Supplementary material
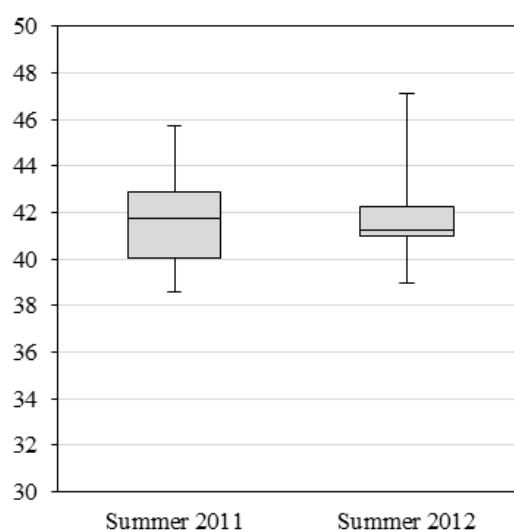
Figure S1. Box-whisker plot of DOC concentrations (μM) for deep seawater reference water (DSR) between the analyses for summer 2011 and summer 2012 samples. In each data set, the box indicates the lower (Q1, 25%) to the upper (Q3, 75%) quartile and the median (the horizontal line within the box). The lowest and highest data points indicate by the whiskers.
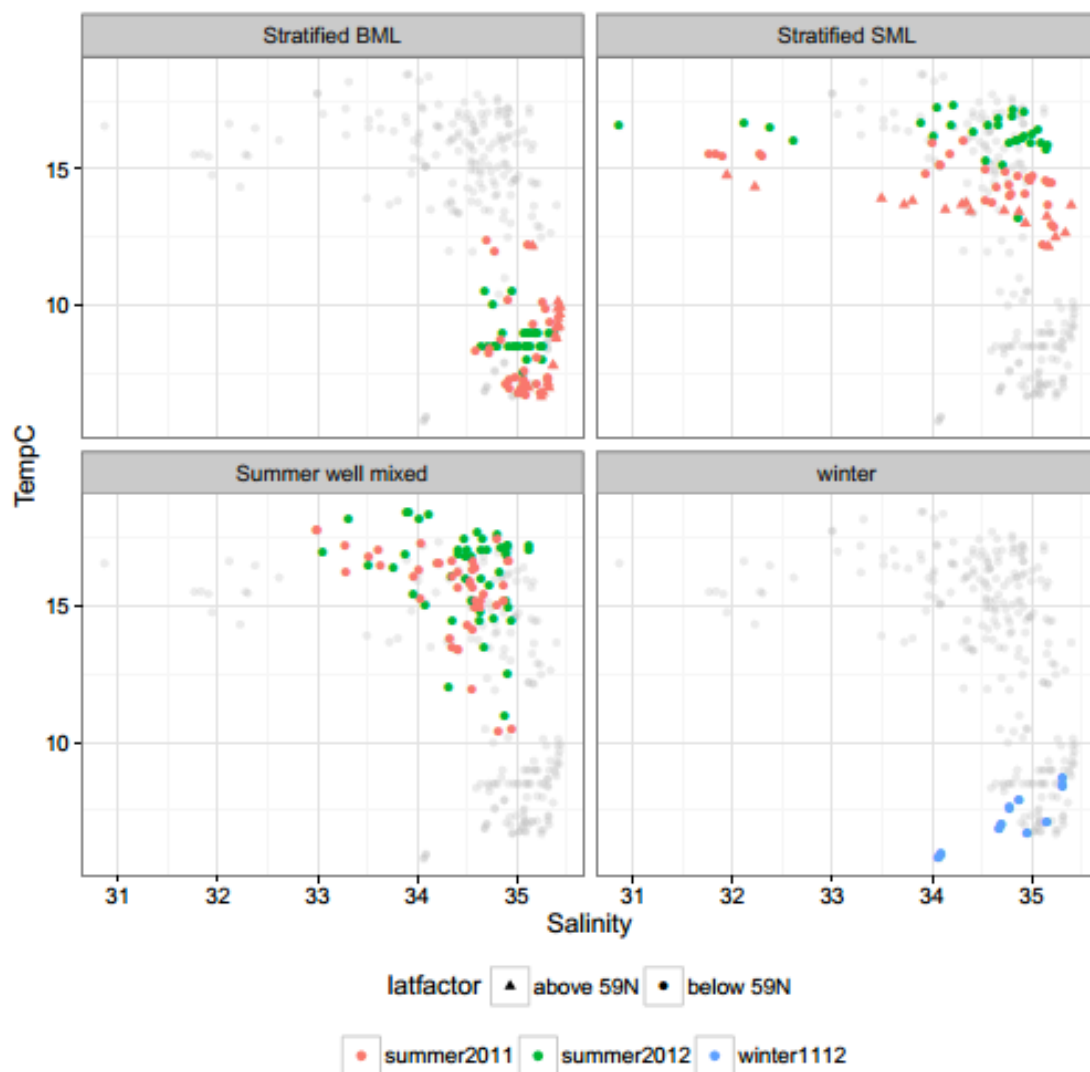
Figure S2. Temperature-salinity plots divided by location / season and cruise. Triangular points in 2011 data represent points north of 59 North, not covered in the summer 2012 survey. Grey points show the whole data set from from all other water types / seasons
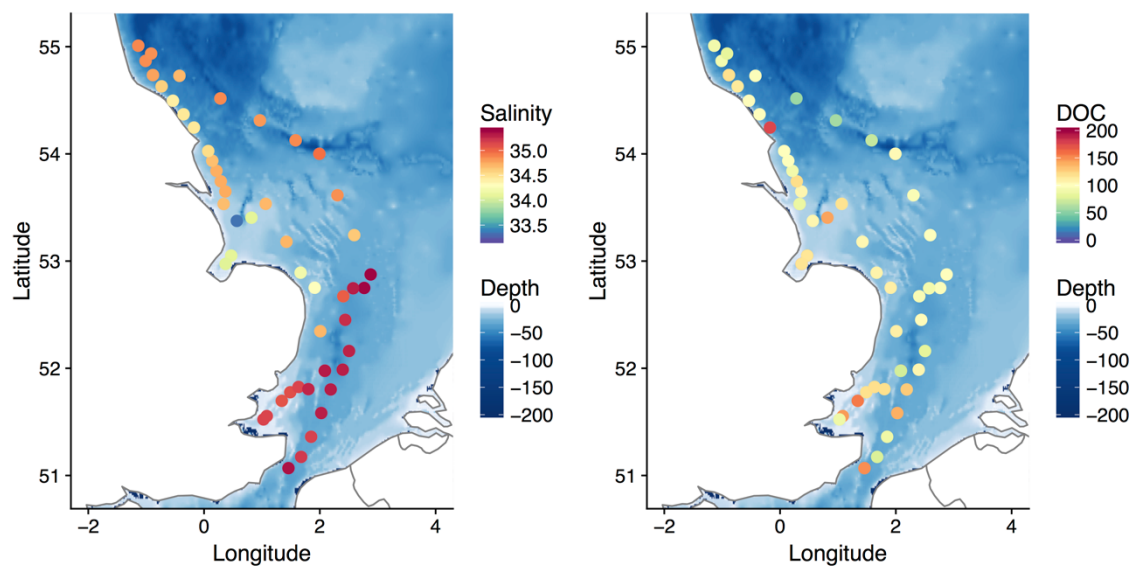
Figure S3. Salinity (a) and DOC (b) distributions observed during the winter cruise in January 2012
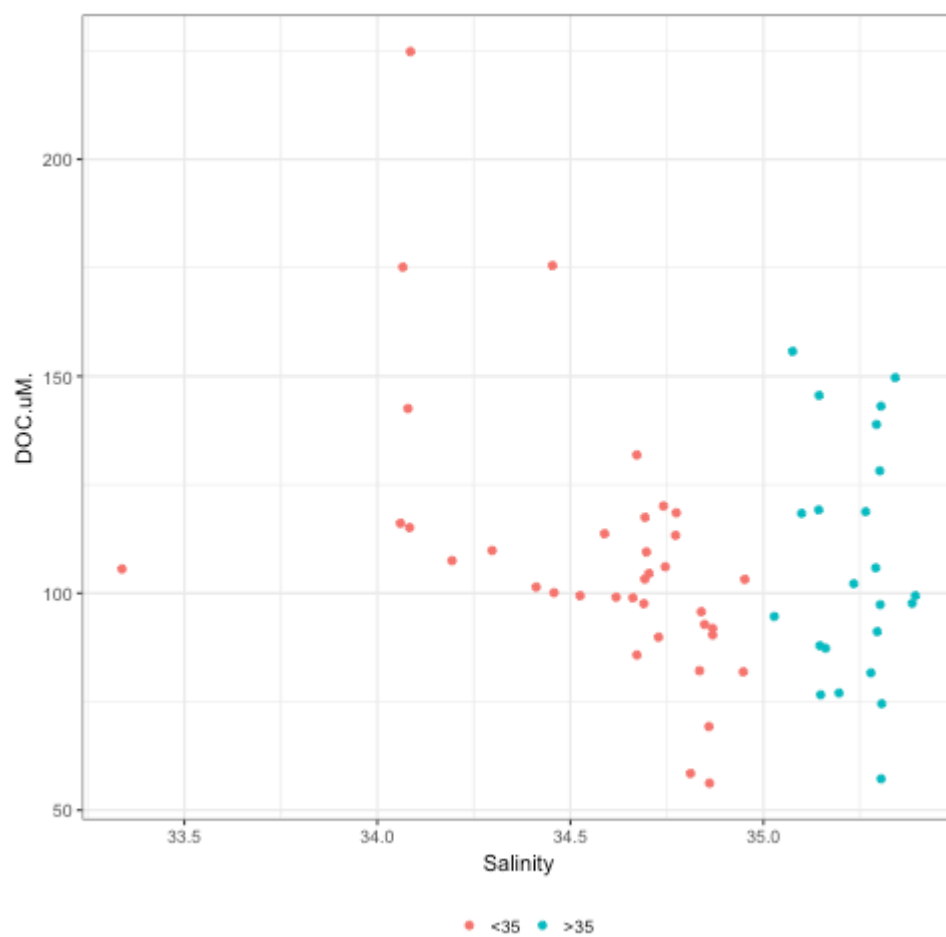
Figure S4. Winter DOC data vs salinity separated into 2 groups by salinity. Waters of S>35 represent data from the south of the southern North Sea, of assumed English Channel origin and waters of S<35 from the rest of the survey.
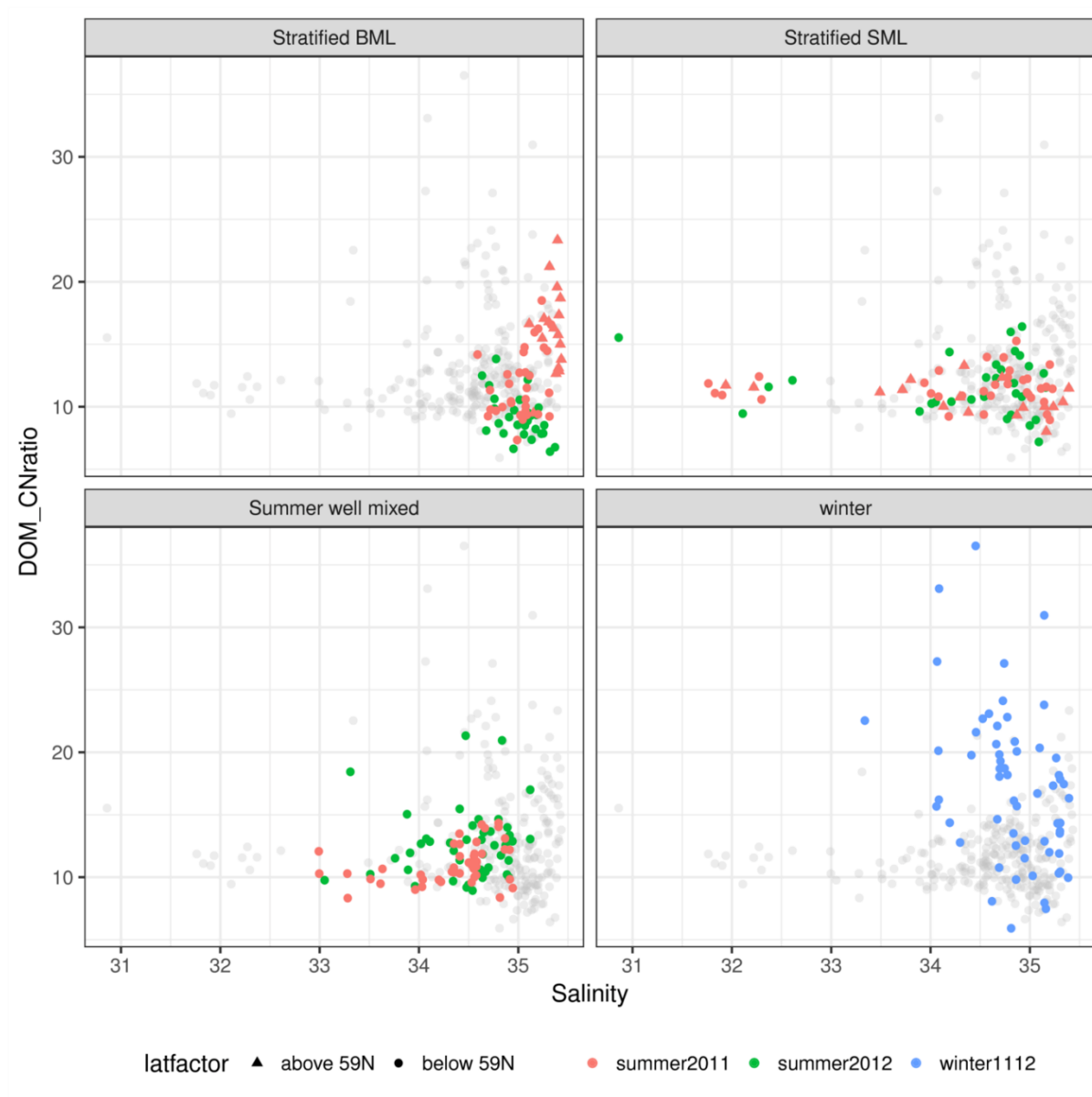
Figure S5. **The relationship between salinity and DOC:DON ratio for each cruise in each water type. Data plotted as triangles represents points sampled north of 59 N in 2011 i.e. stations not sampled in summer 2012. Grey points show the whole dataset from all other water types / seasons.**