Surface kinetic energy distributions in the global oceans from a numerical model and observations

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The surface kinetic energy of a 1/48º global numerical simulation and its distribution as a function of frequency and space are compared to that estimated from 15,329 drifter trajectories. These distributions follow similar patterns with a dominant low-frequency component, well-defined tidal and near-inertial peaks. Clear quantitative differences are identified with deficits of low-frequency energy at the equator and at near-inertial frequencies and an excess of energy at tidal frequencies. The global network of surface drifter are an invaluable tool to validate and improve numerical simulations that are heavily used in Observing System Simulation Experiments (OSSEs) for the developments of new satellites (SWOT, SKIM). Source of biases when comparing these datasets are discussed and associated leads for future work hightlighted.