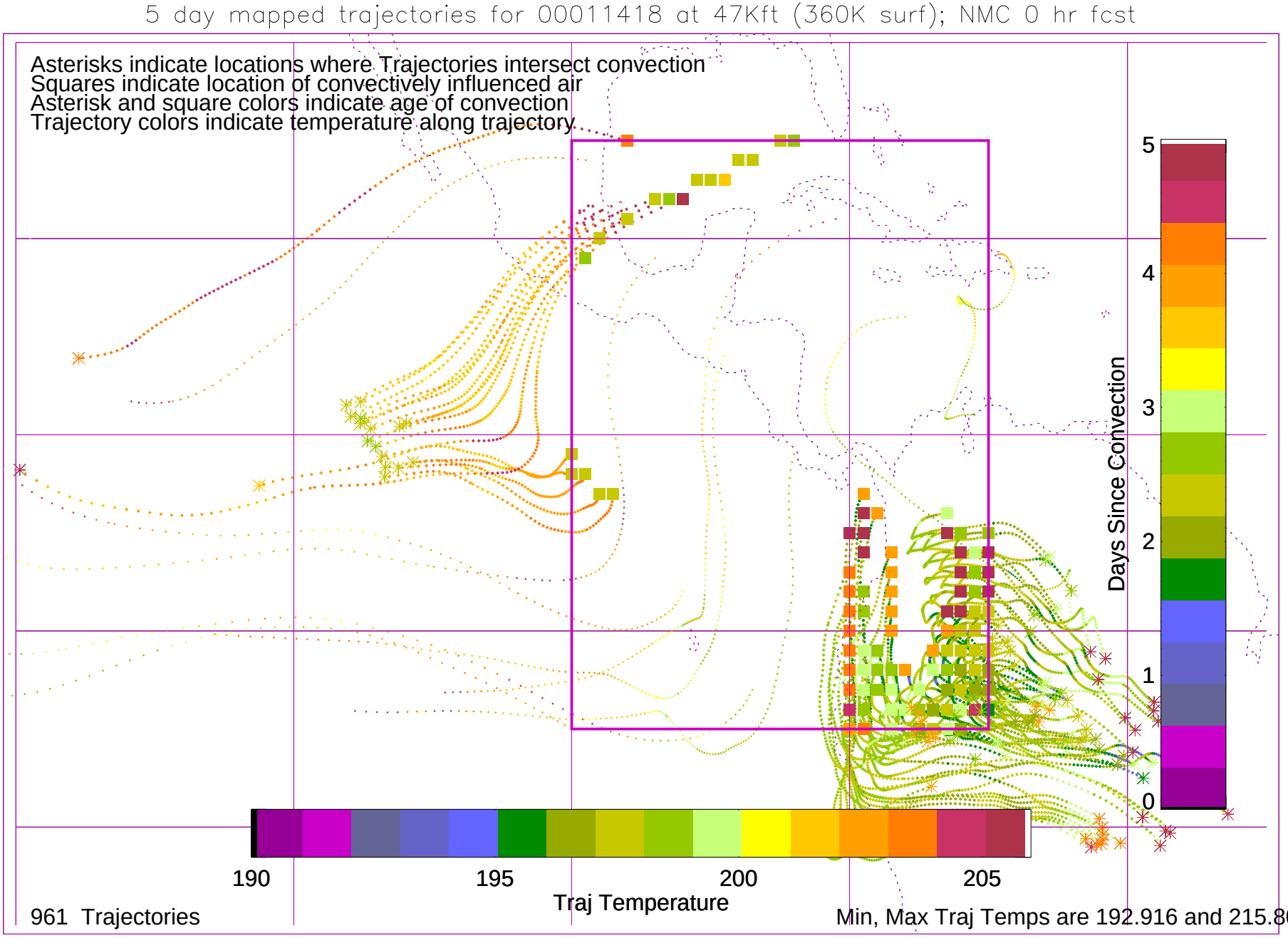
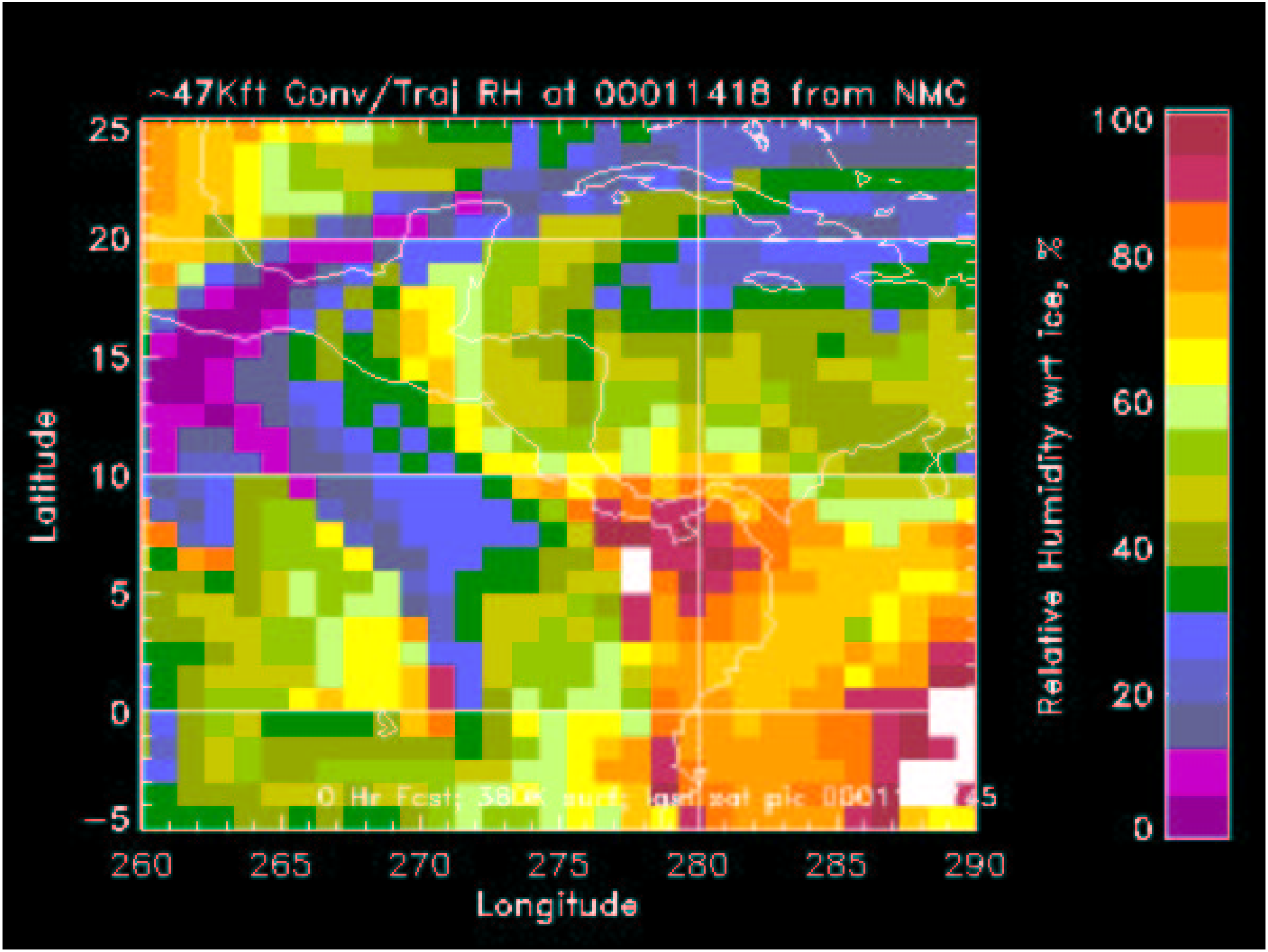
Convective Influence Products

We will provide a measure of convective influence for the tropical domain of interest (TDI) (days to most recent convection for a grid of points in the TDI), and the location of that convection. At this point this is based on five day back trajectories, though we can certainly go back further (with all the great accuracy we have in the tropics!!). We will do this on a daily basis for five levels (43, 47, 51 and 55 Kft). The approach is to use adiabatic back trajectories combined with Geostationary imagery. Influence occurs when the trajectory is below the top of the cloud (as indicated by a modified brightness temperature).

We will provide a trajectory-based RH estimate for the above-mentioned four levels in the TDI. This is based on 5-day back trajectories. Water vapor mixing ratio is the lesser of: (1) the initial (analysis/forecast) mixing ratio based on NMC relative humidity and (2) the minimum saturation mixing ratio attained since the most recent convection. Relative humidity is then calculated based on the current time in the TDI.

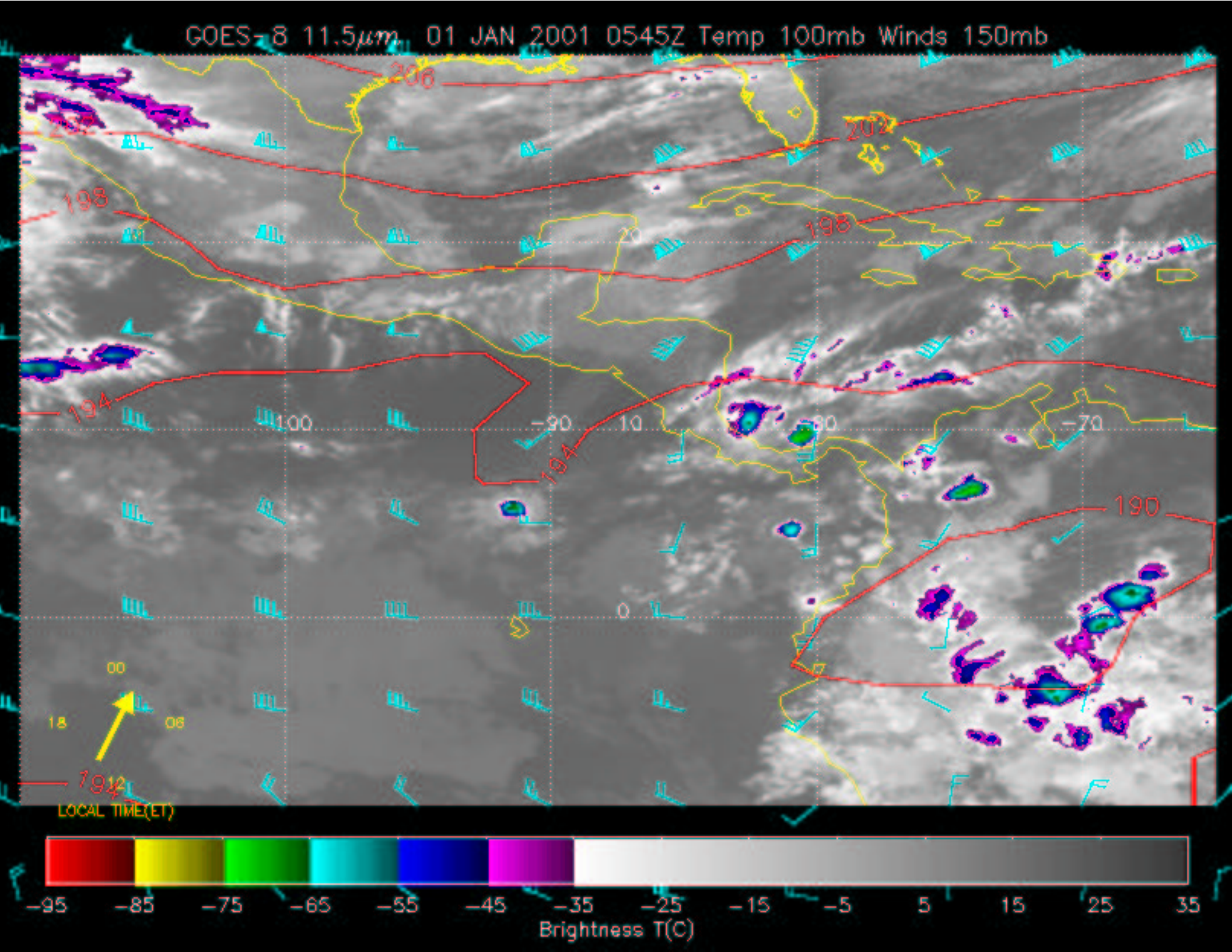

5 day mapped trajectories for 00011418 at 47Kft (360K surf); NMC 0 hr fcst
Asterisks indicate locations where Trajectories intersect convection
Squares indicate location of convectively influenced air
Asterisk and square colors indicate age of convection
Trajectory colors indicate temperature along trajectory
Days Since Convection
0
1
2
3
4
5
190
195
200
205
Traj Temperature
961 Trajectories
Min, Max Traj Temps are 192.916 and 215.800

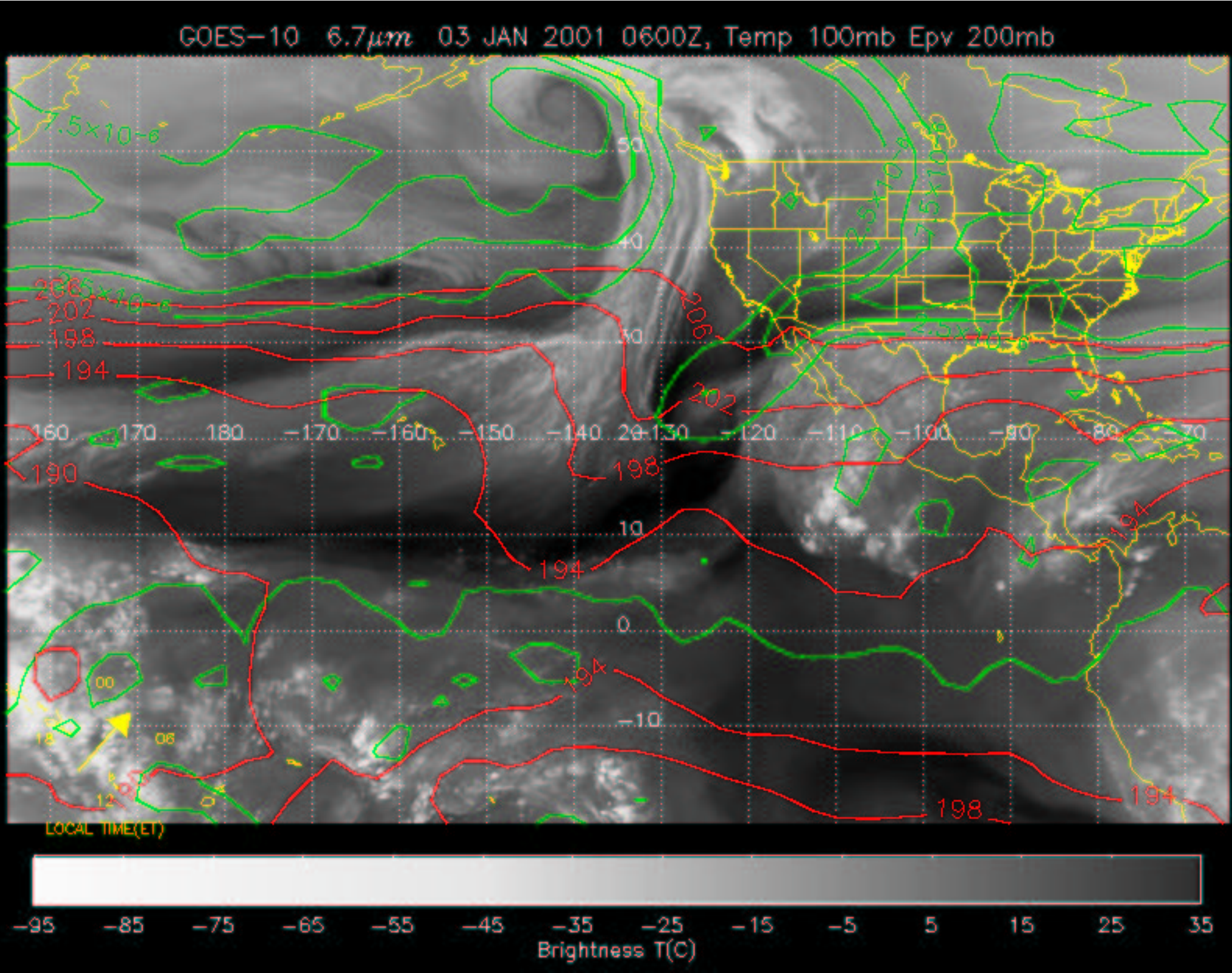

~47Kft Conv/Traj RH at 00011418 from NMC
Latitude
25
20
15
10
5
0
−5
Longitude
260
265
270
275
280
285
290
Relative Humidity wrt ice, %
100
80
60
40
20
0

GOES products

In the midlatitude domain the water vapor channel is of greatest interest. We would consider patching GMS and GOES-10 together to get a complete picture from 80E to the East Coast, so we can see the pulses of convection from the West Pacific Warm Pool. Local weather-related satellite imagery can be obtained from other sites.

In the TDI, we have shown an infrared image. We also plan on a shorter scale visible image for local forecasting. Water vapor is part of the Midlatitude domain image.


GOES-8 11.5μm 01 JAN 2001 0545Z Temp 100mb Winds 150mb
206
202
198
194
190
100
90
80
70
0
00
18
06
LOCAL TIME(ET)
−95 −85 −75 −65 −55 −45 −35 −25 −15 −5 5 15 25 35
Brightness T(C)


GOES-10 6.7μm 03 JAN 2001 0600Z, Temp 100mb Epv 200mb
7.5x10-6
9.5x10-6
7.5x10-6
9.5x10-6
206.5x10-6
202
198
194
206
202
198
194
190
194
194
198
194
60
40
30
20
10
0
-10
160
170
180
-170
-160
-150
-140
-130
-120
-110
-100
-90
-80
-70
00
06
12
18
LOCAL TIME(ET)
-95
-85
-75
-65
-55
-45
-35
-25
-15
-5
5
15
25
35
Brightness T(C)