

Figure S1. Normalized frequency distributions of the difference between the mid-cloud pressure between the cloud top and the apparent cloud height (corresponding to the real cloud base or to the height at which the cloud reaches full opacity) from CALIPSO and p_{cld} from AIRS (left) and between the cloud top temperature from CALIPSO and T_{cld} from AIRS (right). Statistics includes three years (2007-2009) of observations at 1:30 LT. AIRS-CIRS cloud retrievals using ancillary data from AIRS-NASA in red and from ERA-Interim in black, separately for high-level clouds (full line) and for clouds with $p_{cld} > 440$ hPa (broken line). Analysis over three latitude bands: 30°N-30°S (upper panel), 30°-60° (middle panel) and 60°-85° (lower panel).

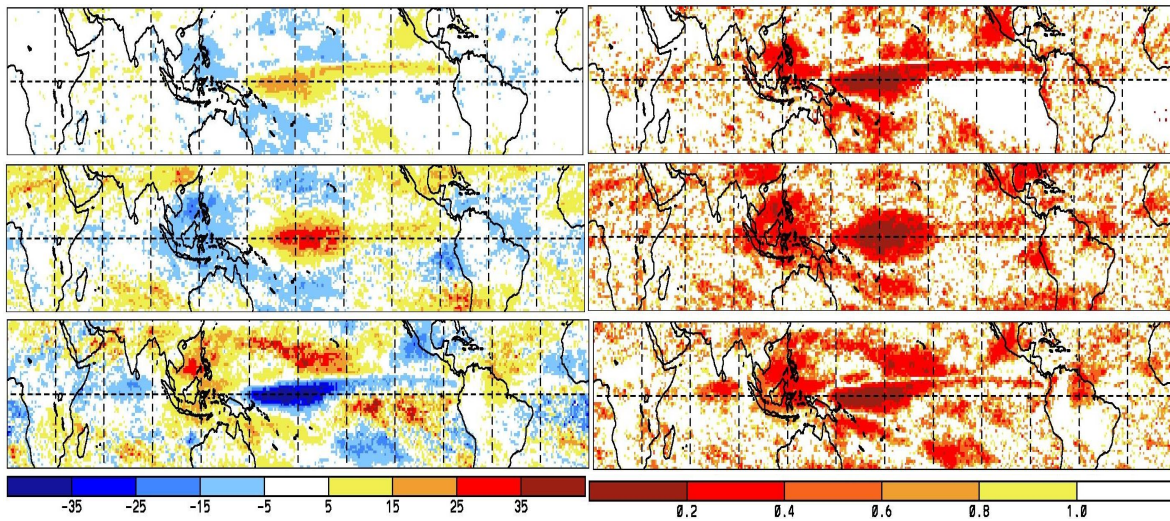


Figure S2. Left: Slopes of change in Cb (top), cirrus (middle) and thin cirrus (bottom) amount in % per °C of tropical warming ($20^{\circ}\text{N} \text{ ó } 20^{\circ}\text{S}$); right: relative slope uncertainty for Cb (top), cirrus (middle) and thin cirrus (bottom) amount change per °C tropical warming. Results using upper tropospheric ($p_{cld} < 330 \text{ hPa}$) cloud type anomalies from AIRS-CIRS and surface temperature anomalies from AIRS-NASA of 156 months during the period 2003-2015.