

## Early winter dissolved Fe distributions in the Southern Indian Ocean (GEOTRACES G1pr07 cruise)

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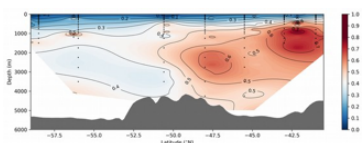
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Iron (Fe) is an essential trace metal that limits primary production in the Southern Ocean (SO), thereby influencing the carbon cycle with possible effects on climate[1]. The Southern Indian Ocean (SIO) is particularly under-sampled, as recognized by the global GEOTRACES community[2]. Moreover, Austral winter data is scarce with only one published study on dissolved Fe (DFe) within the SO[3]. For the first time, seven stations were sampled for DFe in the SIO (G1pr07 transect, 30°E) during Austral winter (July 2017), between 58°S and 41°S, spanning regions from the Antarctic Zone (AAZ) to the Sub-Tropical Zone (STZ).

GEOTRACES trace metal clean protocols were employed throughout sampling and analyses[4]. DFe concentrations were analysed in 0.2 µm filtered and acidified seawater, using inline SeaFAST pre-concentration and SF-ICP-MS detection[5].

Our median DFe concentrations increased from the AAZ to the STZ ranging from 0.05-0.38 nM in surface waters, 0.31-0.51 nM in intermediate waters and 0.41-0.58 nM in deep waters (Figure 1). These values were in agreement with values from a published SO compilation study[2].



**Figure 1:** Gridded section plot of DFe (nM) concentrations along the G1pr07 transect

Potential sources and sinks of DFe within this region during early winter will be discussed using water mass determination and apparent oxygen utilization.

<sup>[1]</sup>Tagliabue *et al.* (2017) *Nature* **543**, 51-59. <sup>[2]</sup>Tagliabue *et al.* (2012) *BG* **9**, 2333-2349. <sup>[3]</sup>Ellwood *et al.* (2008) *GRL* **35**, L11604. <sup>[4]</sup>Cutter *et al.* (2017) *GEOTRACES S&I*. <sup>[5]</sup>Lagerström *et al.* (2013) *Mar. Chem.* **155**, 71-80.