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The bulk parameterizations of turbulent air–sea fluxes in NEMO4: the origin of sea surface temperature differences in a global model study

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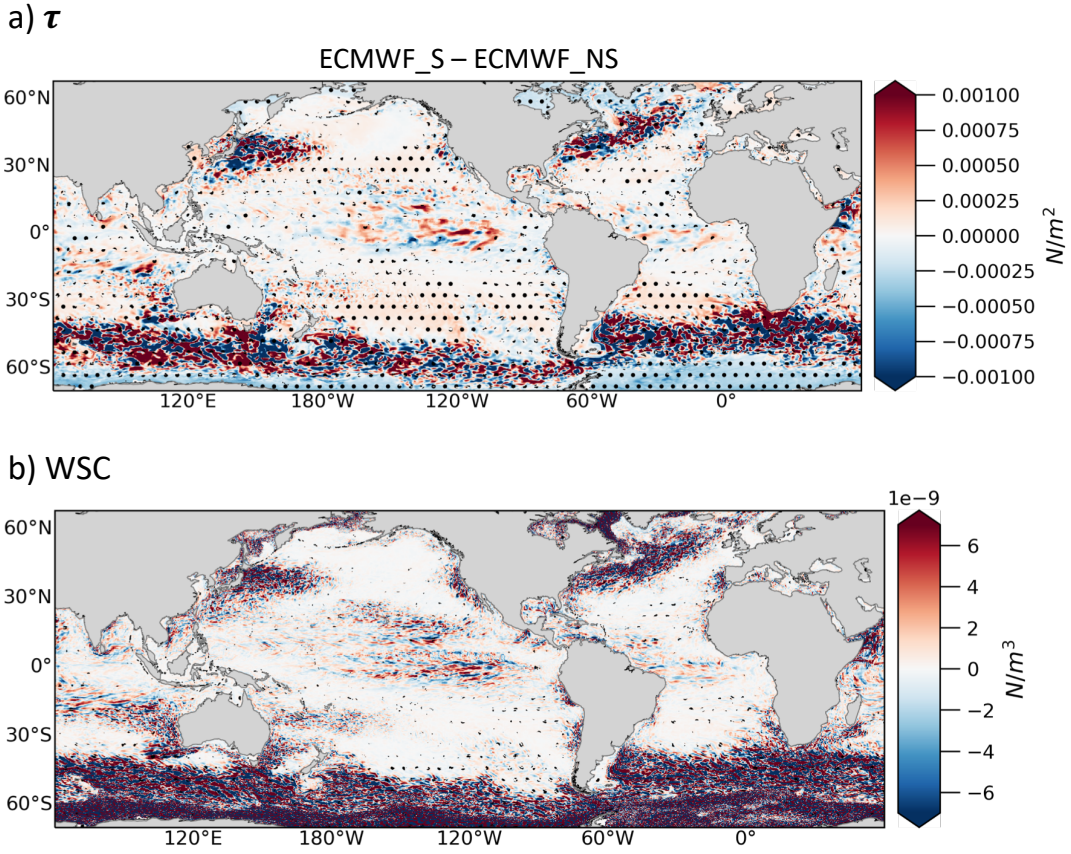
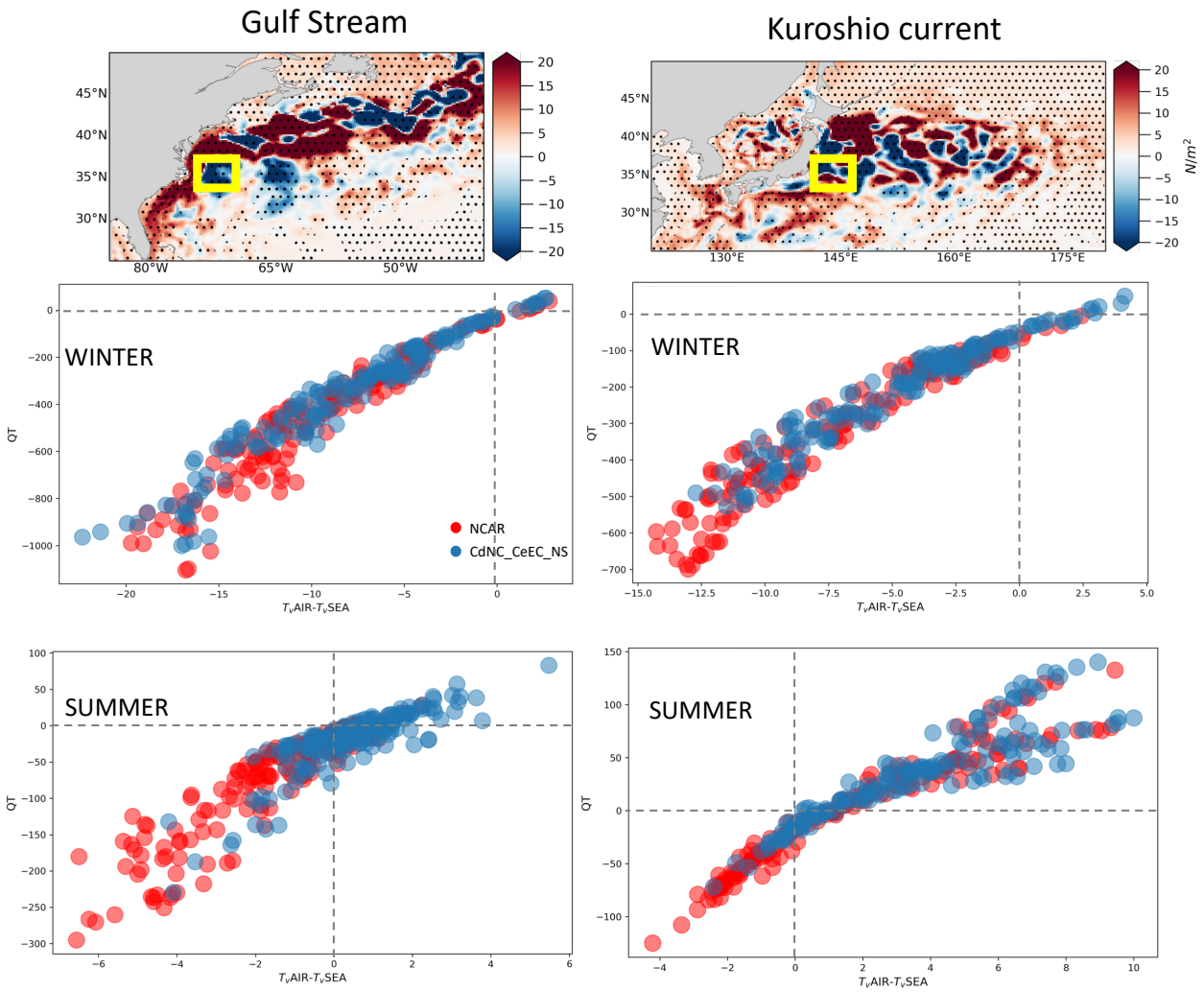
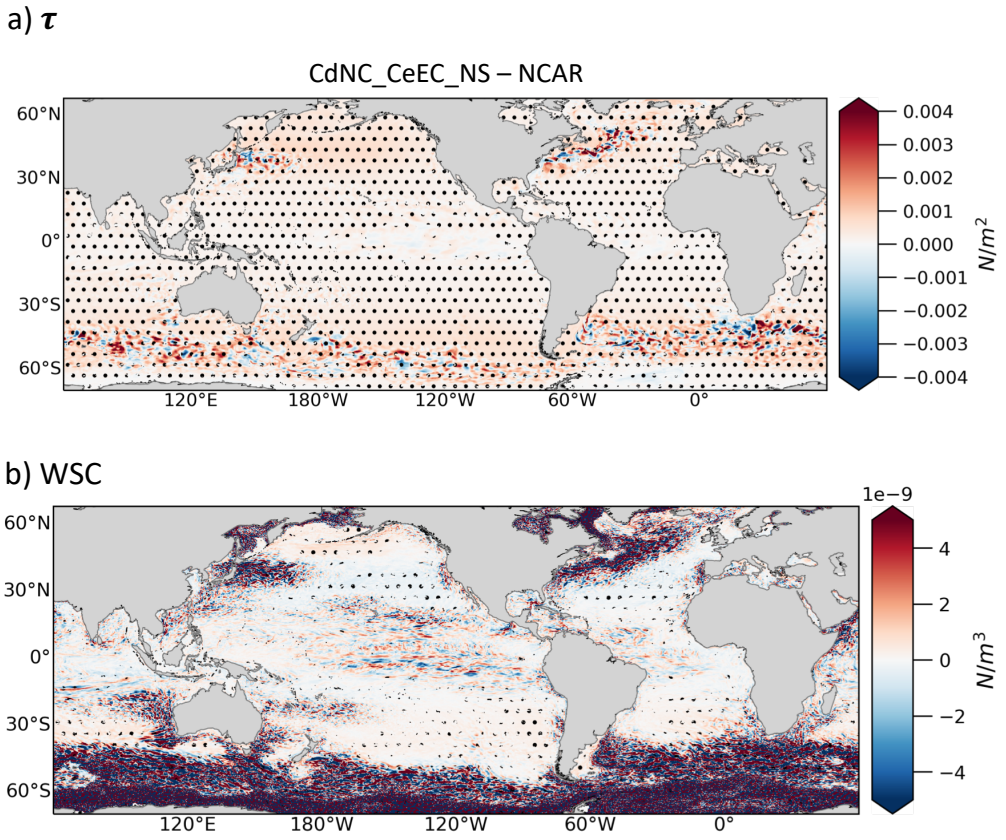
SUPPLEMENTARY MATERIAL



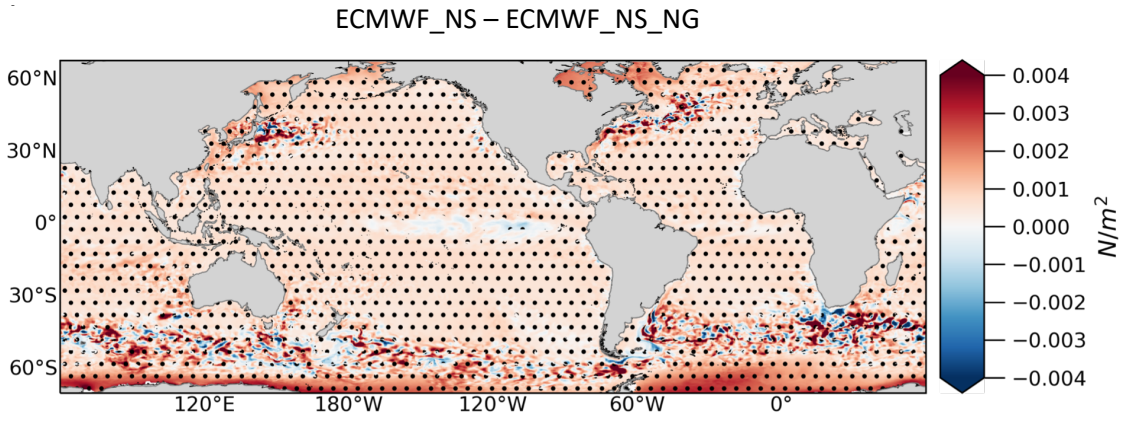
S1. Annual mean differences of a) wind stress ($\boldsymbol{\tau}$), and b) wind stress curl (WSC) between ECMWF_S and ECMWF_NS. Hatching indicates significant values (95% confidence level).



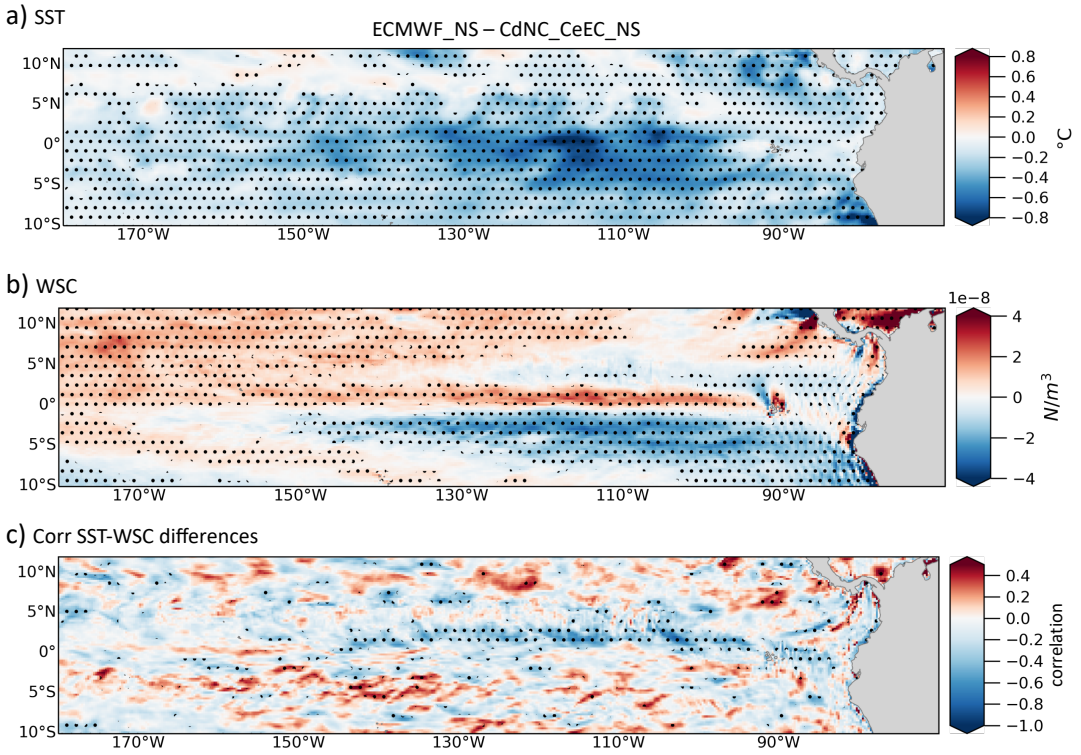
S2. Zoom of annual mean differences of total turbulent heat fluxes (QT) between CdNC_CeEC_NS and NCAR experiments over Gulf Stream and Kuroshio current (top row); Relationship between total turbulent fluxes (QT) and the air-sea virtual temperature difference for selected grid points inside the yellow squares in CdNC_CeEC_NS (blue circles) and NCAR (red circles) in winter (middle row) and in summer (bottom row) for Gulf Stream and Kuroshio current.



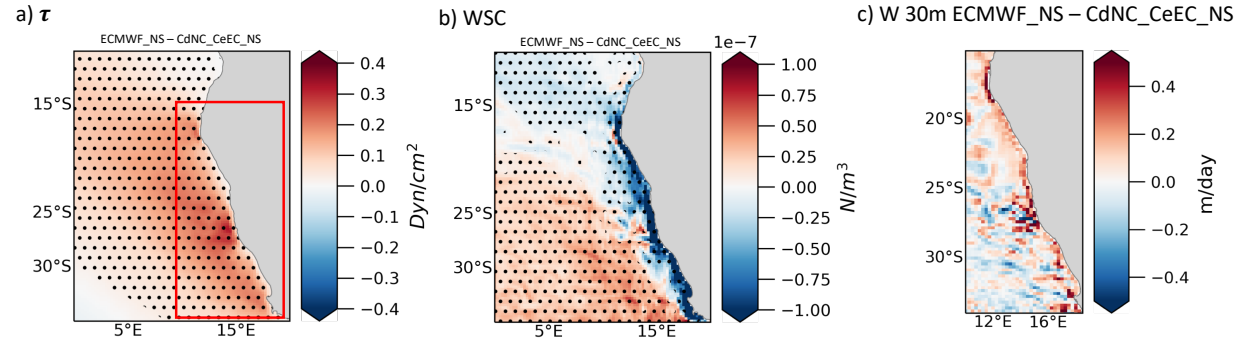
S3. Annual mean differences of a) wind stress ($\boldsymbol{\tau}$), and b) wind stress curl (WSC) between CdNC_CeEC_NS and NCAR. Hatching indicates significant values (95% confidence level).



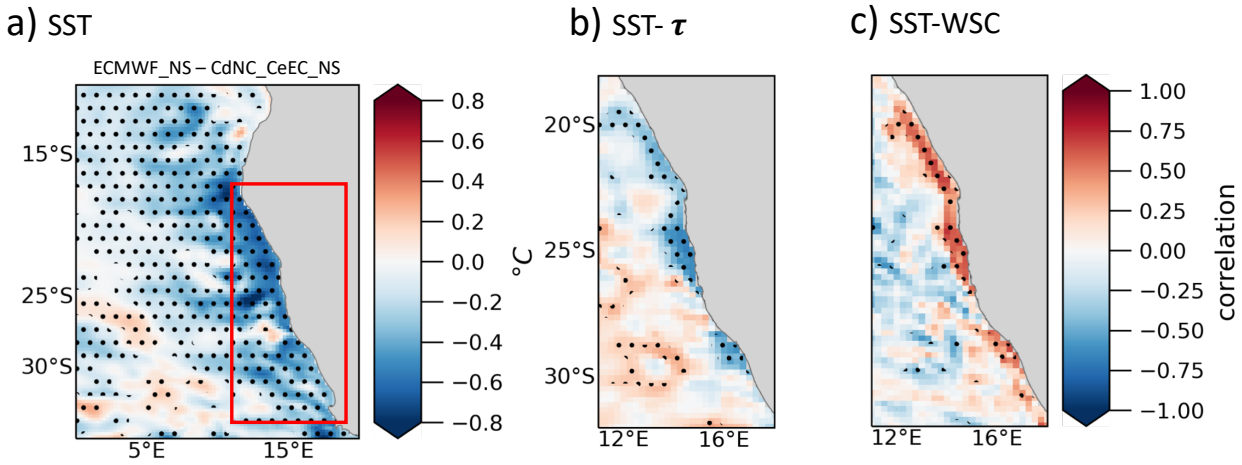
S4. Annual mean differences of wind stress between ECMWF_NS and ECMWF_NS_NG.



S5. Annual mean differences of a) SST and b) wind stress curl (WSC) between ECMWF_NS and CdNC_CdEC_NS; b) correlation between SST WSC differences differences ECMWF_NS and CdNC_CdEC_NS. Hatching indicates significant values (95% confidence level).



S6. Seasonal mean differences (ONDJ) of a) wind stress ($\boldsymbol{\tau}$) and b) wind stress curl (WSC) between ECMWF_NS and CdNC_CeEC_NS; c) Differences in vertical velocity at 30m (W 30m) between the two ECMWF_NS and CdNC_CeEC_NS. Hatching indicates significant values (95% confidence level). Red square identifies the area shown in panel c).



S7. a) Annual mean differences of SST between ECMWF_NS and CdNC_CeEC_NS; b) correlation between SST differences and wind stress differences between ECMWF_NS and CdNC_CeEC_NS; c) same as in b) but for SST differences and wind stress curl differences. Hatching indicates significant values (95% confidence level). Red square identifies the area shown in panels b) and c).