**High priority research themes/questions**

1. **How does the flux/exchange and variability of heat, freshwater, nutrients, carbon and oxygen between the North Atlantic and Arctic impact productivity and longer-term carbon uptake and storage in both regions?**
   1. *Connectivity between basins and with the global system*
2. **What are the local processes driving productivity and biogeochemical fluxes.**
   1. *e.g. eddies, stratification, mixing, riverine supply, ice cover, etc*
3. **How does the timing and magnitude of the seasonal cycle of physical forcing, biogeochemistry and ecosystem productivity control carbon fluxes.**
   1. *Mix-match between warming, ice-cover, production (autotrophy, mixotrophy, heterotrophy), etc*
4. **What are the processes controlling the magnitude and fate of vertical and lateral export of organic matter between sympagic-pelagic-mesopelagic- benthic systems.**
   1. *Ecosystem structure (PFTs, jellyfish, virus, bacteria…), grazing, ballast, size spectrum, canyon flows and cascading etc*
5. **What drives and rectifies the decoupling in elemental ratios?**
   1. *Preferential remineralisation, denitrification, nitrogen fixation, luxury consumption, atmospheric deposition etc.*
6. **How do climate drivers and anthropogenic pressures on ecosystem function and services and marine biodiversity influence biogeochemistry?**
   1. *Warming, wind-fields, mixing, OA, (Mesopelagic) fishing, eutrophication, pollution etc.*