Scale Aware Parametrization of Ocean Eddies
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As the horizontal resolution increases, models are starting to resolve ocean mesoscale eddies and other sub-grid scale processes. However, even at resolutions of 1/4 or 1/12 degree, eddies in many regions are not adequately resolved and coarse resolution parametrizations are often inappropriate.

We will present a new sub-grid scale eddy parametrization designed for eddy permitting models which possesses several key features:
1) Upgradient Momentum Fluxes and energy backscatter: this allows for jet rectification and energy transfer from small to large-scales;
2) Scale Awareness: the eddy parameter is uniquely determined by the model resolution;
3) Uncertainty Quantification: uncertainty in the parametrized eddy fluxes scales with wind forcing, stratification and resolution.

We will show diagnostics from a range of ocean models including a realistic NEMO configuration, highlighting the potential for our parametrization to successfully represent sub-grid eddy parametrization. We will also show results of the implementation of the new parametrization in idealized ocean models, highlighting improvements in the separation point of the jet, its mean strength and its variability.