Auliliary mateial for MS# 2014GL060308

Sequestration efficiency in the iron limited North Atlantic: Implications for the mode of iron supply in fertilized blooms

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Geophysical Research Letters, 2014

Introduction

Additional methodology, discussion, tables and figures referred in the main manuscript are described here. All of these elements are included in a single file entitled “Le Moigne et al\_GR\_April2014\_supmat”. Supplementary discussion has details on how the seasonal carbon export, the Fe sources, the sequestration efficiency and the bloom duration have been calculated. Supplementary Table S1 presents the values of nutrients, chlorophyll-a and dissolved Fe at sampling stations. Supplementary Table S2 presents the carbon export budget in details. Supplementary Table S3 presents the bloom duration extrapolated from other studies. Supplementary Table S4 summarizes the fluxes of dissolved and particulate Fe from the different shleves to both Iceland and Irminger basins. Supplementary Figure S1 show the sampling area for Fe. Supplementary Table S2 shows surface concentration of dissolved Fe along the transect presented in supplementary figure S1. Supplementary Table S3 shows surface concentration of particulate Fe along the transect presented in supplementary figure S1.

1. Supplementary Table S1: Surface nutrient, chlorophyll-a, DFe concentrations.

1.1 Column “Basin” gives the sampling area.

1.2 Column “Station” gives the station number (Fig 1 main text).

1.3 Column “Date” gives the sampling date.

1.4 Column “Nitrate + Nitrite” gives the nitrate + nitrite concentration at each station.

1.5 Column “Silicate” gives the silicate concentration at each station.

1.6 Column “Chlorophyll-a” gives the chlorophyll-a concentration at each station.

1.7 Column “DFe” gives the dissolved Fe concentrations at each station.

2. 1. Supplementary Table S2: Carbon export and Nitrogen deficit.

2.1 Column “Basin” gives the sampling area.

2.2 Column “Station” gives the station number (Fig 1 main text).

2.3 Column “C export” gives the flux of carbon export at each station.

2.4 Column “N export” gives the flux of nitrogen export at each station.

2.5 Column “Nitrate drawdown” gives the drawdown of nitrate at each station.

2.6 Column “PON standing stock” gives the standing stock of PON at each station

2.7 Column “Net N deficit” give the net deficit of Nitrogen from calculation methods provided in the section “Seasonal carbon export” of the supplementary discussion.

3. Supplementary Table S3: Export duration and estimated bloom duration for +Fe regions

3.1 Column 1 gives the export and the bloom duration from calculation methods provided in the section “Seasonal carbon export” of the supplementary discussion.

3.2 Column “KEOPS” gives the export duration and bloom duration from calculation methods provided in the section “Seasonal carbon export” of the supplementary discussion for the KEOPS site.

3.3 Column “CROZEX” gives the export duration and bloom duration from calculation methods provided in the section “Seasonal carbon export” of the supplementary discussion for the CROZEX site.

3.4 Column “IBIS” gives the export duration and bloom duration from calculation methods provided in the section “Seasonal carbon export” of the supplementary discussion for the IBIS site.

4. Supplementary Table S4: Source and flux of DFe and Pfe in the Iceland and the Irminger basins.\*DFe and PFe fluxes from the Greenland shelf to the Irminger basin do not propagate further than the shelve itself.

4.1 Column “Sources” gives the sources of Fe (dissolved “Dfe” and particulate “Pfe”) to both Irminger and Iceland basins.

4.2 Column “Irminger basin Dfe” gives the flux of Dfe from the to the Irminger basin.

4.3 Column “Irminger basin Pfe” gives the flux of Pfe from the to the Irminger basin.

4.4 Column “Iceland basin Dfe” gives the flux of Dfe from the to the Iceland basin.

4.5 Column “Iceland basin Pfe” gives the flux of Pfe from the to the Iceland basin.