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- When ocean advection is not important. SST (Sea Surface Temperature) anomalies are generated by atmospheric noise, and
- then are damped by surface heat flux flux. The SST/Q<sub>turb</sub> (turbulent flux of heat) lagged correlations on monthly times scales are antisymmetric about zero lag (Frankignoul et al 1998) When ocean advection is important (e. g. in the Gulf Stream):
- In the mean, net surface heat flux is driven by geostrophic oceanic heat transport convergence On interannual times scales, heat flux is determined by heat content anomalies and
- heat content anomalies are driven by heat transport convergence (Dong and Kelly 2004)

48<sup>0</sup>N

- For interannual times scales determine: Where in the North Atlantic does advection
- play an important role in air-sea interaction?
- Where does heat stored away from the surface play an important role in air-sea



50

75 100 125 150 175

Throughout: negative heat flux indicates ocean cooling

Location (2): weak advection





Lagged correlations between SST/Q depend on whether the forcing comes dominantly from the ocean













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interaction? Location (1): strong advection