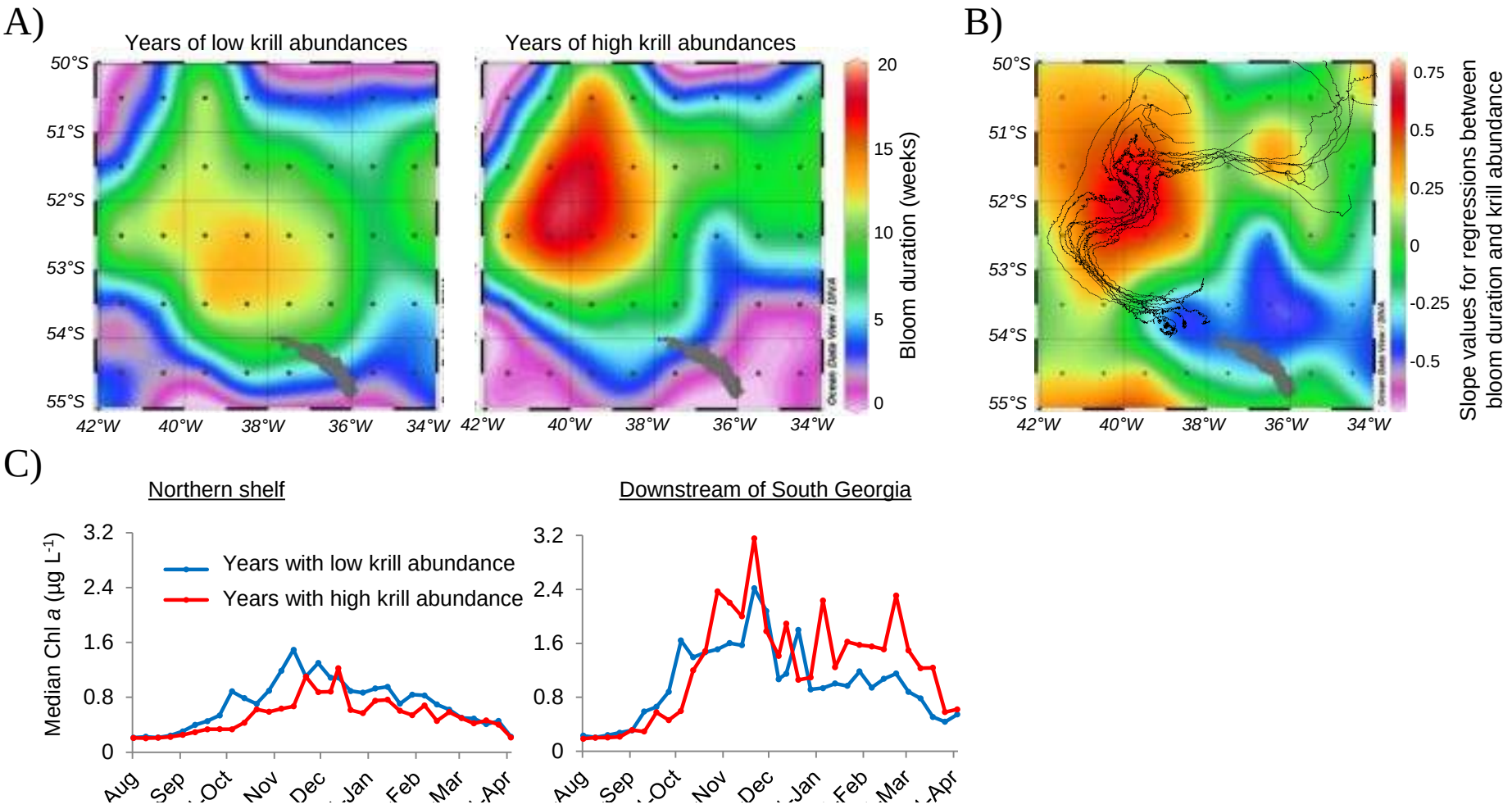

Fig. S2, Related to Fig. 4. Interannual differences in krill abundance as a predictor for the length of the phytoplankton bloom at South Georgia.
A) Average bloom length in years with low (left) and high (right) krill abundances at the South Georgia shelf. Years with low krill abundances: 2002/3, 2003/4, 2004/5, 2008/9, 2010/2011, 2012/2013. Years with high krill abundances: 2005/6, 2007/8, 2009/10, 2011/2012.
B) Spatial distribution of negative (blue-purple) and positive (yellow-red) slope values for the regression between median bloom length and summer krill abundance at South Georgia for the years 2002-2013. Chl *a* concentrations were derived from ocean colour radiometry (MODIS 2002-2013, mid August-mid April, 8-day composites)**.** A bloom was defined as ≥1 µg Chl *a* L^{-1}. The black lines are drifter trajectories, which indicate that the surface water current flow links the northern shelf of South Georgia to the main phytoplankton bloom area downstream with a transit time of 20-50 days [S1].
C) Time course of average annual chl *a* development on the shelf (left) and downstream of South Georgia (right) during years with low and high krill abundance . The right plot indicates that phytoplankton blooms downstream of South Georgia can extend into autumn in years with high krill abundance, but are restricted to spring and summer when the krill abundance is low.

Table S1, Related to Figure 2. Comparison between phytoplankton DFe demand and krill DFe supply for stations where the release of DFe by krill had been measured in ship-board incubations. blue – rates are expressed as per m^{-2} for the total upper ~300 m water column, red – rates are expressed as per m^{-3} for the upper mixed layer (45-70 m), green – results from ship-board incubations of krill.

	DFe-demand by phytoplankton					DFe-supply by krill					Percentage	
Event	Chl *a*	PP	DFe-demand-A	MLD	DFe-demand-B	DFe excretion	No krill-A	DFe supply-A	No krill-B	DFe supply-B	%	%
	(mg m^{-3})	(g C m^{-2} d^{-1})	(µmol Fe m^{-2} d^{-1})	(m)	(nmol Fe m^{-3} d^{-1})	(nmol Fe ind^{-1} d^{-1})	(ind m^{-2})	(µmol Fe m^{-2} d^{-1})	(ind m^{-3})	(nmol Fe m^{-3} d^{-1})		
17	2	0.46	1.43	60	23.8	5.3	185	0.98	1.4	7.4	69	31
44	1.3	0.36	1.12	60	18.6	1.1	185	0.2	1.4	1.5	18	8
67	1.5	0.39	1.21	60	20.1	3.3	130	0.43	0.9	3.0	35	15
92	0.26	0.21	0.65	70	9.4	4.3	1582	6.88	7.1	31	1050*	331*
107	0.26	0.21	0.65	70	9.4	0.1	1408	0.21	6.3	0.9	32	10
116	0.35	0.23	0.69	45	15.4	2.3	264	0.61	1.4	3.2	87	21
128	0.35	0.23	0.69	45	15.4	1.1	194	0.2	1.0	1.1	29	7
145	0.7	0.28	0.85	60	14.2	0.4	172	0.08	1.0	0.5	9	3
154	1	0.32	0.98	60	16.4	0.2	61	0.02	0.5	0.1	2	1
Mean	**0.9**	**0.3**	**0.9**	**59**	**15.9**	**2.0**	**464**	**1.1**	**2.3**	**5.4**	**35**	**12**

Calculations:
DFe-demand-A (µmol Fe m^{-2} d^{-1}) = Primary production (PP, g C m^{-2} d^{-1}) × Fe:C ratio (µmol mol^{-1})
DFe-demand-B (nmol Fe m^{-3} d^{-1}) = DFe-demand-A (µmol Fe m^{-2} d^{-1}) × 1000/ mixed layer depth (MLD, m)
DFe-supply-A (µmol Fe m^{-2} d^{-1}) = DFe-excretion rate (nmol Fe ind^{-1} d^{-1}) × No of krill-A (ind m^{-2})
DFe-supply-B (nmol Fe m^{-3} d^{-1}) = DFe-excretion rate (nmol Fe ind^{-1} d^{-1}) × No of krill-B (ind m^{-3})
No of krill-A (ind m^{-2}) = krill density (g m^{-2})/ krill dry mass (g ind^{-1})
No of krill-B (ind m^{-3}) = No of krill-A (ind m^{-2}) * percentage of krill in upper mixed layer (UML)]/ MLD (m)
/ - these values were exclude for the calculation of the mean value as they are exceptionally high

Assumptions: (1) PP at South Georgia can be calculated from Chl *a* values using the equation y = 144.59 x + 174.77, R^2 = 0.8322 (original data in [S2]).
(2) A Fe:C ratio of 37 µmol mol^{-1} is representative for natural phytoplankton populations under Fe-replete conditions [S3].

Krill density (g m^{-2}) and their vertical distribution across day- and night-time were estimated from acoustic backscattering. Average krill dry mass varied from 0.1 to 0.22 g ind^{-1} between stations.

Table S2, **Related to Figure 3.** Overview of iron measurements in krill tissue, fecal pellets and incubation water, and DFe supply from zooplankton feeding

Iron cycling through krill			**DFe supply from zooplankton feeding**
Particulate Fe (PFe)		**Dissolved Fe (DFe)**	(DFe release rate × biomass)
• PFe in tissue	➡	• DFe release from tissue	0.6-2.8 pM d^{-1} (copepods, [S8])
Muscle: 4-13 µg Fe g^{-1} dm [this study], [S4]		unknown	0.7-5.8 pM d^{-1} (mixed mesozooplankton, [S9])
Stomach: 0.03- 6 mg Fe g^{-1} dm [S4]			0.8-8 pM d^{-1} (micro- and mesozooplankton, [S10])
Whole krill: 4-174 µg Fe g^{-1} dm [S5], [S6]			0.1 – 31 pM d^{-1} (krill, [this study])
• PFe in fecal pellets	➡	• DFe release from pellets	31 pM d^{-1} (microzooplankton, [S11])
2-149 mg Fe g^{-1} dm [this study]		unknown	17-115 pM d^{-1} (microzooplankton, [S12])
• TDFe release when feeding	➡	• DFe release when feeding	
0.02-0.6 µmol TDFe g^{-1} dm d^{-1} [this study]		0.9-34 nmol DFe g^{-1} dm d^{-1} (this study)	**DFe supply from fecal pellets**
0.5-16.5 µmol TDFe g^{-1} dm d^{-1} [S7]			6-96 pM d^{-1} (copepods, [S12])

Calculation of TDFe- and DFe release rates were based on a krill dry mass (dm) of 0.156 g ind^{-1}, which represents an average value for the sampling stations of this study.

Supplemental Experimental Procedures (I)

Cruise details. This study was part of a research expedition to the northern shelf of South Georgia from 25th December 2010 to 19th January 2011 onboard RRS *James Clark Ross*.

Temperature, salinity and fluorescence. Vertical profiles of conductivity-temperature-depth (CTD) and fluorescence were collected with a SeaBird Electronics 9 Plus (SBE 9Plus) CTD and attached Aqua Tracka fluorometer (Chelsea Instruments). Underway surface salinity and fluorescence were obtained from the Oceanlogger SBE45 CTD using the ship's seawater supply. Non-calibrated fluorescence data are given in 'relative units'.

Abundance of diatom, flagellates, ciliates and bacteria . At each station, discrete water samples for taxonomic analysis of the plankton community were taken from 20m depth with a 10L Niskin bottle on a standard stainless steel CTD rosette. Samples were preserved with 2% acidic Lugol's solution and stored in 250 ml amber glass bottles. A 50 ml sub-sample was settled for 24h in an Utermöhl counting receptacle and examined with an inverted microscope (Zeiss, Axiovert 25). Rare items (i.e. large diatoms, thecate dinoflagellates and large ciliates) were counted by scanning the complete receptacle at × 200 magnification, while small common items were enumerated from two perpendicular transects across the whole diameter of the receptacle. The smallest items included in this study were approximately 5 µm. Autotrophic flagellates, small naked dinoflagellates and thecate dinoflagellates were grouped as 'flagellates'. The dimensions of the different taxa were measured and the volume calculated based on simple geometric shapes or combinations thereof [S13].

Composition of suspended particulate matter. Stand-Alone Pumping Systems (SAPS, Challenger Oceanic) were deployed to sample suspended particulate matter from 20m, 50m and 150m water depth. Material was pumped for 1-1.5 hours and filtered onto polycarbonate filters (293 mm diameter, 1 µm pore-size, Sterlitech, USA). From each filter a small piece (~5 cm^2) was cut out with a ceramic knife for subsequent microscopical examination. The remaining filter was stored at -20°C for trace metal analysis. The microscopical analysis was carried out in analogue to that of plankton samples obtained with the Niskin bottles. However, due to the larger volume (mean: 530±210 L) and greater water depth, SAPs samples contained additional items such as copepods, nauplii, pteropods, tintinnids, fecal pellets and lithogenic particles. All items were enumerated and their dimensions measured. The volume and carbon content of copepods was estimated from their prosome length, that of nauplii from the total length according to [S14]. The shape of other items was considered to be either spherical (pteropods, some fecal pellets), cylindrical (fecal pellets) or a truncated cone (tintinnids). Due to intermediate size or breakage, fecal material (≥ 25 µm diameter) was combined into one category regardless its origin from copepods, euphausiids or pteropods. Lithogenic particles were counted in 3 size fractions: 5-10 µm, 11-25 µm and 26-50 µm and the volume was considered to be equal to a half-sphere.

Krill acoustics. Krill density (g m^{-2}) and their vertical distribution were estimated from acoustic backscattering according to [S15]. The mean krill density per station was calculated from multiple 10-nm-transects across the area. Usually 5-7 transects were run to span a diel cycle. By pooling day-time *vs.* night-time transects, patterns in krill diurnal vertical migration were extracted. For the conversion of krill density (g m^{-2}) into carbon concentrations (mg C m^{-3}), first, the average wet mass of krill in the upper 50 m water column was calculated using day- and night-time vertical distribution profiles and, second, wet mass was transferred into carbon content applying a multiplication factor of 0.0993 [S16].

Live krill sampling was based on targets identified with the echosounder and carried out with purpose-built 1 m^2 square nets. To allow for short duration hauls, all but one of the targets were in the upper 50 m water column. Solid plastic cod ends minimised abrasion to the catch. Onboard, krill were immediately transferred into the cold room (2°C). A batch of ~50 krill was frozen at -80°C for diet analysis and trace metal analysis of muscle tissue.

Krill stomach content. To examine krill diet, the stomach was dissected from frozen krill and samples were analysed according to [S4],[S13].

Fecal pellet collection. About 150-200 healthy individuals were sequentially washed in a series of acid-cleaned buckets filled with 0.2 µm-filtered seawater obtained from trace metal clean towed fish and then left for defecation in a laminar flow cabinet in a temperature-controlled room (2°C). Fecal pellets were collected at 0.5-1 h intervals over a maximum of 3 hours using acid washed plastic pipettes. The pellets were purified, transferred to an acid washed plastic tube, rinsed twice with deionised water (Milli-Q, Millipore) and then frozen at -80°C for subsequent analysis of trace metals.

Supplemental Experimental Procedures (II)

Krill bottle incubations. To set up the experiments, water from towed (2-3 m depth) trace metal clean fish was passed through a 0.2 µm membrane filter in a class 100 laminar flow cabinet and filled sequentially into 4-5 acid-washed 9 L-polycarbonate (PC) carboys (Nalgene). The carboys were placed in a laminar flow cabinet in a temperature-controlled room (2°C). Krill were first sequentially washed in three 5 L acid cleaned plastic buckets containing 0.2 µm filtered seawater and then placed into 2-3 of the 9 L PC carboys (10-20 krill carboy^{-1} depending on their body size). The other 2 PC carboys served as controls. After initial mixing and adding krill, a subsample of 120 ml water was taken from each carboy tap and subsequently after 1 h and 3 h. The samples were transferred to a trace metal clean laboratory container for the analysis of DFe and TDFe. Following the termination of the experiments, the fecal pellets remaining at the bottom of the carboys were quantitatively collected into an acid washed plastic tube, twice rinsed with deionised water and then frozen at -80°C. The krill used in the experiments were also frozen at -80°C for subsequent enumeration and morphometric measurements.

Dissolved iron (DFe) and total dissolvable iron (TDFe) in water samples. Discrete water samples were collected from depths between 20-1000 m using six trace metal clean GO-FLO bottles (General Oceanics, Miami, USA) deployed on a Kevlar wire. In addition, surface water samples for DFe and TDFe were collected using the towed fish. The surface water was pumped from the towed fish to the trace metal clean laboratory container via an enclosed system, using Teflon tubing and suction provided by a peristaltic pump (Watson Marlow). Samples for DFe measurements were filtered through 0.2 µm cartridge filters (Sartobran P300, Sartorius) with gentle N_2 overpressure. The filtration was carried out in a class 100 laminar flow hood. Both DFe and TDFe samples were stored in 125 mL acid-washed low density polyethylene bottles (LDPE, Nalgene), acidified with ultra pure HNO_3 (Romil UpA) to pH 1.66 (22 mmol H^+L^{-1}), and shipped to the National Oceanography Centre Southampton (NOCS). For off-line preconcentration of DFe and TDFe an automated system (Preplab) with a WACO preconcentration/matrix removal resin [S17] was used. Concentrations of DFe and TDFe were determined by isotope dilution inductively coupled plasma – mass spectrometry (ID-ICP-MS, Element II XR ThermoFisher Scientific) according to the method described by [S18].

It should be noted that TDFe represents DFe plus the amount of Fe re-dissolved from particles following > 6 months sample storage after the addition of 22mmol H^+ L^{-1}. This implies that acid-inert minerals (e.g. zircon) and their associated trace metals likely did not contribute to the total dissolvable concentration. The analytical blank of the ICP-MS method was determined and showed that the acid blank (distilled HNO_3) was negligible, while the buffer blank (2M NH_4Ac pH8.9) did not exceed 0.06 nmol L^{-1}. The detection limit of this method was 0.03 nmol L^{-1} (defined as three times the standard deviation of the system blank, n = 3). The accuracy of the system was assessed by the determination of DFe in surface water (SAFe S) and deep water (SAFe D2), collected during the SAFe programme and in GEOTRACES surface (GS) and deep (GD) seawater reference materials. The concentration of DFe measured during this study was SAFe S = 0.087 ± 0.025 nmol L^{-1} (n = 25), SAFe D2 = 0.90 ± 0.10 nmol L^{-1} (n = 19), GEOTRACES GD = 1.28 ± 0.15 nmol L^{-1} (n = 3), and GS = 0.56 ± 0.05 nmol L^{-1} (n = 6). All standard seawater values were in good agreement with the census values (SAFe S = 0.093 nmol L^{-1}; SAFe D2 = 0.93 nmol L^{-1}, GS = 0.55 nmol L^{-1}; GD = 1.00 nmol L^{-1}).

Particulate iron in suspended material, krill fecal pellets and krill muscle tissue. Suspended particles were collected by the Stand-Alone Pumping Systems attached to a Kevlar wire and deployed for 1.-1.5 h at 20 m, 50m, and 150 m. Acid cleaned 1 µm polycarbonate filters (Sterlitech, 293 mm diameter) were mounted and demounted in the individual filter holders in a laminar flow hood. The PC filters were stored at -20°C and shipped frozen to the NOCS. Here, filters were thawed and particles were rinsed off using deionized water. Particles were collected on acid cleaned 47 mm PC filters (0.4µm poresize, Sterlitec) mounted in a polytetrafluoroethylene (PTFE, Nalgene) filter holder. Following filtration, the loaded filters were transferred into a 50 mL acid cleaned PTFE container. The labile particulate trace metal fraction was remobilized using a 25% acetic acid solution (SpA, Romil) over a period of three hours. Subsequently, the filters were transferred carefully into acid cleaned petri dishes (Fisher) and particles removed from the filters during the leaching process in the 50 ml PTEE containers were concentrated by centrifugation. The remaining 25% acetic acid solution was decanted into 25 mL acid cleaned PTFE containers.

Supplemental Experimental Procedures (III)

The acetic acid solution was evaporated to dryness on a heat plate set to 90°C. The remaining salts were re-dissolved by 1 mL of concentrated sub-boiled HNO_3 (PTFE still, Savilex). The solution was concentrated on the heat plate until a small drop of HNO_3 was left. This drop was diluted with 10 mL of 2% HNO_3 (sub-boiled) and transferred into 30 mL acid cleaned LDPE bottles and stored until analysis.

After decanting the 25% acetic acid solution, the wet 47 mm PC filters were transferred back into the 50 mL PTFE container and placed onto the PTFE container wall to minimize the filter blank. To digest the remaining particles, 2 mL of concentrated sub-boiled HNO_3 and HCl (PTEE still, Savilex) and 13 drops of concentrated hydrofluoric acid (HF, SpA, Romil) were added. The PTFE container was closed and placed on a heat plate at 140°C. After 4 hours the container was carefully opened and the HNO_3/HCl/HF solution was evaporated to dryness. The undigested filters were removed and the remaining salts were re-dissolved with 2 mL concentrated sub-boiled HNO_3 and evaporated on the heat plate until a small drop of HNO_3 was left. This drop was diluted with 15 mL of 2% HNO_3 (sub-boiled) and transferred into 30 mL acid cleaned LDPE bottle until analysis. All samples were analyzed by ICP-MS (Thermo Fisher Scientific, X-Series) using calibrations by standard additions and In/Re for drift control. Particulate iron concentrations (PFe) in the water column were determined by applying the water volume recorded by the flowmeter on the SAPs and hence had passed the SAPs PC filter. The leaching and digestion of krill fecal pellets and krill muscle tissue were performed in a similar manner as described for the SAPS particles.

To validate the determined trace metal concentrations, certified reference materials (HISS-1, NIST 1573a, NIST 1648a, TORT-2) were analysed with each batch of samples. Results were in good agreement with certified values (HISS-1: 2.54±0.50 g kg^{-1} (2.50 g kg^{-1}); NIST 1573a: 0.38±0.01 g kg^{-1} (0.37 g kg^{-1}); NIST 1648a: 37.5±4.4 g kg^{-1} (39.2 g kg^{-1}); TORT-2: 0.12±0.00 g kg^{-1} (0.11 g kg^{-1})). The limit of detection (defined as three times the standard deviation of the system blank n = 3) did not exceed 0.2 µg kg^{-1}, and the blank of the method was below the limit of detection (LOD).

Phytoplankton bloom characteristics. Chlorophyll *a* (chl *a*) concentrations were obtained from ocean colour radiometry (MODIS, 2002-2014, 9 km standard product, 8-day composites, 20th of August – 20th of April). Therefore the area of the South Georgia bloom (50°S-55°S, 34°W-42°W) was divided into 40 subareas of 1°Lat x 1°Lon. For each of these subareas the annual median chl *a* concentration and bloom duration (chl *a* ≥1µg L^{-1}) were determined. During the years 2006/7 and 2013/14 no proper phytoplankton bloom developed at South Georgia, and therefore these years were excluded from further analysis.

Annual krill abundance at South Georgia. As an index of the annual krill abundance at SG we used the inverted anomaly of the median krill body length for the years 2002/3, 2003/4, 2004/5, 2005/6, 2007/8, 2008/9, 2009/10, 2010/11, 2011/12, 2012/13. The krill body length data derived from a long-term dietary analysis of Antarctic fur seals based on weekly collected scat samples [S19]; the raw data are available on request from the British Antarctic Survey. Here we calculated the annual median krill body length from scat samples collected during austral summer (beginning of December to end of February). About 1000 krill were measured for each of the years. The occurrence of small krill at South Georgia (median length <50 mm in predator diet) is associated with successful krill recruitment and transfer from nursery areas further south [S20]. Moreover, the dominance of smaller krill also indicates high mass-specific feeding rates [S21], which further enhances the effect of a large population on the food environment. In contrast, the dominance of large krill (>50mm) indicates an aging population with low influx of younger krill [S20] and low mass-specific feeding rates [S21], and therefore less impact on the food environment.

Supplemental References

S1 Meredith, M.P., Watkins, J.L., Murphy, E.J., Cunningham, N.J., Wood, A.G., Korb, R., Whitehouse, M.J., and Thorpe, S.E. (2003). An anticyclonic circulation above the Northwest Georgia Rise, Southern Ocean. Geophys. Res. Lett. *30(20)*, 2061. doi: 10.1029/2003GL018039.

S2 Korb, R.E., and Whitehouse, M.J. (2004) Contrasting primary production regimes around South Georgia, Southern Ocean: large blooms versus high nutrient, low chlorophyll waters. Deep-Sea Res. I *51*, 721-738 (2004).

S3 Twining, B.S., Baines, S.B., Fisher, N.S., and Landry, M.R. (2004) Cellular iron contents of plankton during the Southern Ocean Iron Experiment (SOFeX). Deep Sea Res. I *51*, 1827-1850.

S4 Schmidt, K., Atkinson, A., Steigenberger, S., Fielding, S., Lindsay, M.C.M., Pond, D.W., Tarling, G., Klevjer, T.A., Allen, C.S., Nicol, S., and Achterberg, E.P. (2011). Seabed foraging by Antarctic krill: implications for stock assessment, bentho-pelagic coupling and the vertical transfer of iron. Limnol. Oceanogr. *56*, 1411-1428.

S5 Palmer Locarnini, S.J..P, and Presley, B.J. (1995) Trace element concentrations in Antarctic krill, *Euphausia superba*. Polar Biol. *15*, 283-288.

S6 Nicol, S., Bowie, A., Jarman, S., Lannuzel, D., Meiners, K.M., and van der Merwe, P. (2010). Southern Ocean iron fertilization by baleen whales and Antarctic krill. Fish and Fisheries *11*, 203-209.

S7 Tovar-Sánchez, A., Duarte, C.M., Hernández-León, S., and Sañudo-Wilhelmy, S.A. (2007). Krill as a central node for iron cycling in the Southern Ocean. Geophys. Res. Lett. *34*, L11601, doi:10.1029/2006GL029096.

S8 Sarthou, G., *et al.* (2008) The fate of biogenic iron during a phytoplankton bloom induced by natural fertilisation: Impact of copepod grazing. Deep-Sea Res. II *55*, 734-751.

S9 Giering, S.L.C., Steigenberger, S., Achterberg, E.P., Sanders, R., and Mayor, D.J. (2012) Elevated iron to nitrogen recycling by mesozooplankton in the Northeast Atlantic Ocean. Geophys. Res. Lett. *39*, L12608.

S10 Bowie, A.R., et al. (2001) The fate of added iron during a mesoscale fertilisation experiment it the Southern Ocean. Deep-Sea Res. II *48*, 2703-2743.

S11 Strzepek, RF., *et al.* (2005) Spinning the 'Ferrous Wheel': The importance of the microbial community in an iron budget during the FeCycle experiment. Glob. Biogeochem. Cyles *19*, GB4S26.

S12 Boyd, P.W., Strzepek, R., Chiswell, S., Chang, H., DeBruyn, J.M., Ellwood, M, Keennan, S., King, A.L., Maas, E.W., Nodder, S., et al. (2012). Microbial control of diatom bloom dynamics in the open ocean. Geophys. Res. Lett. *39*, L18601.

S13 Schmidt, K., Atkinson, A., Petzke, K.-J., Voss, M., and Pond, D. W. (2006) Protozoans as a food source for Antarctic krill: complementary insights from stomach content, fatty acids, and stable isotopes. Limnol. Oceanogr. *51*, 2409-2427.

S14 Mauchline , J. (1998). The biology of calanoid copepods. Adv. Mar. Biol. 33, 1-710.

S15 Fielding, S. *et al.* (2014) Interannual variability in Antarctic krill (*Euphausia superba*) density at South Georgia, Southern Ocean: 1997-2013. ICES J Mar Sci. doi:10.1093/icesjms/fsu104.

S16 Atkinson, A., Ward, P., Hunt, B.P.V., Pakhomov, E.A. , and Hosie, G.W. (2012) An overview of Southern Ocean zooplankton data: Abundance, biomass, feeding and functional relationships. CCAMLR Science *19*, 171-218.

S17 Kagaya, S. *et al.* (2009) A solid phase extraction using a chelate resin immobilizing carboxymethylated pentaethylenehexamine for separation and preconcentration of trace elements in water samples. Talanta *79*, 146-152.

S18 Milne, A., Landing, W., Bizimis, M., and Morton, P. (2010) Determination of Mn, Fe, Co, Ni, Cu, Zn, Cd and Pb in seawater using high resolution magnetic sector inductively coupled mass spectrometry (HR-ICP-MS). Anal. Chimi. Acta *665*(2), 200-207.

S19 Reid, K. (1995) The diet of Antarctic fur seals (*Arctocephalus gazelle* Peters 1875) during winter at South Georgia. Ant. Sci. *7*, 241-249.

S20 Forcada, J., and Hoffman, J. I. (2014) Climate change selects for heterozygosity in a declining fur seal population. Nature *511*, 462-465.

S21 Schmidt, K., and Atkinson, A (2016) Feeding and food processing in Antarctic krill (*Euphausia superba* Dana), In V. Siegel (ed.) 'Biology and Ecology of Antarctic Krill'. Advances in Polar Ecology. Springer, Dortrecht. DOI 10.1007/978-3-319-29279-3_5