

EGU22-2849

<https://doi.org/10.5194/egusphere-egu22-2849>

EGU General Assembly 2022

© Author(s) 2022. This work is distributed under the Creative Commons Attribution 4.0 License.



## The Structure of North Atlantic Kinetic Energy Spectra

William K. Dewar<sup>1,2</sup>, Takaya Uchida<sup>1</sup>, Quentin Jamet<sup>1</sup>, and Andrew Poje<sup>3</sup>

<sup>1</sup>EOAS, Florida State University, Tallahassee, USA

<sup>2</sup>University Grenoble Alpes, CNRS, IRD, Grenoble-INP, Grenoble, FR

<sup>3</sup>Dept of Mathematics, CUNY-SI, USA

An ensemble of North Atlantic simulations is analyzed, providing estimates of kinetic energy spectra. A wavelet transform technique is used permitting comparisons to be made between spectra at different locations in this highly inhomogeneous environment. We find a strong tendency towards anisotropy in the spectra, with meridional spectra typically stronger than zonal spectra. This holds even in the gyre interior where conditions might be expected to be homogeneous. The spectra show reasonable ranges consistent with a downscale enstrophy cascade, but also a persistent tendency to exhibit steeper slopes at smaller scales. The only location where the presence of an upscale cascade is supported is the Gulf Stream extension. This is amongst first attempts to quantify and compare spectra and their differences in the inhomogeneous setting of the North Atlantic.