Natural Surfactant Enrichments in the Atlantic Ocean between 50°N and 50°S, Data from the Atlantic Meridional Transect, Oct-Nov. 2014

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Introduction
Natural (biologically-derived) surfactants
- Organic matter with surface active properties
- Partition preferentially into the sea surface microlayer (SML)
- Soluble or insoluble
- High-molecular-weight (HMW) polysaccharides, proteins, lipids and complex β-glucans
- Suppress gas transfer velocity (kL) by up to 73% by phytolipid-derived surfactants has been observed [5]

Objectives
- To determine surfactant control of gas transfer velocity (kL) across biogeochemical provinces in the Atlantic Ocean. This poster shows associated data on surfactant enrichments in the Atlantic Ocean along the Atlantic Meridional Transect (AMT24).

Results
- Surfactants enriched in the SML relative to the bulk water (Figure 4).
- Enrichment of surfactants relative to the SML was still enriched in surfactants even at wind speeds up to 13ms⁻¹ without any significant depletion (EF≥1) (Figure 6).
- EFs were significantly different between Northern and Southern hemispheres (p-value<0.05) and it was higher in the Northern hemisphere (Table 2) (Figure 7).

Conclusions
- Surfactant enrichment and its EF is higher in the Atlantic Northern hemisphere relative to the Atlantic Southern hemisphere.
- Surfactant enrichments persisted at wind speed over the average global wind speed (6.6ms⁻¹) and the SML was still enriched in surfactants even at wind speeds up to 13ms⁻¹.
- Any exchange processes in the interface may be influenced with high surfactant enrichments in the Northern Hemisphere relative to the Southern Hemisphere.

Next steps
- Complete data analysis (AMT25)
- Link surfactant variability to variability of kL [8]