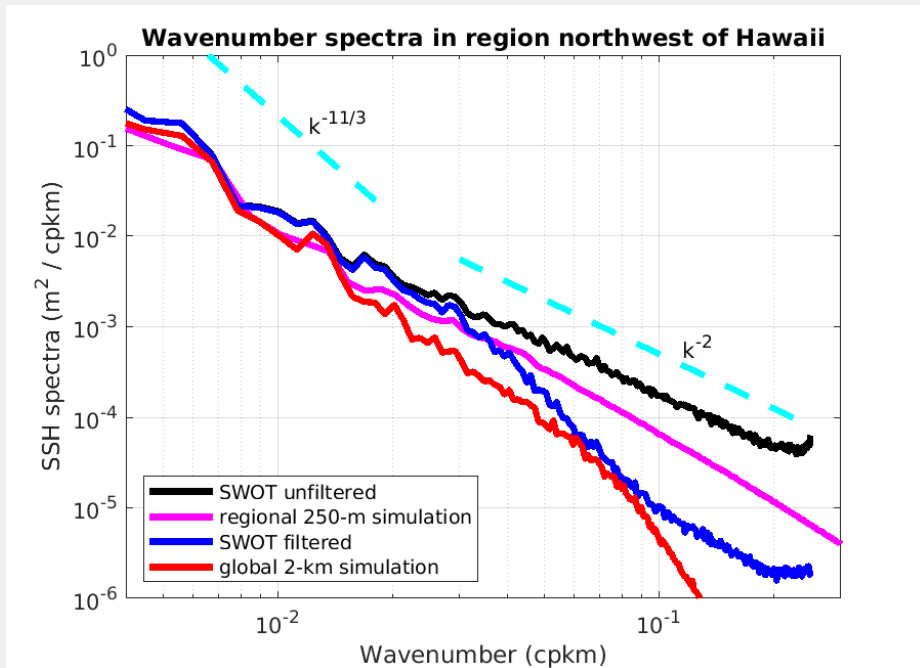


SWOT high-wavenumber (small scale) signals will force us to improve our models



The sea surface height (SSH) wavenumber spectra in global high-resolution models capture the unfiltered SWOT spectrum down to about 50 km. However, the SWOT spectrum has more power, and a shallower spectrum, at higher wavenumbers.

Our regional MITgcm simulations (Nelson et al. 2020) feature much finer horizontal and vertical grid spacing than global models. The regional models come closer to the SWOT data, but are still insufficiently energetic at high wavenumbers.

So, what is missing? We are investigating this question with some new existing and planned high-resolution simulations of MITgcm and Oceananigans.

Dan Whitt, NASA AMES + others: LLC4320v2: run during same period as SWOT, with multiple improvements (i.e. more accurate tides, etc.)

W. Richard Peltier and Kayhan Momeni, U-Toronto: LLC8640: plan to double horizontal and vertical resolution

Greg Wagner, Aeolus Labs + Dan Whitt, Brian Arbic, Dimitris Menemenlis, Jinbo Wang, Jorn Callies: Plan to run extremely high-resolution simulations with Oceananigans