

AQ Summary & Plan of Action for Next Few Days for Onshore Team

Sunday, May 15, 2019

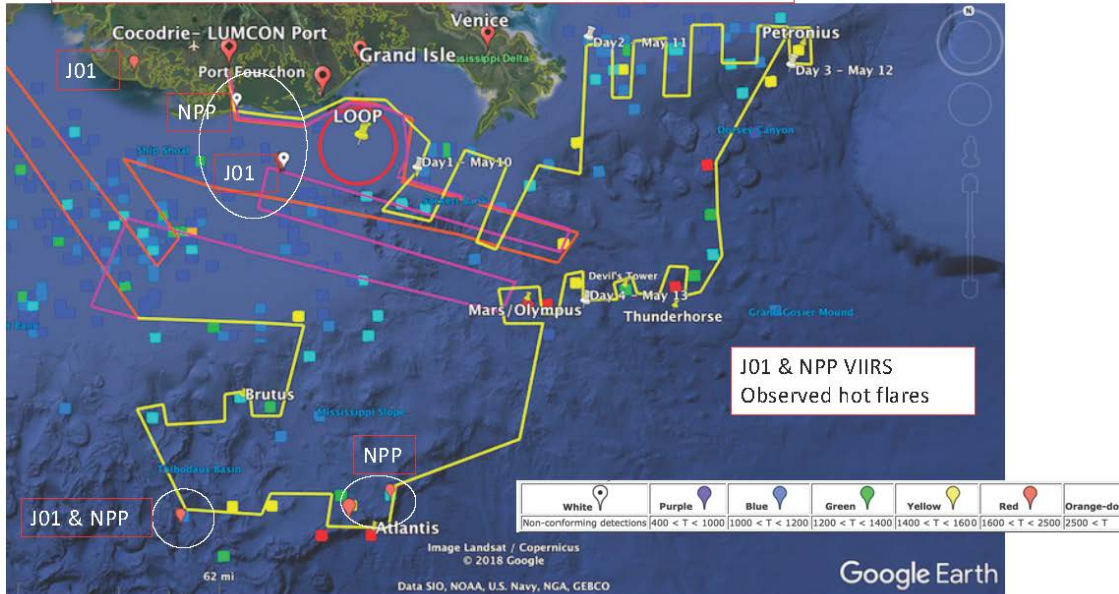
LUMCON, Cocodrie, LA

Onshore Team: Bryan Duncan (NASA), Mirjam den Hoed (KNMI)

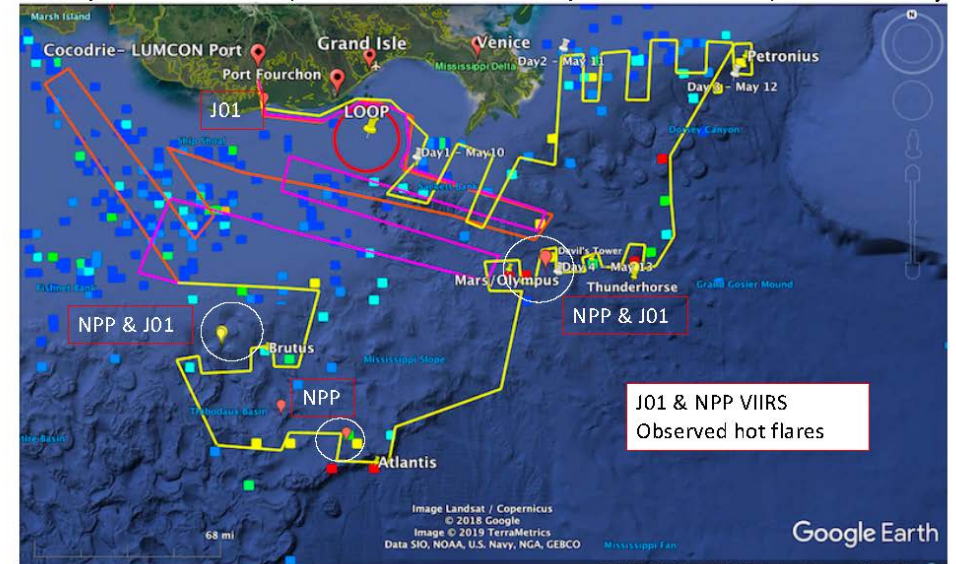
From Debra: Flares

NPP VIIRS (0738UTC) & J01 VIIRS (0830UTC) on May 11

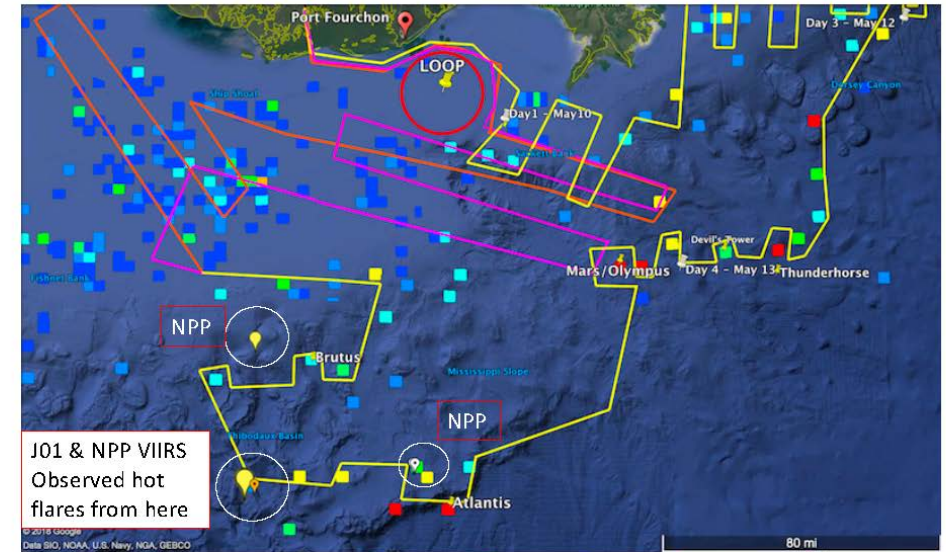
Data from: https://ngdc.noaa.gov/eog/viirs/download_viirs_fire.html



NPP VIIRS (0719UTC) & J01 VIIRS (0809UTC) on May 12

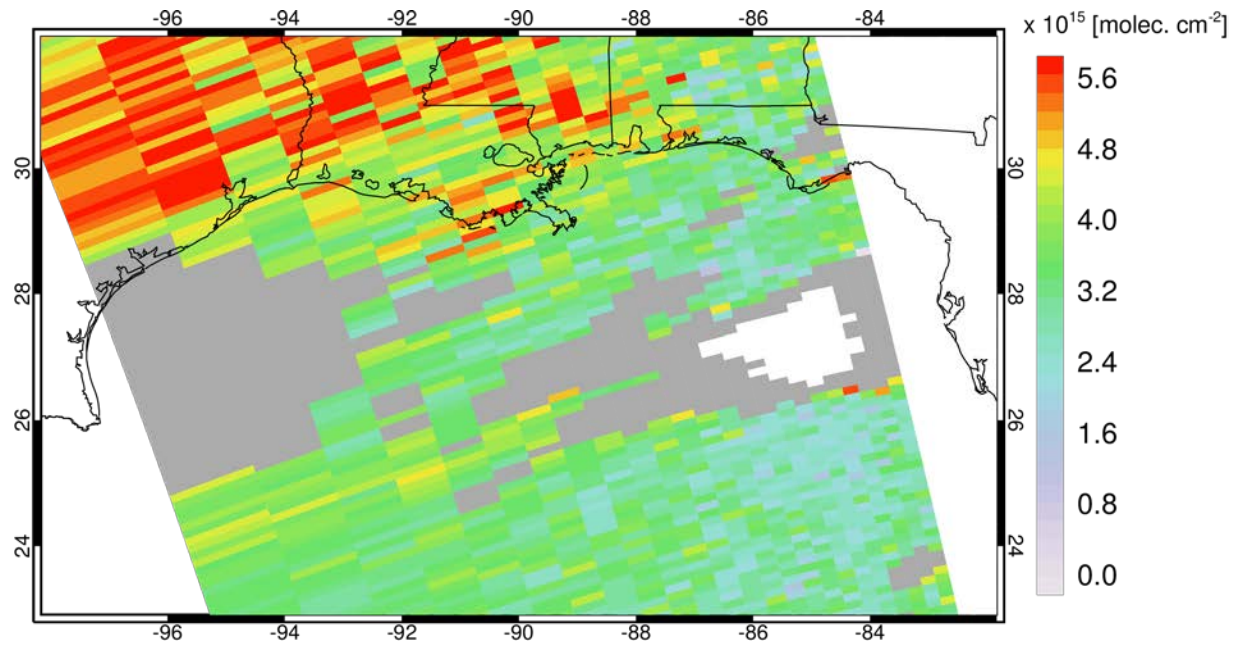


NPP VIIRS (0845UTC) & J01 VIIRS (0752UTC) on May 13

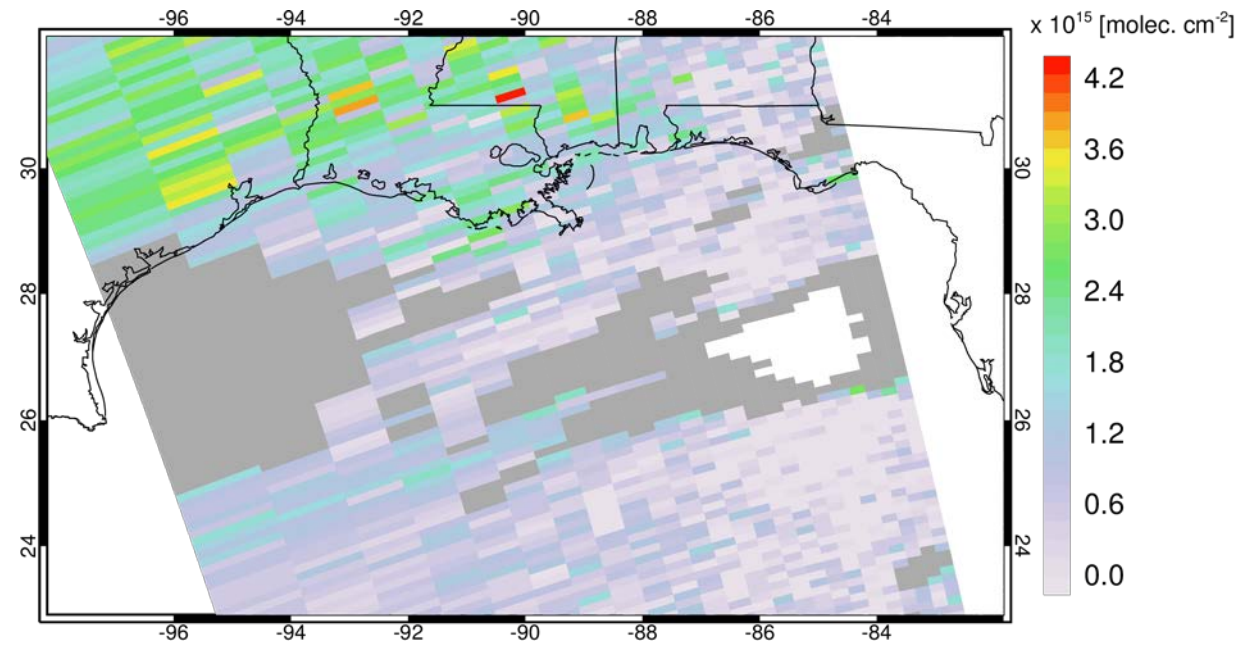


From Lok: OMI NO₂ May 13th

Total Column

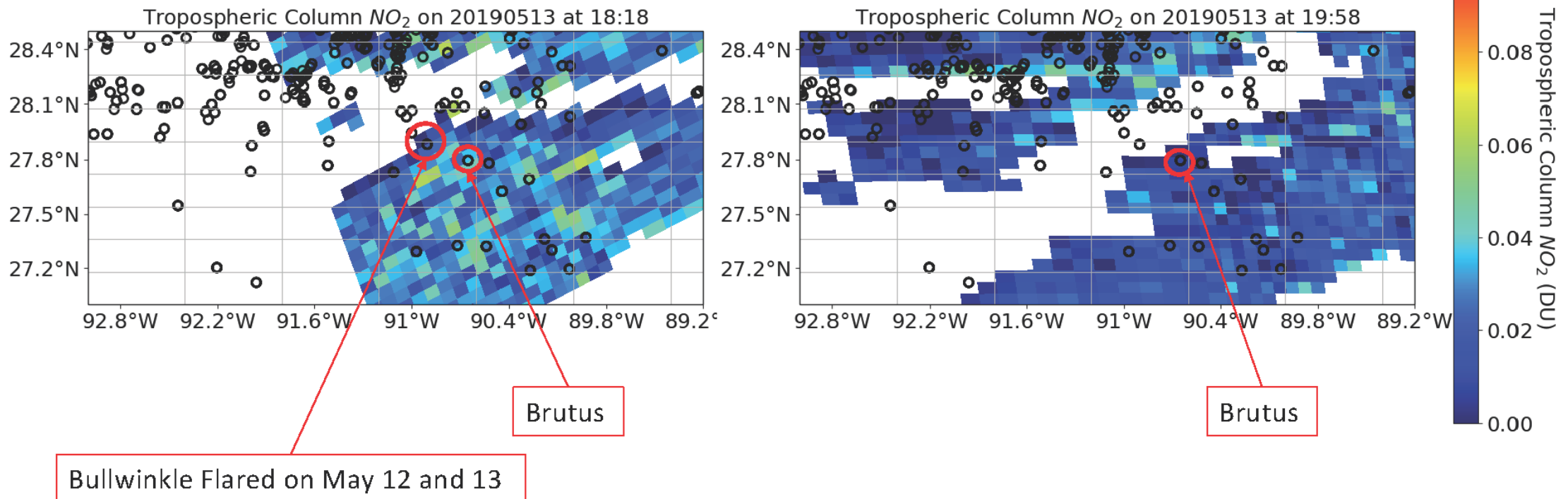


Tropospheric Column

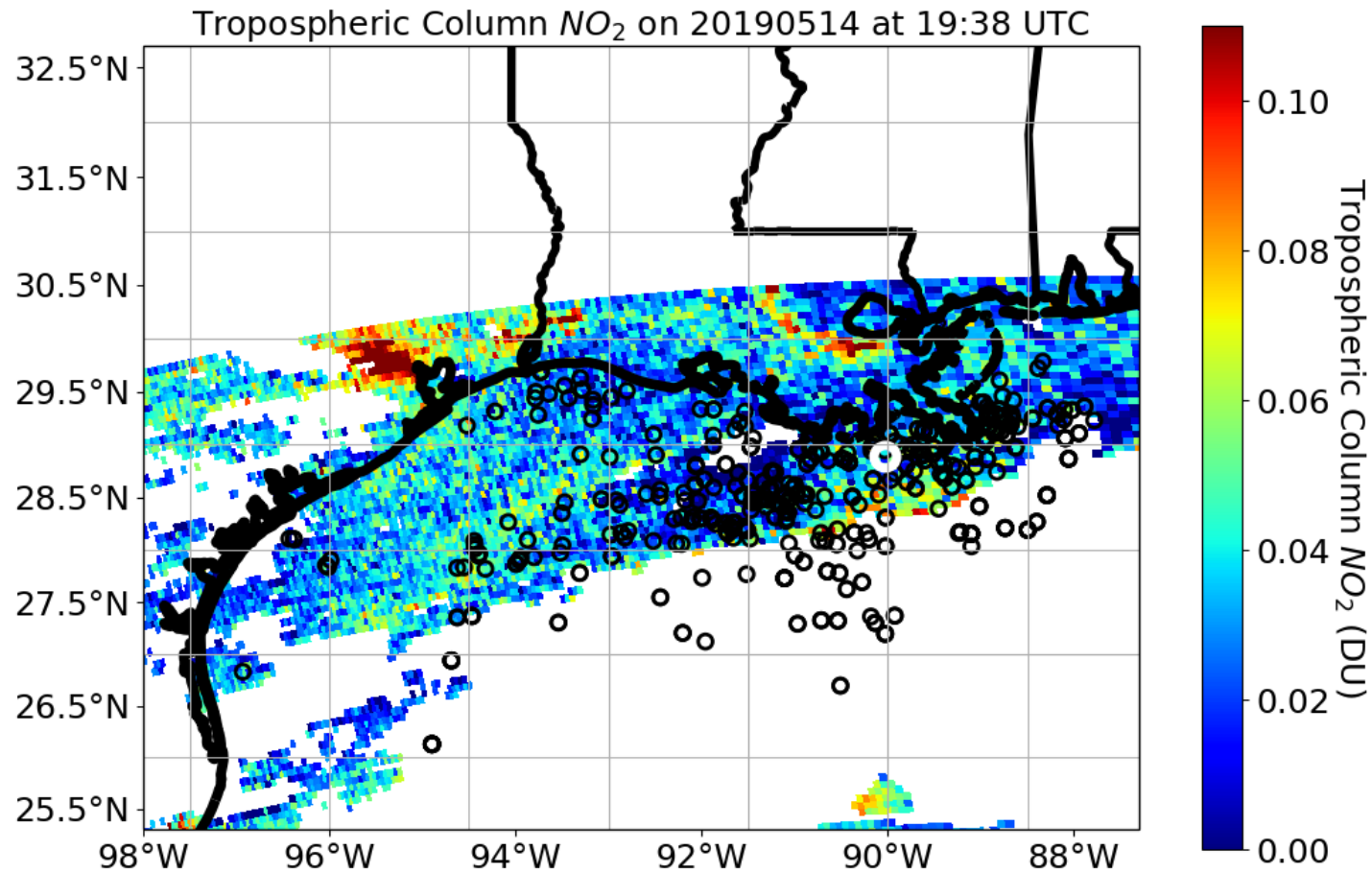


From Debra: TROPOMI NO₂ May 13th

- Elevated NO₂ to Clean Conditions within 1.5 hours.
- Maybe NO₂ not only from Brutus, Bullwinkle platform active too? Or mixing of large scale air masses?

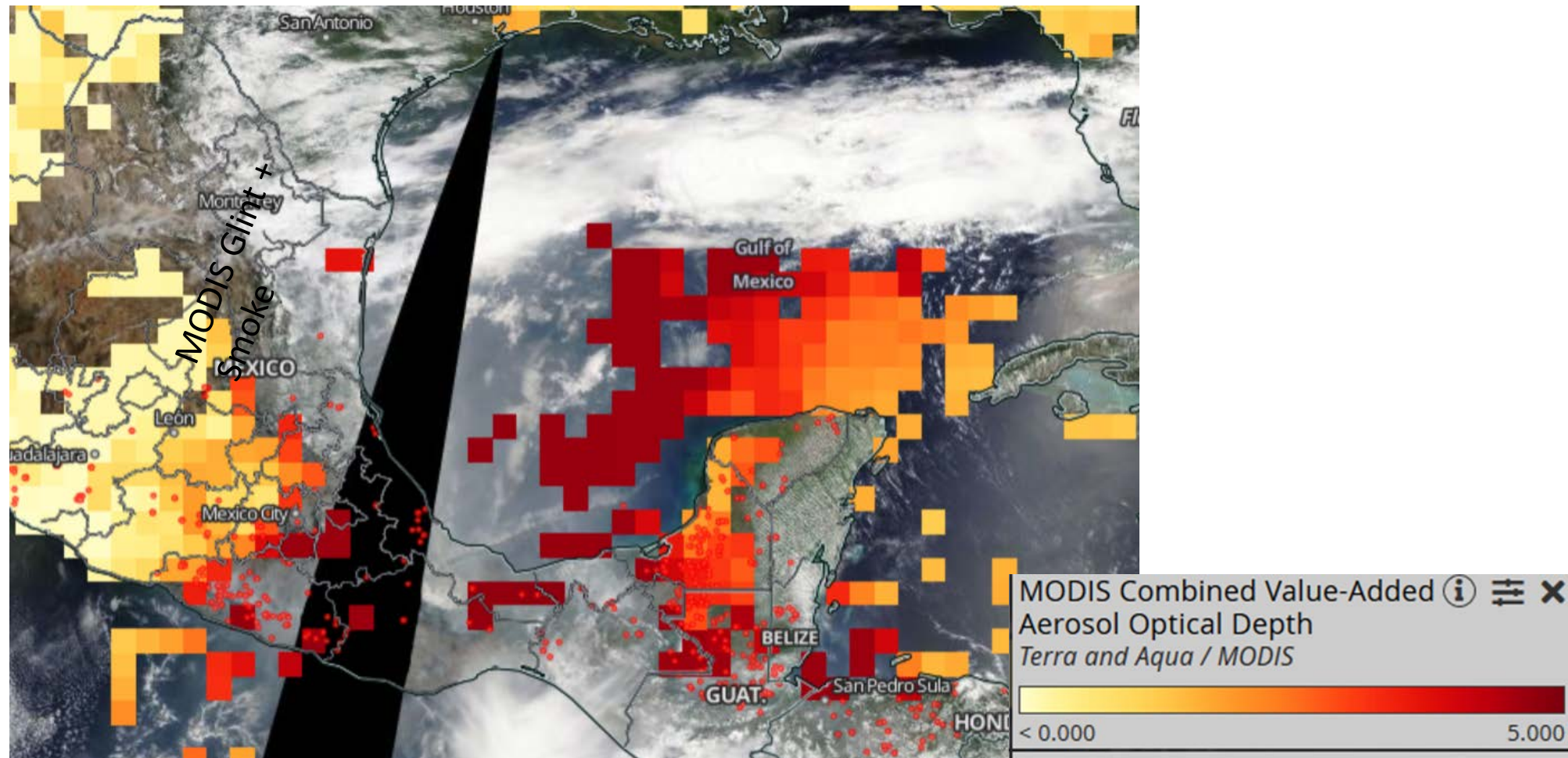


From Debra: TROPOMI NO₂ May 14th



May 14, 2019: Watching Agricultural Fires in Mexico and Central America: Polluting GoM

MODIS Firecounts & True Color Image & AOD

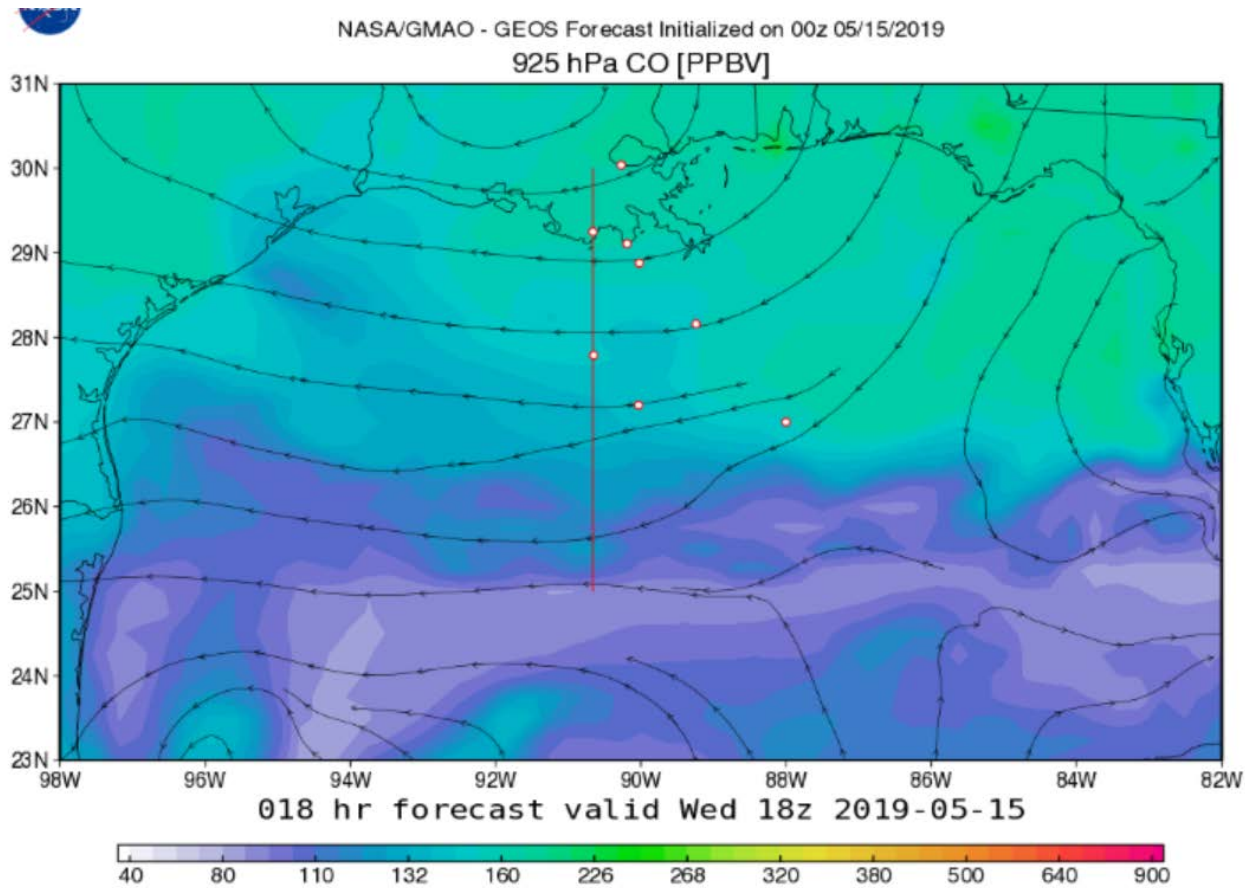


GEOS Chemical Forecasts

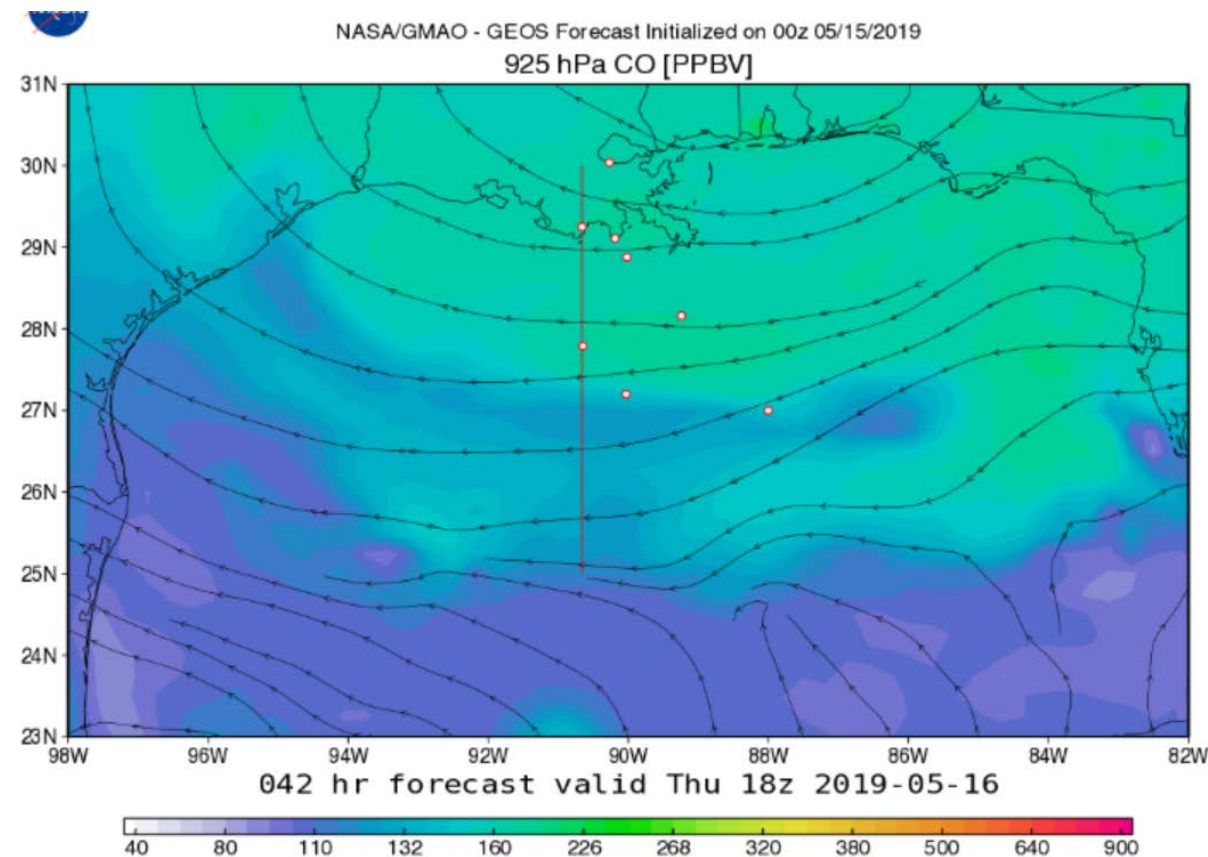
- Offshore winds continue to keep continental air in study area on Wednesday and Thursday.
- Southerly flow begins to return Thursday into Saturday with marine air reaching land on Saturday.
- **NOTE:** GEOS forecasts DO NOT simulate GoM ONG source emissions, therefore the simulated transition between air masses may not be quite as distinct as observed.
- **NOTE:** Sometimes the fire smoke is over or under done. The forecast assumes persistence (intensity too) throughout, which may or may not be true.
- **NOTE:** As with any forecast, there is uncertainty in exactly where the transition will be at any given time.

Surface level CO (FP)

Wednesday 1 PM: Somewhat sharp transition between continental and marine air at southern edge of study region.



Thursday 1 PM: Transition begins to show signs of breaking down.

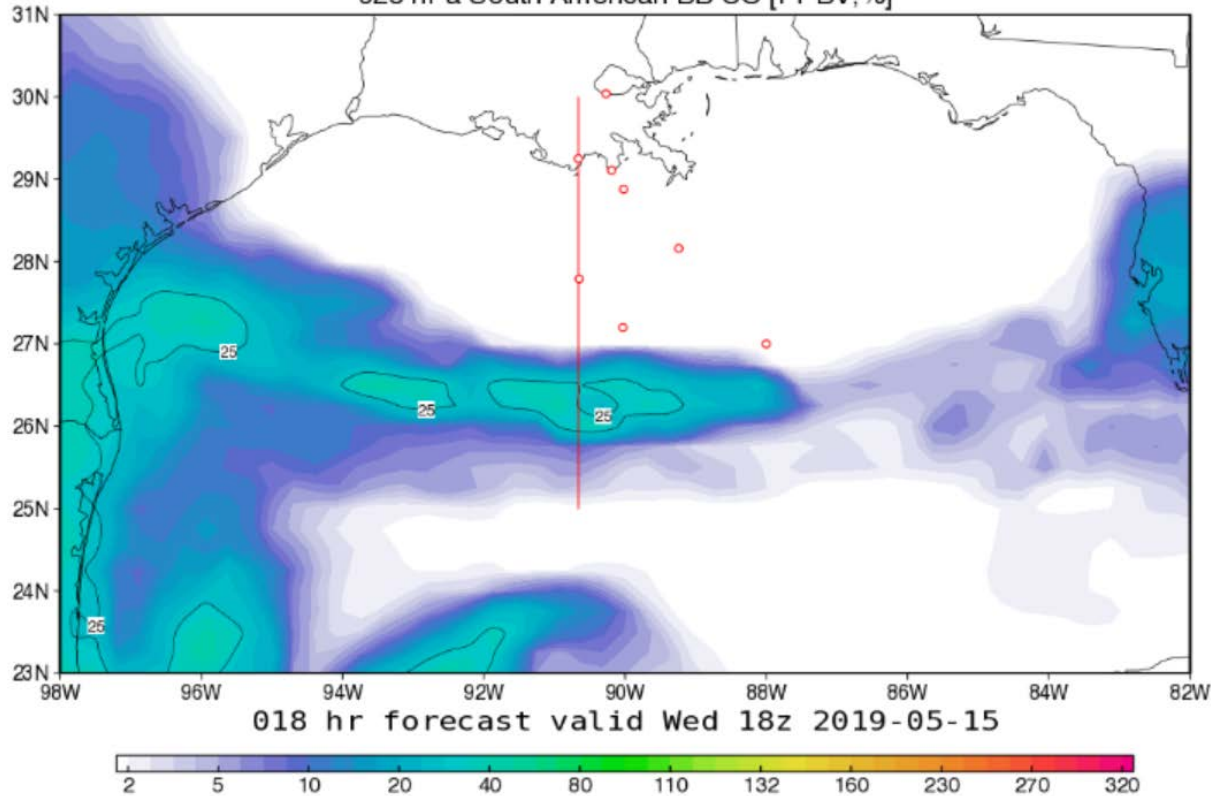


Surface level CO Tracers (FP) : Wednesday 1 pm

Mixture of some agricultural fire pollution (levels relatively low) and continental pollution in southern portion of study area. Northern area dominated by continental pollution.

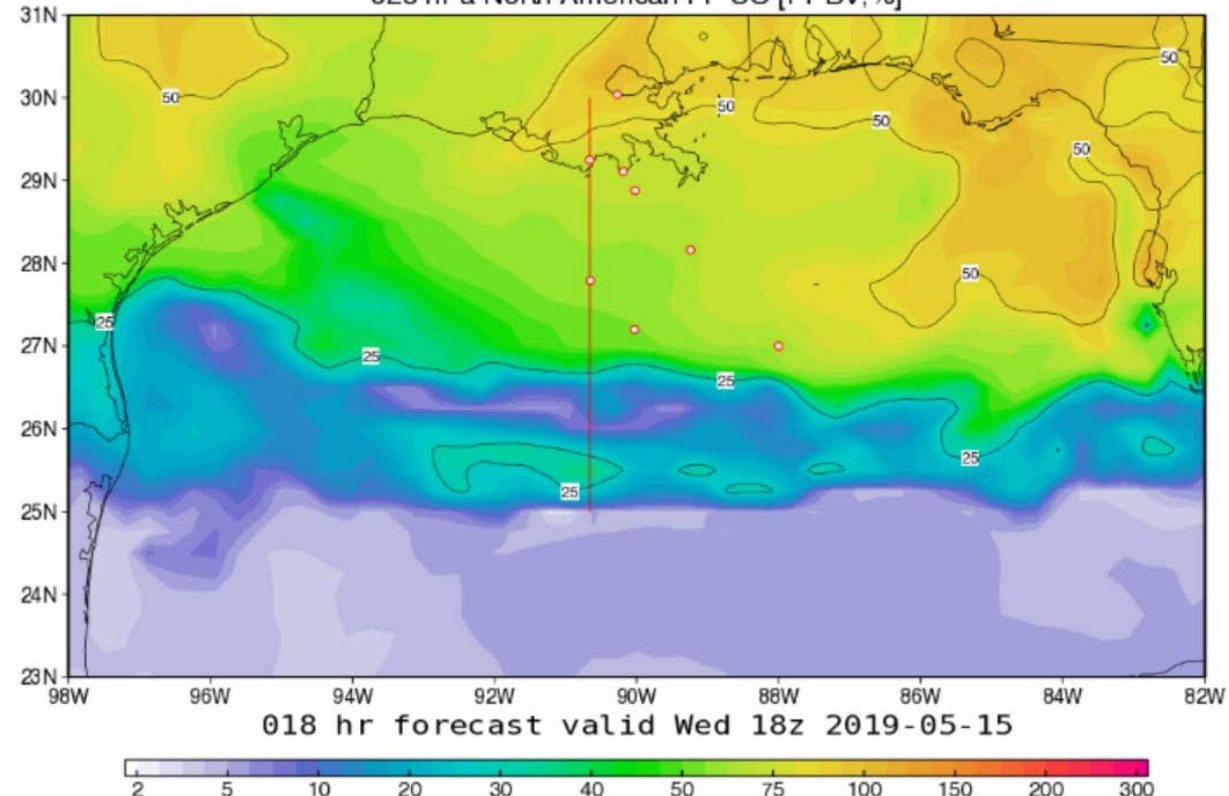
Agricultural Fires

NASA/GMAO - GEOS Forecast Initialized on 00z 05/15/2019
925 hPa South American BB CO [PPBV, %]



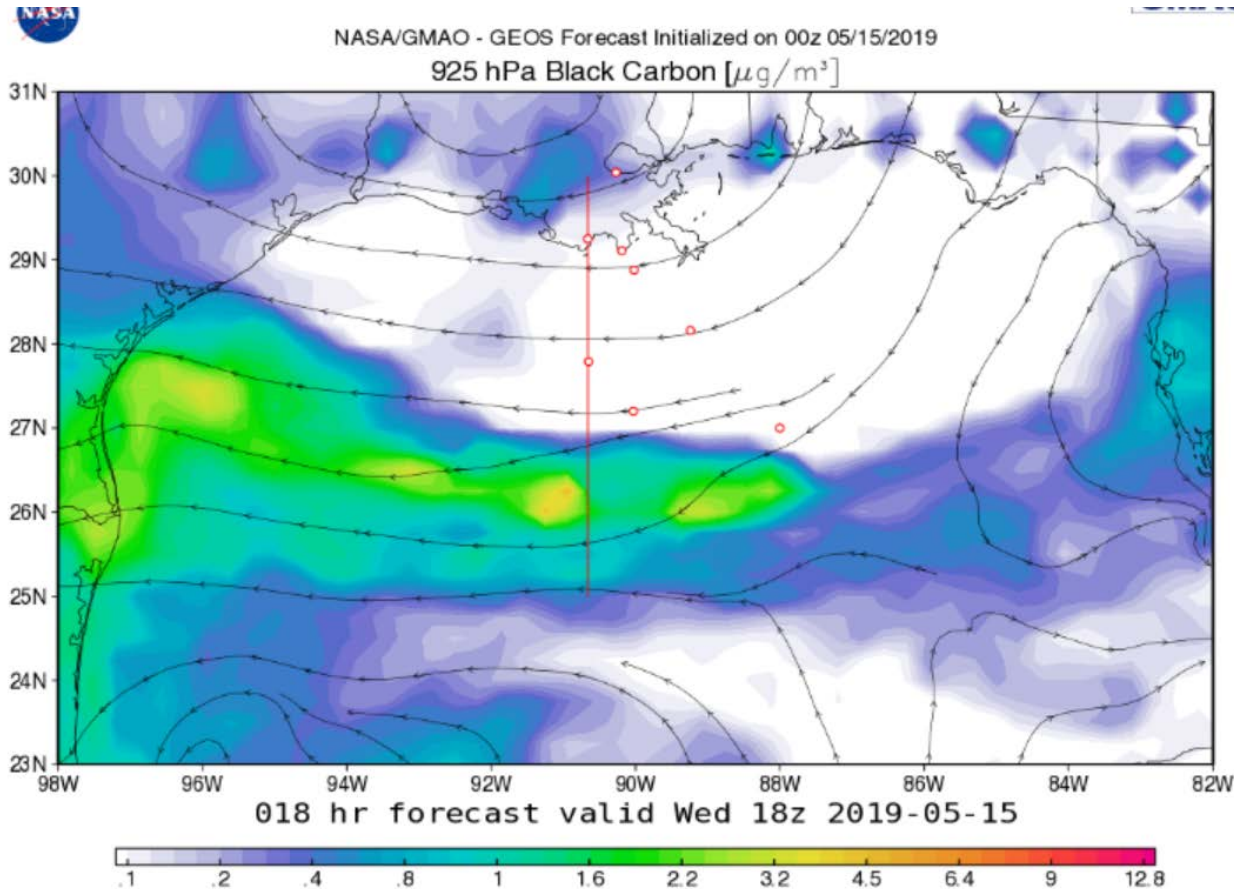
N. American Fossil Fuel

NASA/GMAO - GEOS Forecast Initialized on 00z 05/15/2019
925 hPa North American FF CO [PPBV, %]

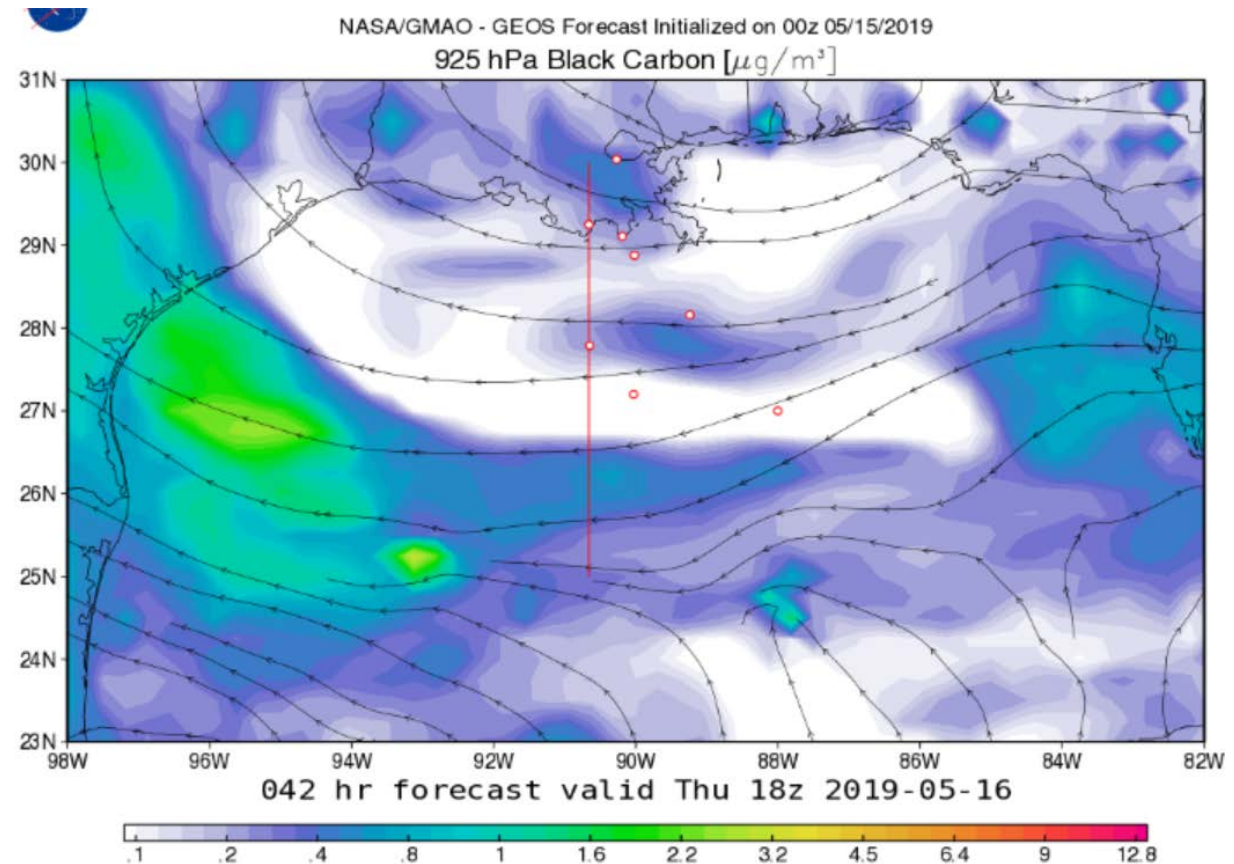


Surface level AOT (FP)

Wednesday 1 PM: Sharp transition in AOT from agricultural fires, but levels low in study area.

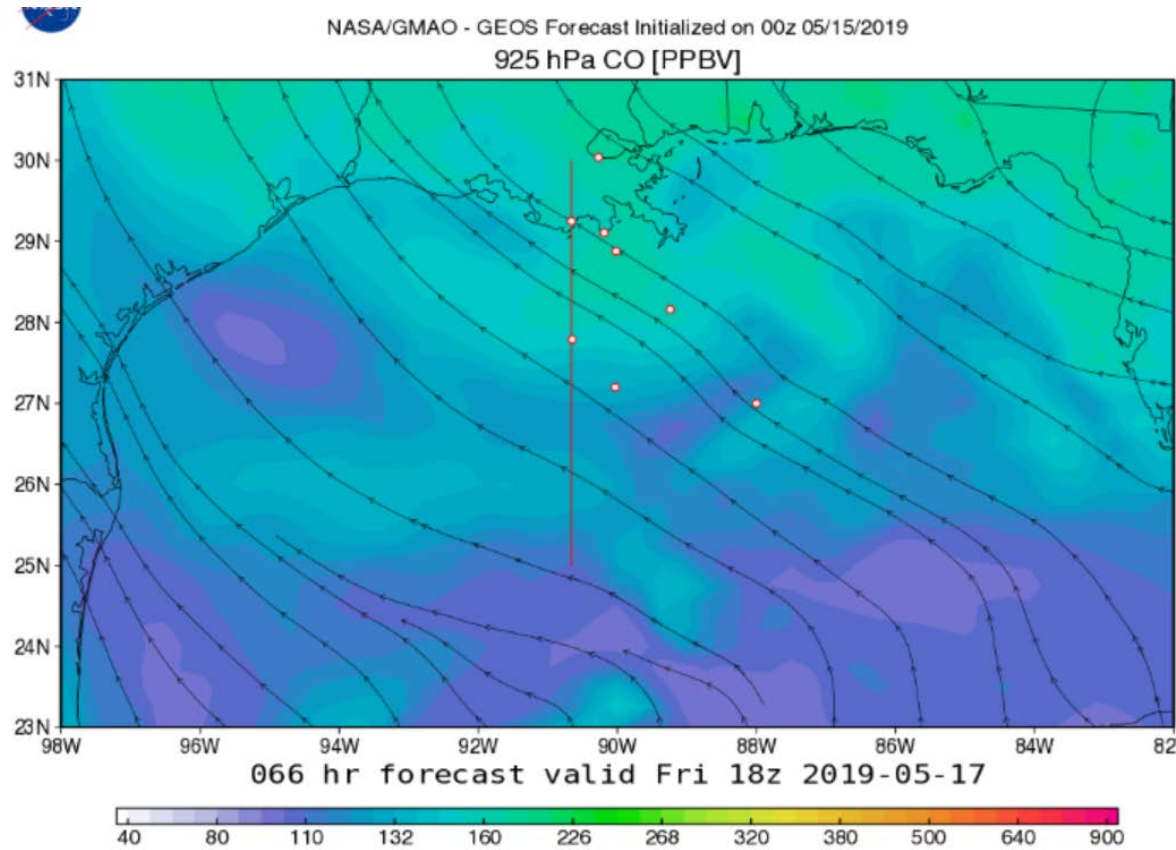


Thursday 1 PM: Wildfire influence wanes at surface over study area.

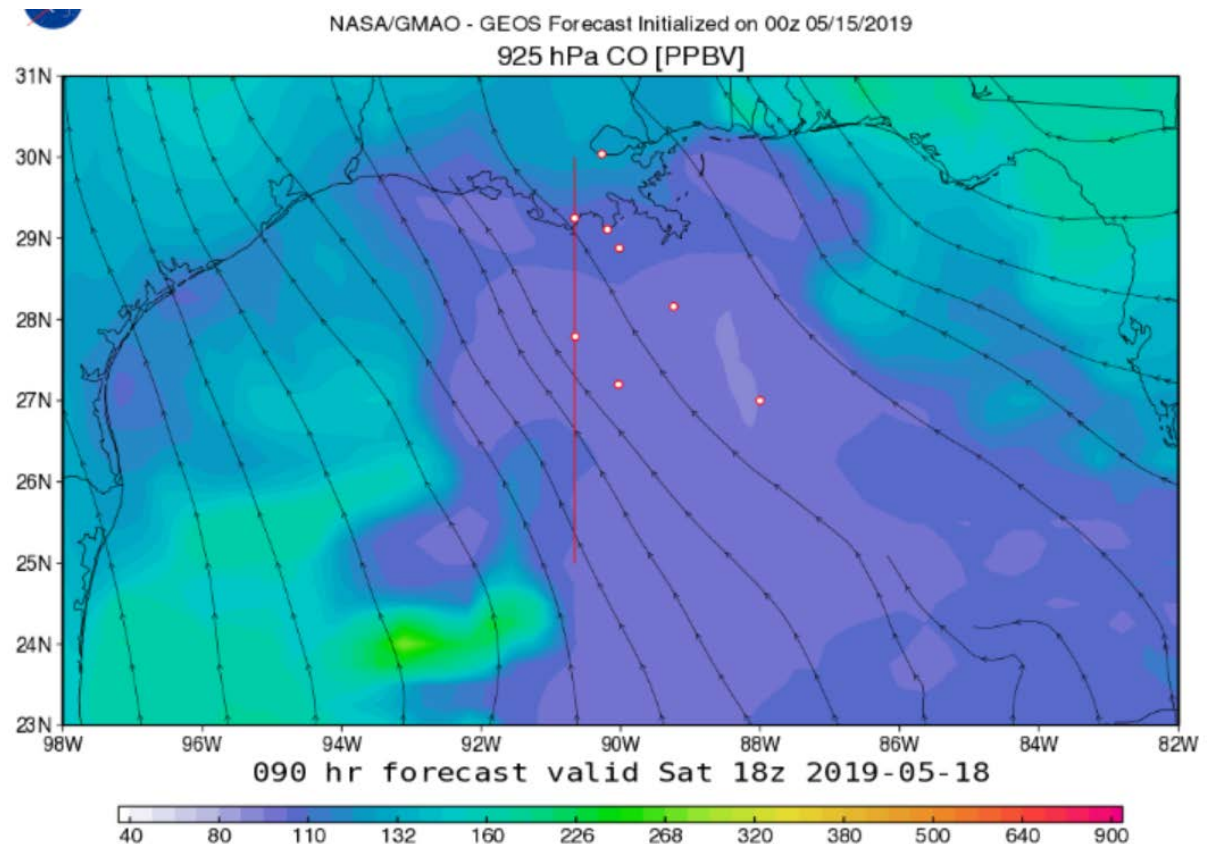


Surface level CO (FP)

Friday 1 PM: Return of more southerly flow.

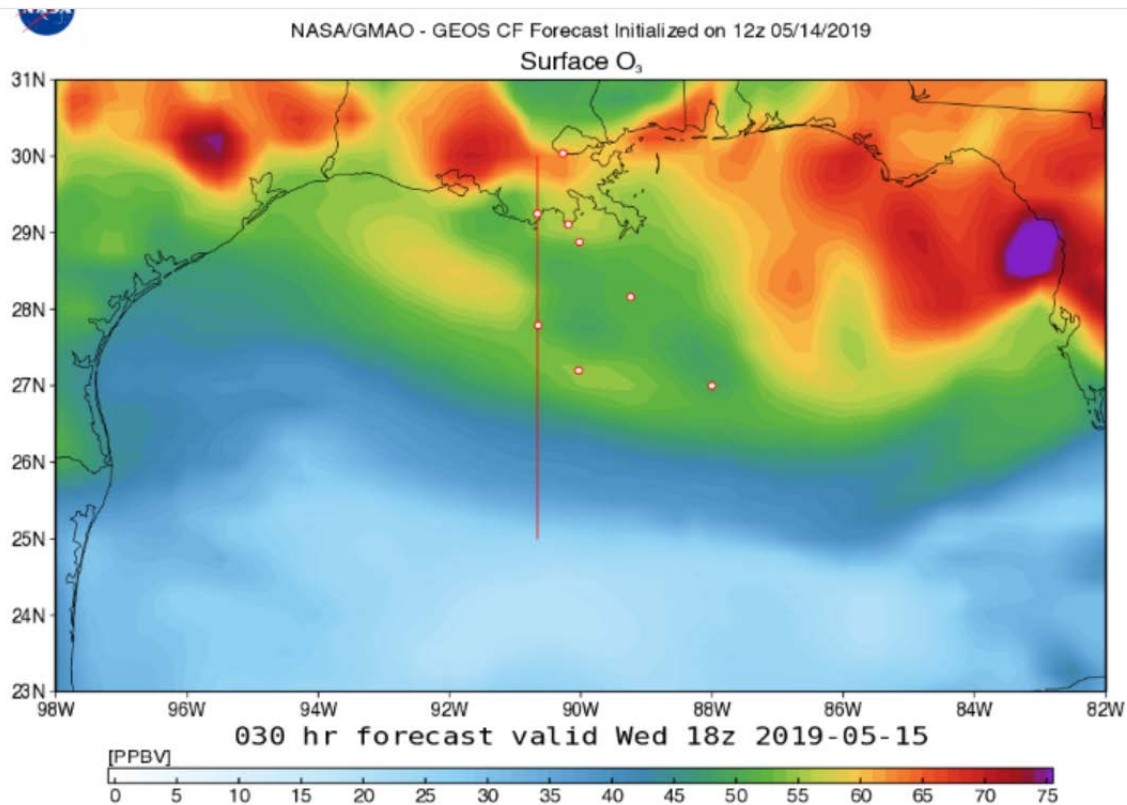


Saturday 1 PM: Marine air takes over study area.

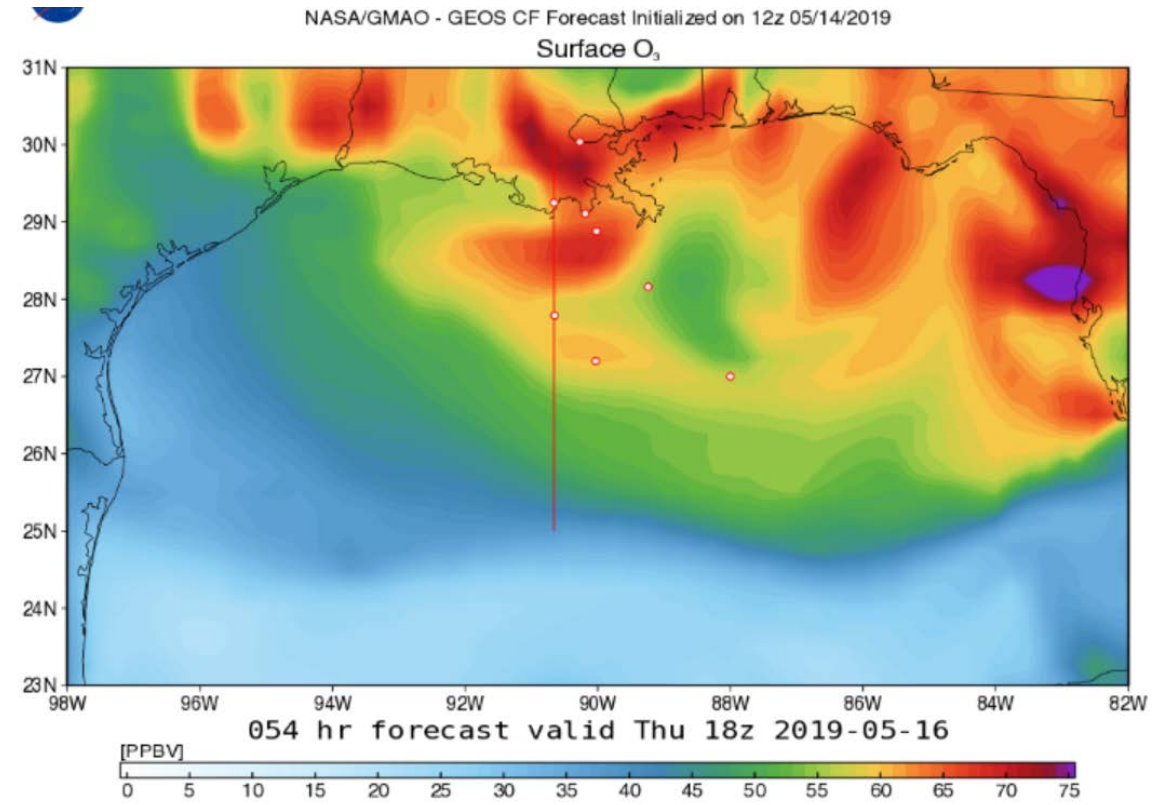


Surface level Ozone (CP)

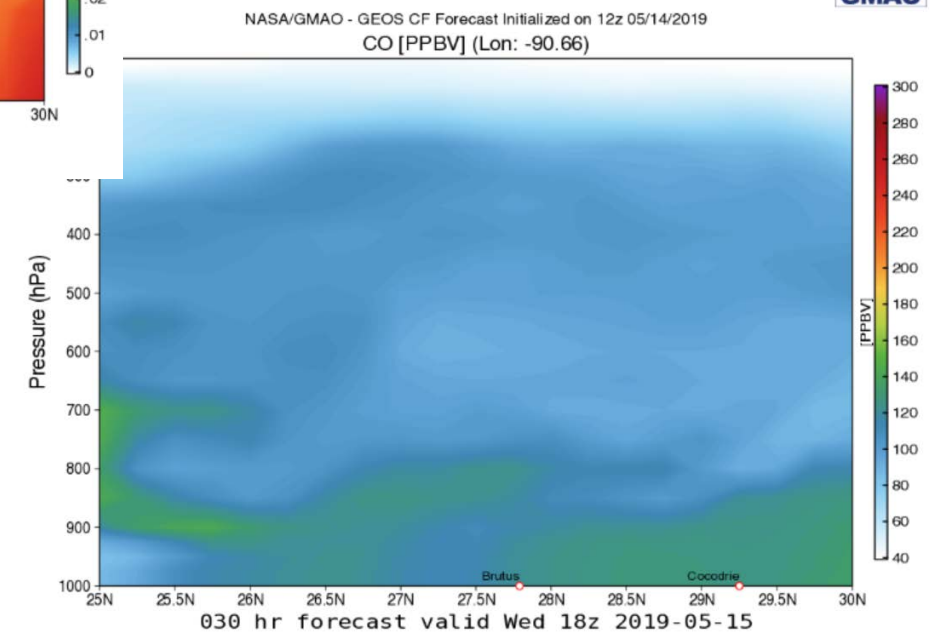
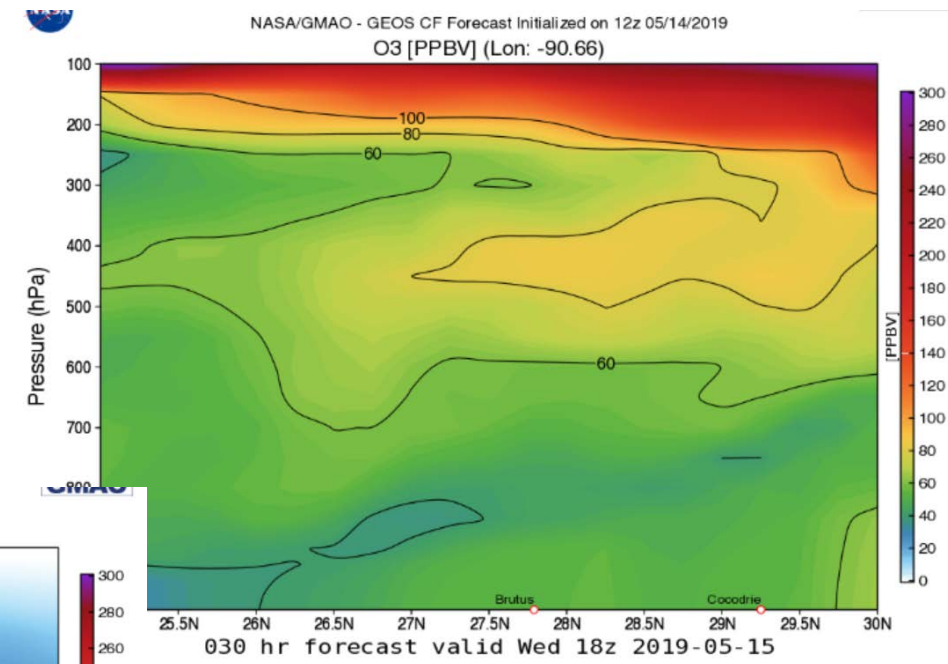
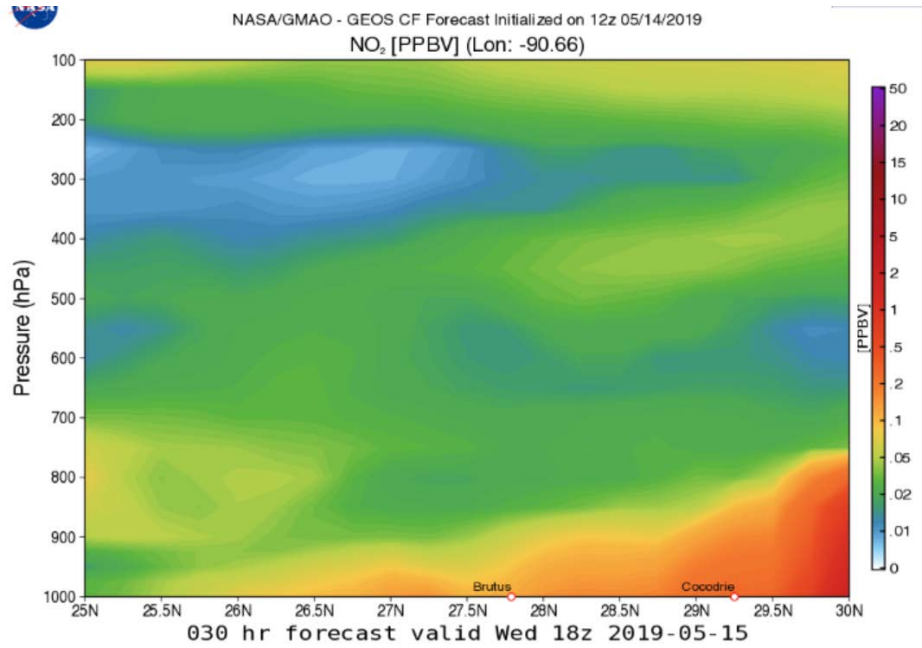
Wednesday 1 PM: Sharp transition between continental and marine air at southern edge of study region.



Thursday 1 PM: Onshore sources continue to affect offshore.

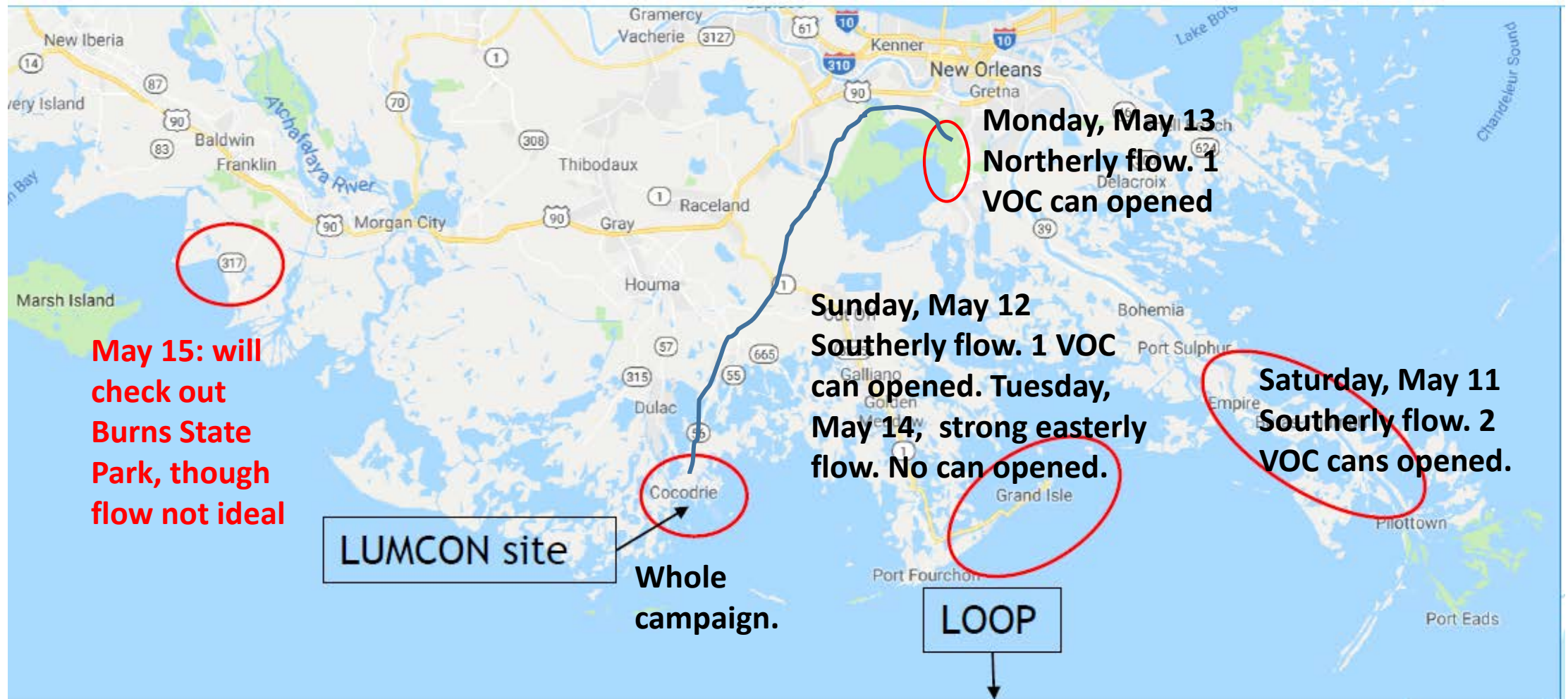


Cross Sections (CP) : Wednesday 1 pm



Onshore Team Plan of Action: Targets

Targets picked for dates based on weather conditions (e.g., forecasted wind direction), location of ship, and proximity to offshore sources.



KNMI NO₂-sonde operation during SCOAPE



4 KNMI NO₂-sondes available

- 1 sonde runs continuously at LUMCON
 - Aim: Capture as much off-shore NO₂ as possible.
- 1 sonde is deployed from a car
 - Aims: i) support off-shore measurements with surface NO₂ measurements at different points of interest; ii) identify places of interest for monitoring during 2020 NASA/BOEM campaign; iii) preparation of NO₂ vertical column measurements from a drone during 2020 campaign

Onshore Team's Activities: Previous Day (Tuesday)

Cocodrie to Grand Isle State Park (GISP) & Back

- Very windy easterly flow was not ideal for sampling onshore flow at any of the stations so we went to GISP again & also sniffed around Port Fourchon and other industry near our previous sampling site at GISP. On our previous visit the breezy winds were southerly.
- Jose, Mirjam, and Bryan all agreed that this site is an excellent candidate site for a potential drone/no2-sonde experiment next year. Jose mentioned that the winds die down in summer as compared to now, which would likely be better for sampling. There were numerous areas where a drone could be operated in a line of sight fashion.

NO₂-sonde measurements from Cocodrie to Port Fourchon/Grand Isle State Park

- Sampling site: Grand Isle State Park
- Easterly strong winds 70's – low 80's. Not surprisingly, NO₂ was low just about everywhere.
- Some clear skies but high cirrus more common than not.
- Great sampling site from campground and observation tower.
- No VOC can was collected at TROPOMI overpass. We have only 6 left for the next few days which are likely to be better for sampling onshore flow.

The tower could give a little vertical information on NO₂ distributions.



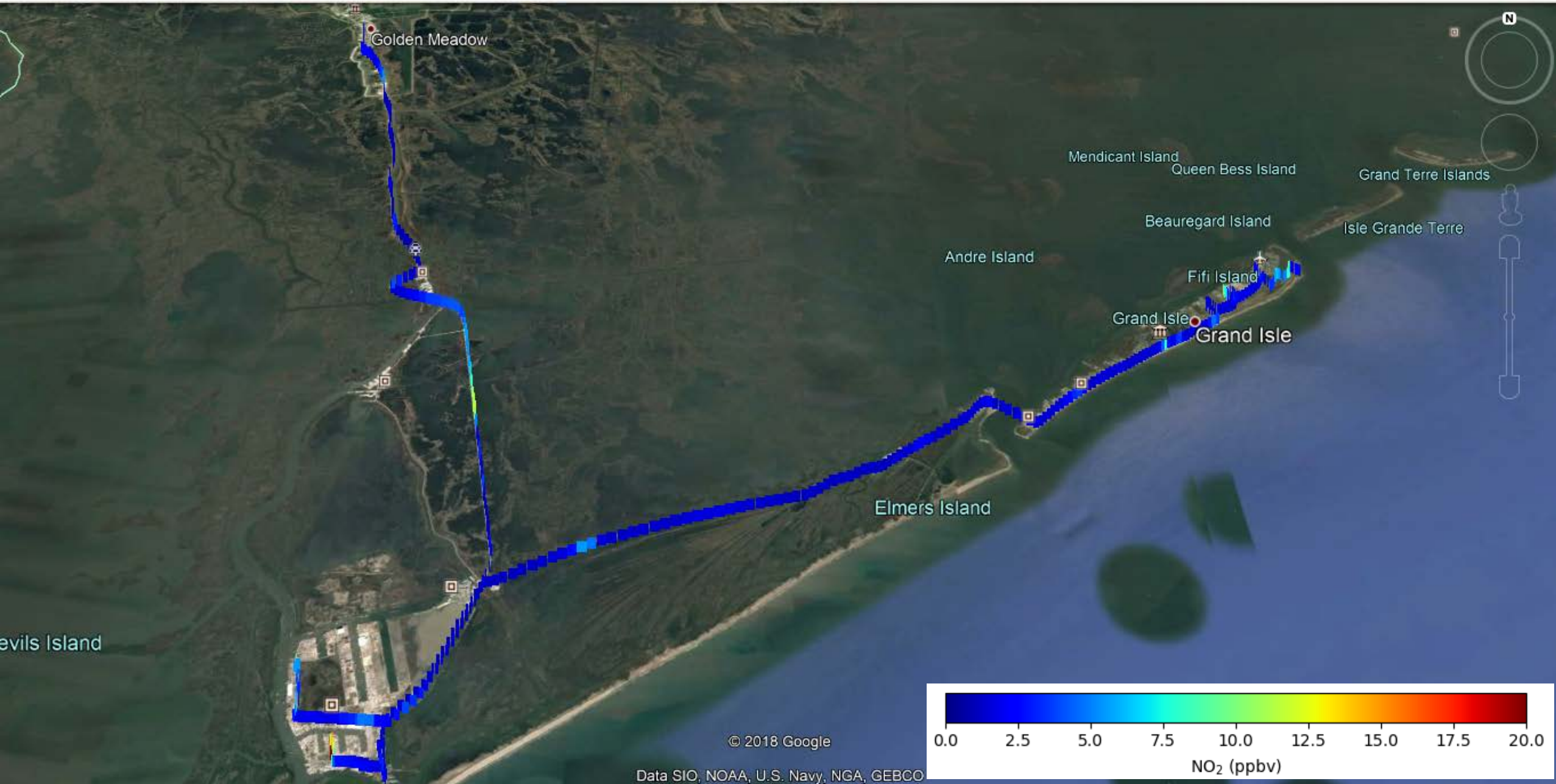
Numerous offshore activities (rigs & boats) are visible from sampling location.



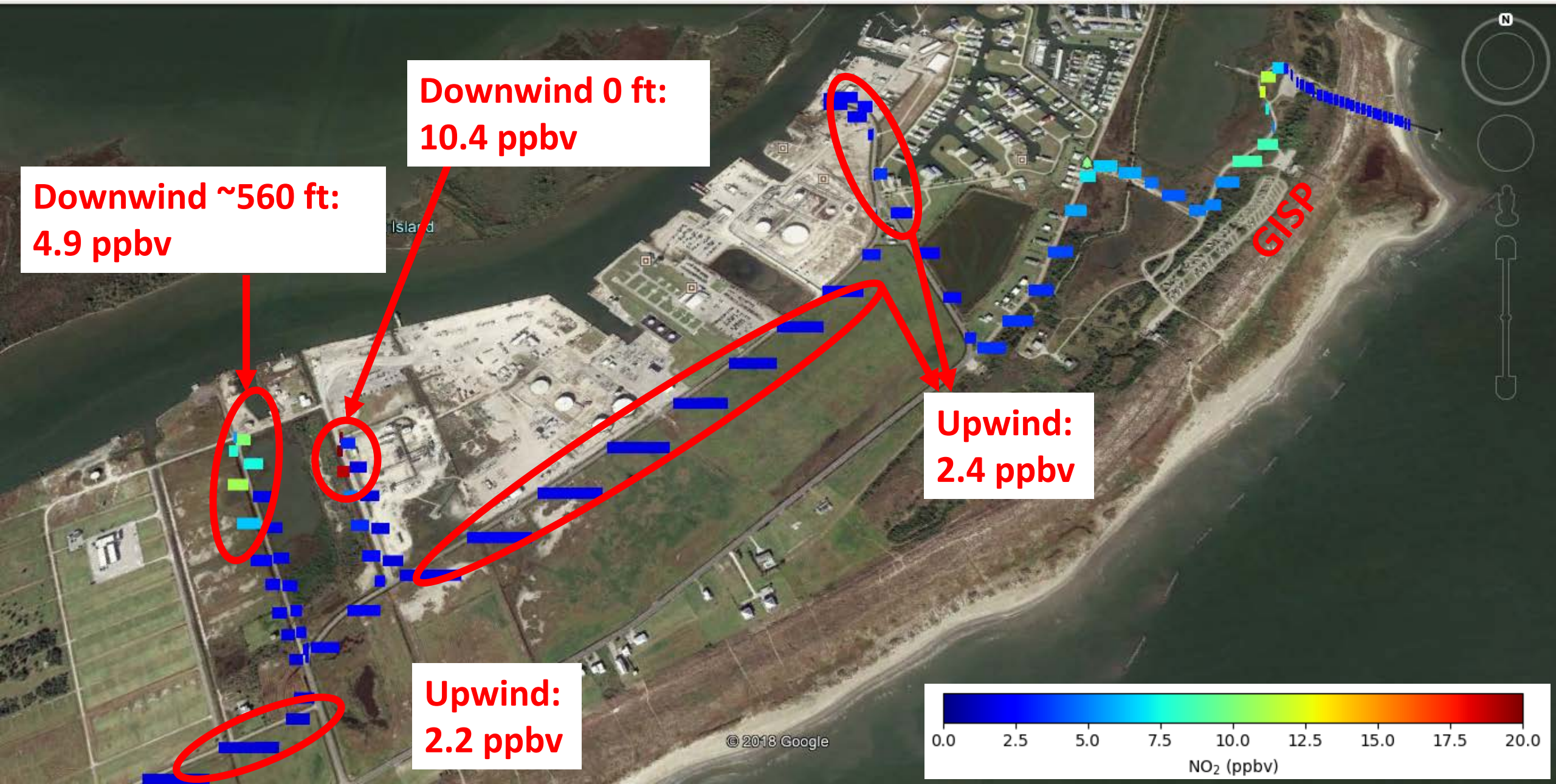
14 May 2019 NO₂-sonde car measurements to GI



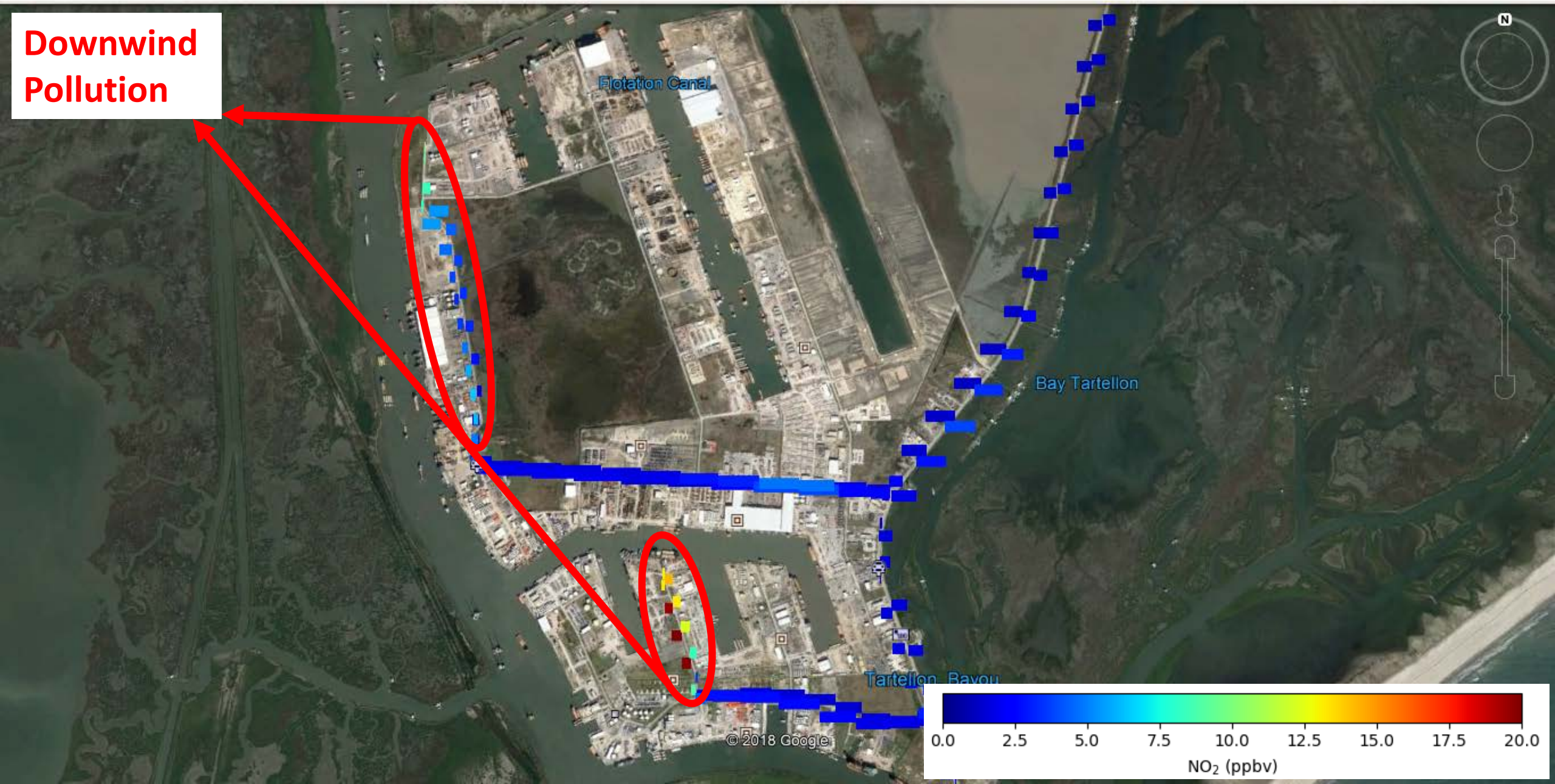
14 May 2019 NO₂-sonde car measurements returning



COX energy company near GISP

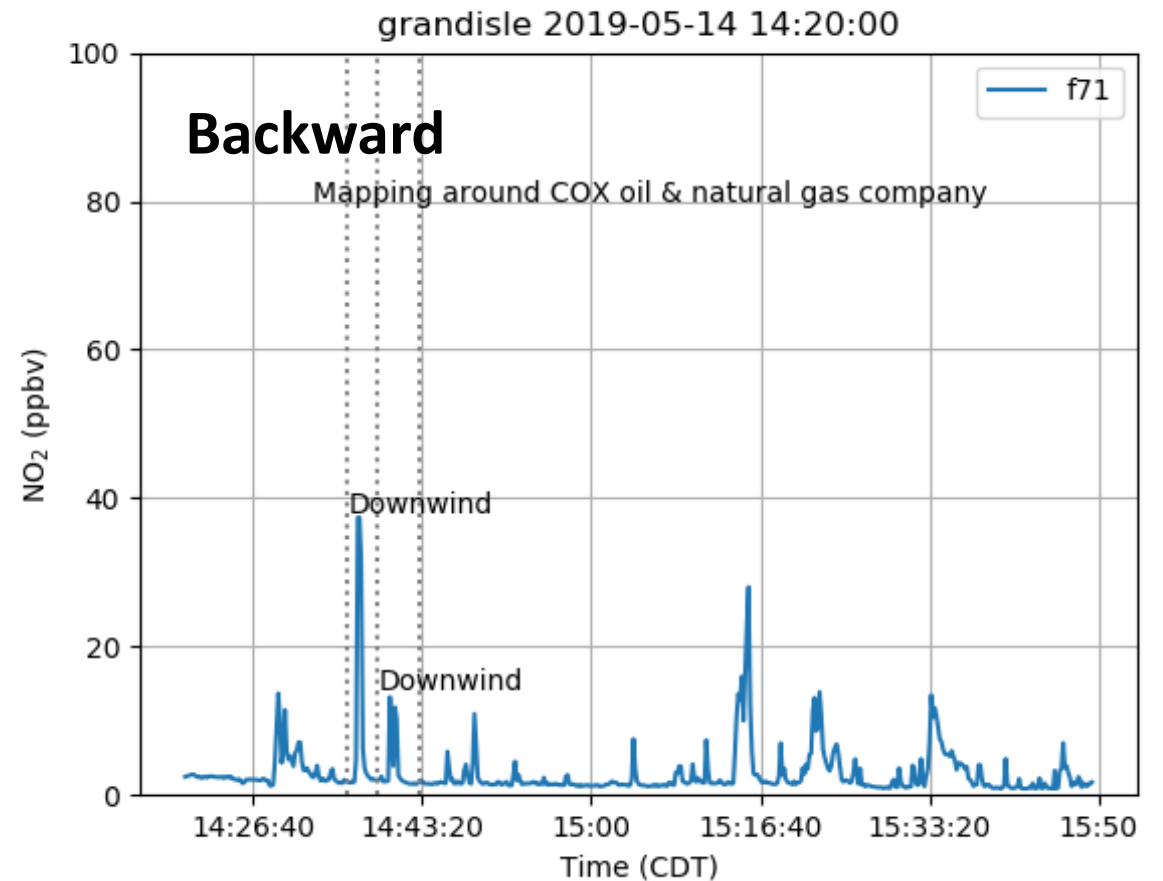
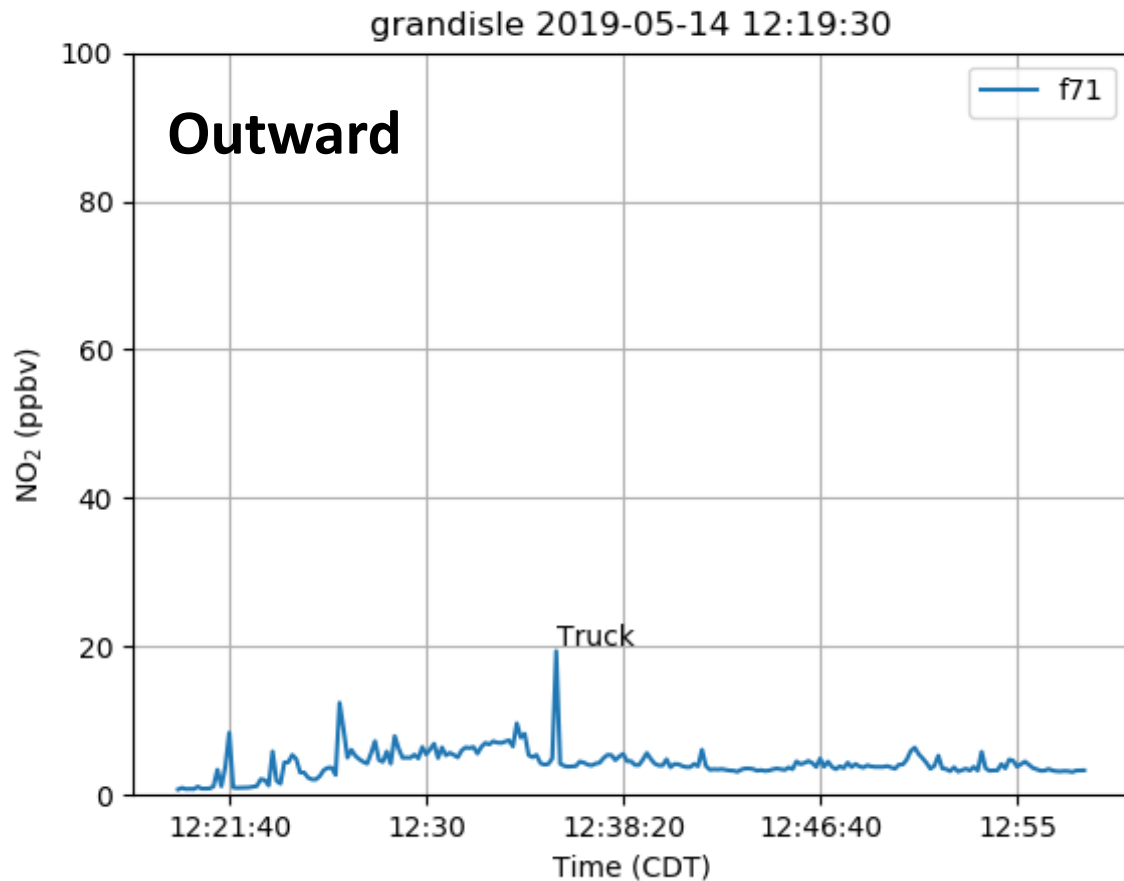


Port Fourchon

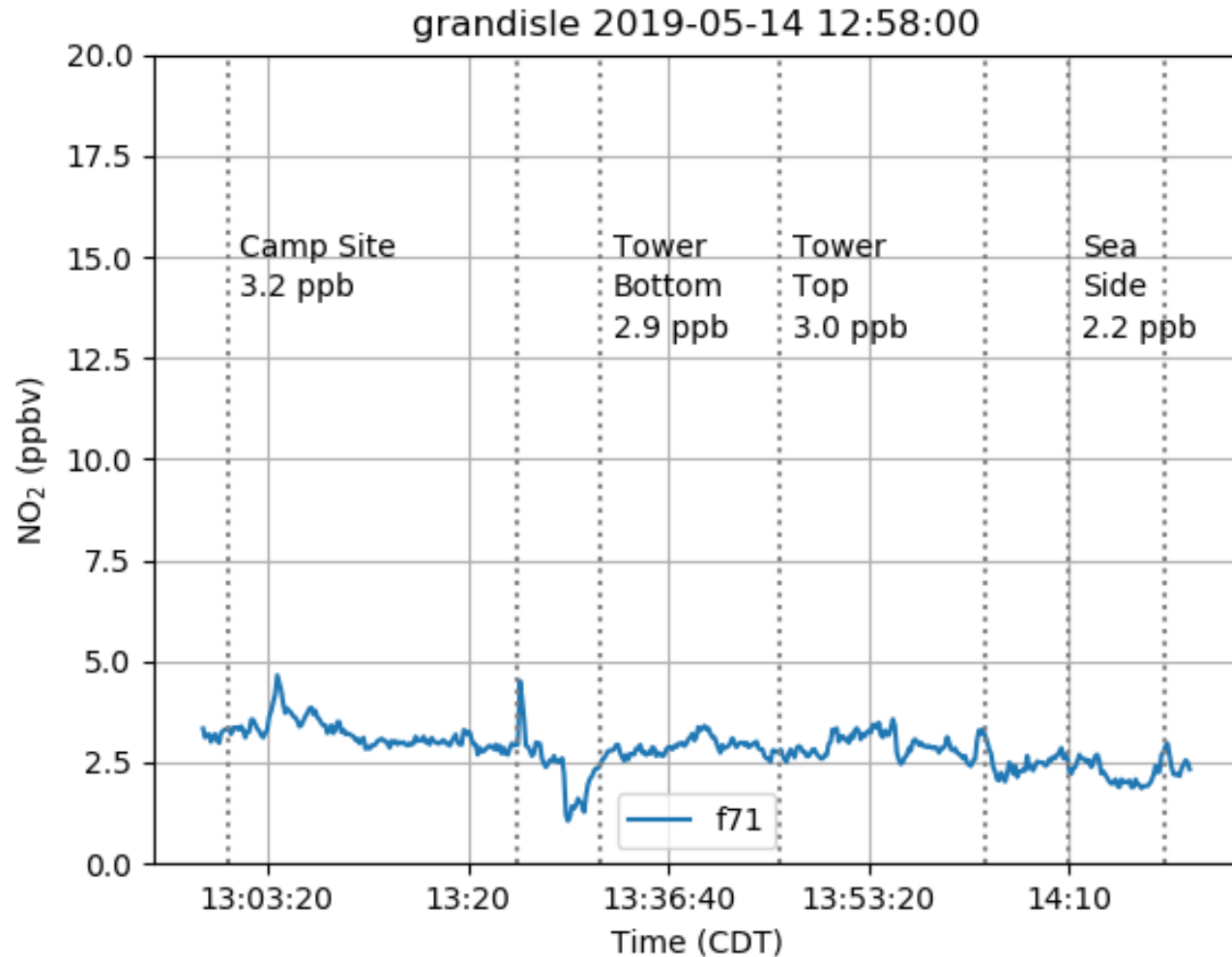


14 May 2019 NO₂-sonde time series

- Today was cleaner than yesterday, maybe due to the strong wind around Grand Isle
- Differences in NO₂ vmr up- and downwind of COX energy company are clearly visible



14 May 2019 NO₂-sonde time series



No big differences in NO₂ vmr were observed down at the Grand Isle State Park

Wind direction

Friday and Saturday seem like best days to observe onshore flow.

Thursday 1 pm

Saturday 1 pm

Wednesday 1 pm

Friday 1 pm

