The spiralling North Atlantic Subtropical Gyre

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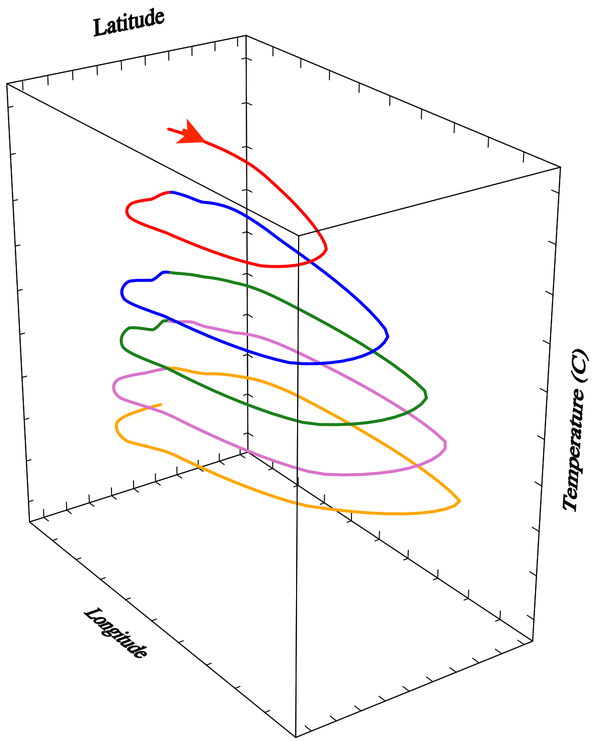
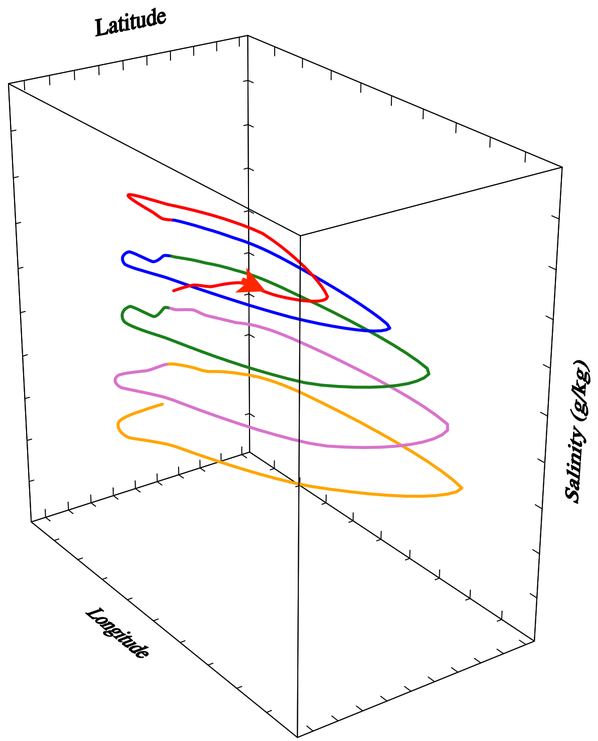
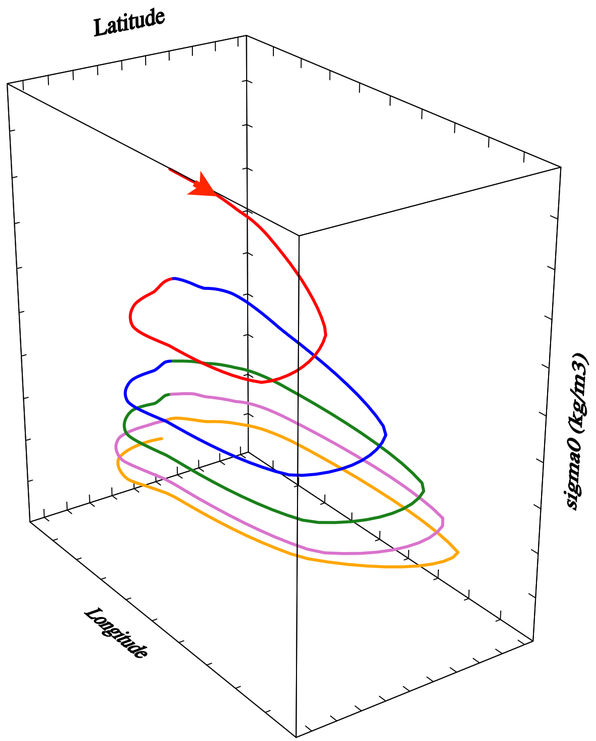


Cooler



Fresher



Denser

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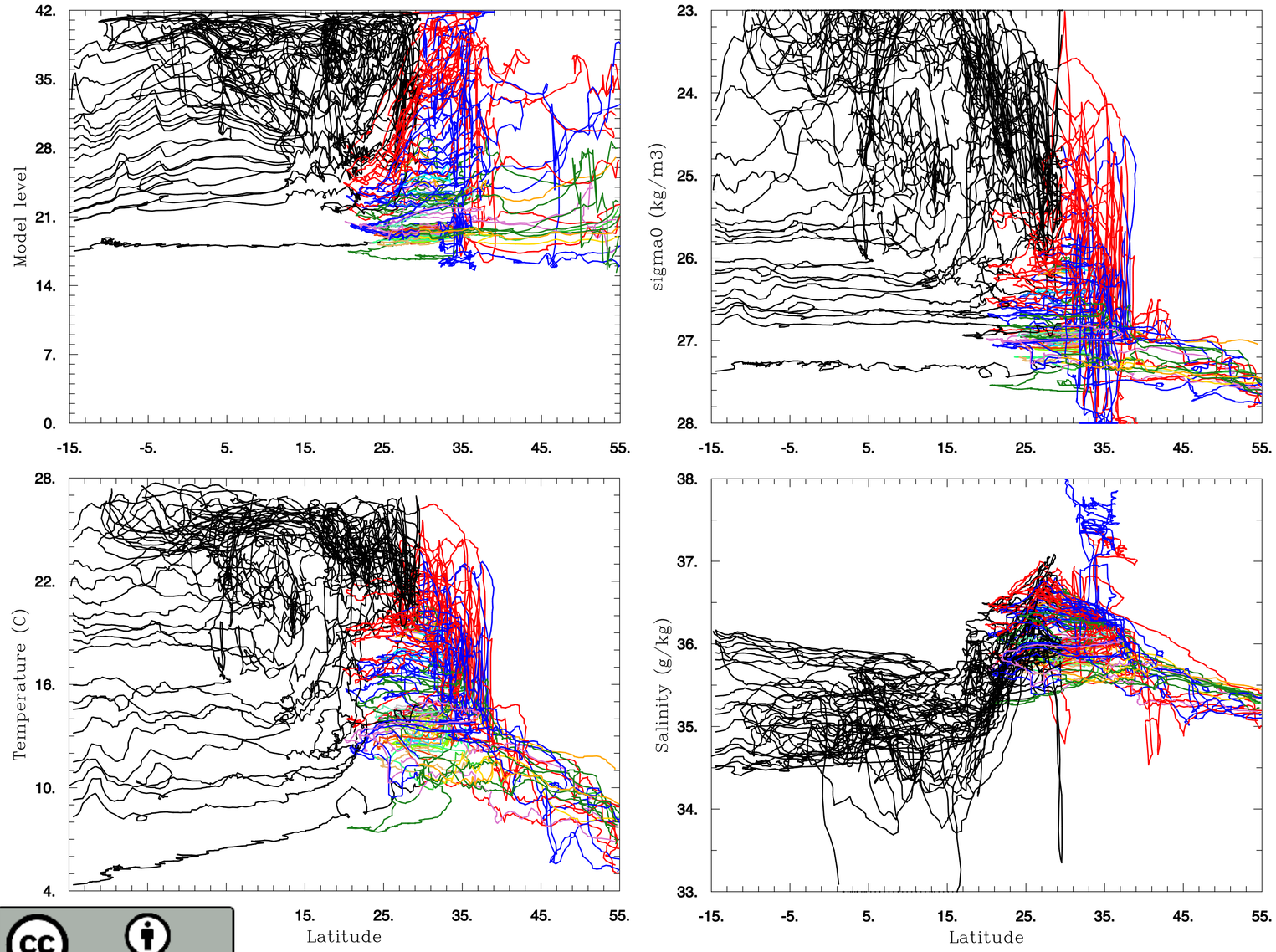
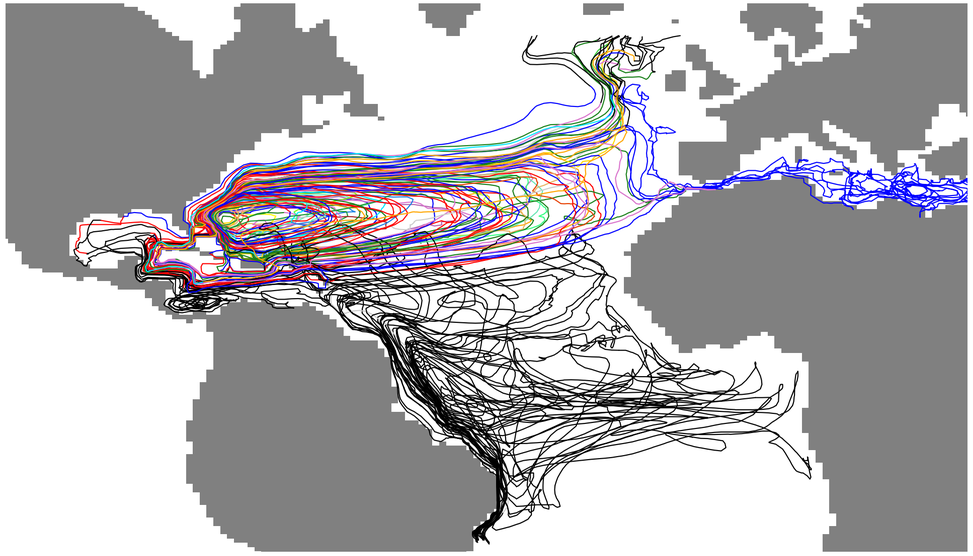
Lagrangian trajectories from south to north





First Gyre
Second Gyre
Third Gyre
Fourth Gyre
Fifth Gyre

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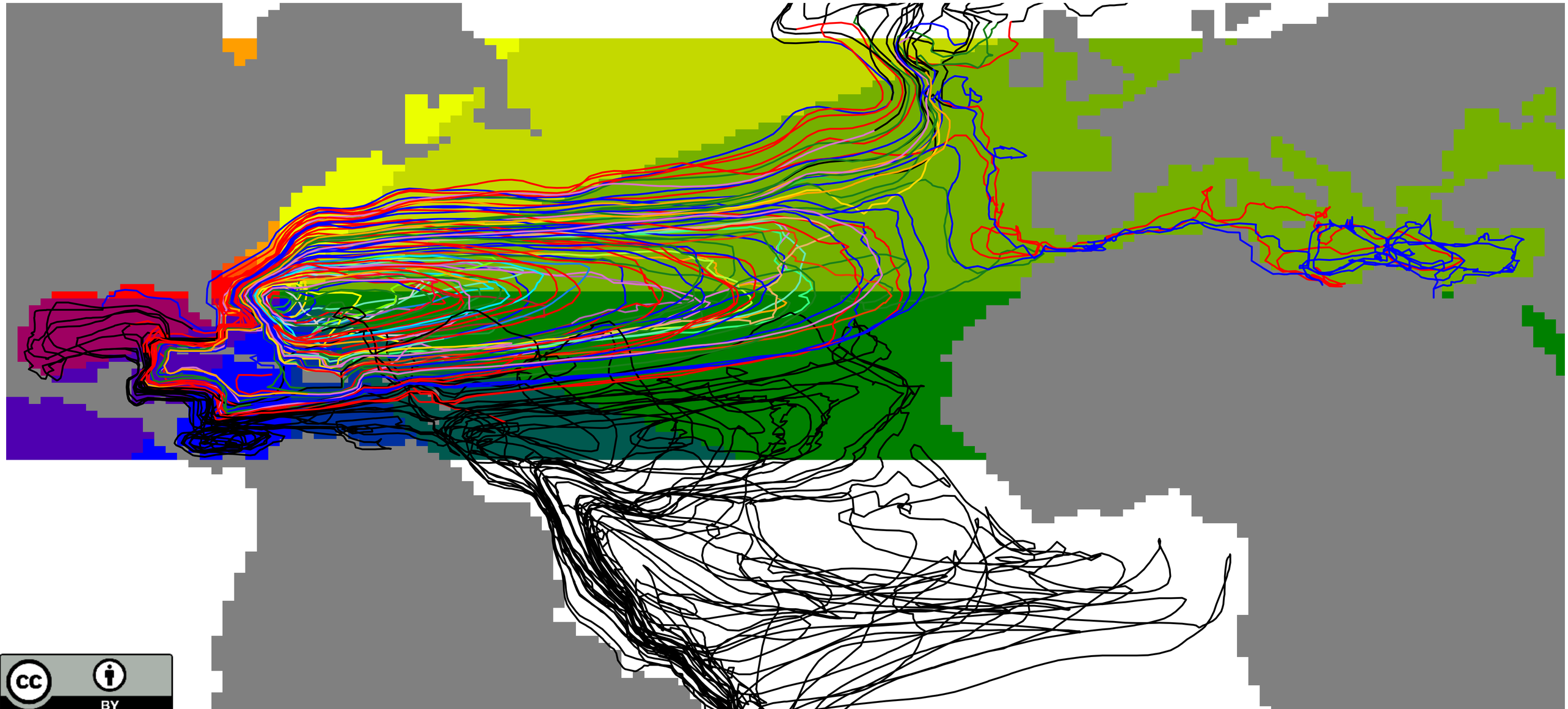
Dividing the gyre into 12 regions like a clock in order to make average positions in x, y, z, T,S, σ_0 for the gyre loops



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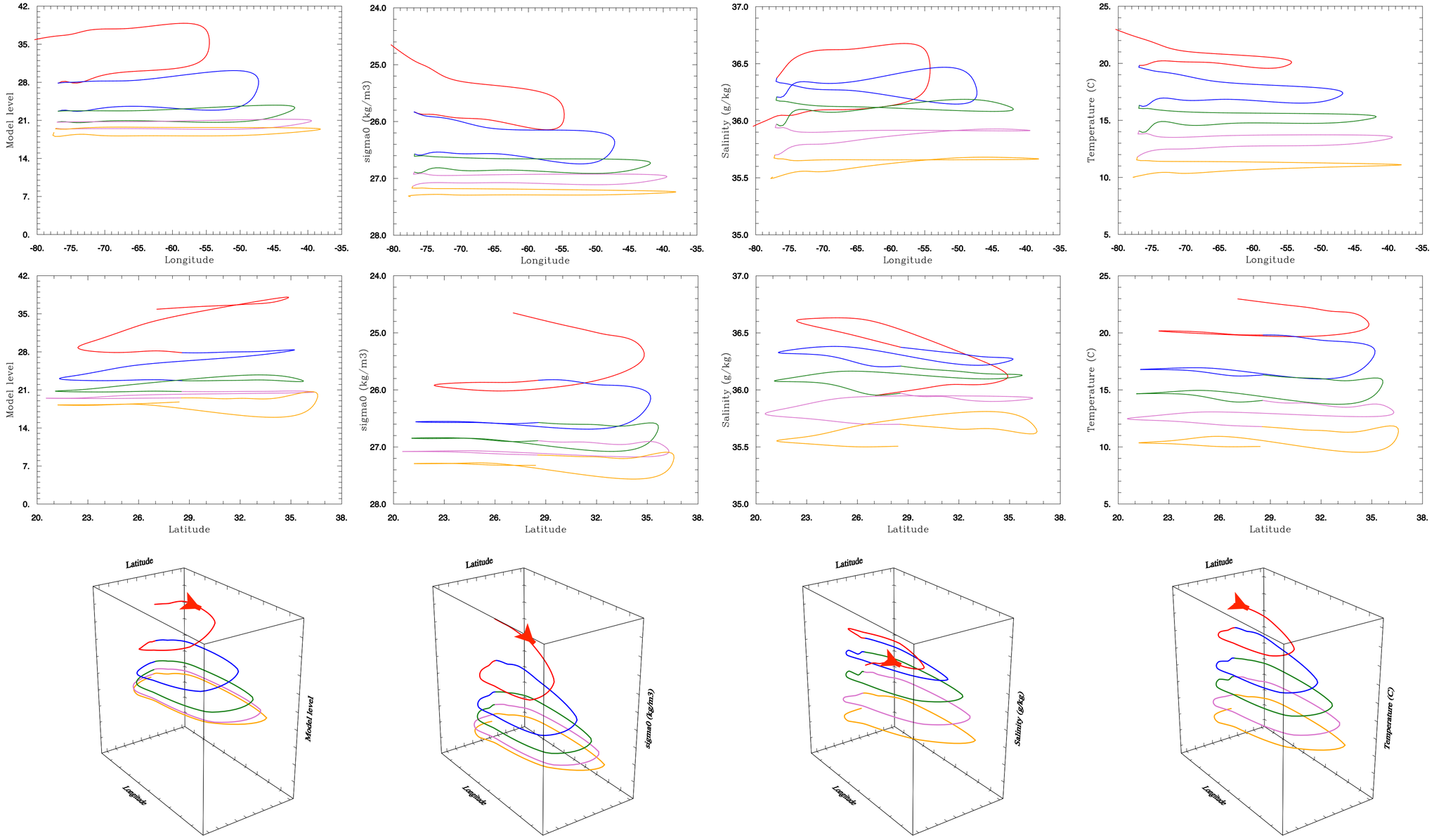
The spiral as a function of longitude, latitude and

"depth" density salinity temperature



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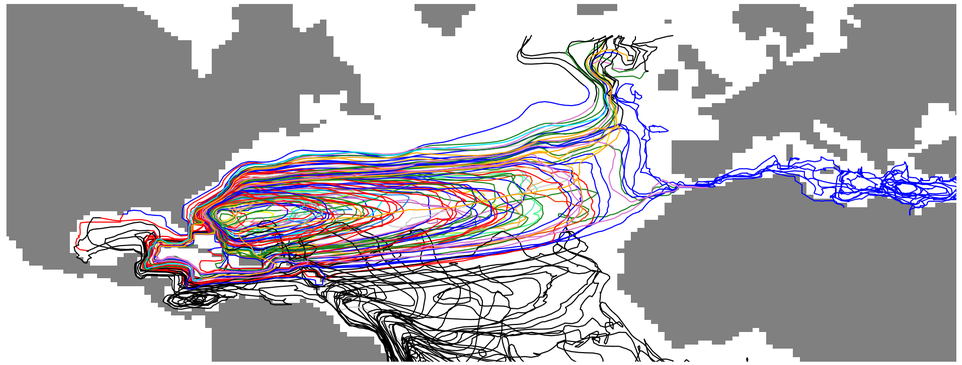
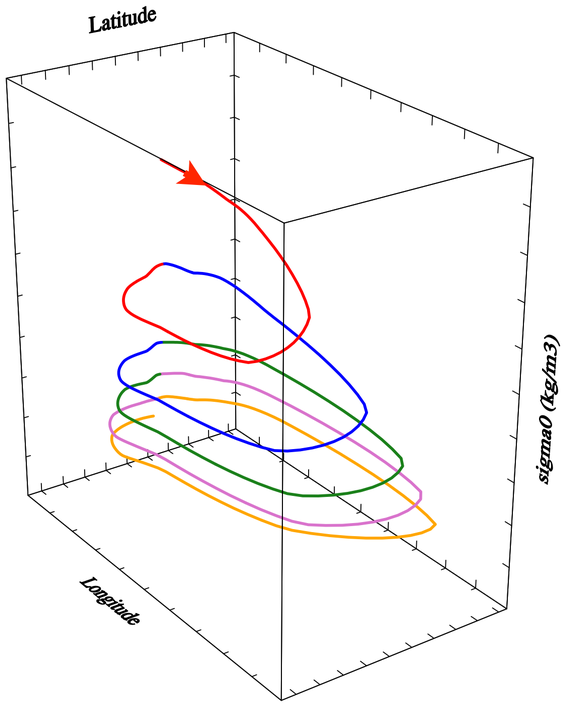
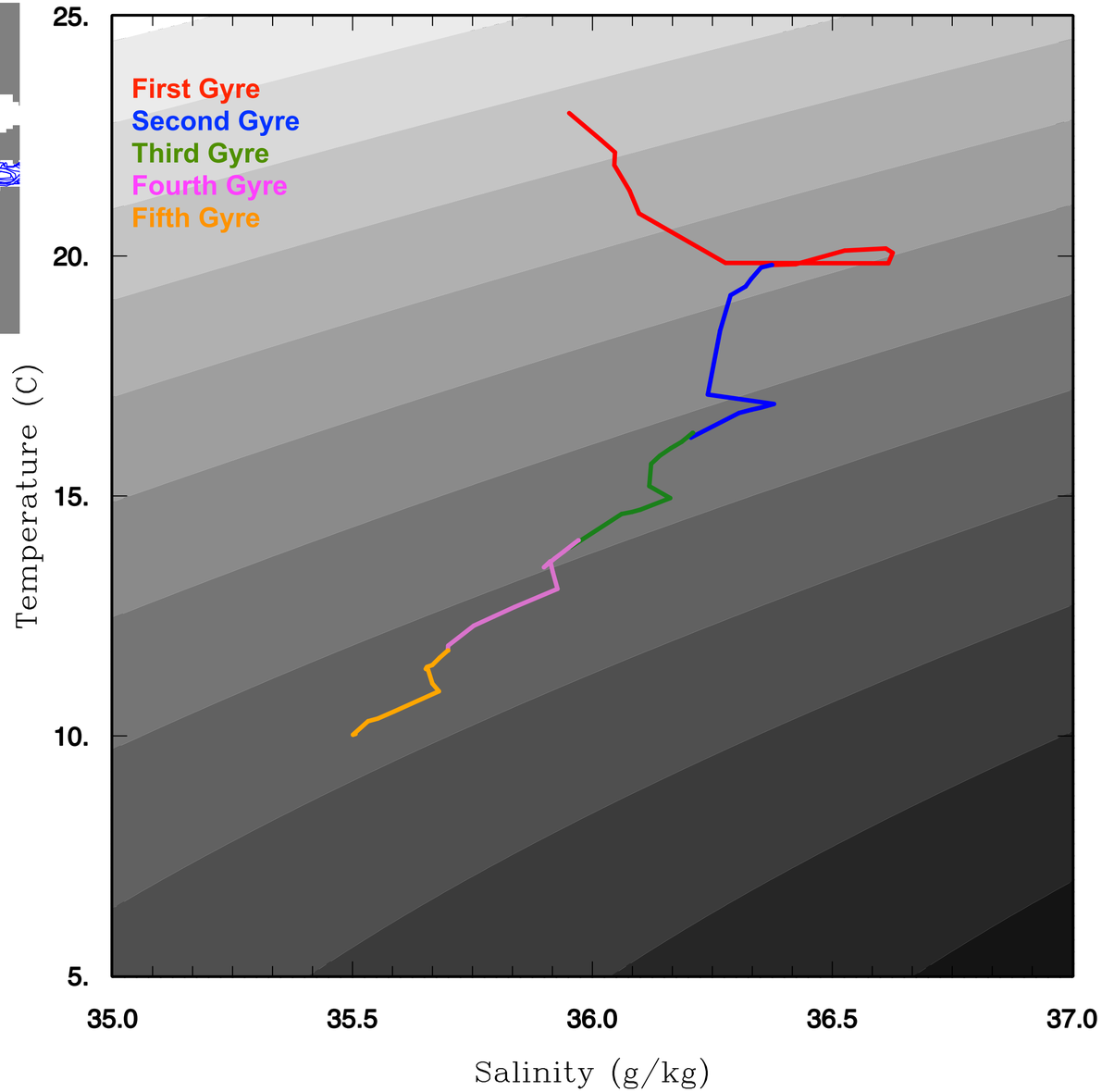



Latitude
Longitude
sigma0 (kg/m3)


First Gyre
Second Gyre
Third Gyre
Fourth Gyre
Fifth Gyre
25.
20.
15.
10.
5.
Temperature (C)
35.0
35.5
36.0
36.5
37.0
Salinity (g/kg)

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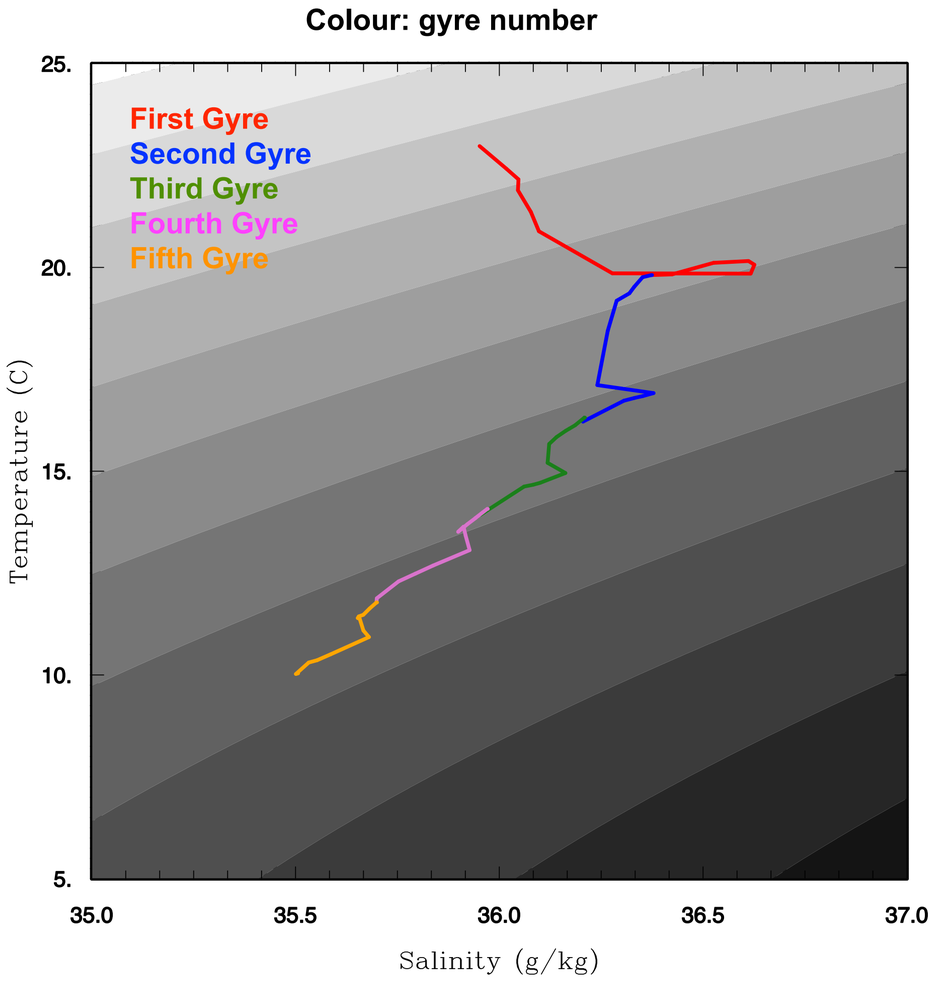
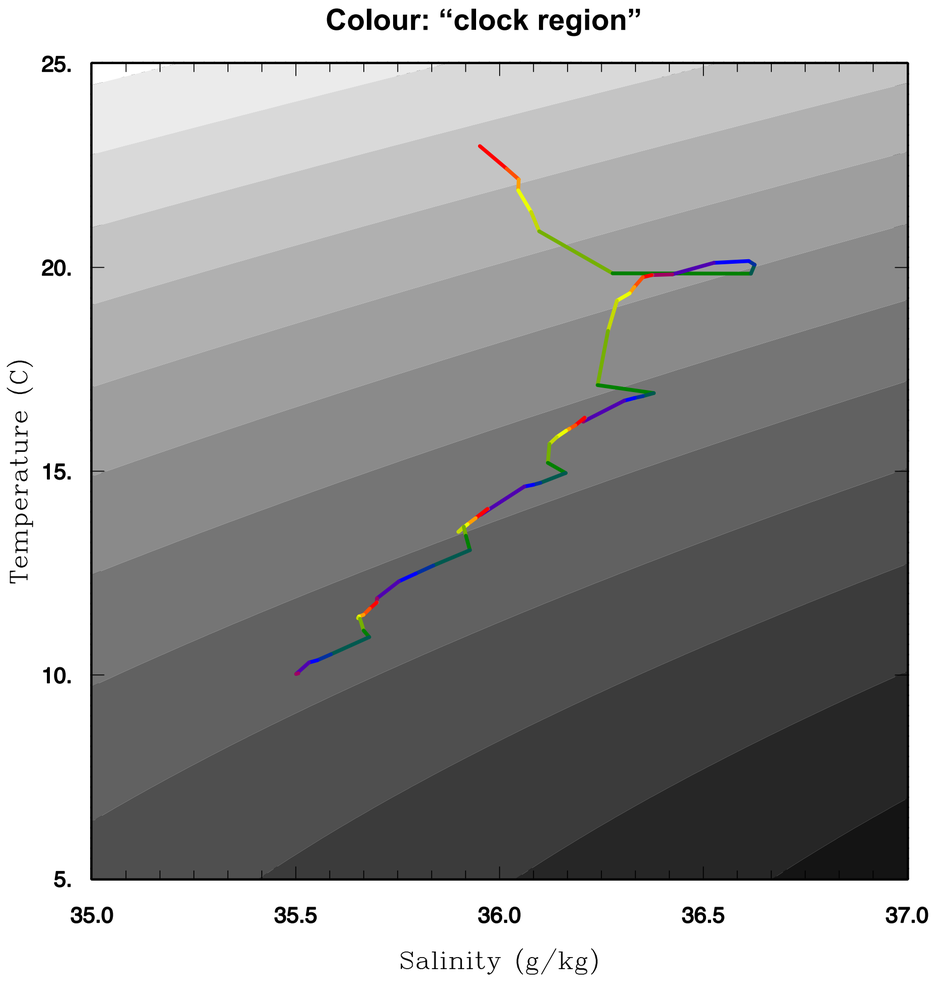
Isopycnic mixing everywhere except in the east, where there are clear diapycnal "jumps"





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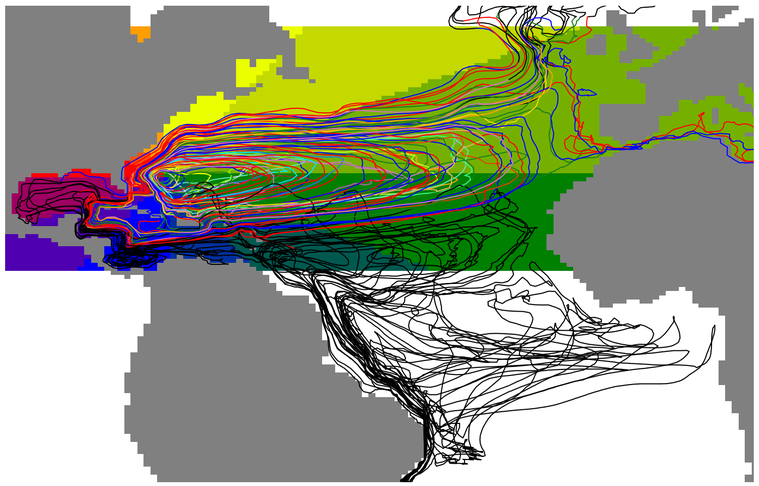
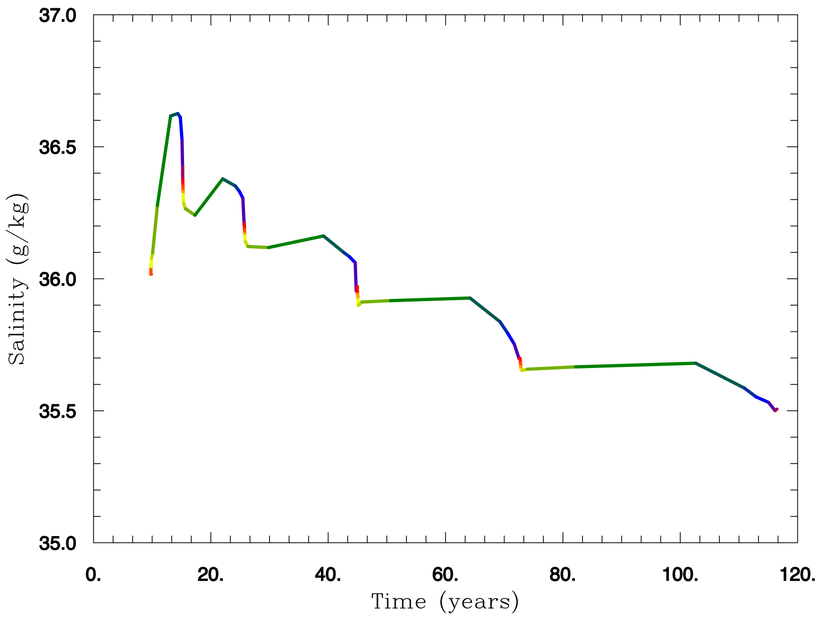
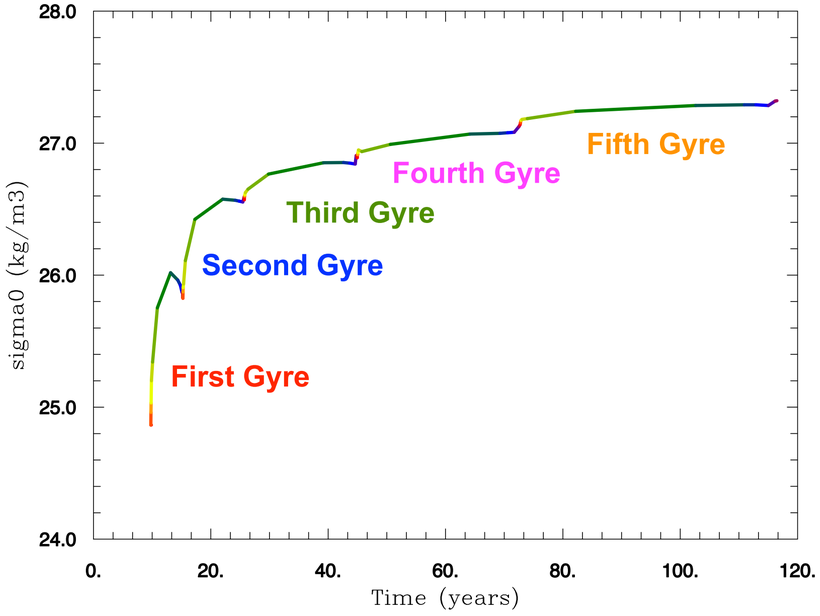
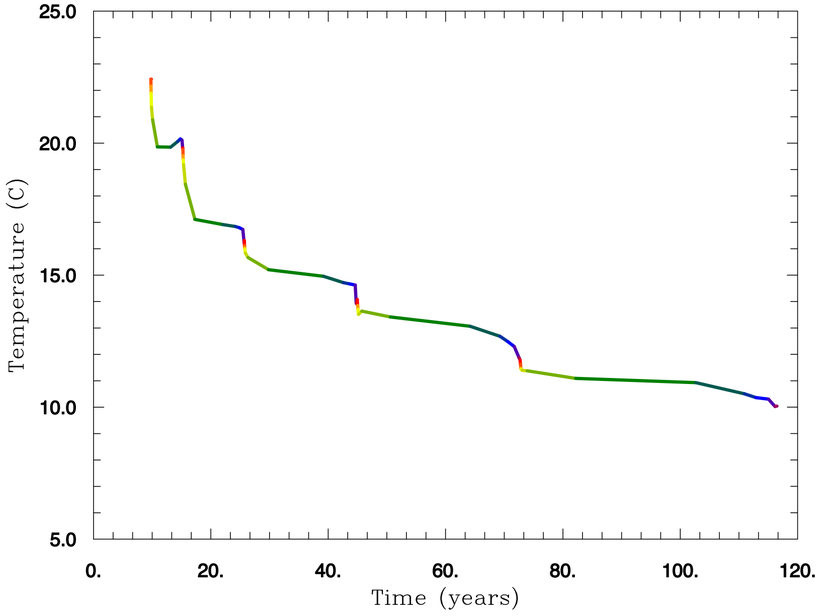
Time evolution









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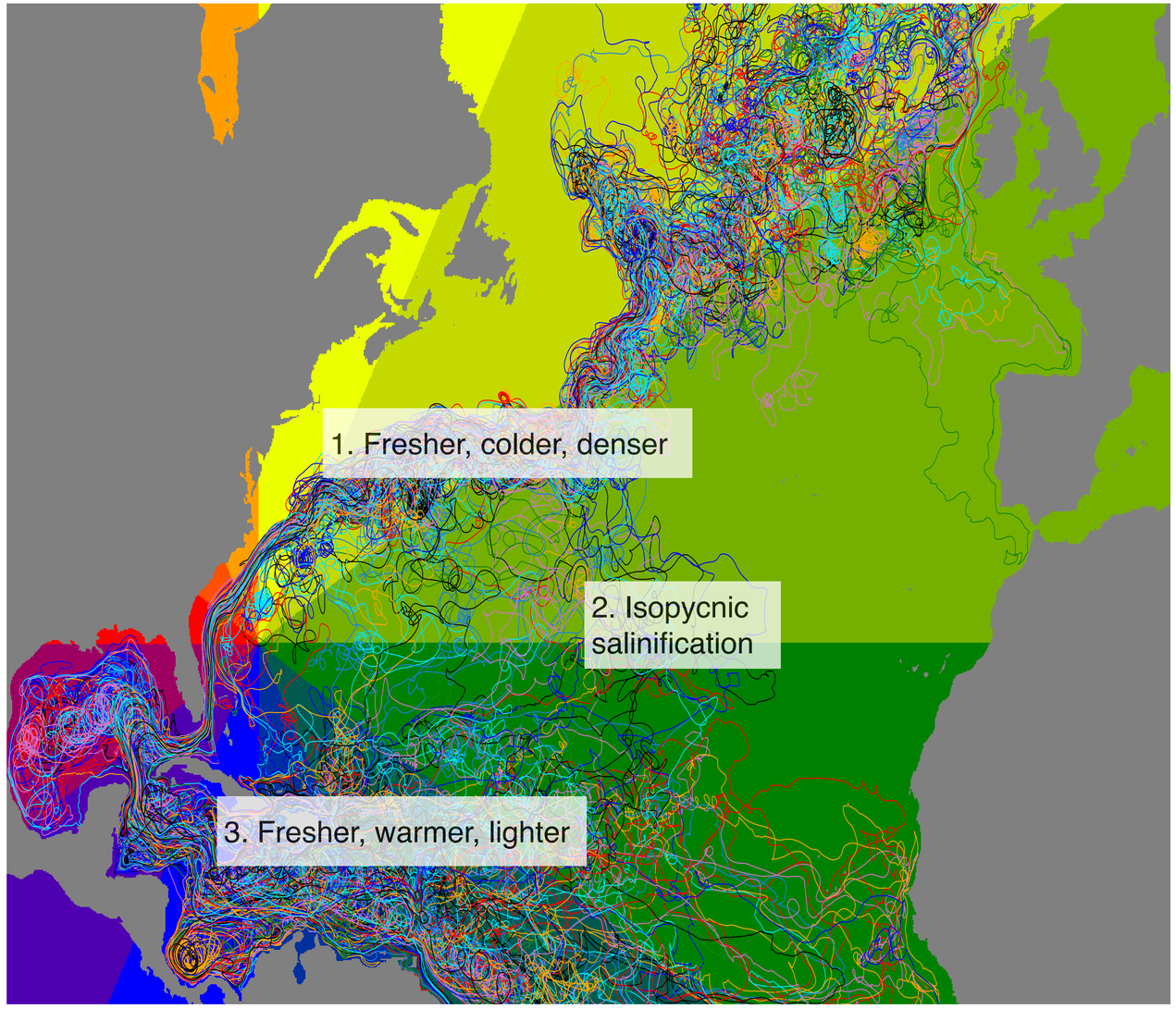
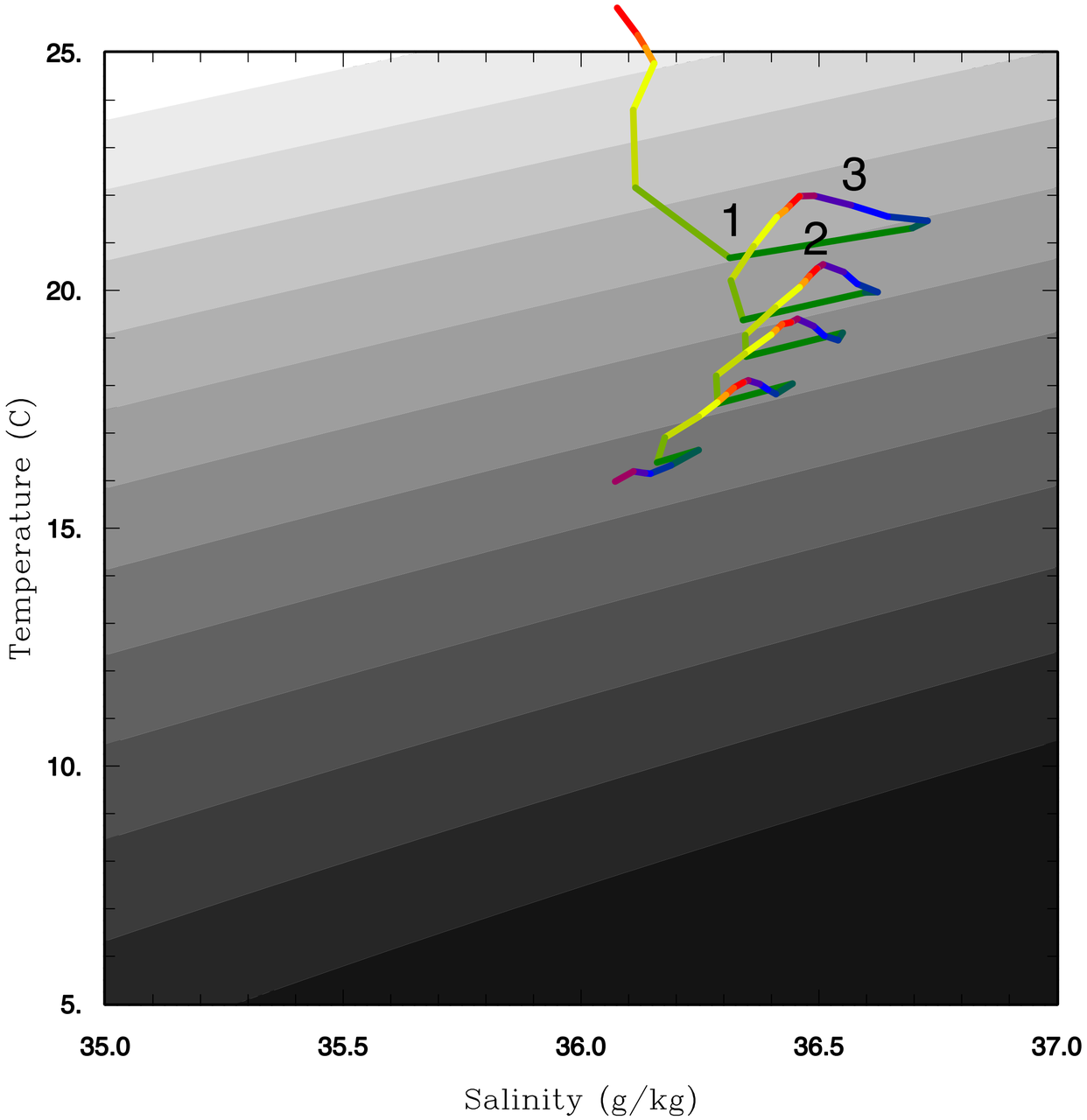

1. Fresher, colder, denser
2. Isopycnic salinification
3. Fresher, warmer, lighter


25.
20.
15.
10.
5.
Temperature (C)
35.0
35.5
36.0
36.5
37.0
Salinity (g/kg)
1
2
3

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