

UK GEOTRACES 2014-2015 report

GEOTRACES meetings and presentations:

- AGU 2014 (San Francisco, USA)
- 3rd International Symposium on “Effects of climate change on the World’s Oceans” (Santos City, Brazil)
- Standard & Intercalibration meeting in Galway
- 1 session and 1 tutorial (what controls the distribution of iron in ocean?) Ocean Sciences 2016
- 2 invited talks at Goldschmidt 2015

Outputs:

- 14 journal articles reporting GEOTRACES activities published/ accepted 2014-2015 (6 more submitted)
- Special issue SCOR WG 139
- 3 PhD completions
- Submission of results for GEOTRACES particle intercalibration co-ordinated by Phoebe Lam

Cruises:

- 3 Shelf Sea Biogeochemistry cruises

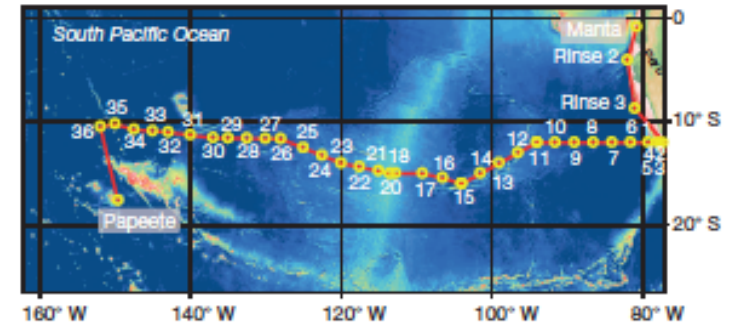
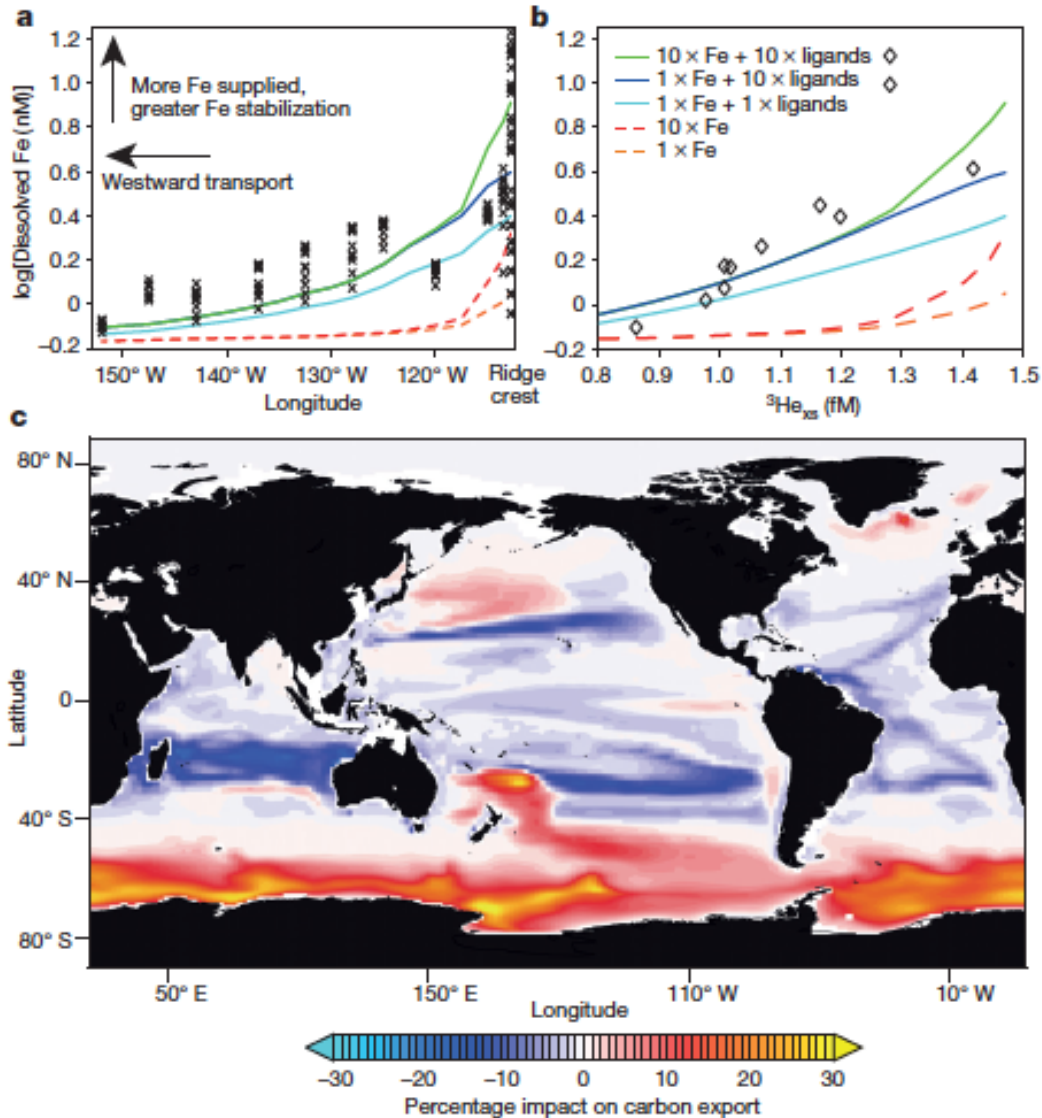
Funding:

- Process Study:-Shelf Sea Iron Biogeochemistry –on going
- The impact of Mid-Ocean Ridges on the ocean’s iron cycle (Tagliabue & Lohan) was not funded but will be submitted once more on Friday
- Royal Society Meeting
- ZIPLOc (Zinc Iron and Phosphorus co-Limitation in the Ocean (Mahaffey, Tagliabue, Lohan with project partners Mak Saito and Ben Twining

Royal Society Science Meeting

- Biological and climatic impacts of ocean trace element chemistry
- 7th to 10th December 2015
- Gideon Henderson

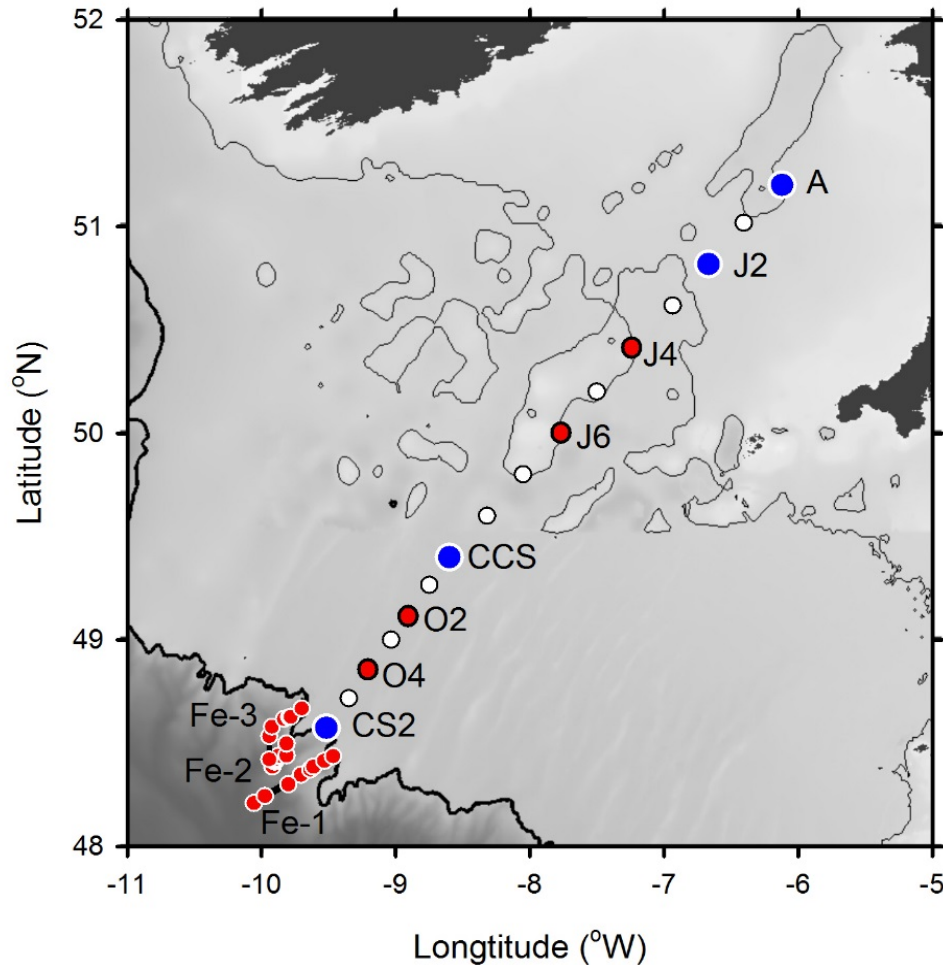
The impact of Hydrothermal Iron



- Up to 30% of carbon export in the southern ocean is supported by hydrothermal iron
- Equal contributions from the gross hydrothermal input and the chemical stabilisation

Basin Scale Transport of Hydrothermal Dissolved Metals across the South Pacific Ocean
Resing, Sedwick, German, Jenkins, Moffett, Sosht, Tagliabue: Nature 2015

Process Study: Shelf Sea Iron Biogeochemistry



Cruises:

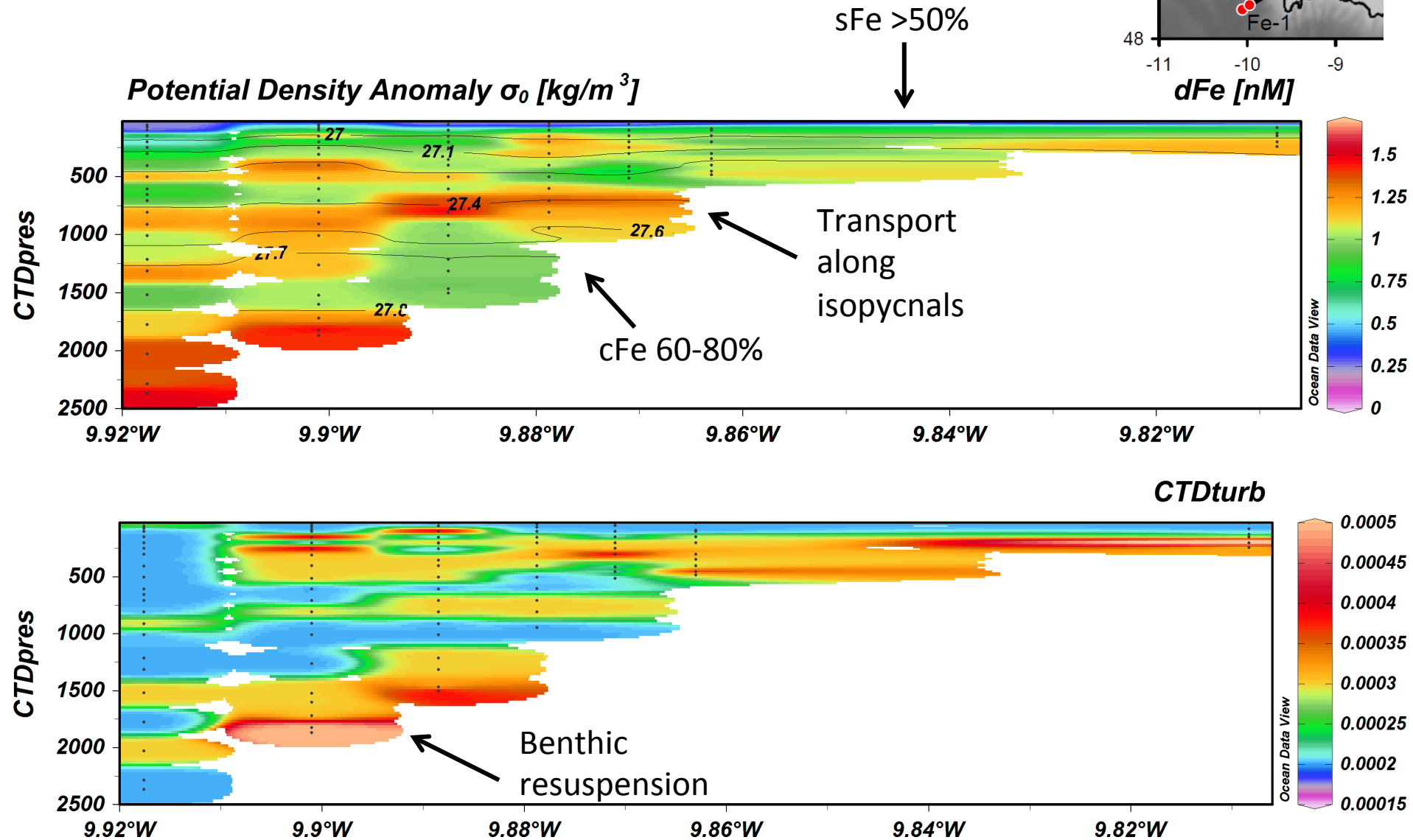
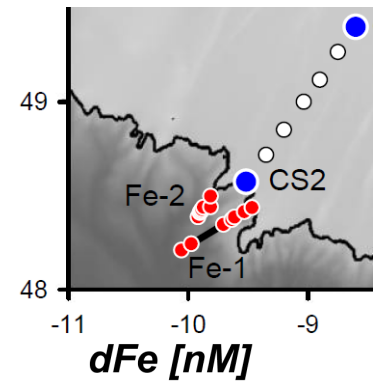
DY018 -12/11/14-11/12/14

DY029 – 1/05/15-30/05/15

DY033 – 11/07/15-3/08/15

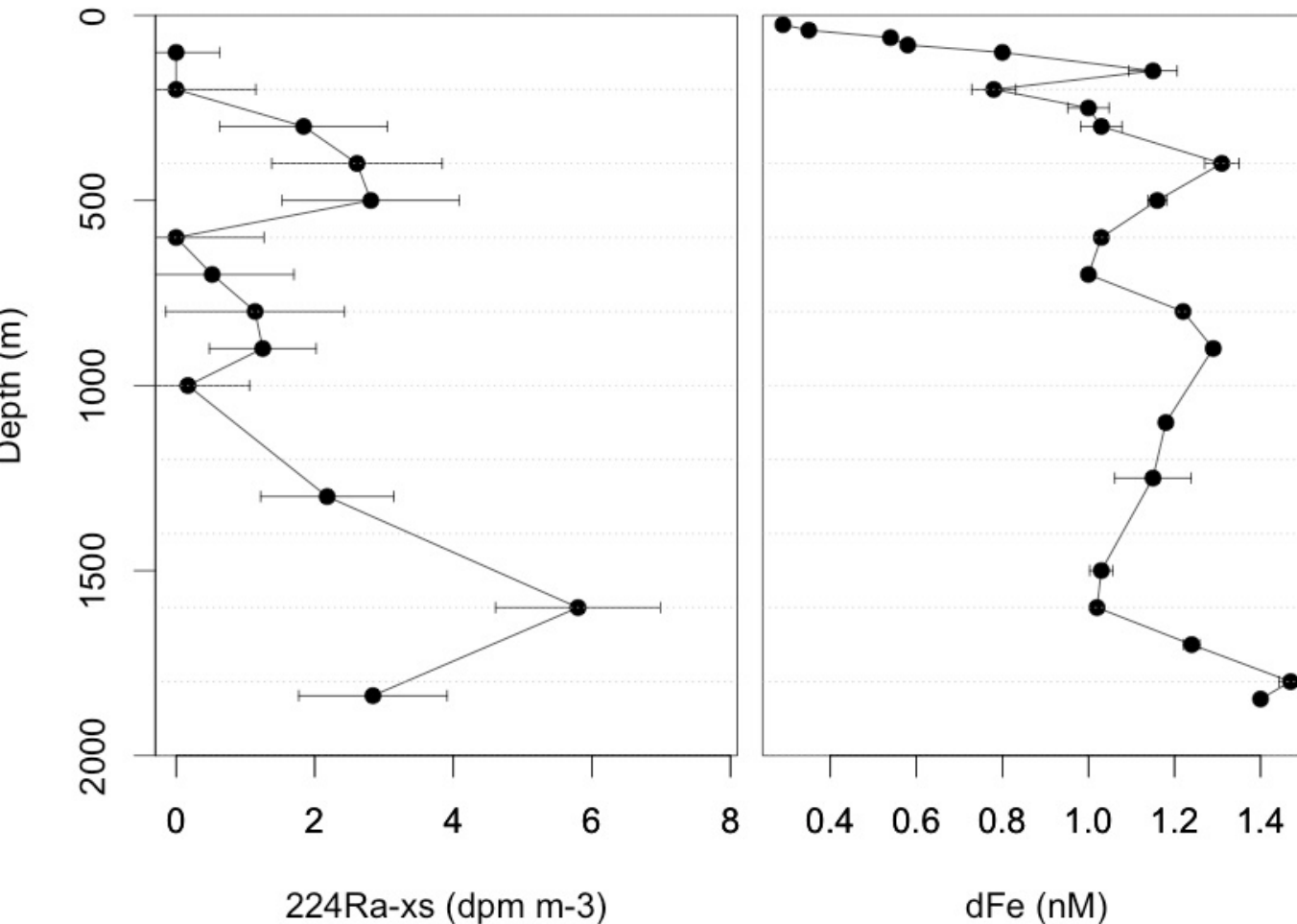


Offshore Transport



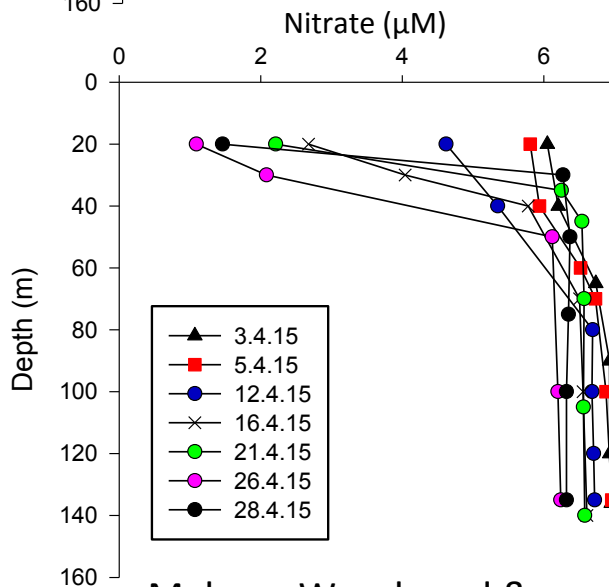
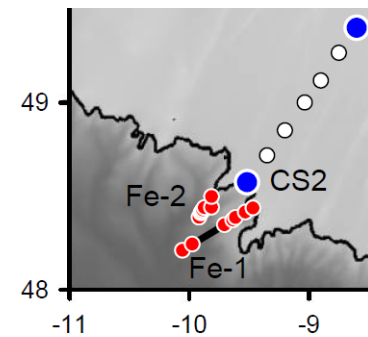
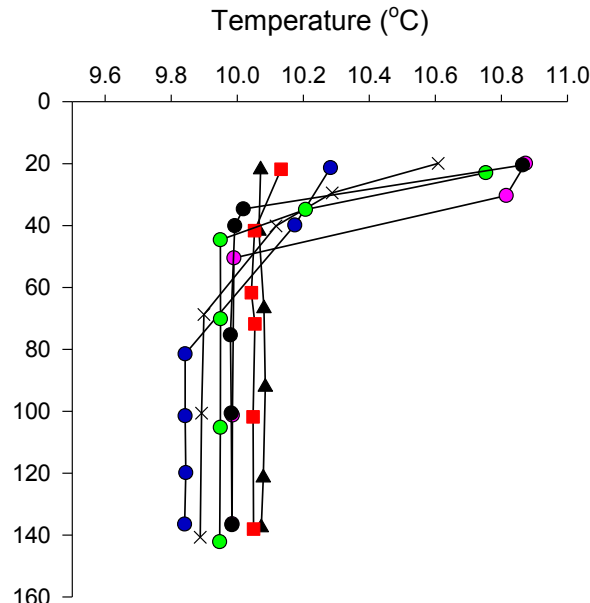
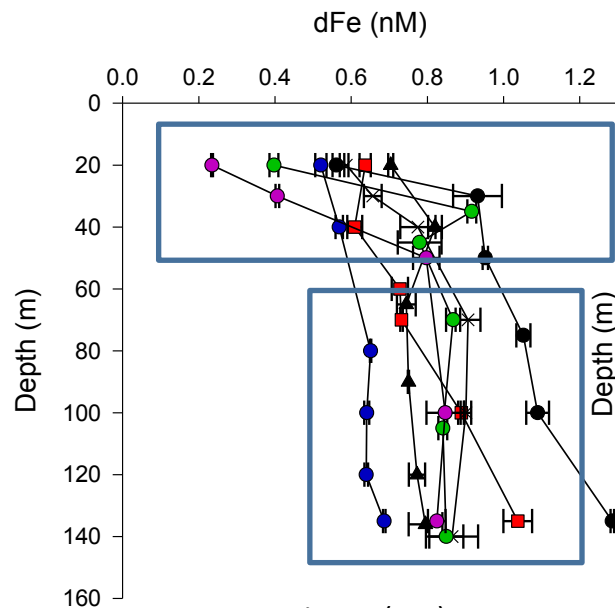
Radium and Iron

Amber Annett & Walter Geibert, Antony Birchill Maeve Lohan



- ❖ Ra isotopes constrain a time scale of 5.4-7.6 days 45 km from the shelf slope
- ❖ Transport rate 5.9 to 8.3 km/d

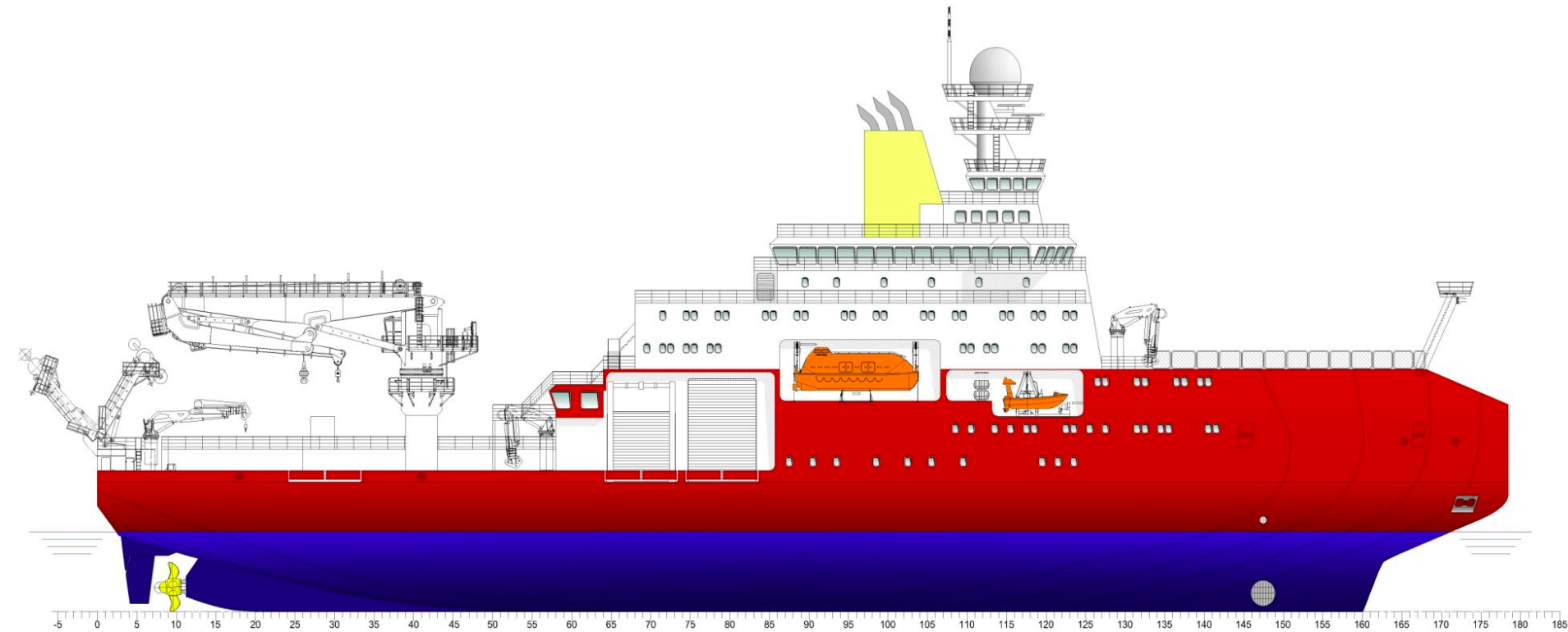
Central Celtic Sea April 2015



- Coincident decrease in dFe and NO_3 in surface waters- nutrient type behaviour
- sFe very high in surface waters 60-80% dFe
- cFe very high at depth 80% of dFe
- Large changes in dFe at depth- particle reactive behaviour- tides,
- Fe isotopes
- ^{55}Fe uptake

Malcom Woodward &
Carolyn Harris

New Capabilites



New Polar ice strengthen Ship –operational 2019 –will have trace metal clean operations
Operated by NERC's British Antarctic Survey

New conducting Kevlar winch installed on RSS Discovery and one which will be on the RSS Cook

New atmospheric sampling station at Penlee point near Plymouth in collaboration with PML