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Interaction of alternating oceanic zonal jets and wind-driven gyres BALU NADIGA, LANL, DAVID STRAUB, McGill — Recent evidence has unmasked the presence of alternating zonal jets superimposed on the larger scale midlatitude ocean circulation. Analogous jets are well-known from β-plane turbulence and are associated w ith a halting of the 2d inverse energy cascade by Rossby wave dispersion. Both the β-plane turbulence and the gyre scale dynamics are nonlinear and it seems reasonable to anticipate that the two will inter act. Some evidence for these interactions comes from observations: e.g., jets in the N. Atlantic are aligned at an angle to latitude circles, following a direction nearly parallel to the seaward extension of the Gulf Stream. In the North Pacific, both the jets and the Kuroshio extension are more nearly zonal. How jets interact with the wind-driven cirulation is considered in the quasi-geostrophic equations in a box ge ometry forced by i) a large scale wind, ii) a small scale stochastic forcing and iii) both. The first cas e is the classic midlatitude double gyre problem, the second has previously been used to model the jets an d the third allows us to consider interactions between the two. We focus primarily on the energetics.

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