Supplement

Michael Cartwright et al.

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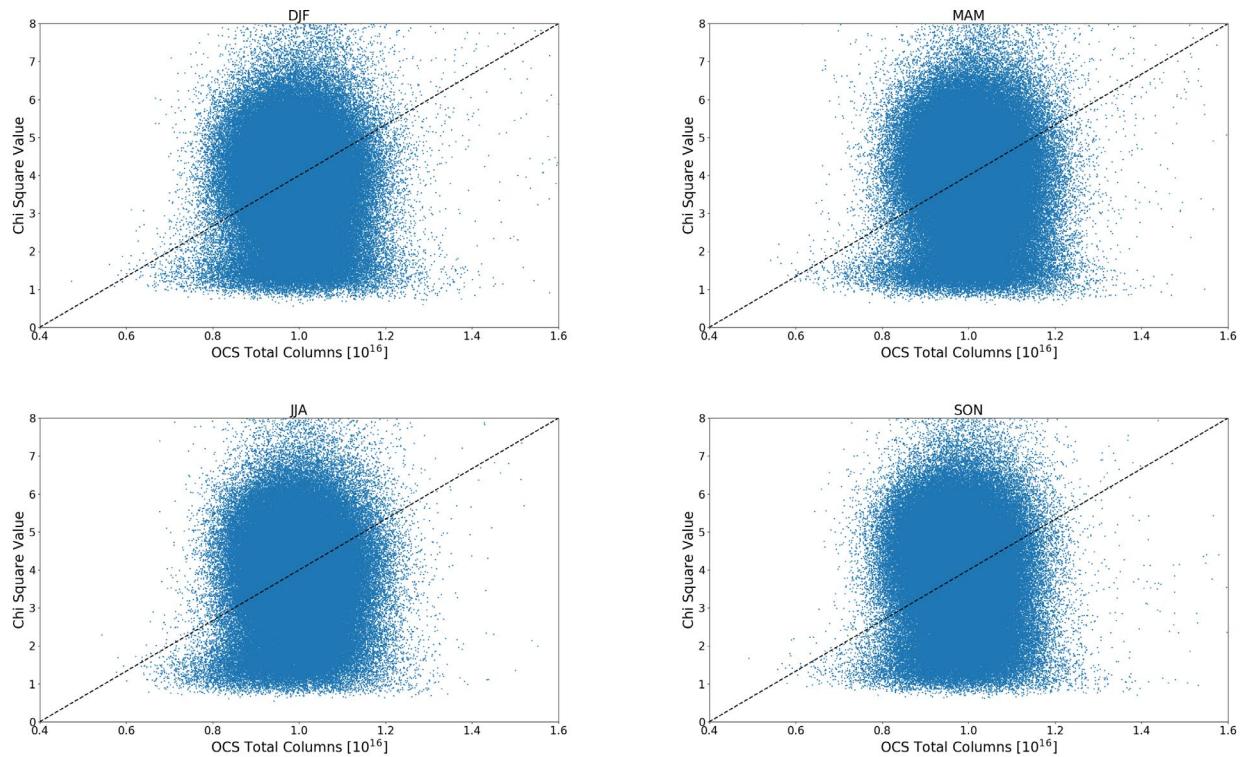

5   **Figure S1. Correlation between OCS total column amounts (molecules cm^{-2}) and χ^2. A random subset of 200,000 pixels is used from global OCS$_{OCE-B}$ 2018 data.**

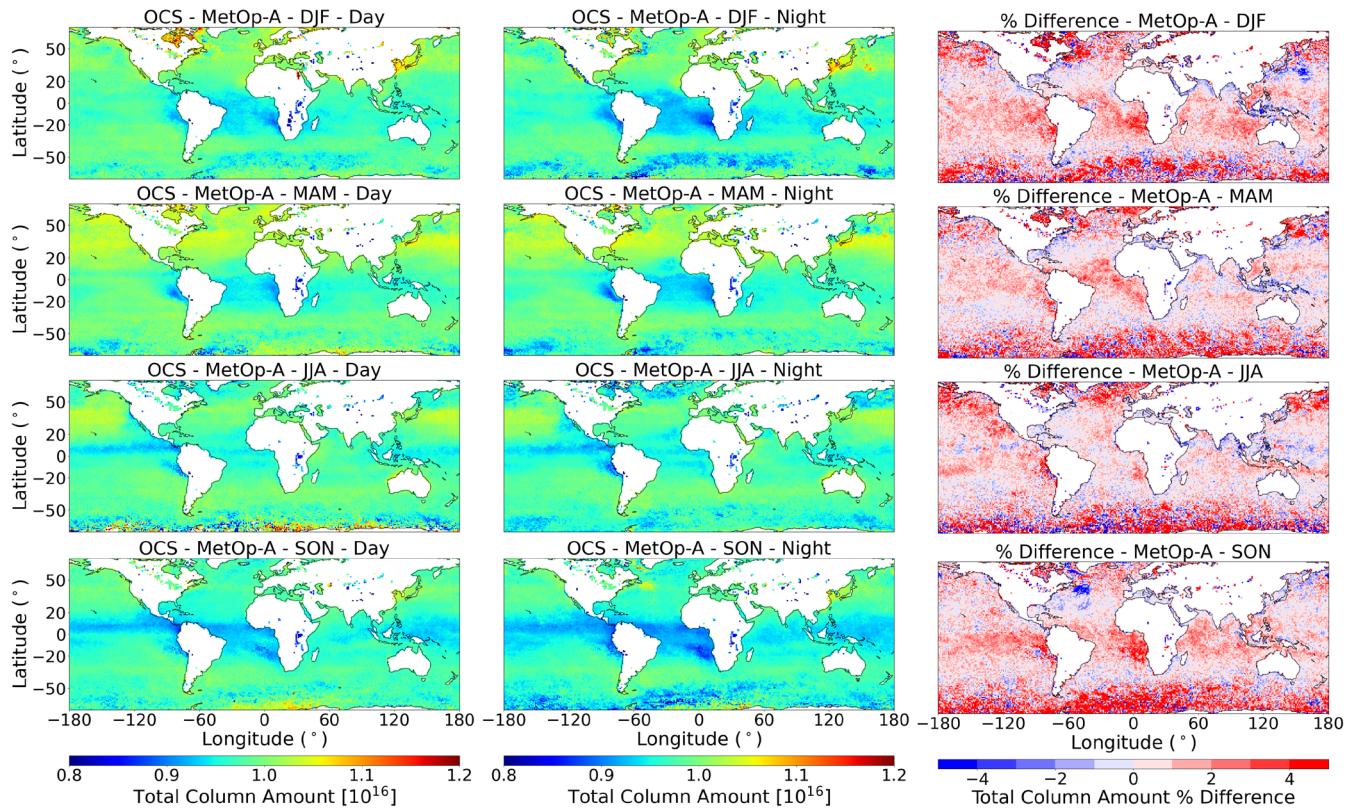



Figure S2. Seasonal estimates of total column OCS mean values in units of molecules cm⁻², for 2018, in 1°×1° bins. Using MetOp-A measurement spectra only. Left: OCS$_{OCE-A}$ daytime estimates, middle: OCS$_{OCE-A}$ nighttime estimates, right: the % difference between day and night.

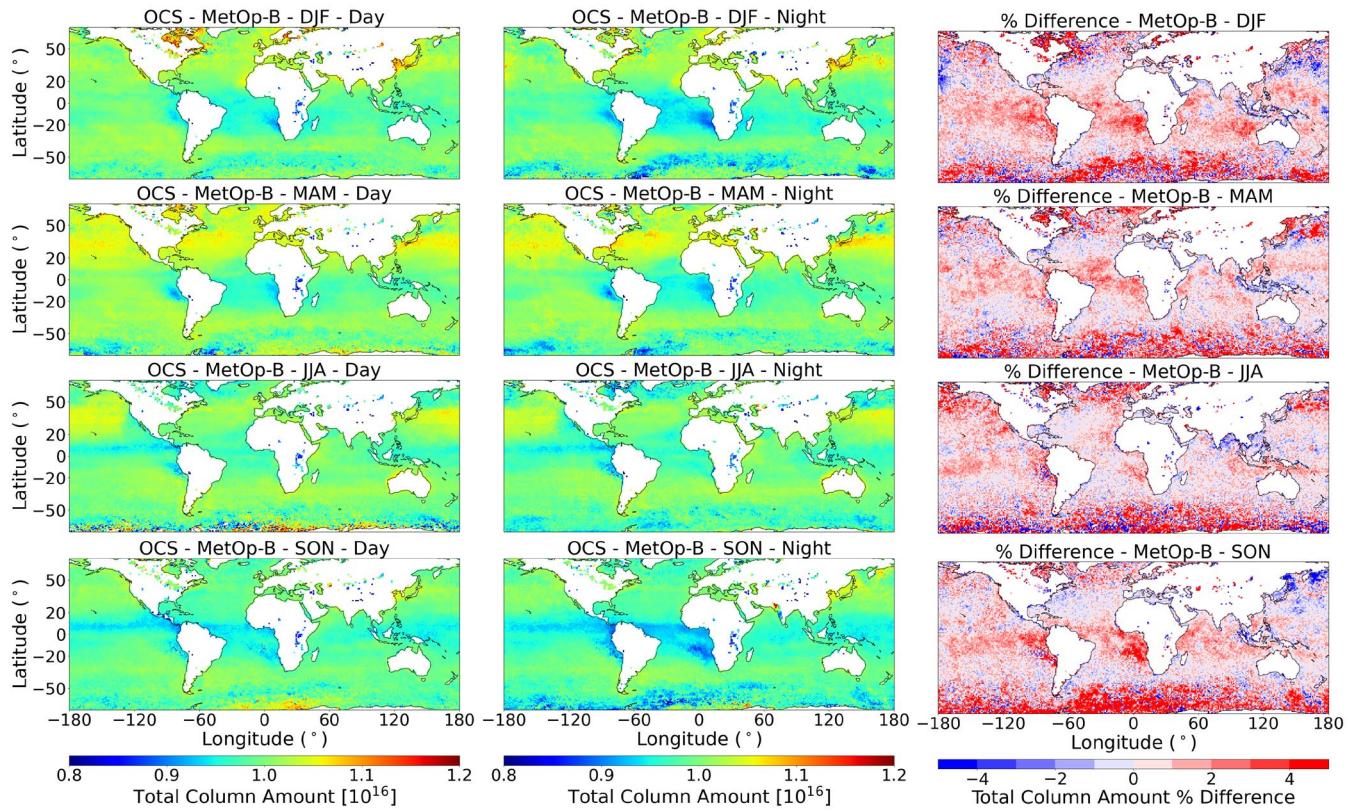



Figure S3. Seasonal estimates of total column OCS mean values in units of molecules cm^{-2}, for 2018, in 1°×1° bins. Using MetOp-B
measurement spectra only. Left: OCS$_{OCE-B}$ daytime estimates, middle: OCS$_{OCE-B}$ nighttime estimates, right: the % difference
between day and night.

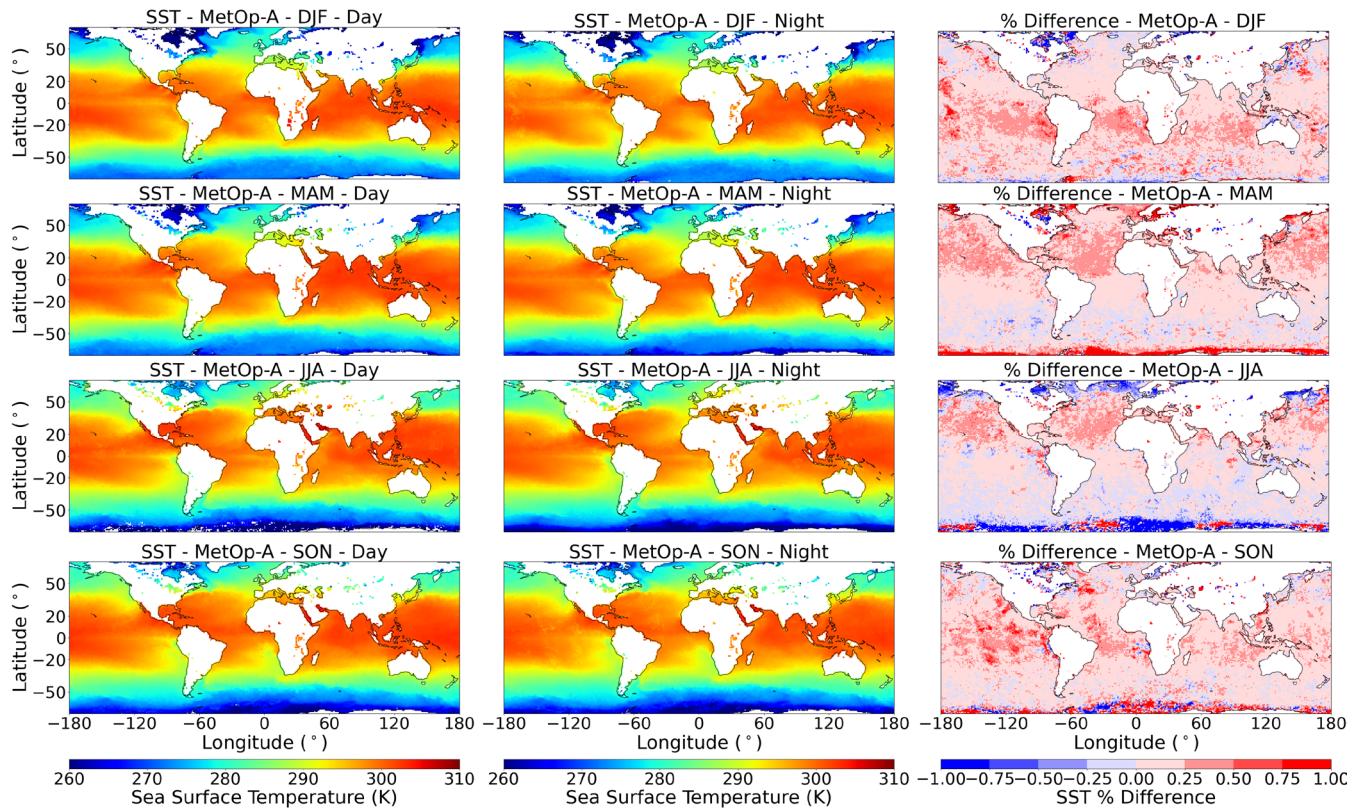



Figure S4. Seasonal estimates of mean retrieved sea surface temperature (SST) values in units of K, for 2018, in 1°×1° bins. Using MetOp-A measurement spectra only. Left: daytime estimates, middle: nighttime estimates, right: the % difference between day and night.

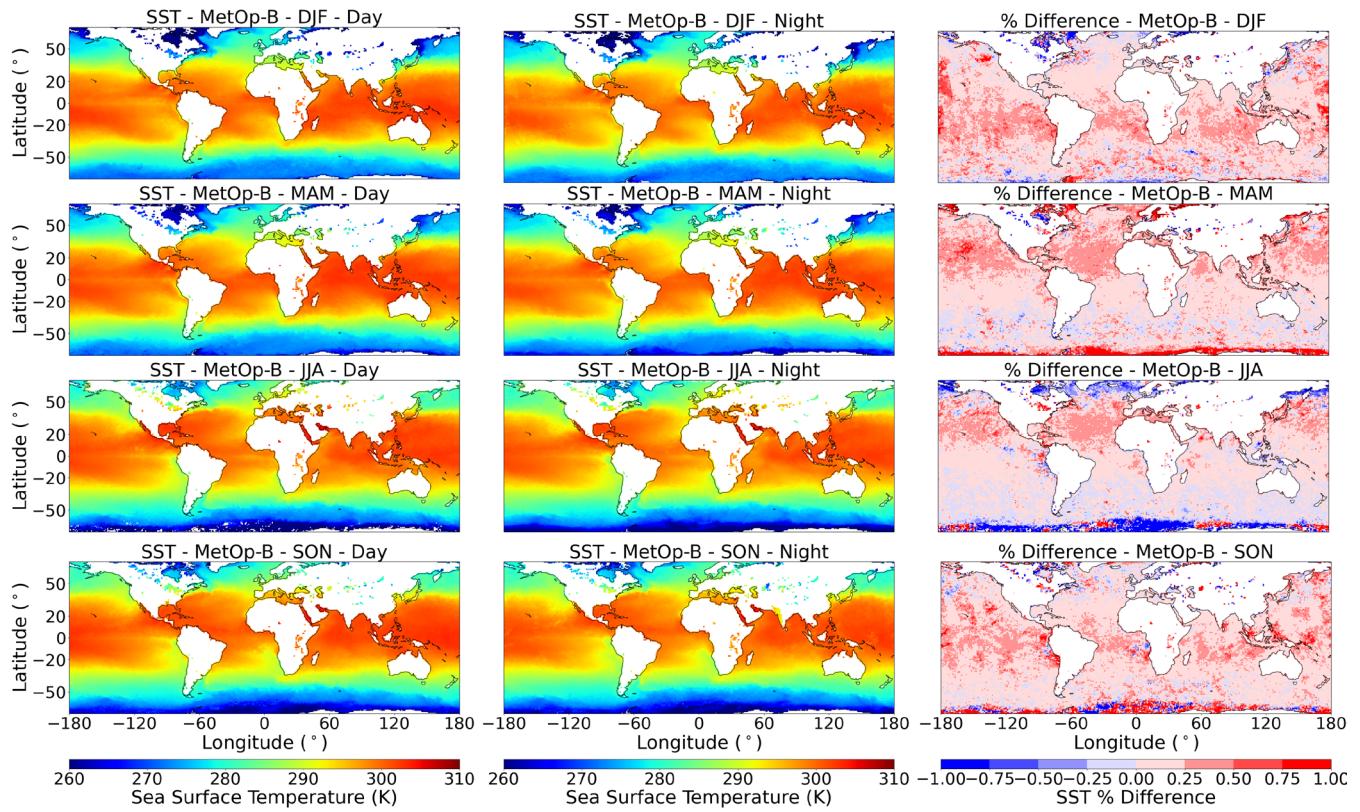



Figure S5. Seasonal estimates of mean retrieved sea surface temperature (SST) values in units of K, for 2018, in 1°×1° bins. Using MetOp-B measurement spectra only. Left: daytime estimates, middle: nighttime estimates, right: the % difference between day and night.

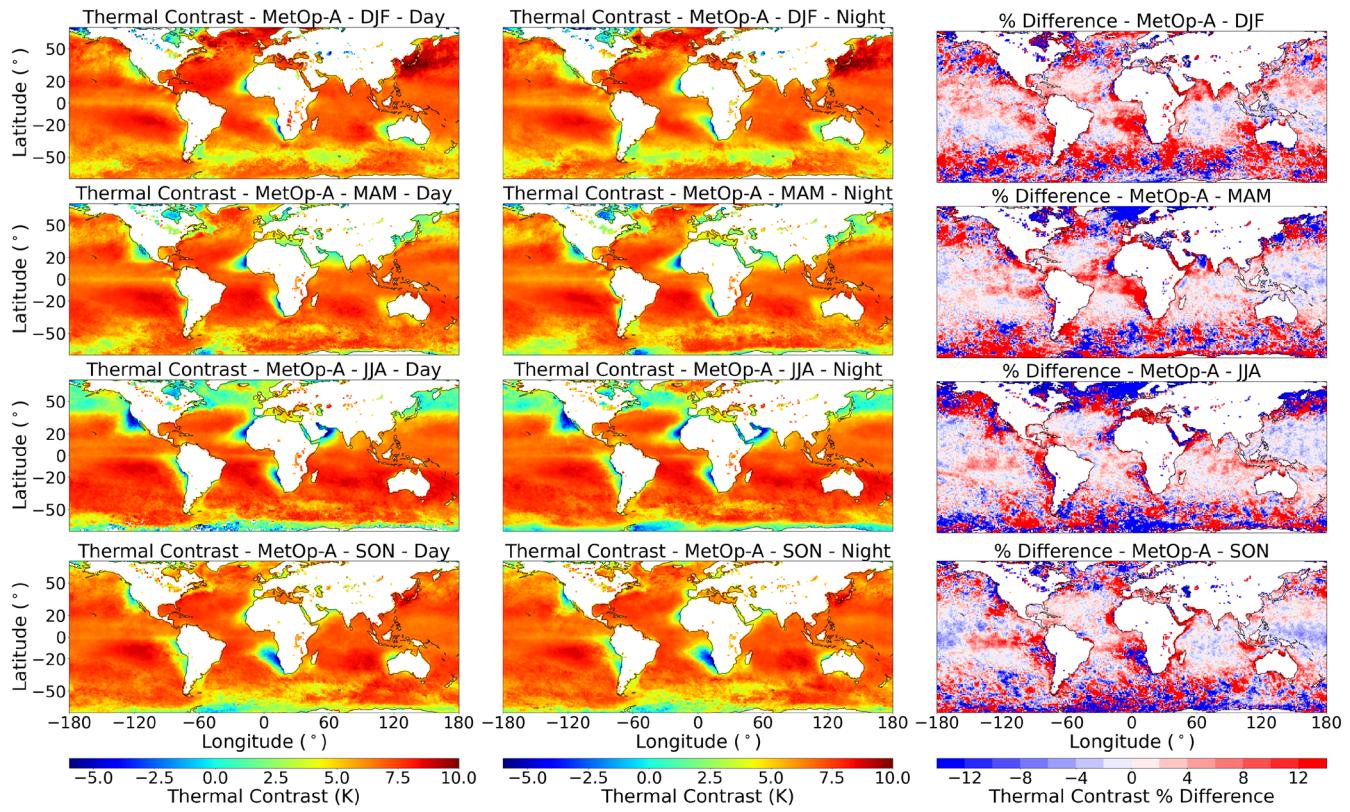
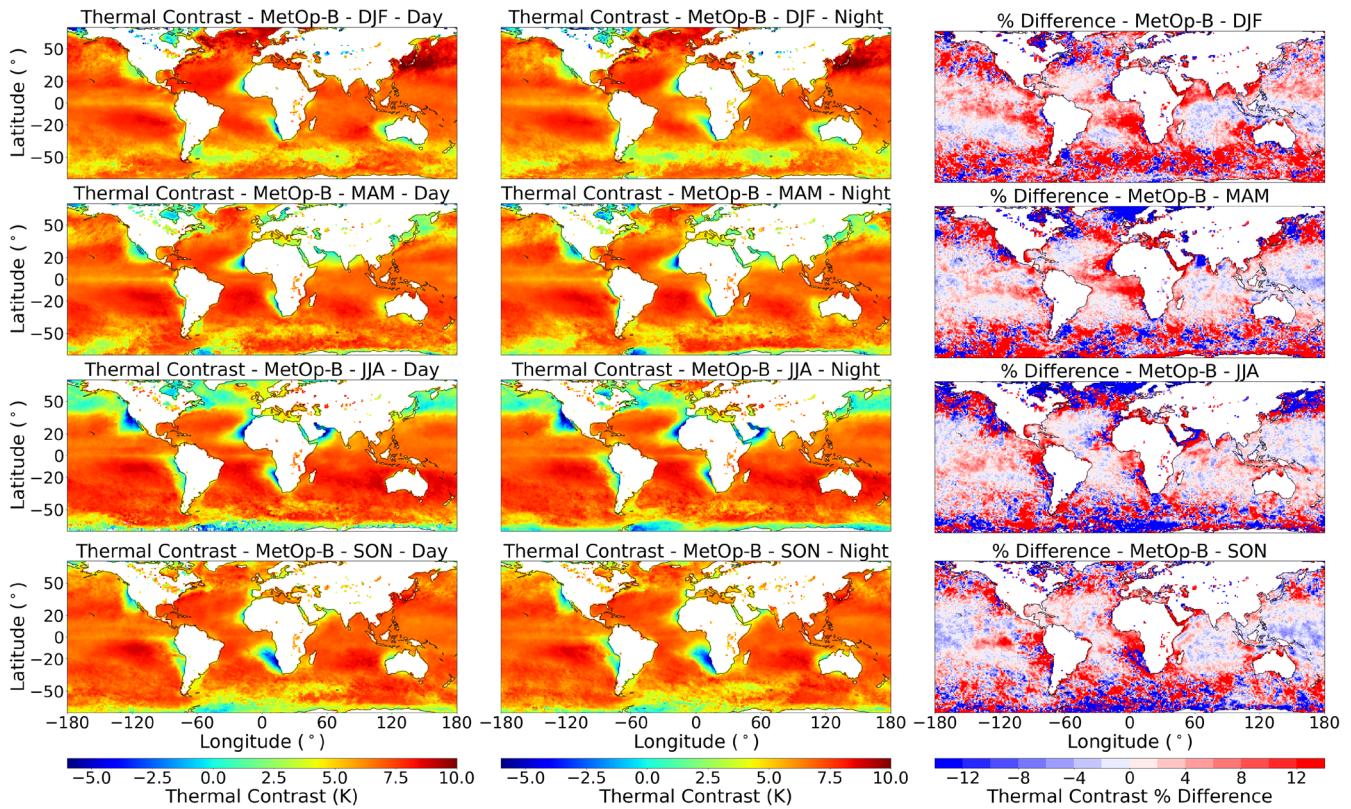
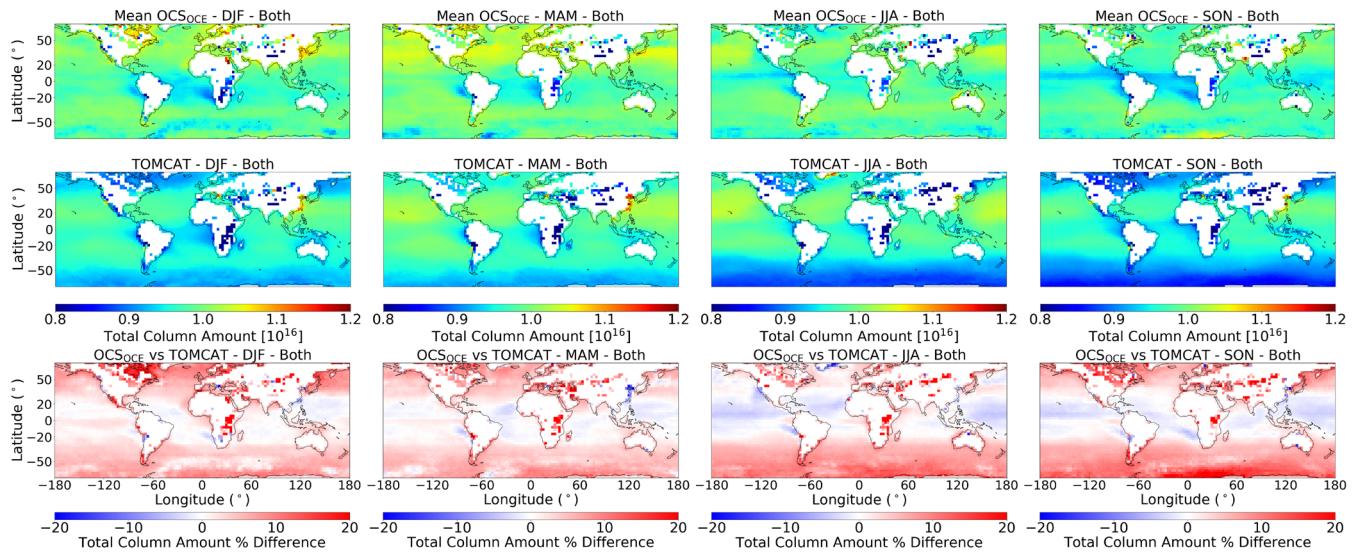



Figure S6. Seasonal estimates of mean retrieved thermal contrast (surface temperature less the first atmospheric layer temperature) values in units of K, for 2018, in 1°×1° bins. Using MetOp-A measurement spectra only. Left: daytime estimates, middle: nighttime estimates, right: the % difference between day and night.

35 **Figure S7. Seasonal estimates of mean retrieved thermal contrast (surface temperature less the first atmospheric layer temperature) values in units of K, for 2018, in 1°×1° bins. Using MetOp-B measurement spectra only. Left: daytime estimates, middle: nighttime estimates, right: the % difference between day and night.**

40 **Figure S8. 1st row: seasonal estimates of total column OCS_OCE mean values in units of molecules cm^{-2}, for 2018, in 1°×1° bins. 2nd row: TOMCAT OCS without OCS_OCE AK applied and 3rd row: the % difference with OCS_OCE.**