

EGU2020-1459, updated on 05 Jul 2020  
<https://doi.org/10.5194/egusphere-egu2020-1459>  
EGU General Assembly 2020  
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## The spiralling North Atlantic Subtropical Gyre

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The North Atlantic Subtropical Gyre is shown to have a downward spiral flow beneath the mixed layer, where the water slowly gets denser, colder and fresher as it spins around the gyre. This path is traced with Lagrangian trajectories as they enter the Gyre in the Gulf Stream from the south until they exit through the North Atlantic Drift. The preliminary results indicate that these warm, saline waters from the south gradually becomes fresher, colder and denser due to mixing with waters originating from the North Atlantic. There are indications that there is also a diapycnal mixing, in the eastern part of the gyre due to mixing with the saline Mediterranean Waters, which would then be crucial for the Atlantic Meridional Overturning. The mixing in the rest of the gyre is dominated by isopycnic mixing, which transforms gradually the water into colder and fresher water as it spins down the gyre into the abyssal ocean before heading north.