

Insert into Andy's Talk

AIRS Science Team Meeting

L. Larrabee Strow^{1,2} and Sergio De Souza-Machado, UMBC^{1,2}

September 26, 2019

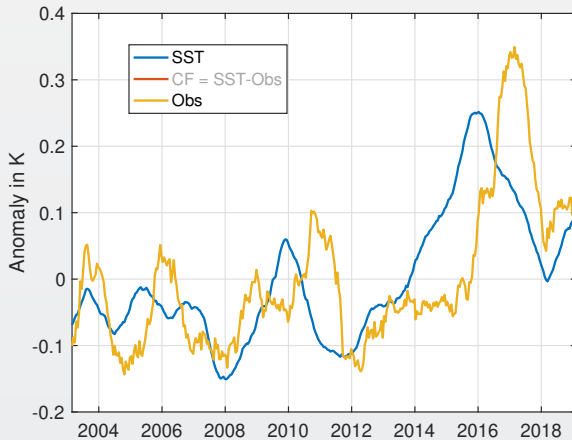
¹UMBC Physics Dept.

²UMBC JCET

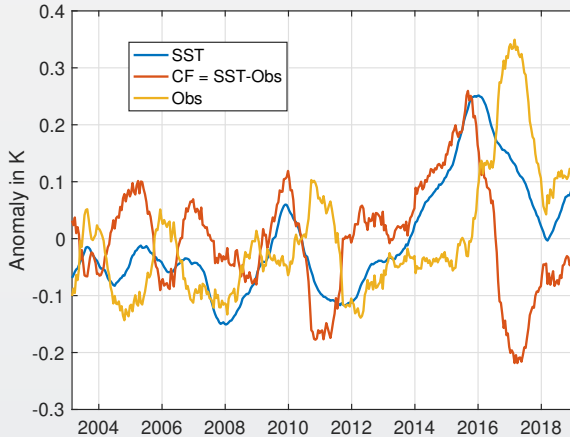
Cloud Forcing Global Behavior

- Something for which AIRS may have a unique contribution
- Define $CF = SST - BTobs$. (more cloud means positive)
- Global: maybe interesting, what does AIRS stability tell us?
- ENSO: how does cloud forcing respond to an ENSO kick?
- We know SST very well, we know BTobs very well.
- Of course, global dominated by tropics

Global SST and BTobs Anomalies

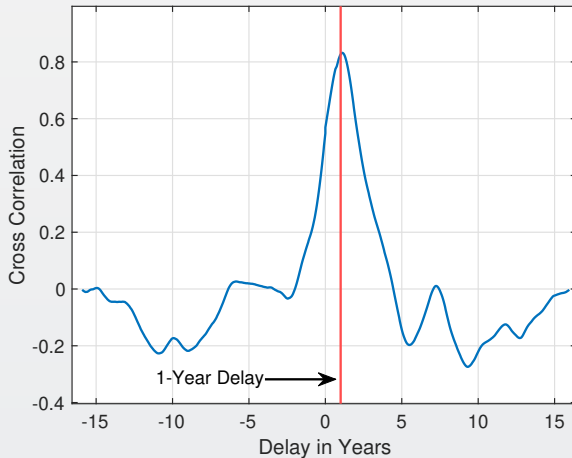


Now Add Cloud Forcing



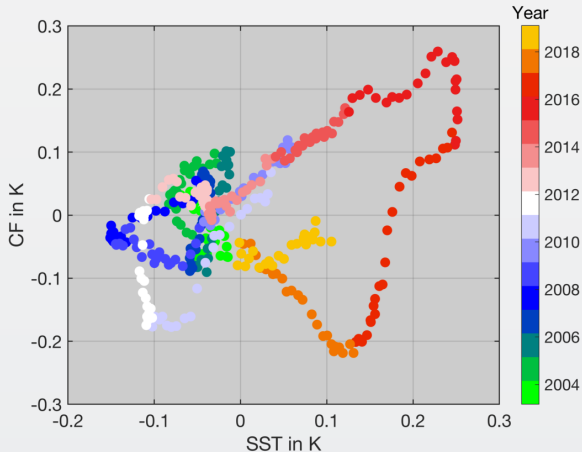
- Note sharp CF drop at SST peak anomaly

Delay of BTobs Anomaly to SST Anomaly



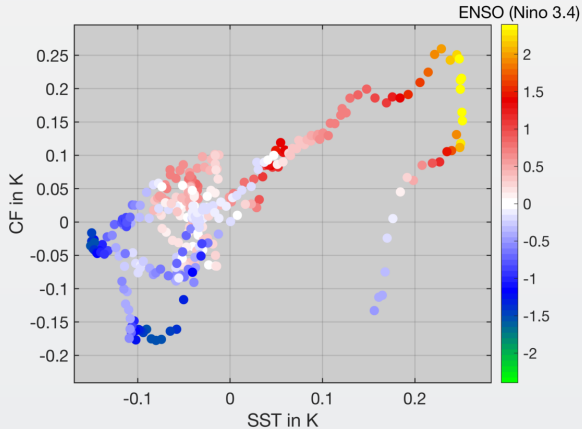
- Almost exactly a 1-year delay in BTobs (clear trend) from SST

Examine Time Dependence of CF vs SST Anomaly



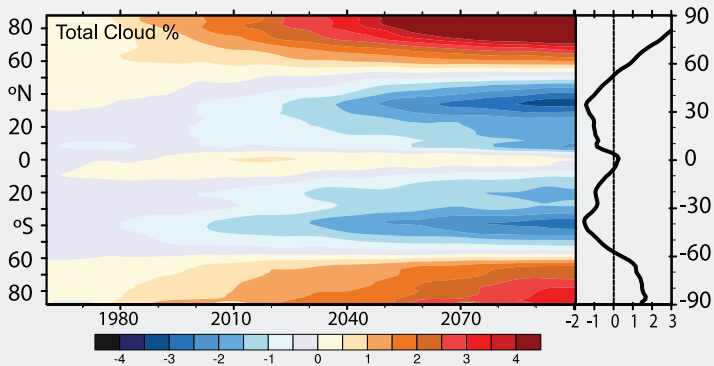
- At peak of ENSO CF drops very quickly
- Overshoots
- Then back to normal, BUT, of course, SST has gone up by a tremendous amount in a short time: 0.15K

CF vs ENSO Index



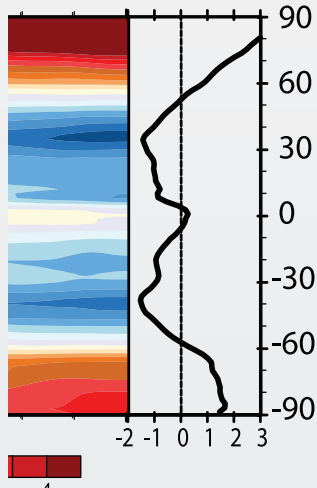
- ENSO returns to normal, CF returns

Climate Model Cloud Trends (Trenberth, 2009)



AIRS CF (Scales about right)

Climate Model C(fraction) Trend



AIRS CF Trend

