

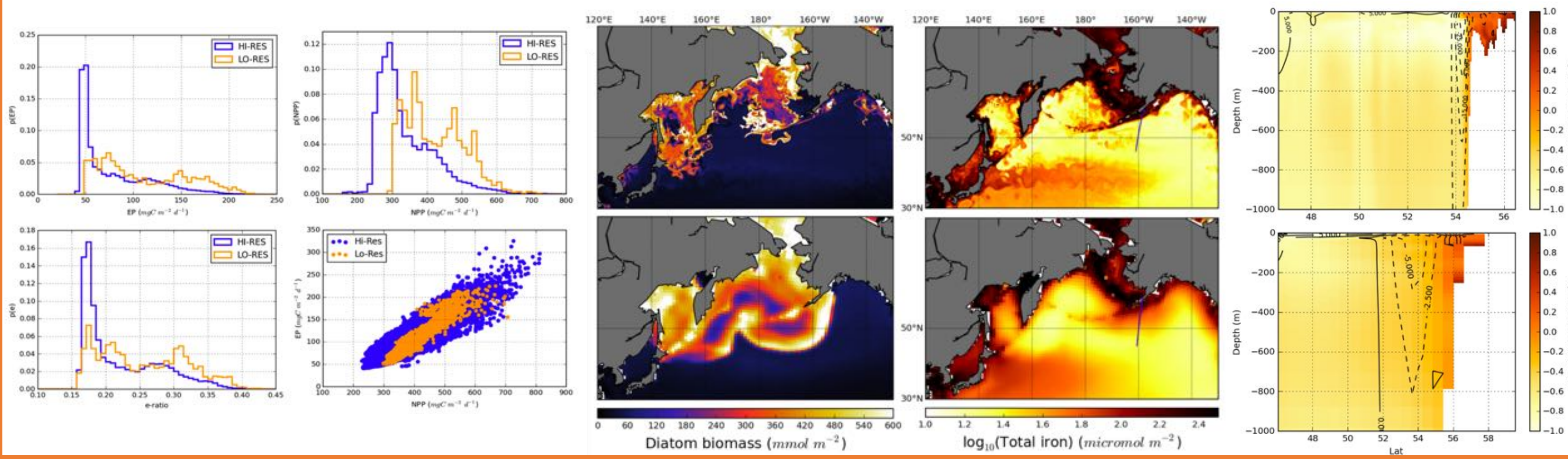
Mesoscale effects on carbon export: a global perspective

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North Pacific: Reduced iron transport limits production



Model and Results

Model: **Harrison et al. GBC 2018**

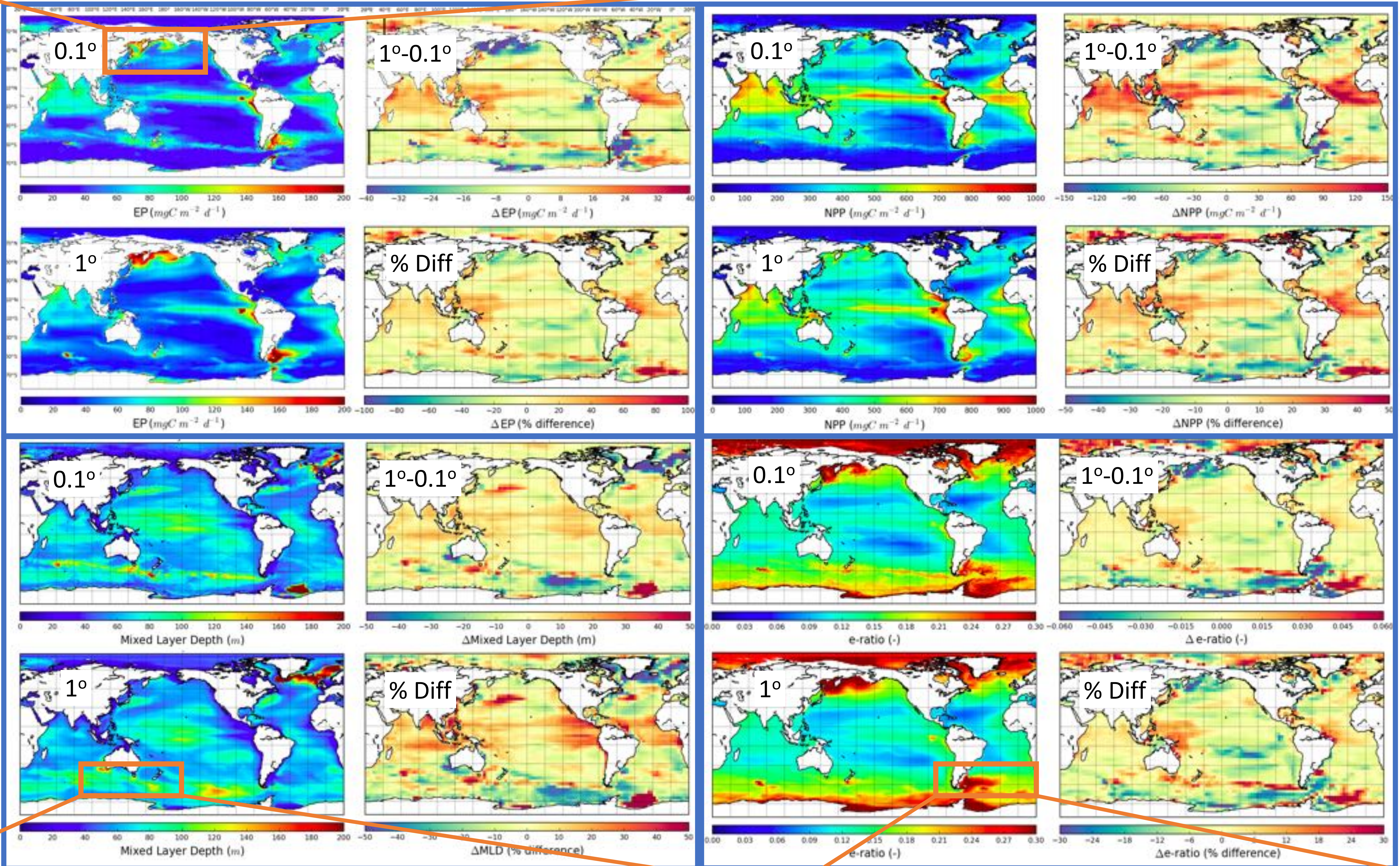
- 5 year CESM1-BEC 0.1 and 1 degree simulations
- Full ocean biogeochemistry

Result Highlights:

- Mesoscale resolution has a small effect on globally integrated carbon export (< 2%), but compensating regional impacts are up to +/-50%.
- Improved representation of coastal jets and mesoscale turbulence limit export in regions where shelf-derived nutrients fuel production.
- Deeper mixed layers with mesoscale resolution result in enhanced production in some regions

Export Production

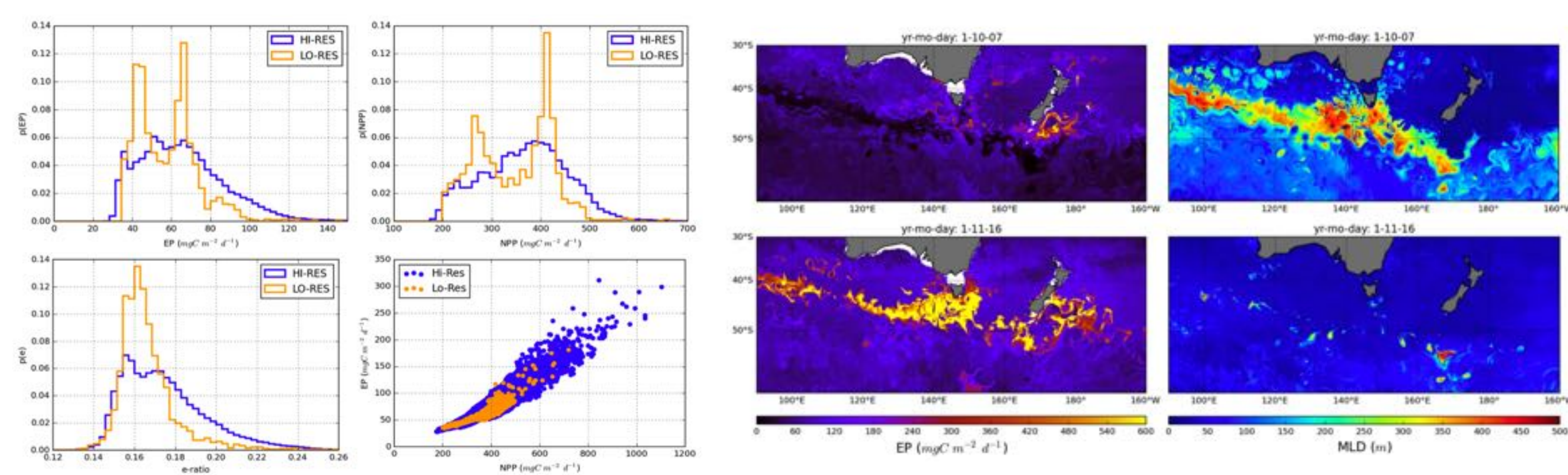
Mixed Layer Depth



Net Primary Productivity

e-ratio = EP/NPP

Subantarctic Pacific: Narrower, deeper mixed layers redistribute production and export



South Atlantic: Reduced iron, plankton community shift

