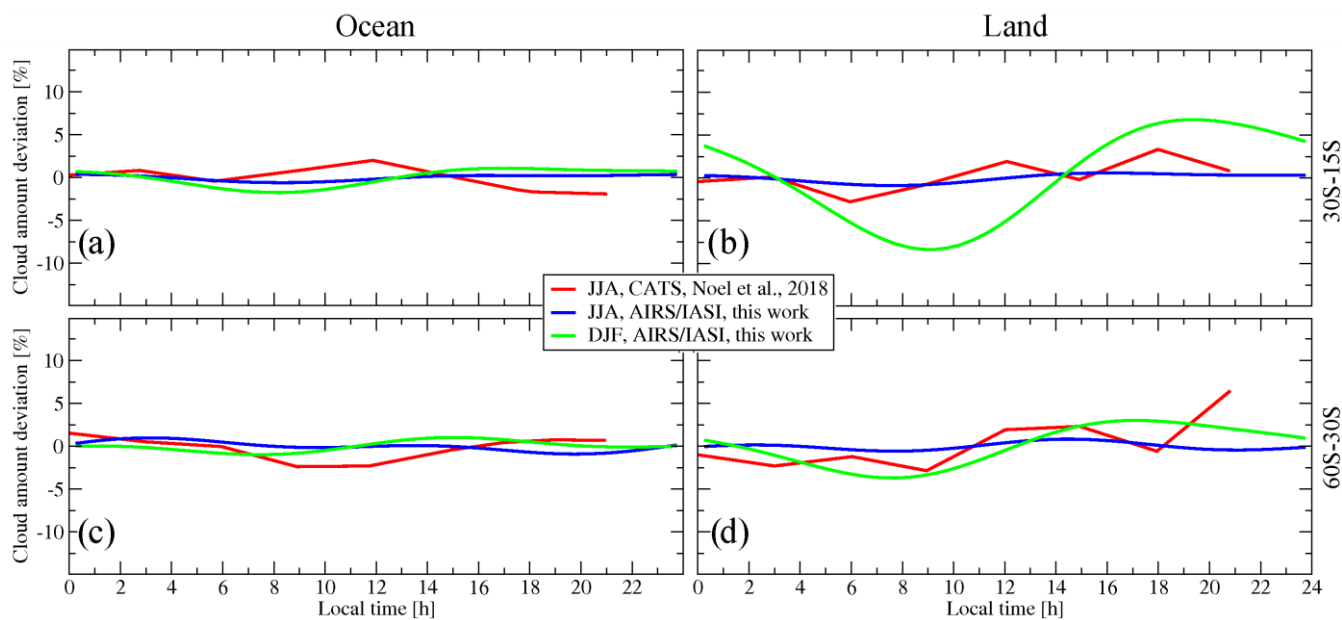
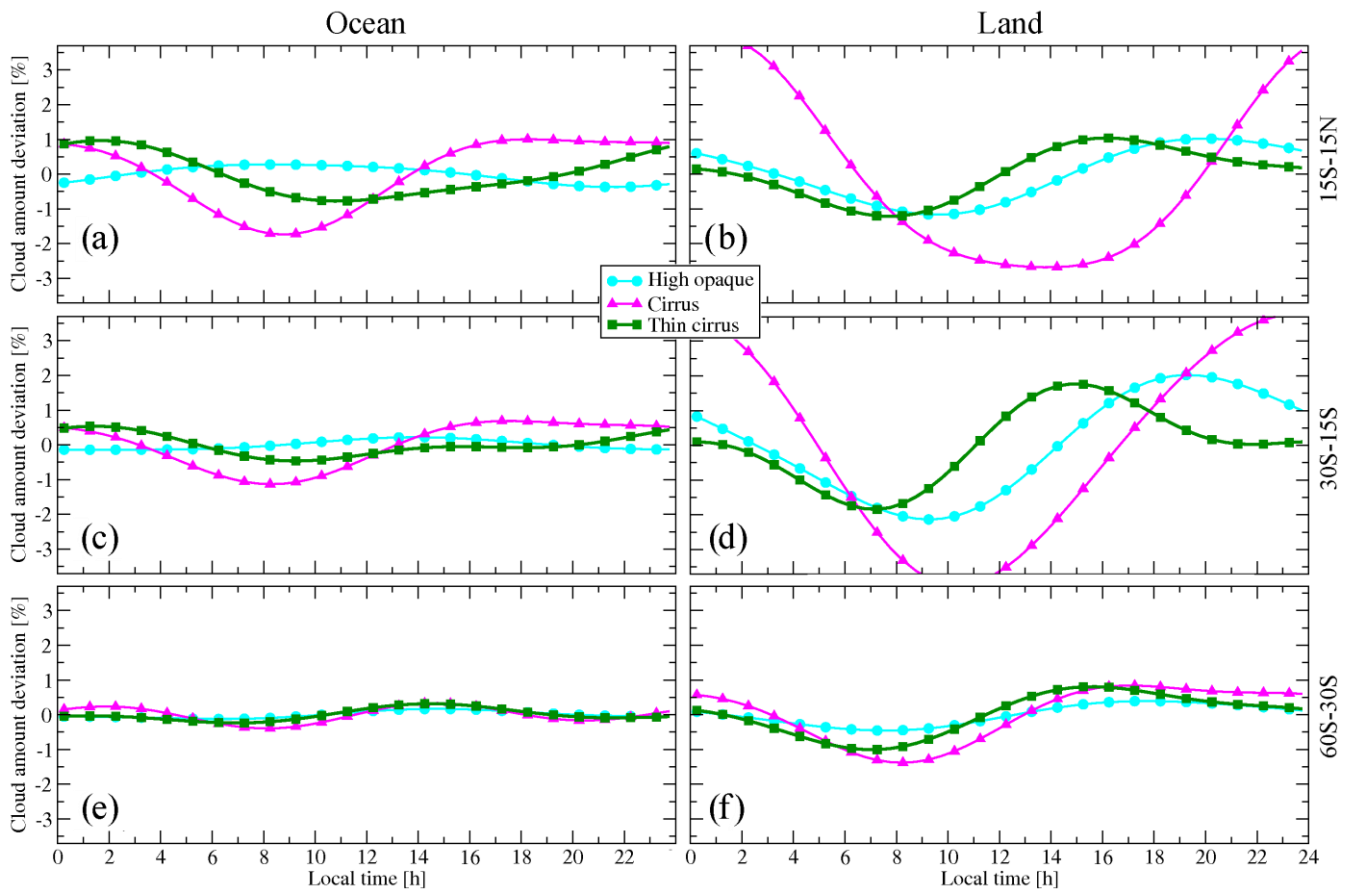


## Supplement



5 **Fig. S1.** Same as Fig.3, but for the latitudinal zones where the diurnal cycle is weak in the boreal summer. Neither the correlation coefficients for AIRS/IASI vs CATS nor the peak local times for CATS are marked because the observed variation is noisy. DJF curves for AIRS/IASI correspond to austral summer and have large amplitudes, similar to JJA curves in Fig.3.



**Fig. S2.** Diurnal cycle of high opaque, cirrus, and thin cirrus amount in SH subtropics and SH midlatitudes in austral summer estimated from AIRS/IASI: a) 15S–15N, ocean; b) 15S–15N, land; c) 30S–15S, ocean; d) 30S–15S, land; e) 60S–30S, ocean; f) 60S–30S, land. The statistics is averaged for 2008–2015.