

# Lagrangian versus Eulerian spectral estimates of surface kinetic energy over the global ocean

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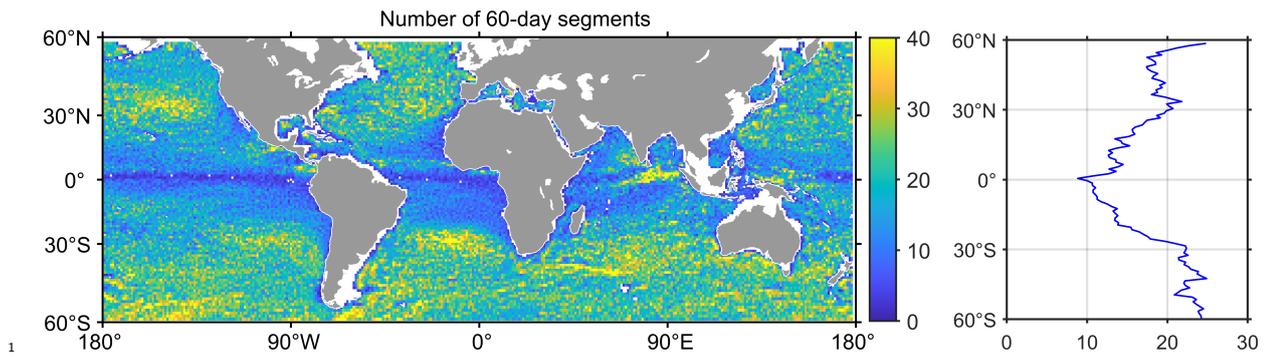
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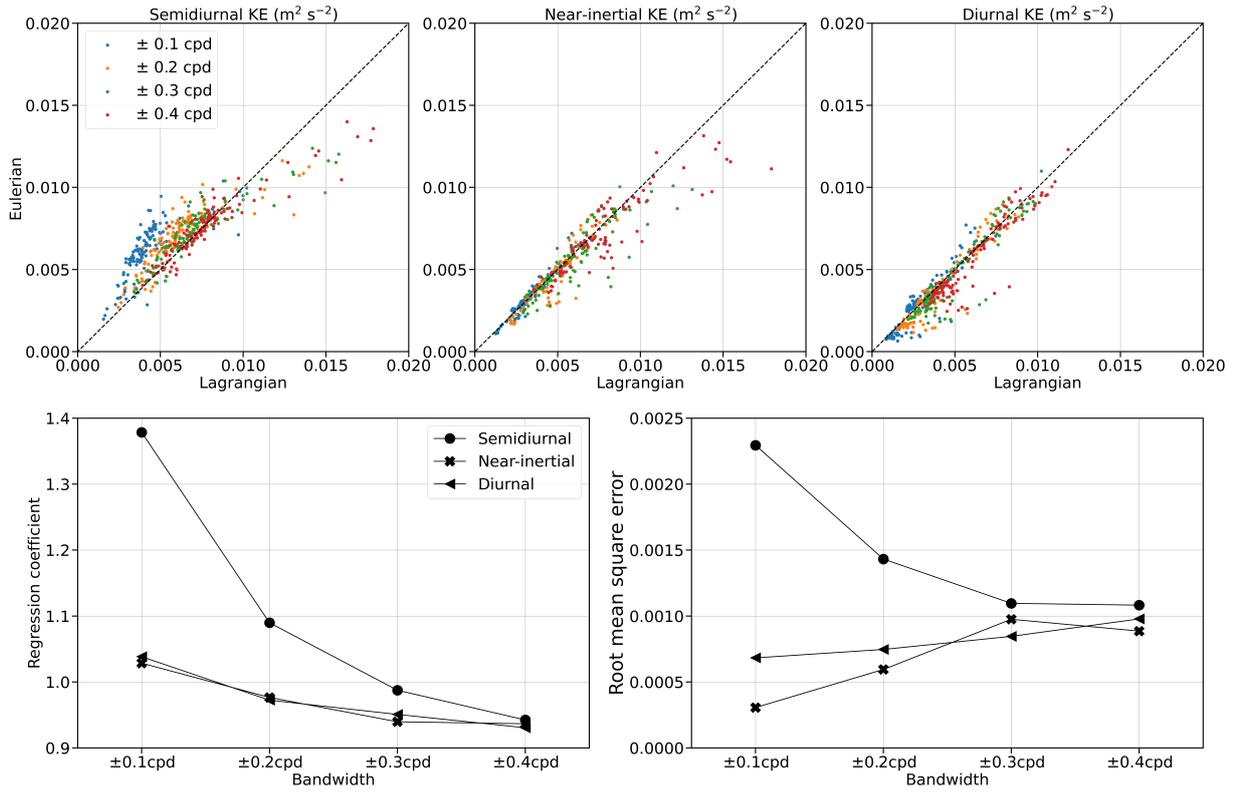
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**Table S1.** The mean and standard deviation (Std) values of the ratio of Lagrangian KE/(Lagrangian KE + Eulerian KE) in five different frequency bands.

	Total	Low-frequency	Semidiurnal	Near-inertial	Diurnal
Mean	0.49	0.49	0.47	0.49	0.48
Std	0.06	0.07	0.06	0.07	0.06



**Figure S1.** (a) Distribution of the number of 60-day Lagrangian trajectory segments over the global ocean in  $1^\circ \times 1^\circ$  bins. (b) Zonally averaged number of 60-day Lagrangian trajectory segments in  $1^\circ$  latitude bins.

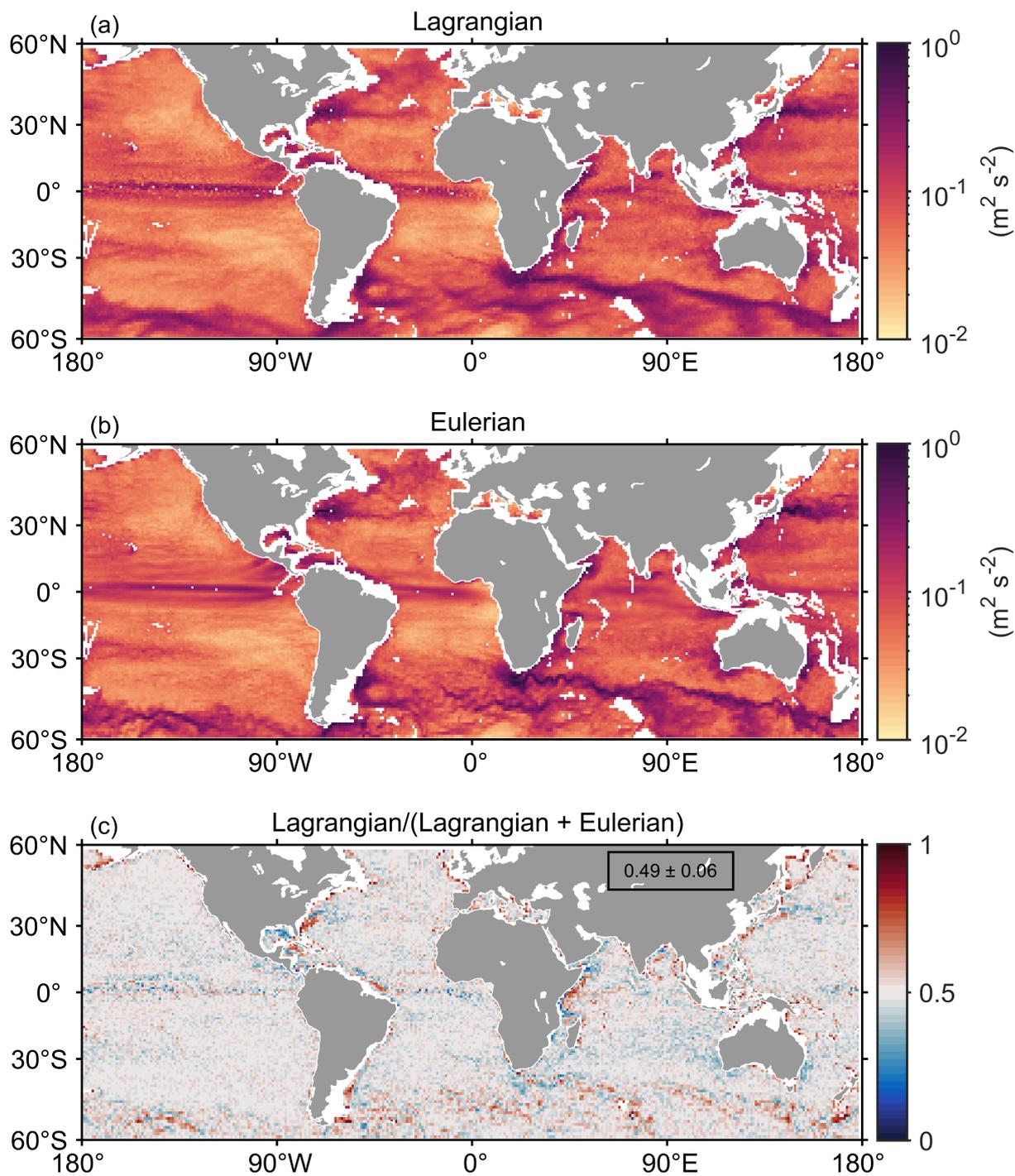


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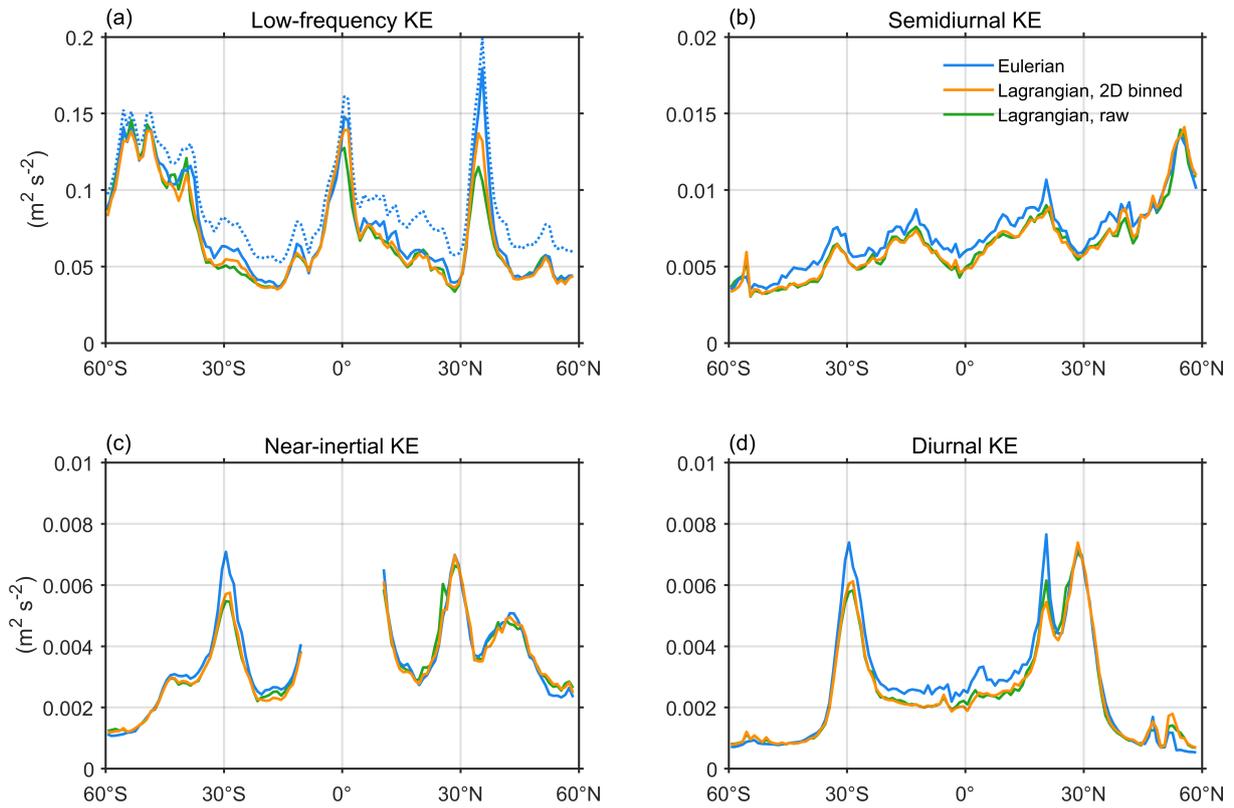
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8 **Figure S2.** Scatter diagram of the comparison between Lagrangian and Eulerian (a)  
9 semidiurnal, (b) near-inertial and (c) diurnal KE for bandwidths of ±0.1 cpd (blue), ±0.2  
10 cpd (orange), ±0.3 cpd (green), ±0.4 cpd (red). The (d) regression coefficient and (e) root  
11 mean square error (m<sup>2</sup> s<sup>-2</sup>) between Lagrangian and Eulerian semidiurnal, near-inertial  
12 and diurnal KE as a function of bandwidth.

## Total KE



14  
15 **Figure S3.** Global maps of (a) Lagrangian and (b) Eulerian total KE at the surface  
16 layer and (c) the ratio of Lagrangian/(Lagrangian + Eulerian) in  $1^\circ \times 1^\circ$  bins.



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19 **Figure S4.** Zonally averaged (a) low-frequency, (b) semidiurnal, (c) near-inertial and (d)  
 20 diurnal KE in  $1^\circ$  latitude bins estimated from Eulerian velocity field (blue) and Lagrangian  
 21 particle trajectories with (orange) and without (green) binning. Zonally averaged total  
 22 KE estimated from Eulerian velocity field (blue dotted curve) is also displayed in (a).