Integrating GOES-16 Resources into Air Traffic Decision Making

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Application:

Thunderstorms along and ahead a surface trough across Central and Southwest Texas, advancing into the South and Southeast Texas (May 20th 2018).

GOES-16 "Lower-level Water Vapor" band (**Figures 1 and 2**) detected gravity waves from nocturnal convection over North Texas, moving south; and also showed strengthening disturbances over Southwest Texas approaching from the west.

The effects of gravity waves were also noted on the "Mid-Level Water Vapor" band (**Figure 3**) where convection initiated well in advance of the strong outflow boundary.

The "Red Visible" band (**Figure 4**) revealed the erosion of the subsidence layer as stratocumulus transformed into towering cumulus.

The evidence of these features gave forecasters the awareness and confidence to communicate with FAA air traffic managers about the onset and duration of thunderstorms at George Bush Intercontinental Airport in Houston, Texas (IAH) and other impacted airports.

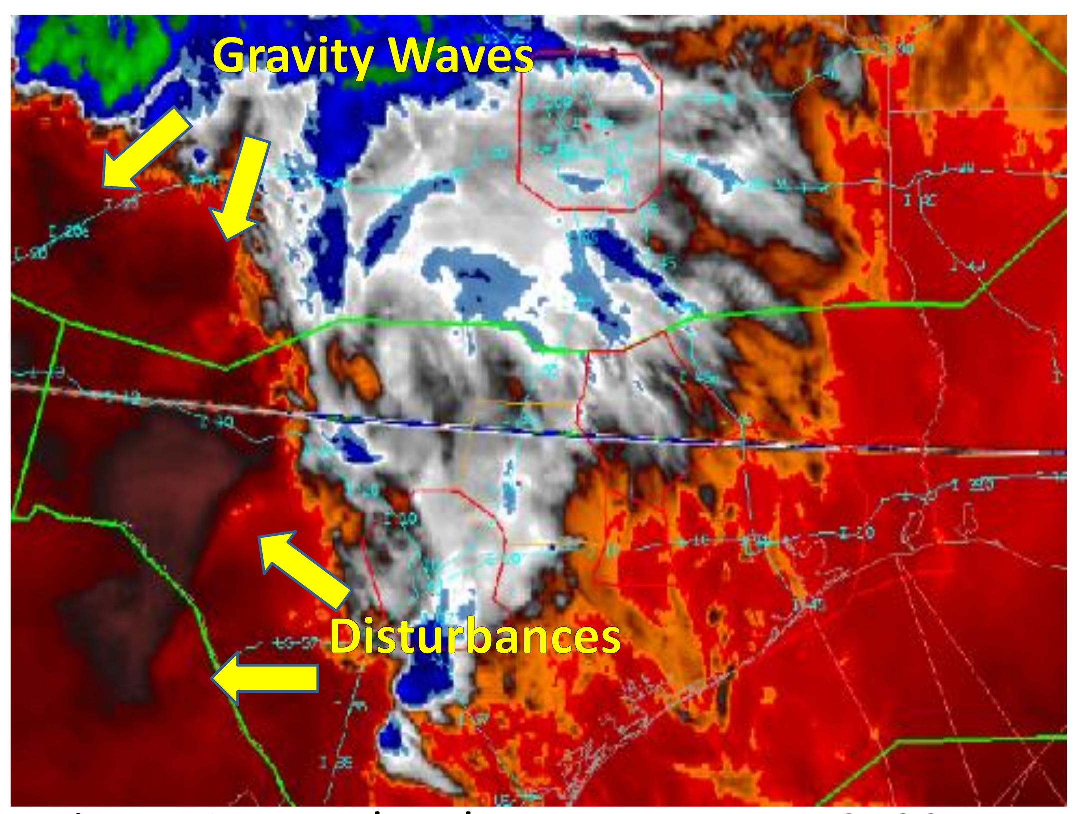

Figure 1: Low-level Water Vapor at 0732Z

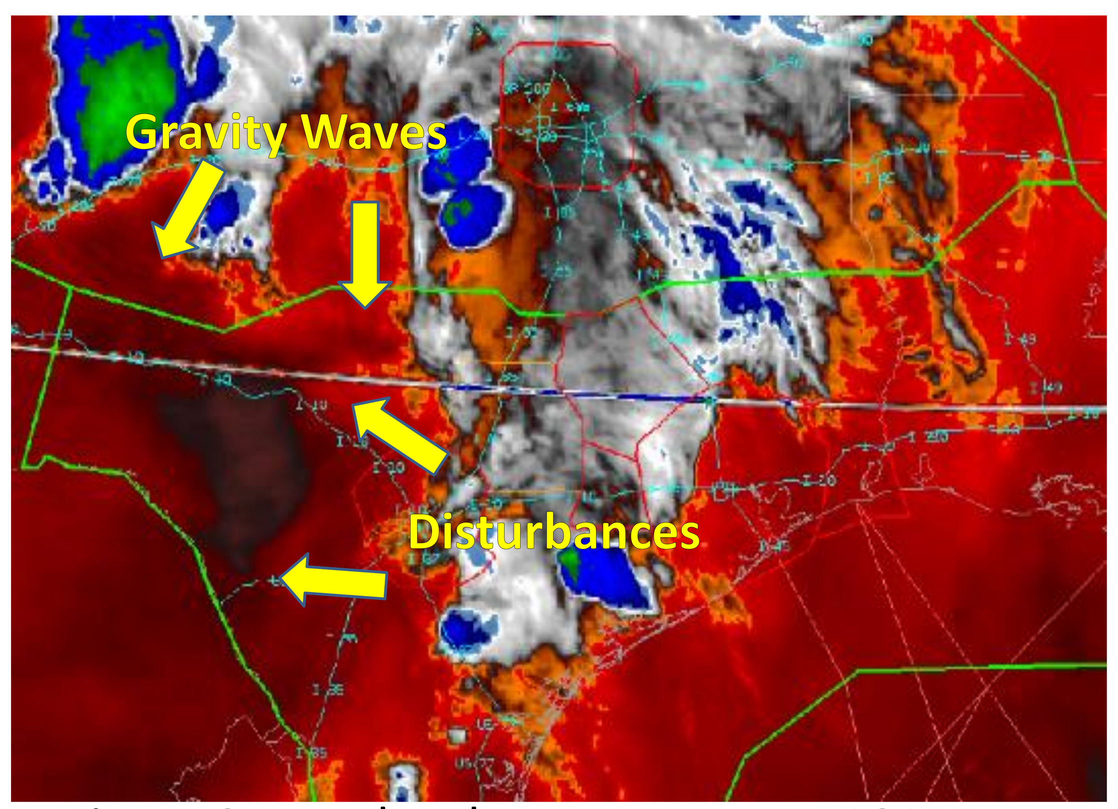

Figure 2: Low-level Water Vapor at 1017Z

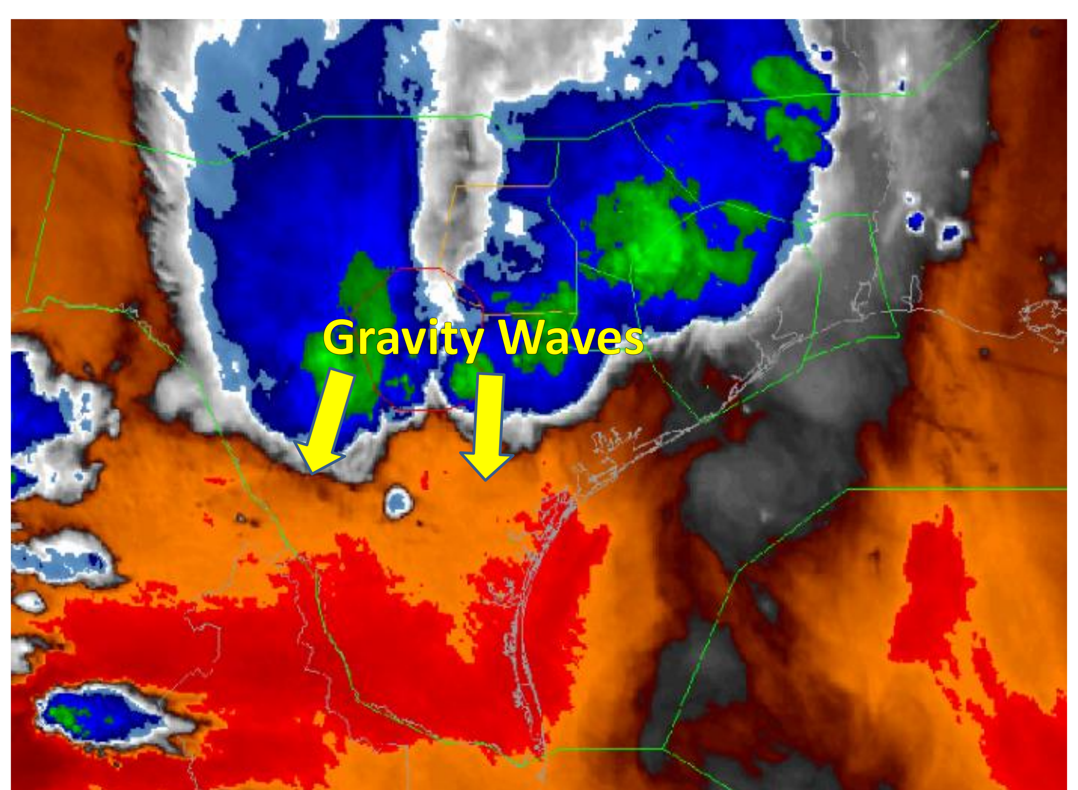

Figure 3: Mid-level Water Vapor at 2112Z

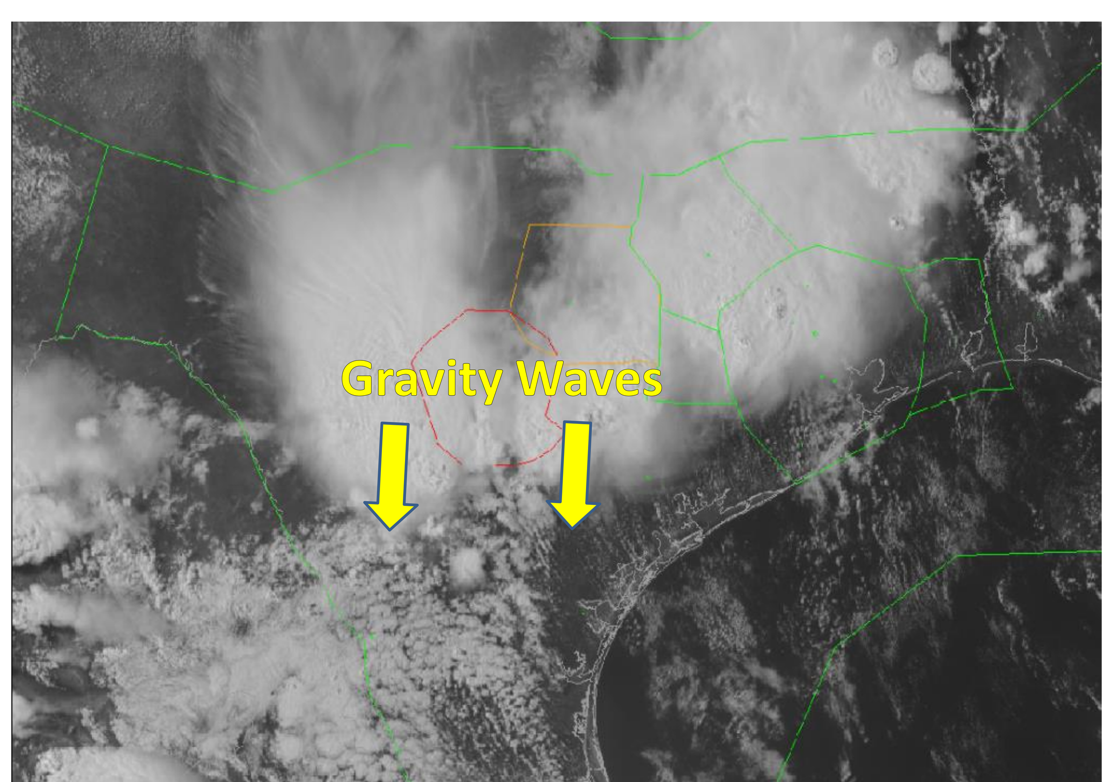

Figure 4: Red Visible at 2137Z

Success:

GOES-16 satellite imagery was a useful resource for identifying features, such as gravity waves, that would alter expected convective development and coverage, and resulted in changes to impact forecasts previously collaborated by NWS and aviation industry partners.

The spatial and temporal resolution of GOES-16 resources helped CWSU forecasters identify subtle yet impactful weather phenomena.

CWSU forecasters communicated these environmental changes to FAA decision makers responsible for making tactical changes to established plans.

These air traffic management decisions changed the outcome of the air traffic, resulting in timely ground stops at Austin-Bergstrom Airport (AUS) (**Figure 5**), IAH (**Figure 6**), the San Antonio Airport (SAT) (**Figure 7**), and eventually, a ground delay program at IAH (**Figure 8**).

These decisions allowed air traffic controllers to maximize efficiency and flight safety across the South Central U.S. section of the National Airspace System during this event.

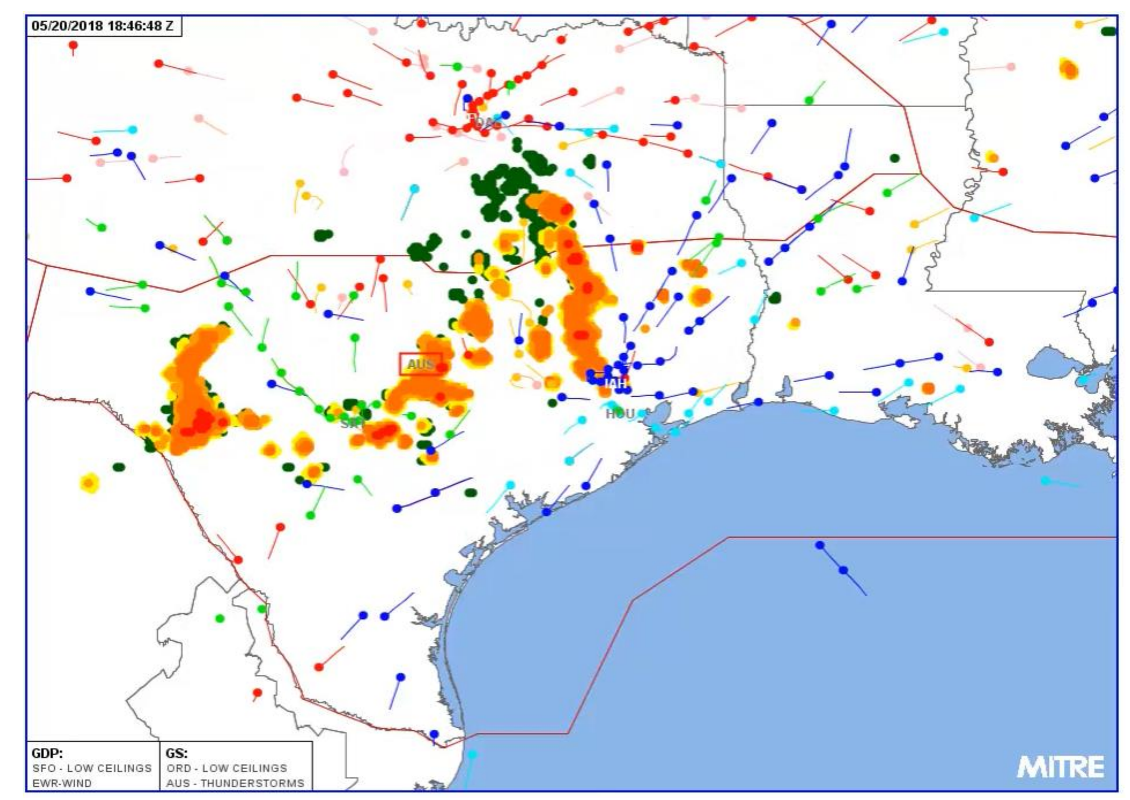

Figure 5: Ground stop at AUS at 1846Z

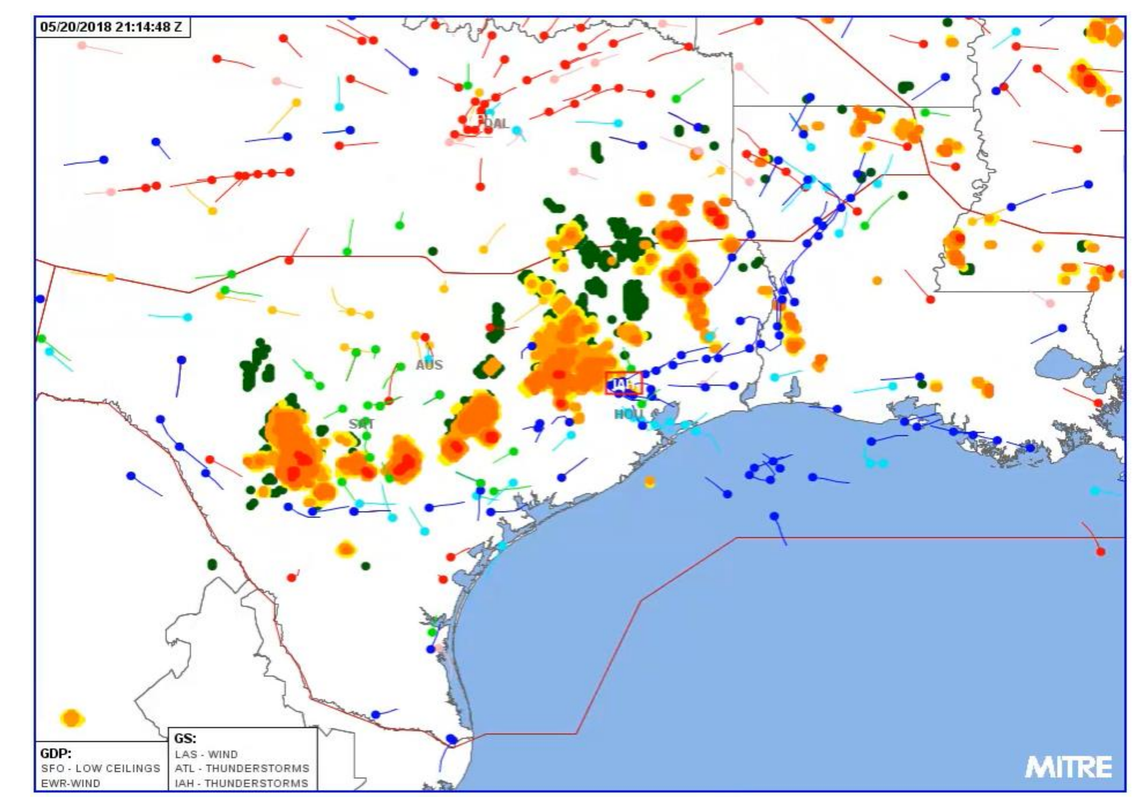

Figure 6: Ground stop at IAH at 2114Z

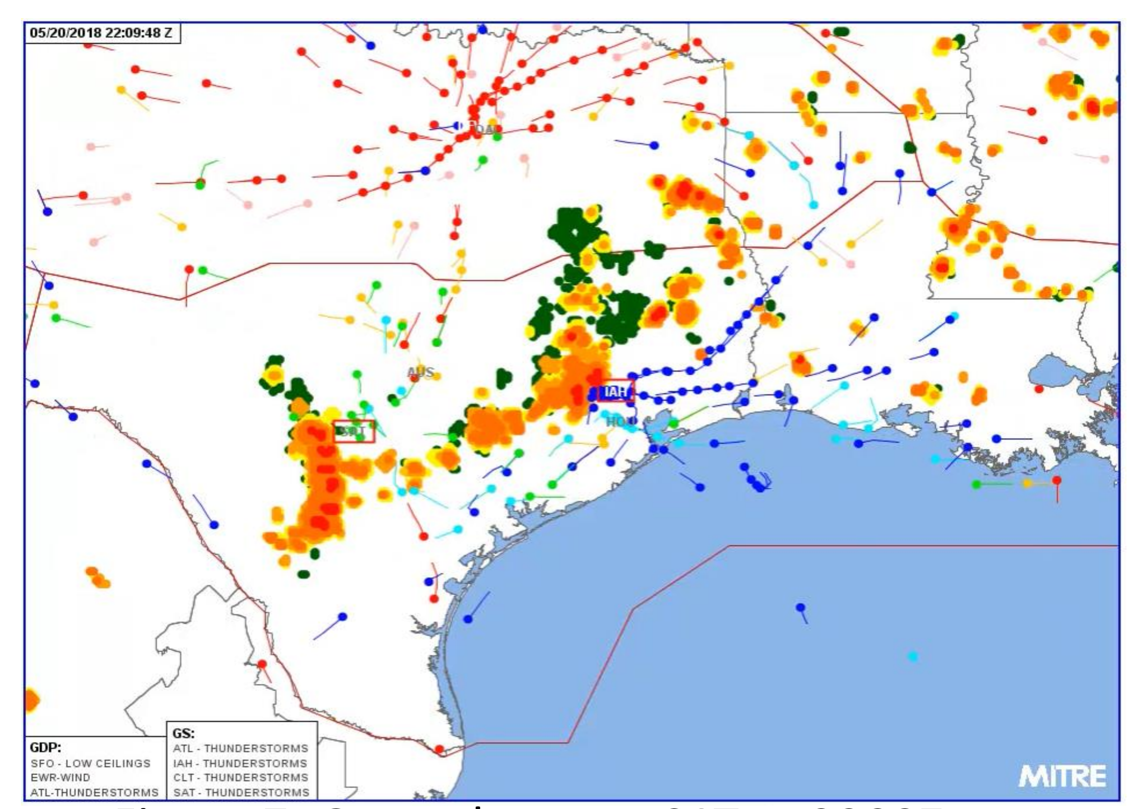

Figure 7: Ground stop at SAT at 2209Z

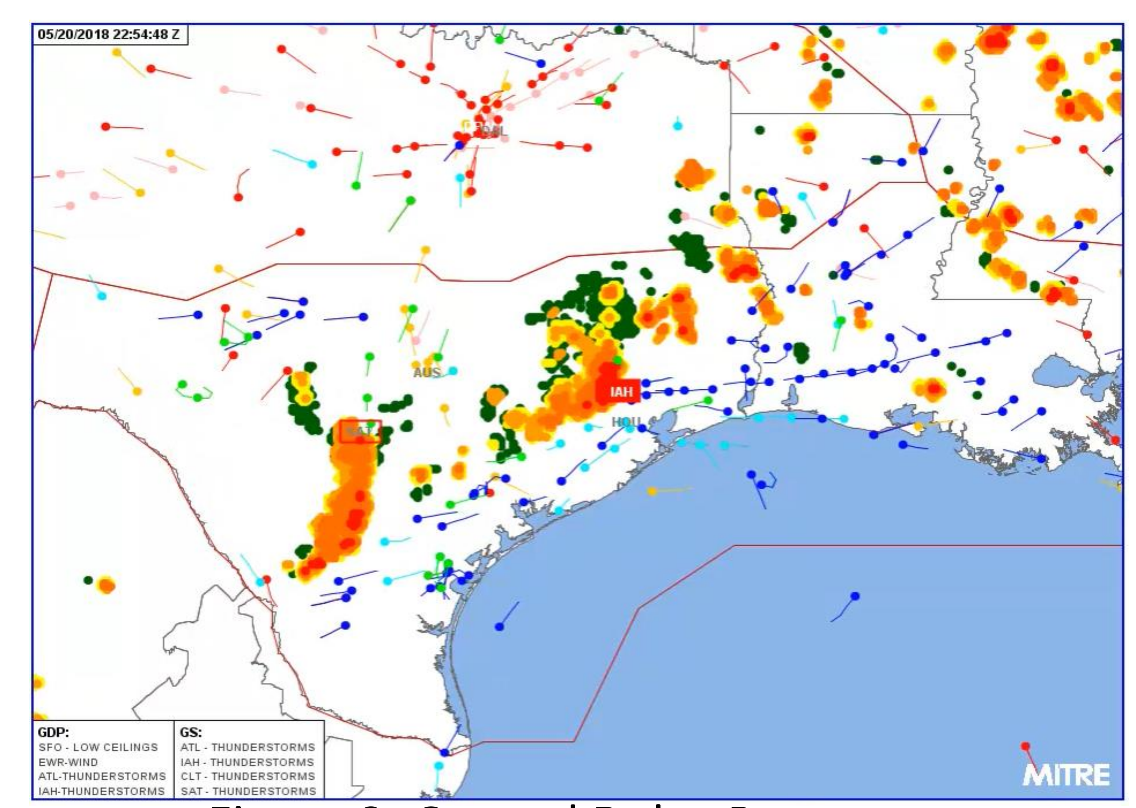

Figure 8: Ground Delay Program at IAH at 2114Z