# Drivers of SIC & SST variability

2007 and 2012 September sea ice extents, from NSIDC. While 2012 had less sea ice than 2007, SST anomalies in 2007 were almost three times warmer than in 2012 (Steele and Dickinson 2016).

Arctic sea ice has been declining, and sea surface temperatures (SSTs) have been rising. However, sea ice concentration (SIC) and SST anomalies are not perfectly correlated.

Sea ice and SST are influenced by many factors, including radiative fluxes. The timing of radiative fluxes plays a role in how the ocean state develops, with longwave (LW) fluxes stronger and more variable in spring and shortwave (SW) fluxes dominating in summer.

Both LW and SW fluxes are connected to clouds, which modulate the surface energy budget by blocking SW to cool the surface or trapping LW to warm the surface.
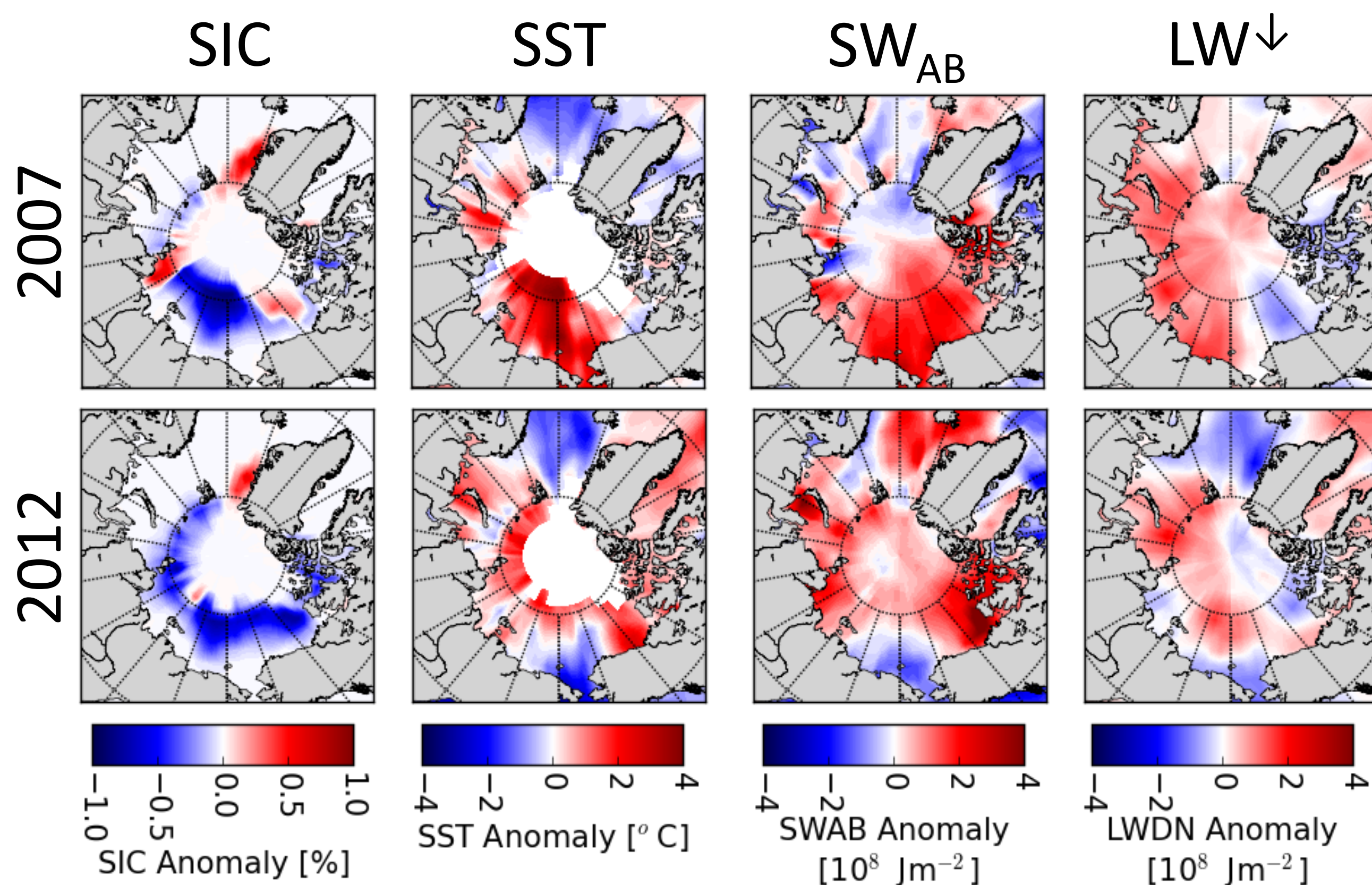
Anomalies of SIC from NSIDC, SST from NOAA OI, absorbed SW (SW_{ab}) and downwelling LW ($LW\downarrow$) melt season accumulations from CERES, relative to 2001-2017.

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