Supplementary Fig. 1. Estimated response in winter (DJF) of the geopotential height at 250 hPa (m) to eleven oceanic regressors. Black contours indicate 10% significance. Latitude circles are shown every 20°, starting at 20°N.
Supplementary Fig. 2. Response of the geopotential height anomaly (shading, in m) and the wave activity flux (green arrows, in m s) at 250 hPa in OND to the OE (left) and the PDO (right). Vectors in dark green are 10% significant, and only every third vector is plotted for clarity.

Supplementary Fig. 3. Turbulent heat flux feedback residual (Wm$^{-2}$, positive upward) for the PDO in NDJ (top) and for SONDF based on OAFlux (bottom). The mean KE and OE paths are indicated, and black contours indicate 10% significance.