

CALIPSO observations

data to address indirect effects ?

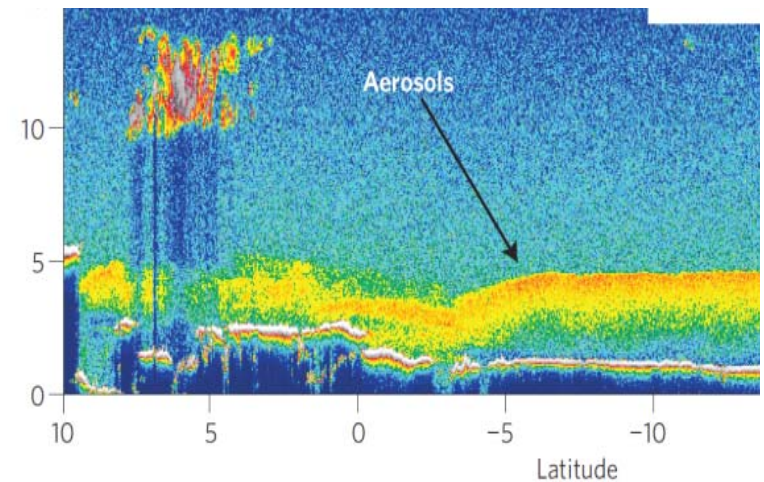
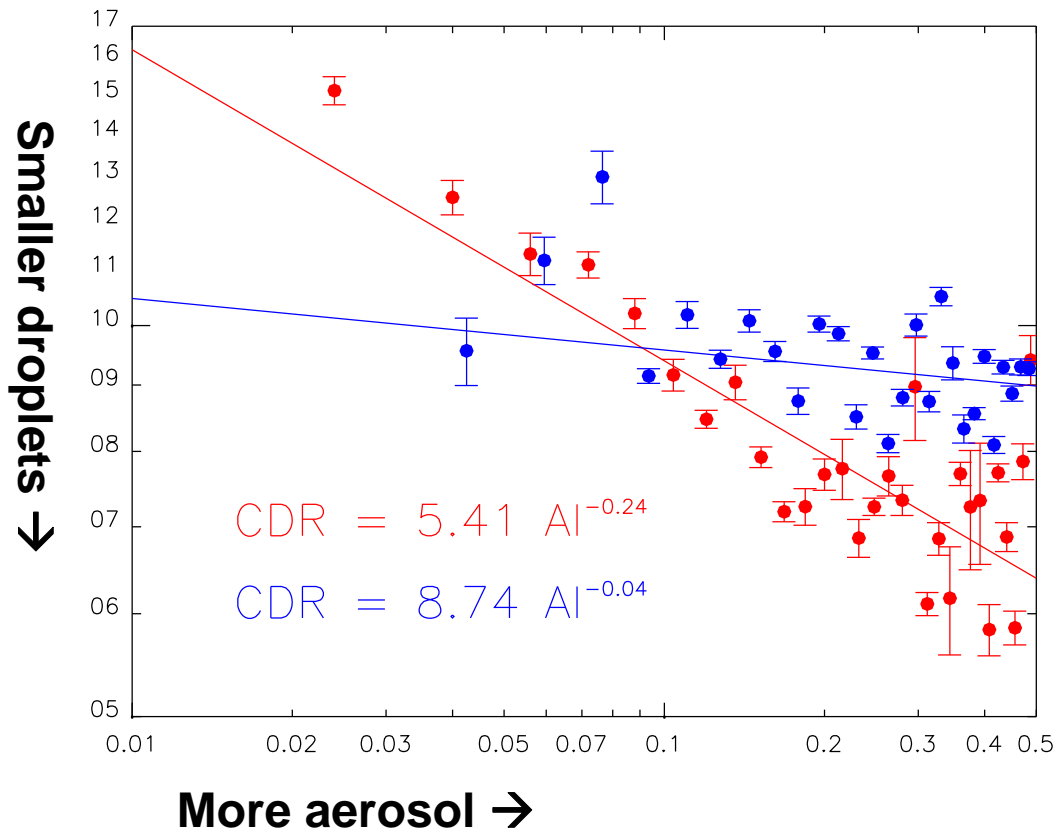
Dave Winker

Costatino and Breon, GRL, 2010: Observations of Twomey effect

Smoke layer vertically separated from cloud in 83% of observations

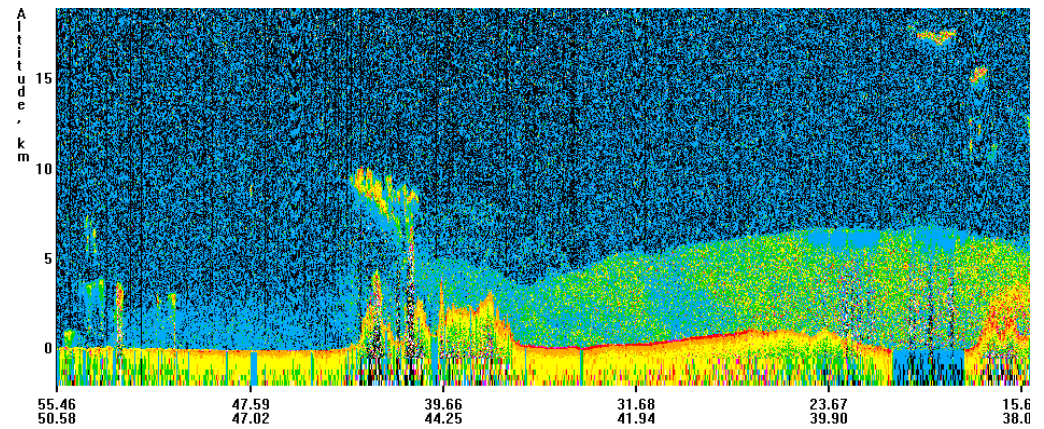
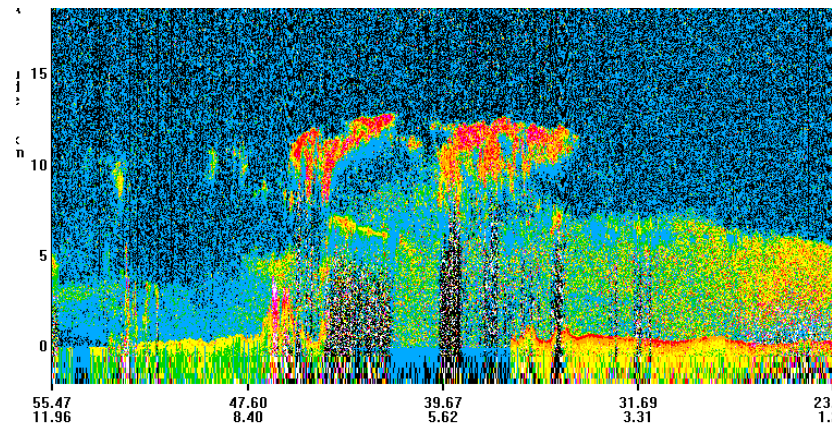
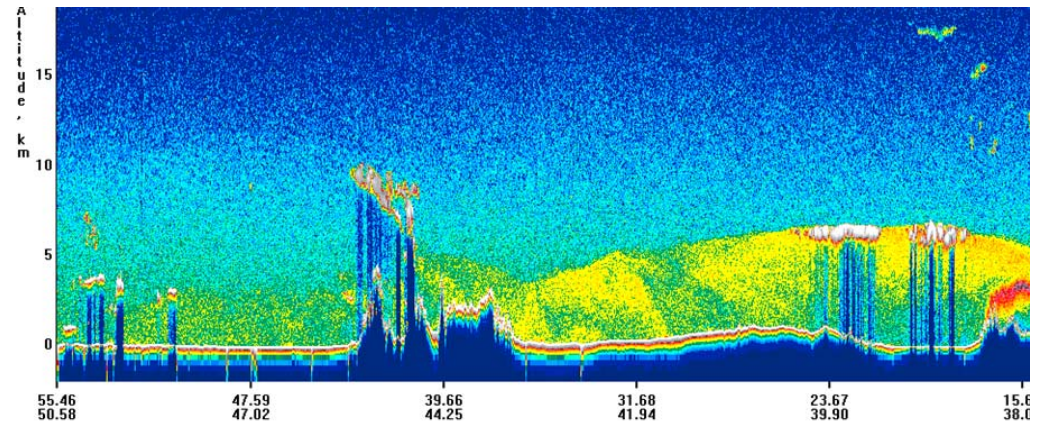
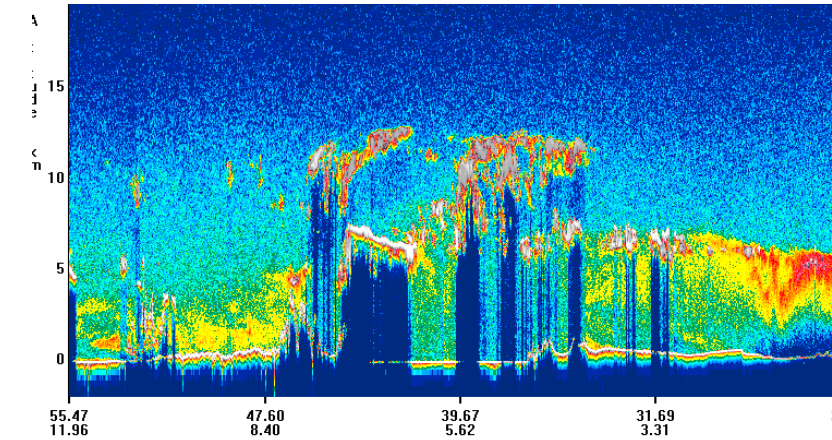
Blue – smoke and cloud are vertically separated

Red – smoke in contact with cloud (as confirmed by CALIOP)



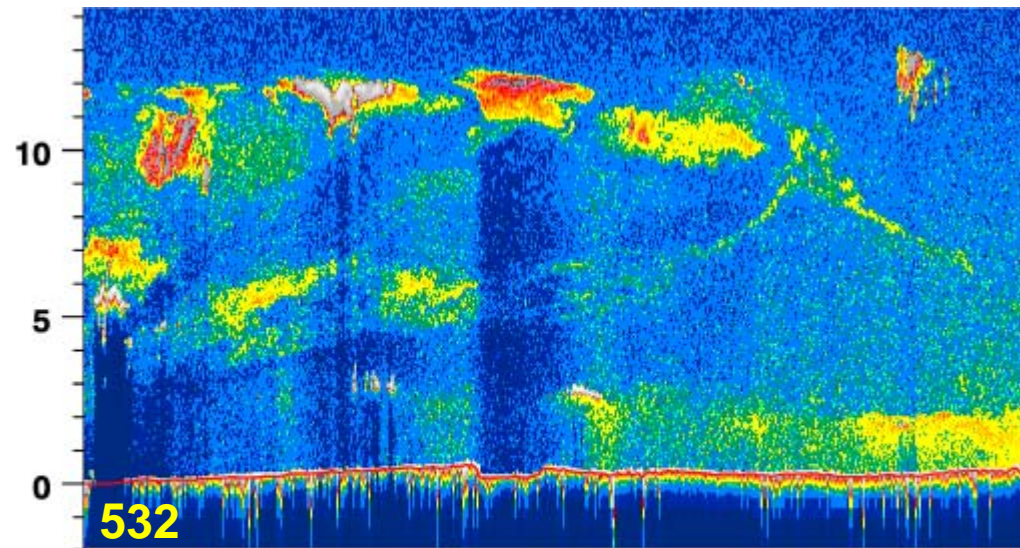
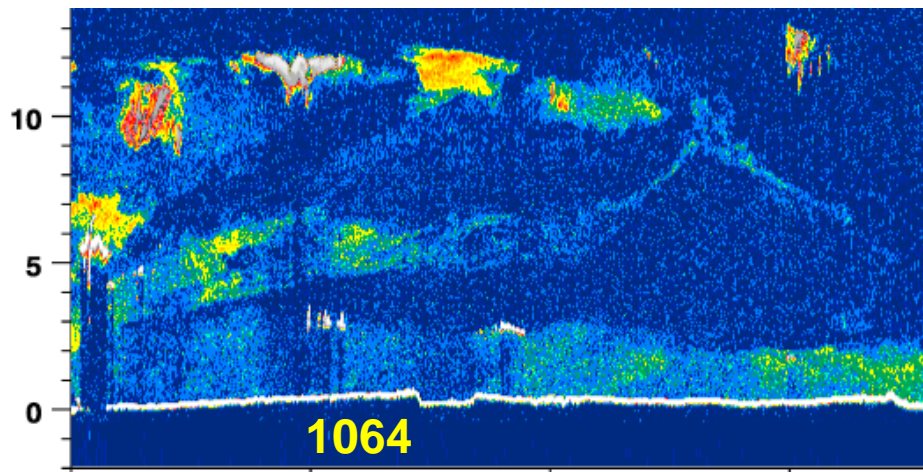
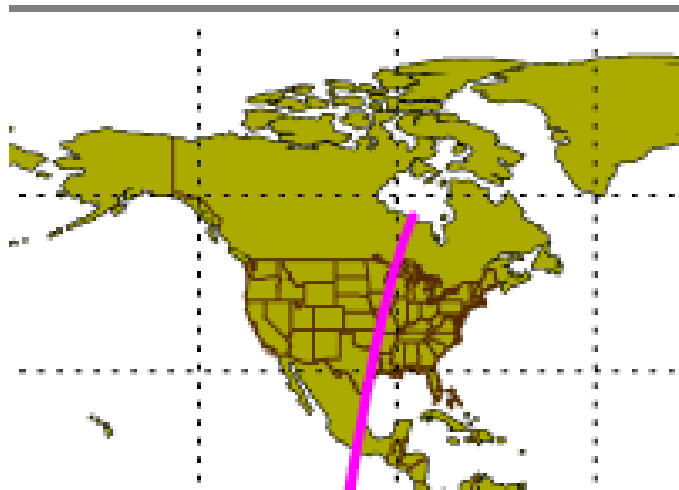
- cloud droplet number, aerosol index (τ_{A}): MODIS
- relative cloud/aerosol vertical location: CALIOP

Sahara Dust

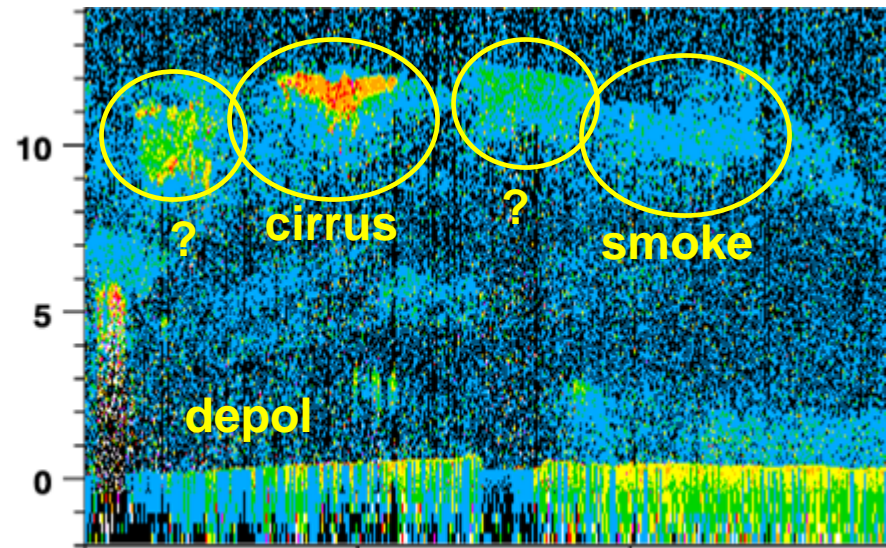


6 July 2006

UTC: 2006-07-06 08:18:40



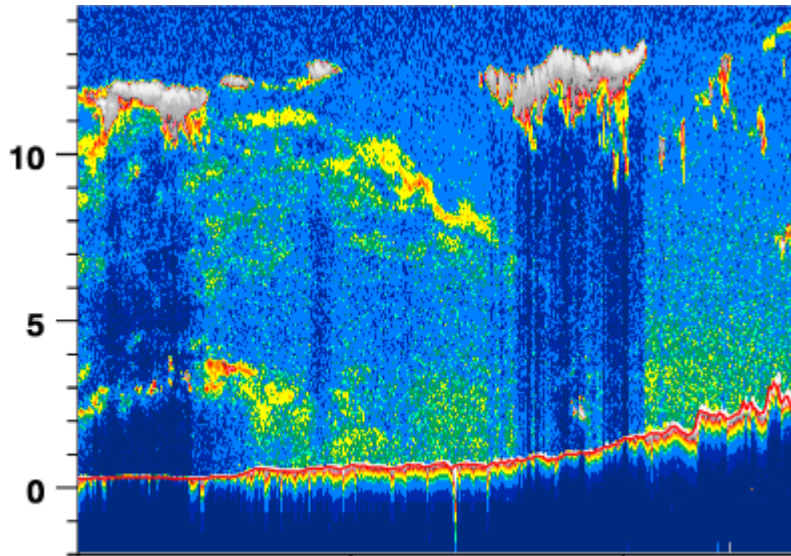
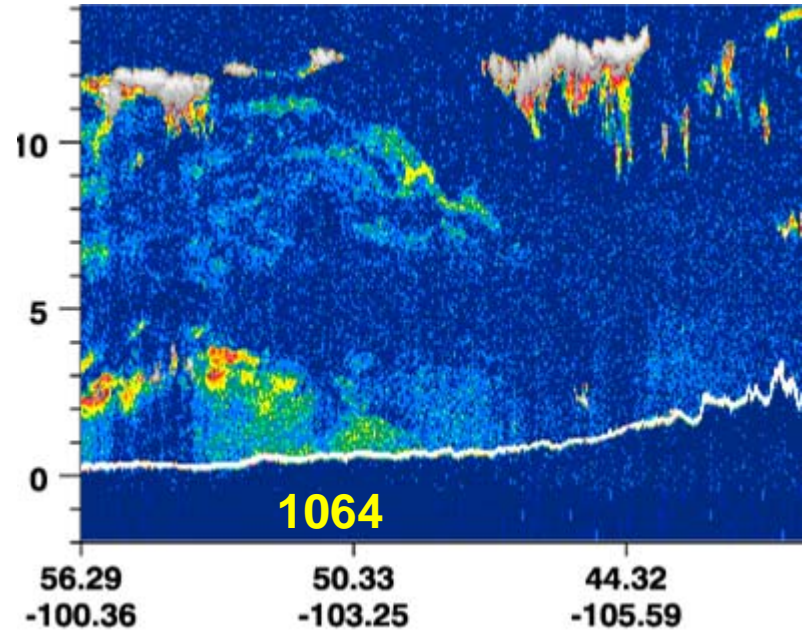
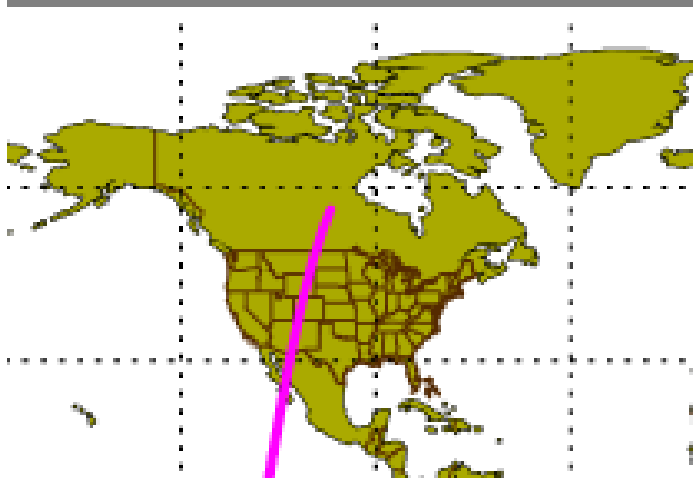
t 56.42 50.46 44.45 38.41
n -86.39 -89.29 -91.63 -93.62



t 56.42 50.46 44.45 38.41
n -86.39 -89.29 -91.63 -93.62

5 July 2006

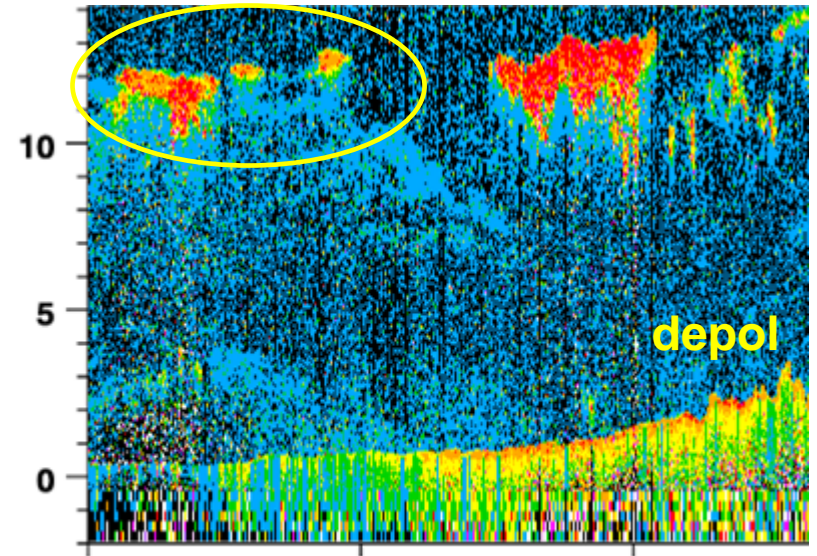
UTC: 2006-07-05 09-14-17



at 56.29
on -100.36

50.33
-103.25

44.32
-105.59

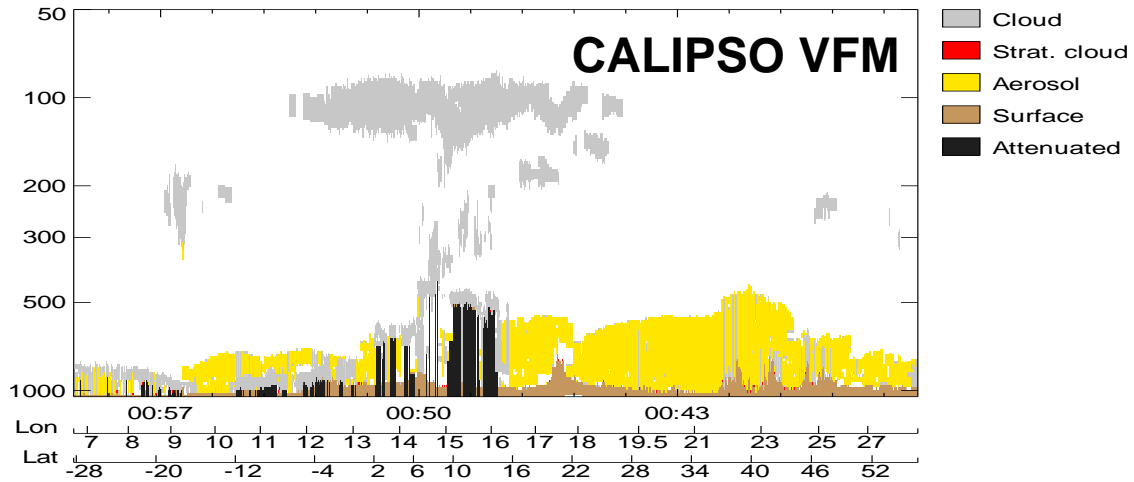


t 56.29
n -100.36

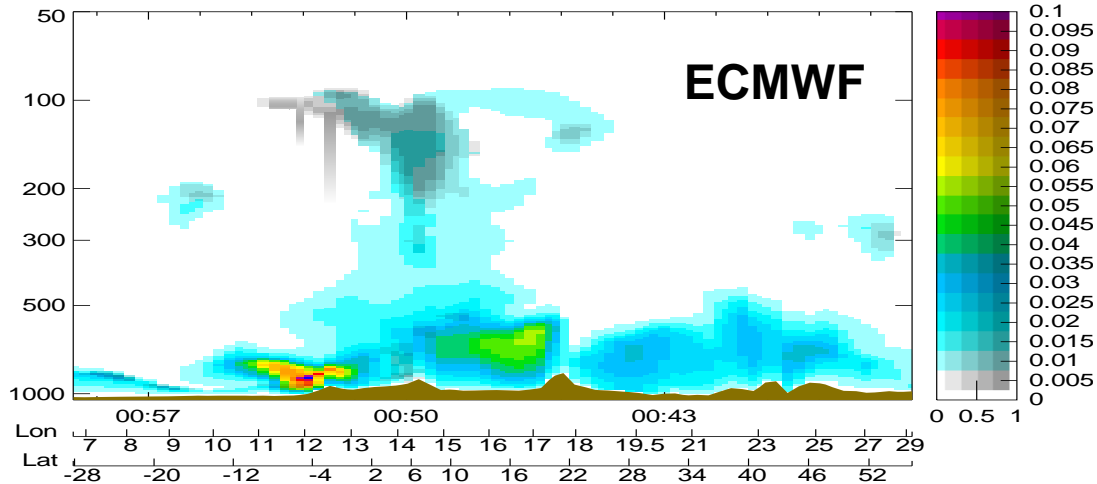
50.33
-103.25

44.32
-105.59

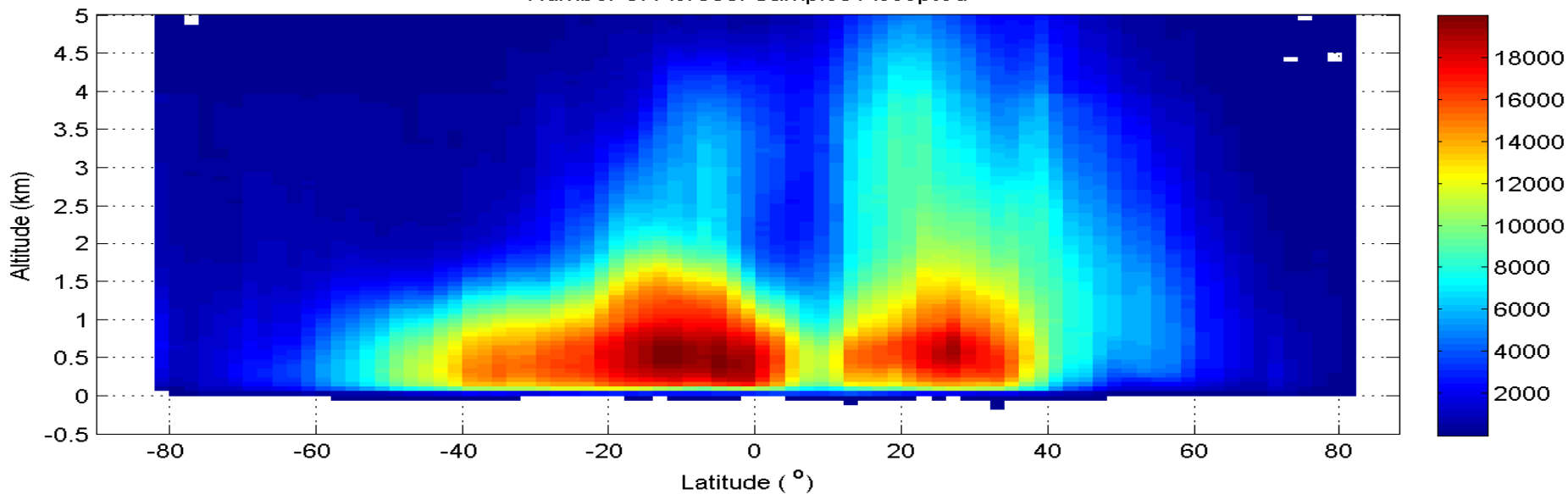
CALIPSO feature classification along 9670 km of A-Train orbit between 26/06/2007 00:36:29 and 26/06/2007 01:00:01



Model (eybt) aerosol amount and cloud fraction along 9625 km of A-Train orbit between 26/06/2007 00:36:17 and 26/06/2007 00:59:42



Number of Aerosol Samples Accepted



Cumulative Frequency of Aerosol Samples (%), JJA 2007, Day & Night

