

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

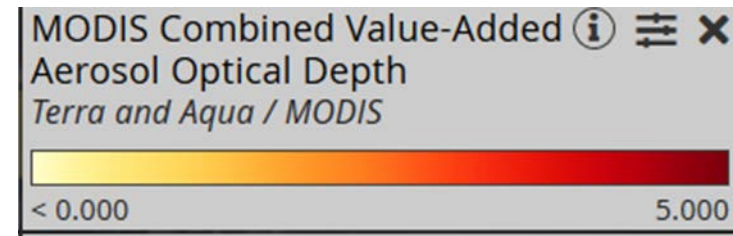
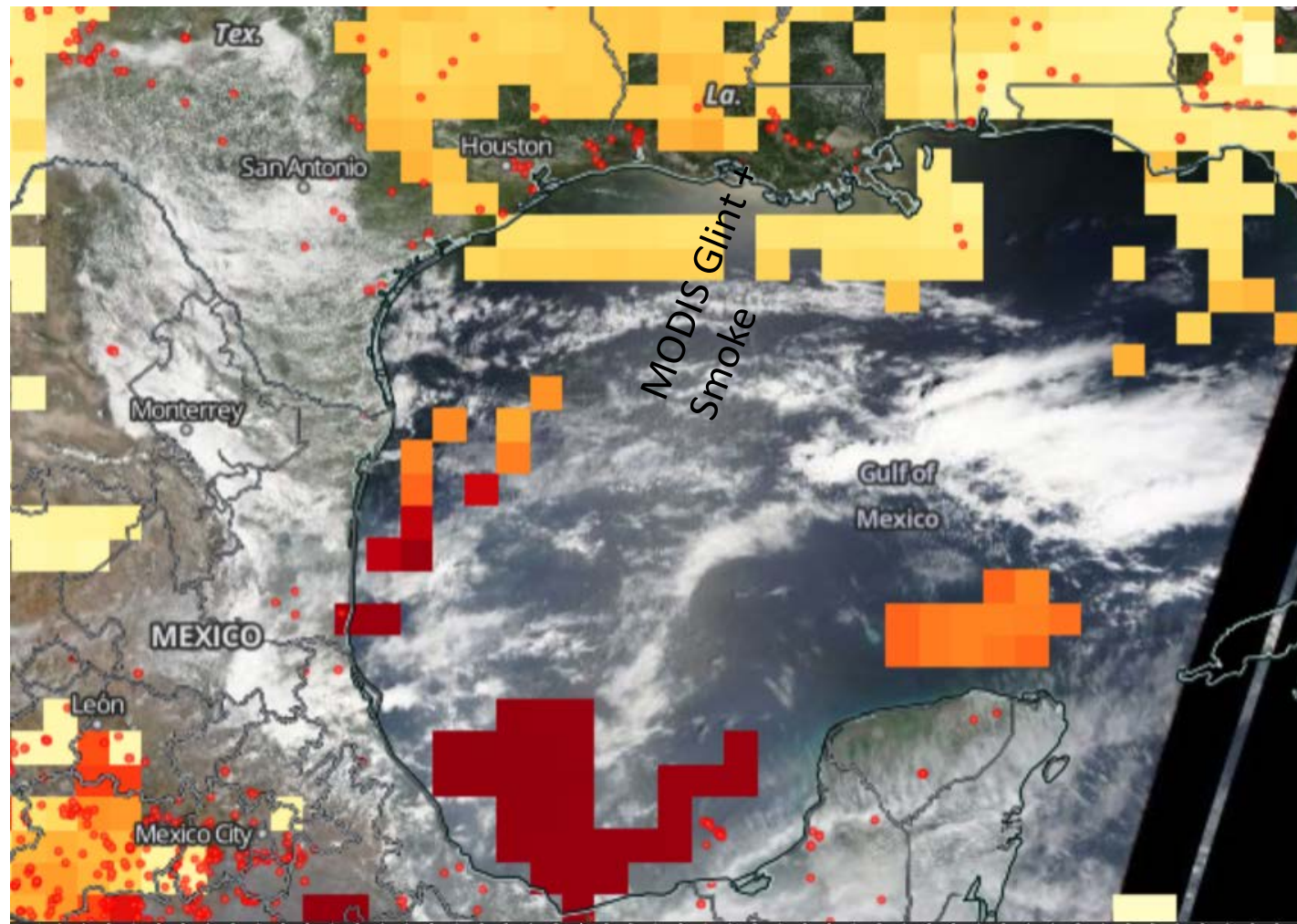
Sunday, May 16, 2019

LUMCON, Cocodrie, LA

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

May 15, 2019: Watching Agricultural Fires in Mexico and Central America: Polluting GoM

MODIS Firecounts & True Color Image & AOD

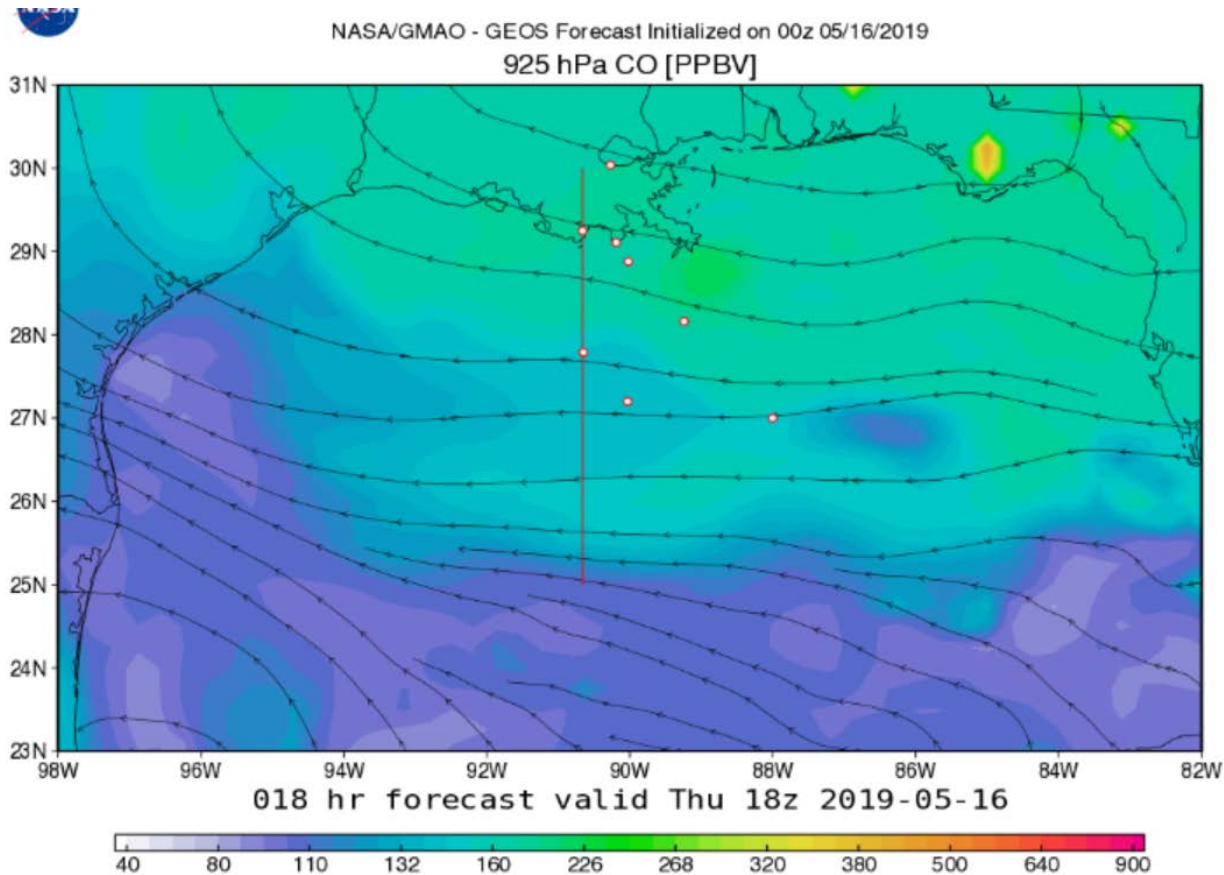


GEOS Chemical Forecasts

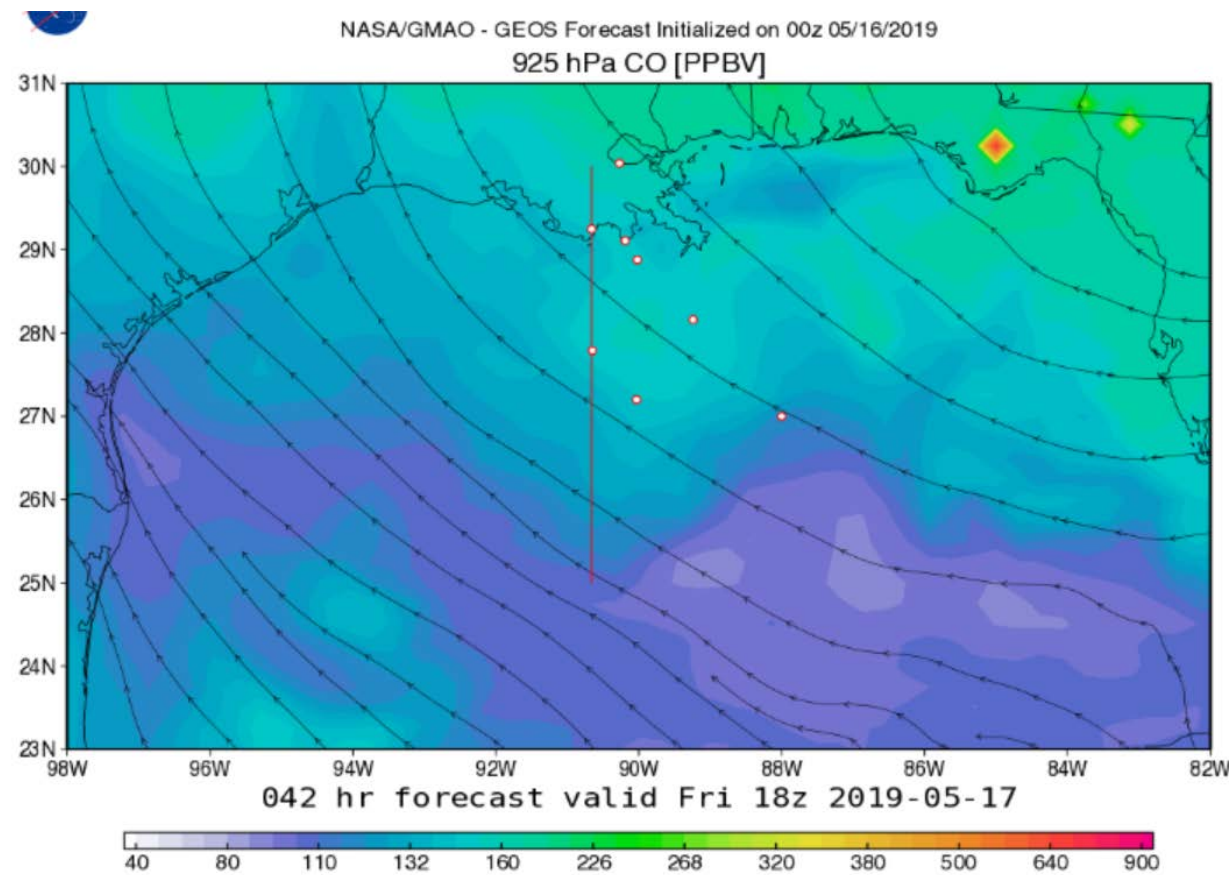
- Winds continue to keep continental air in study area on Thursday.
- Southerly flow begins to return Thursday into Saturday with marine air reaching land on Saturday.
- **NOTE:** GEOS forecasts DO NOT simulate GoM ONG source emissions, therefore the simulated transition between air masses may not be 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)

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

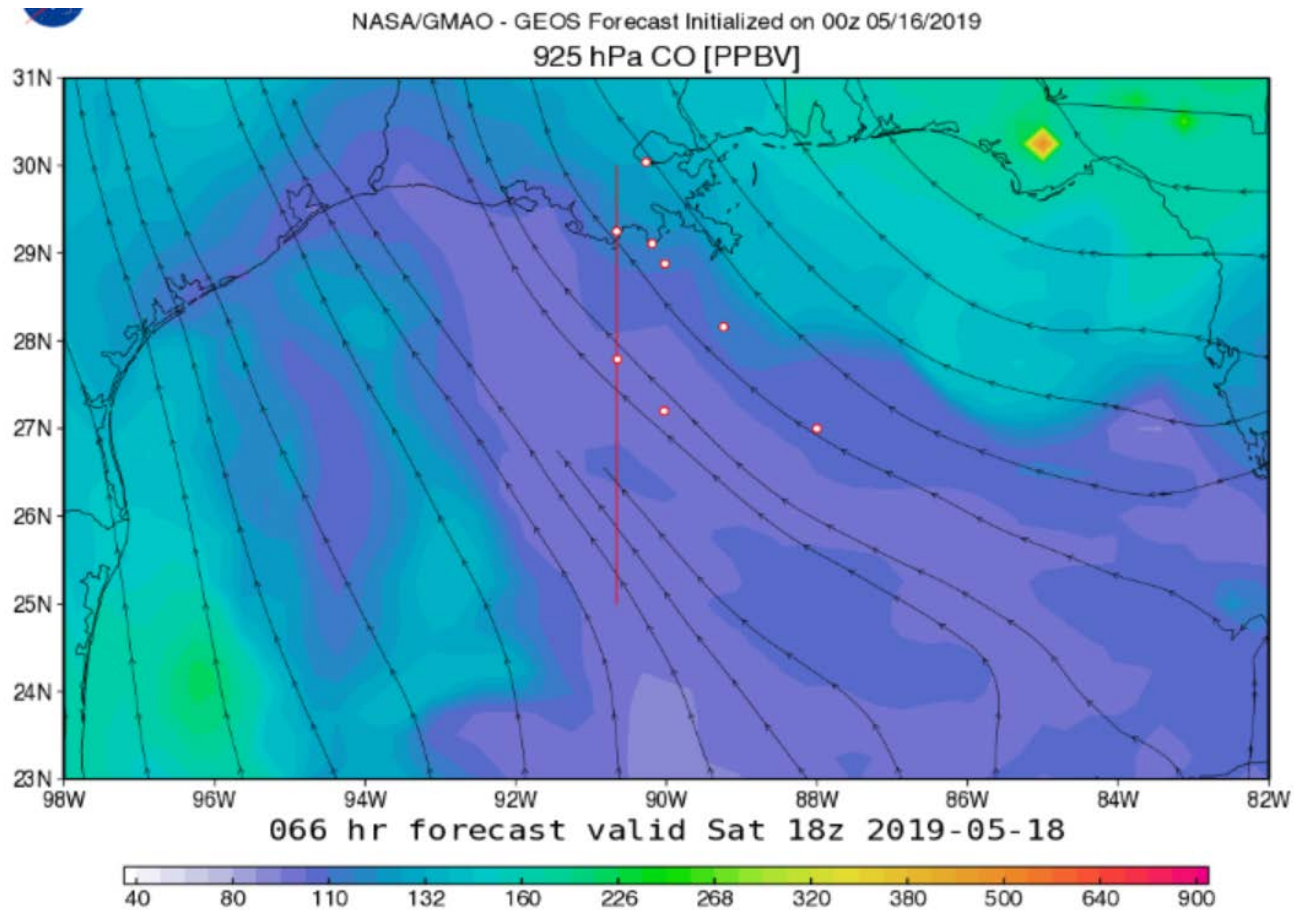


Friday 1 PM: Transition begins to show signs of breaking down.



Surface level CO (FP)

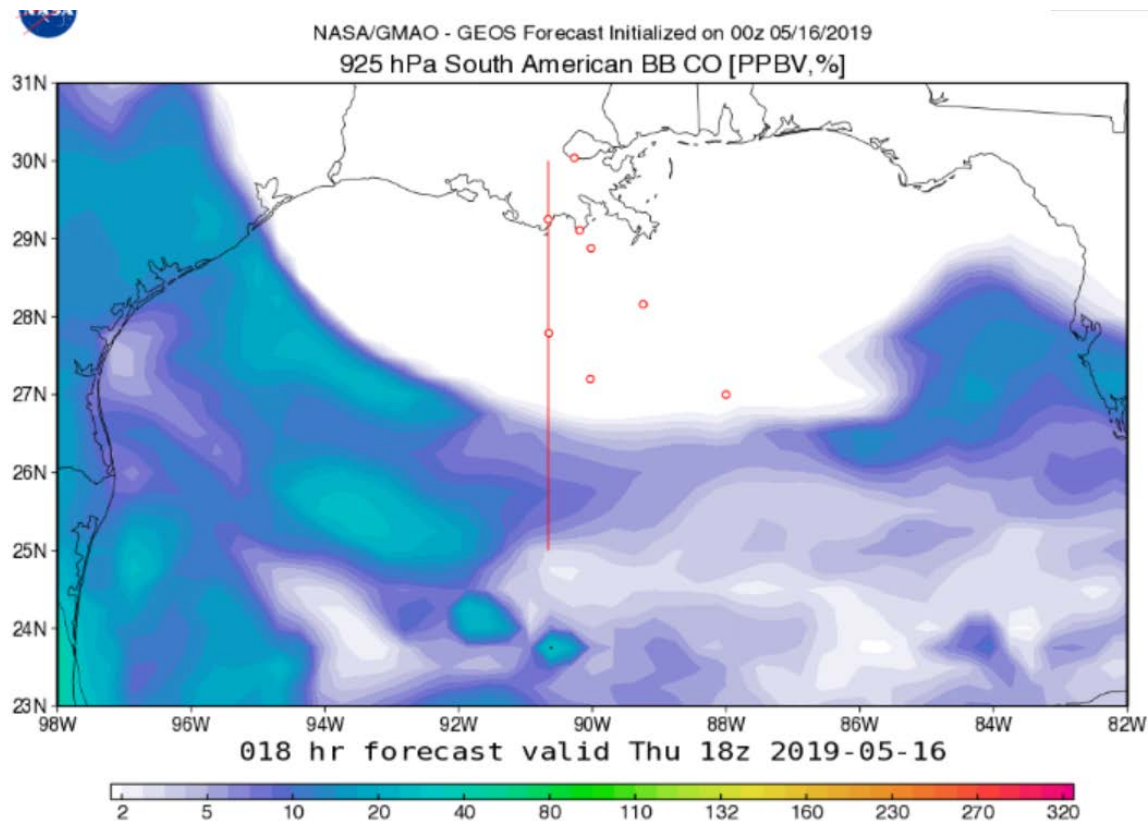
Saturday 1 PM: Marine air takes over study area.



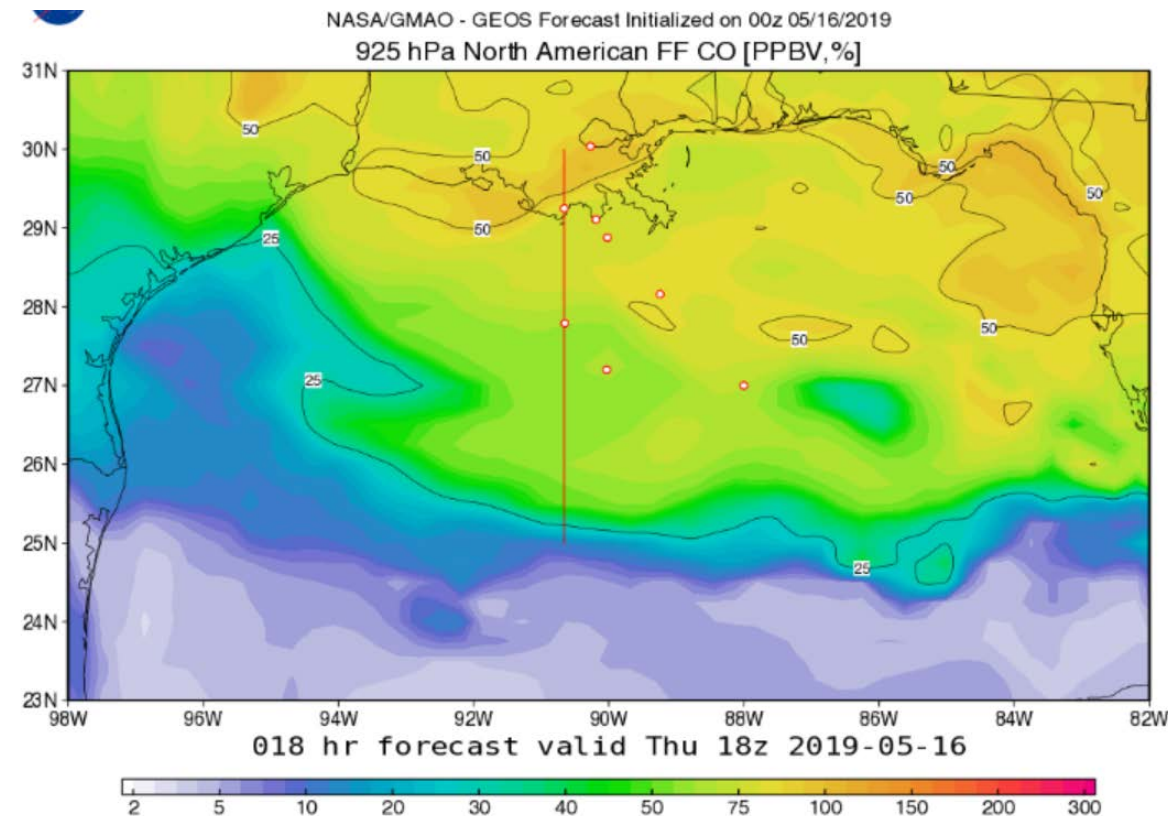
Surface level CO Tracers (FP) : Thursday 1 pm

The continental sources dominate the study area, but this begins to wane by Saturday with the return of more southerly flow. At this time, agricultural smoke is forecasted to start impacting the study region in a minor way by Friday and Saturday.

Agricultural Fires



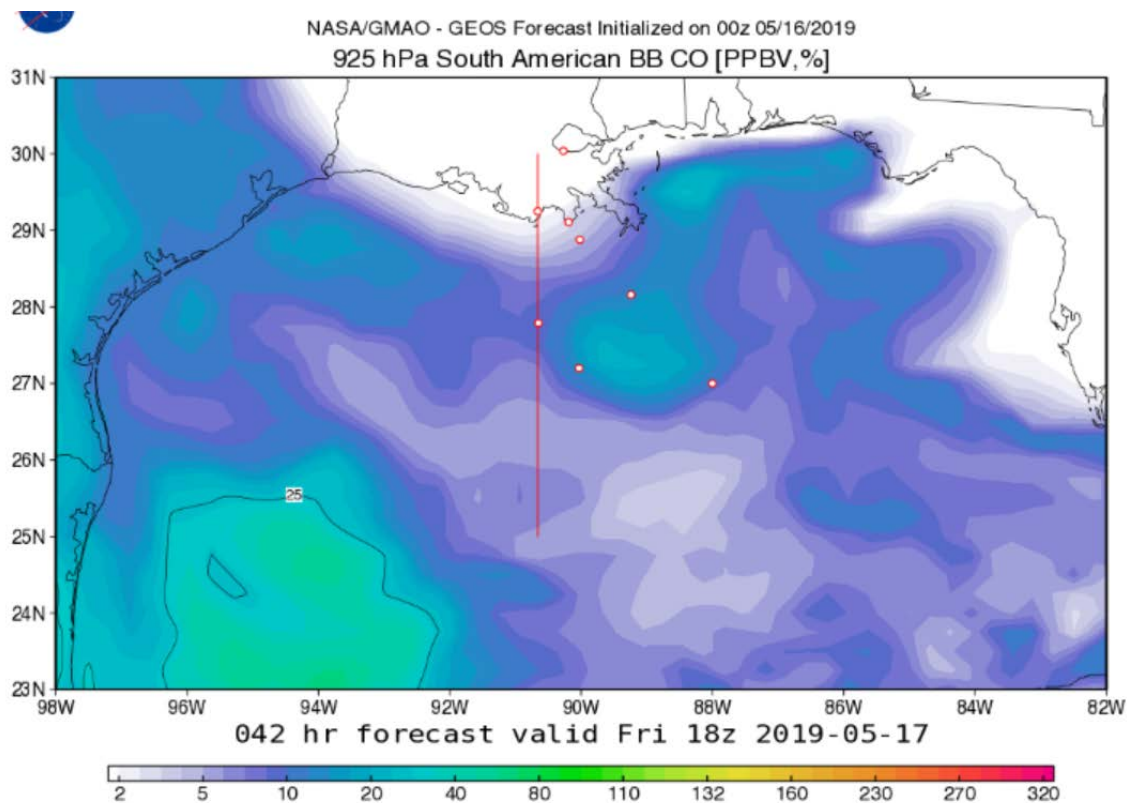
N. American Fossil Fuel



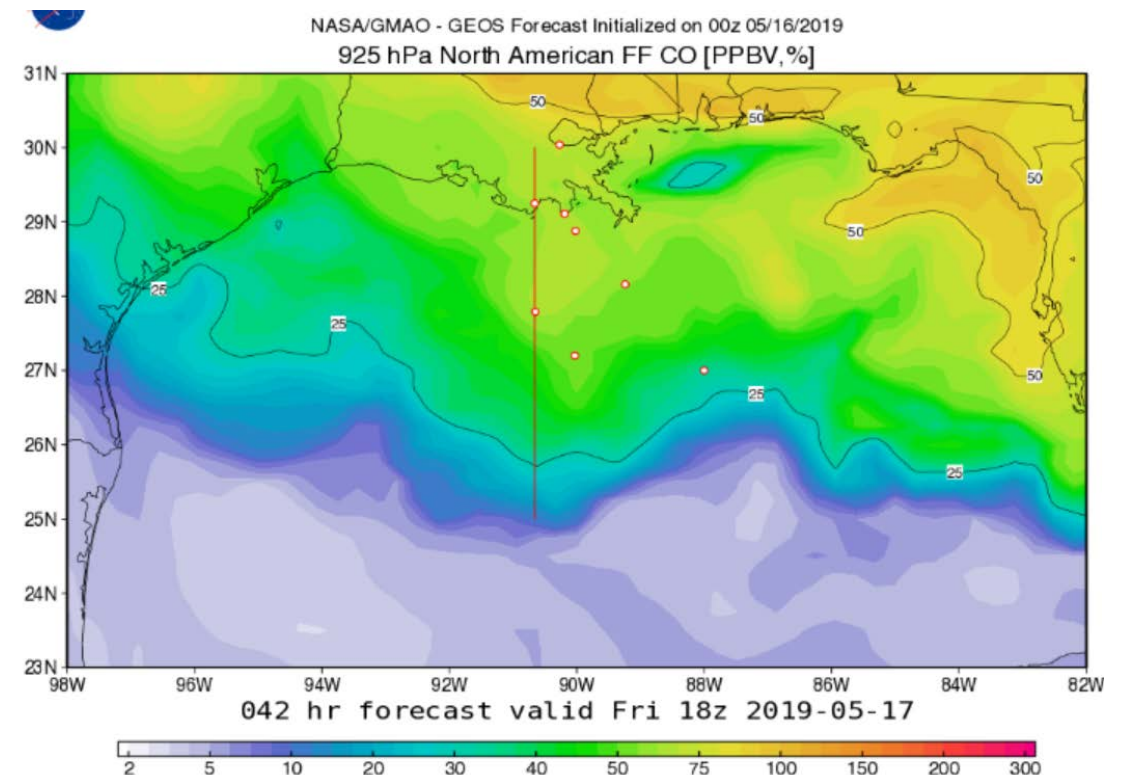
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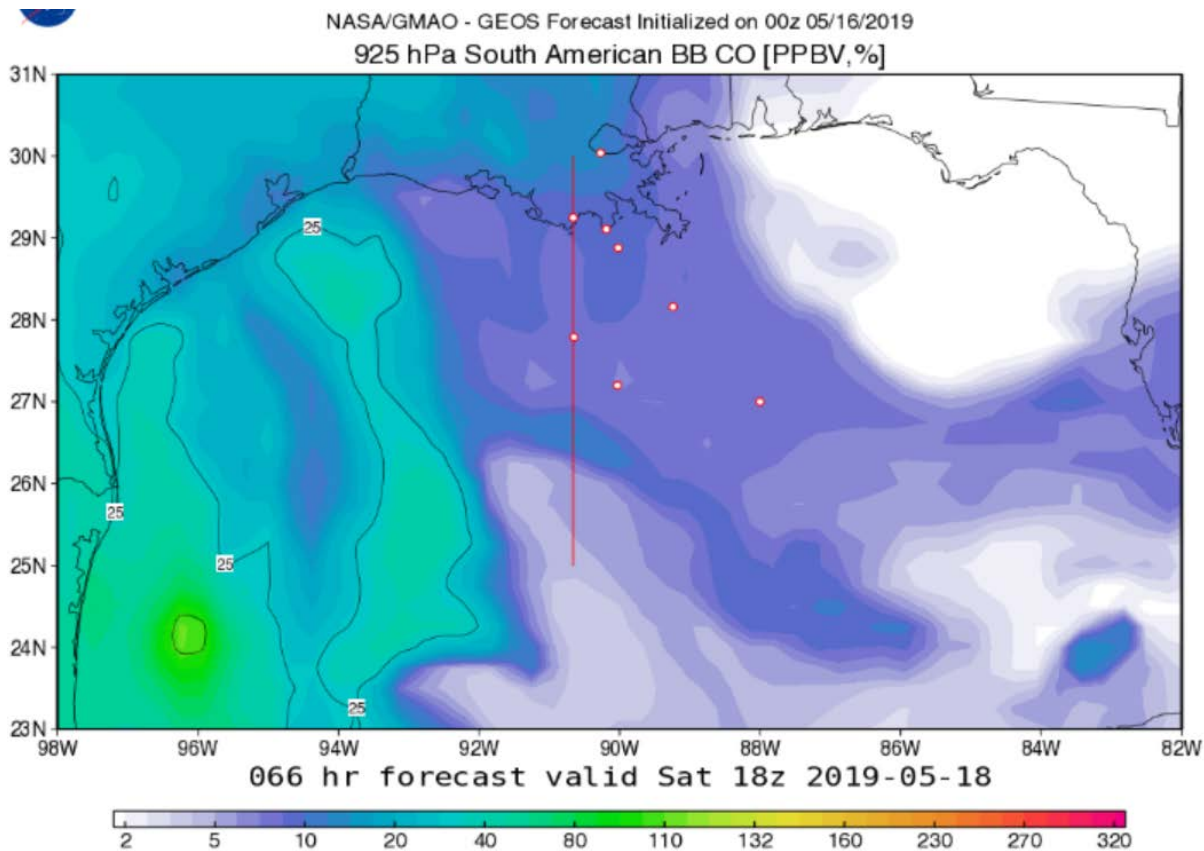
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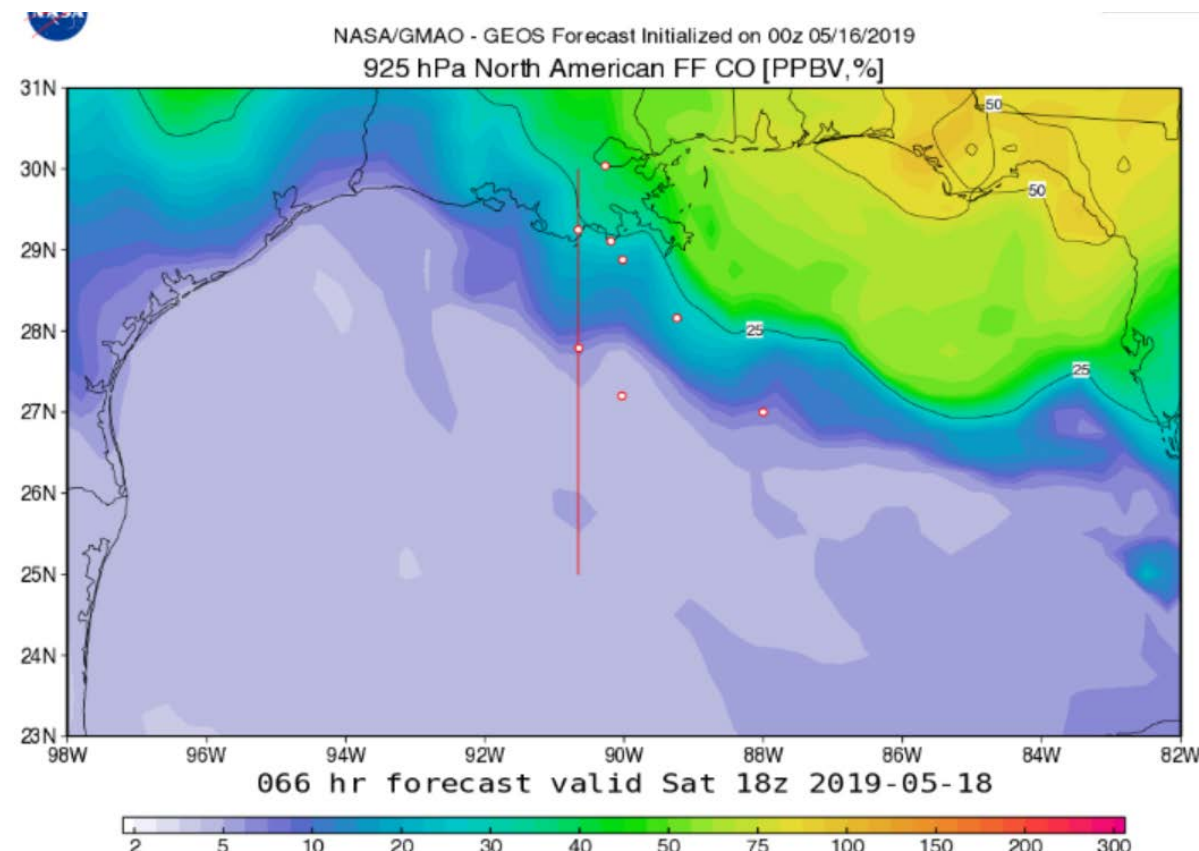
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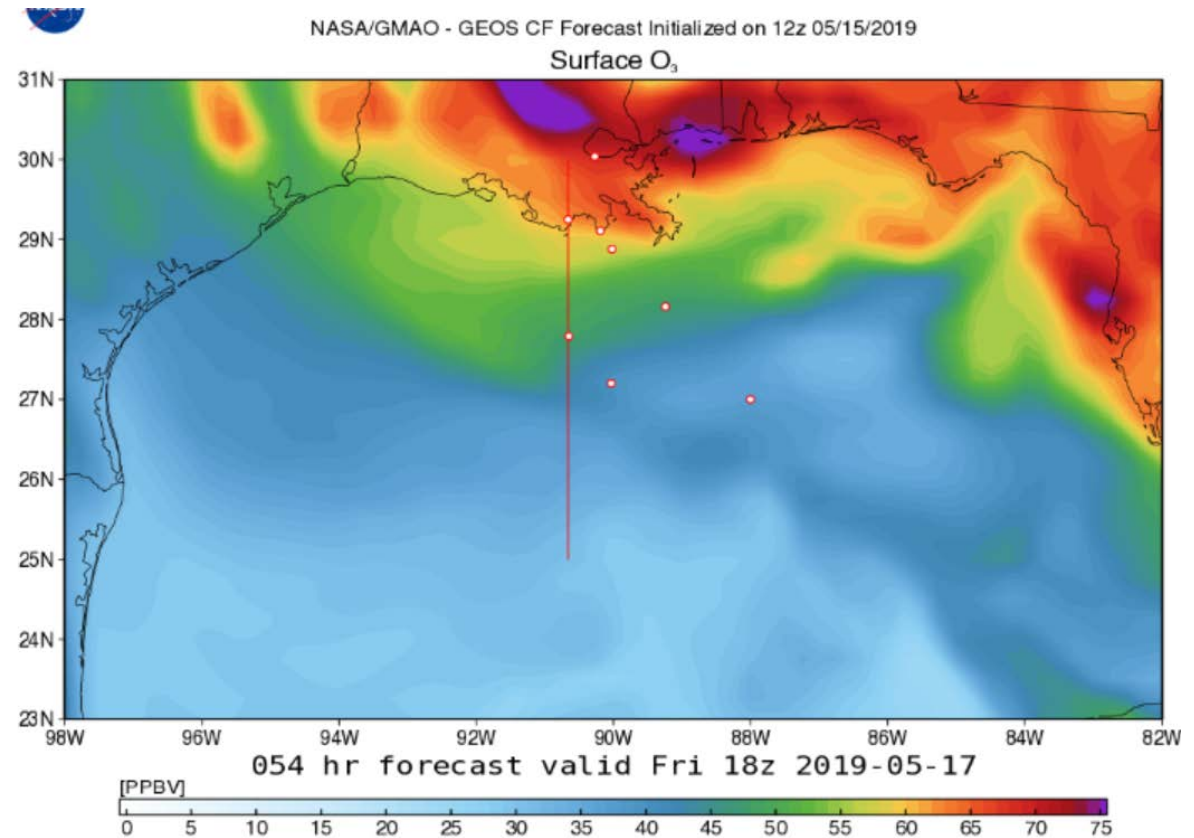
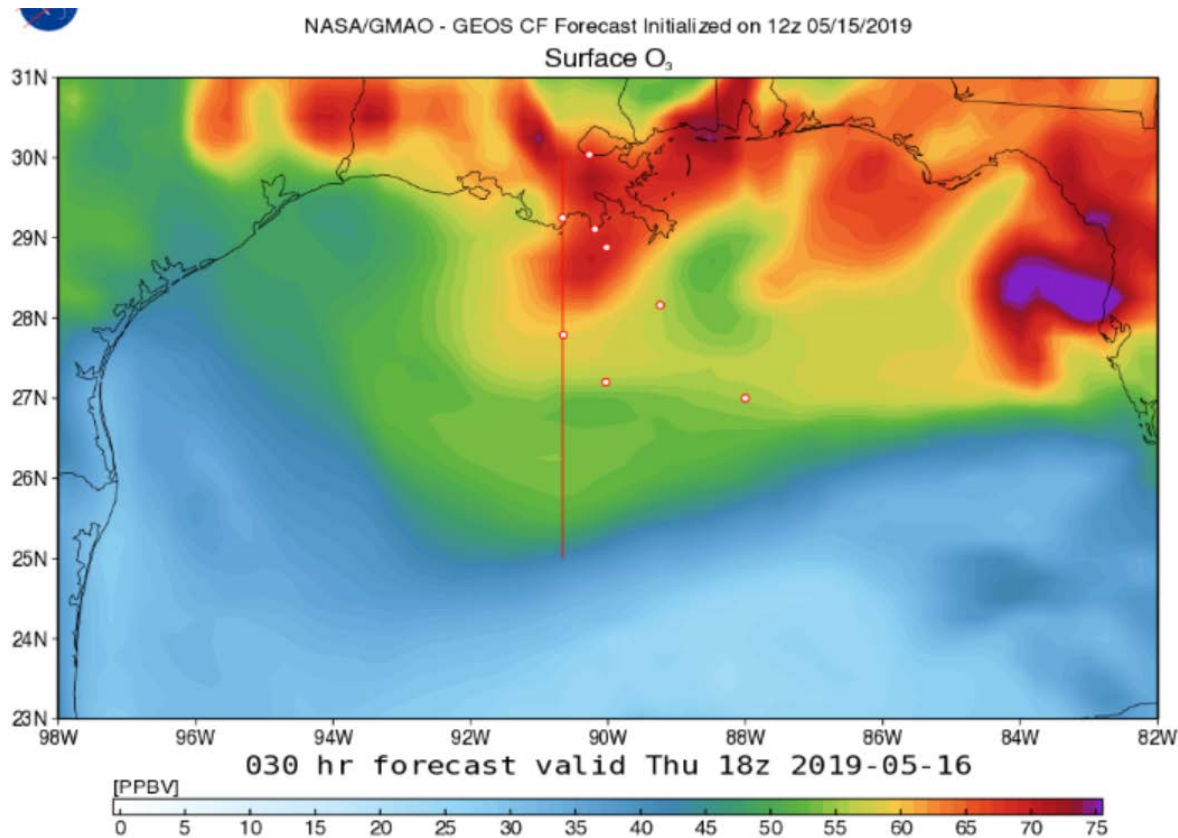
N. American Fossil Fuel



Surface level Ozone (CP)

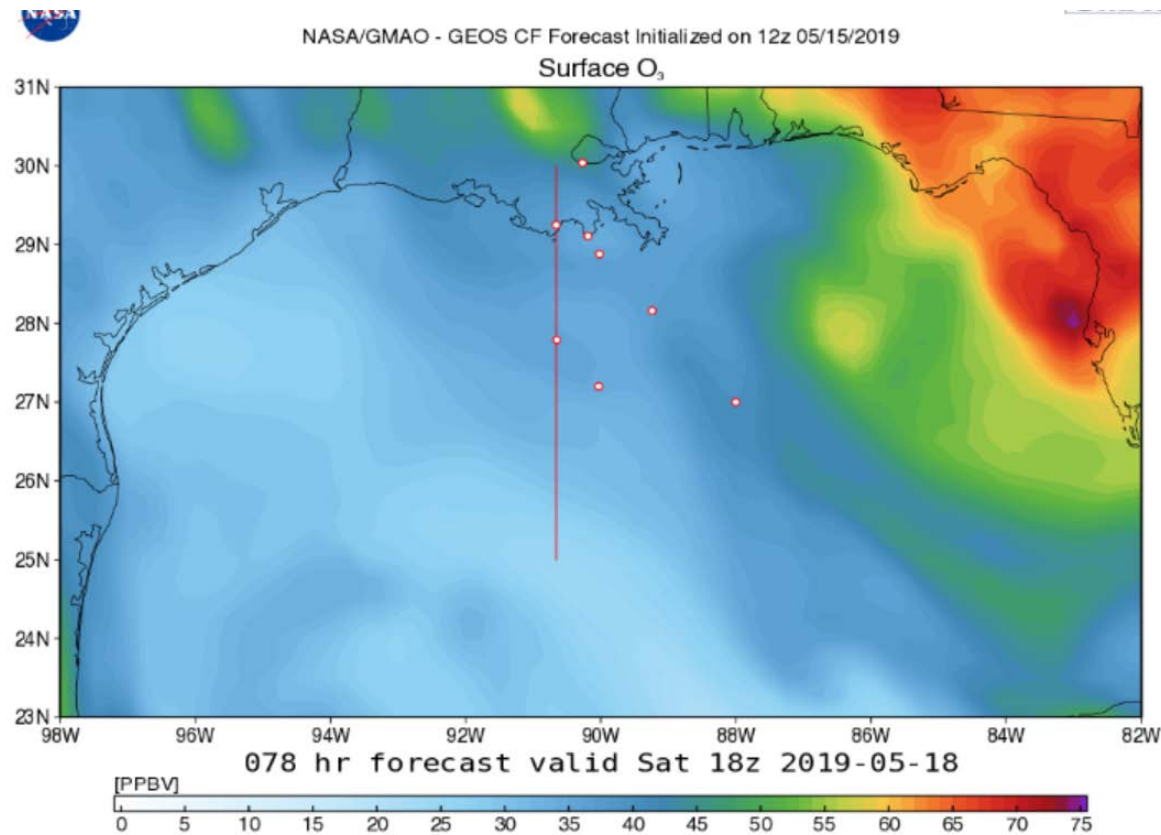
Thursday 1 PM: Onshore sources elevating ozone over study area, especially near coasts,

Friday 1 PM: Onshore sources continue to affect offshore, but influence waning as southeasterly flow takes hold.

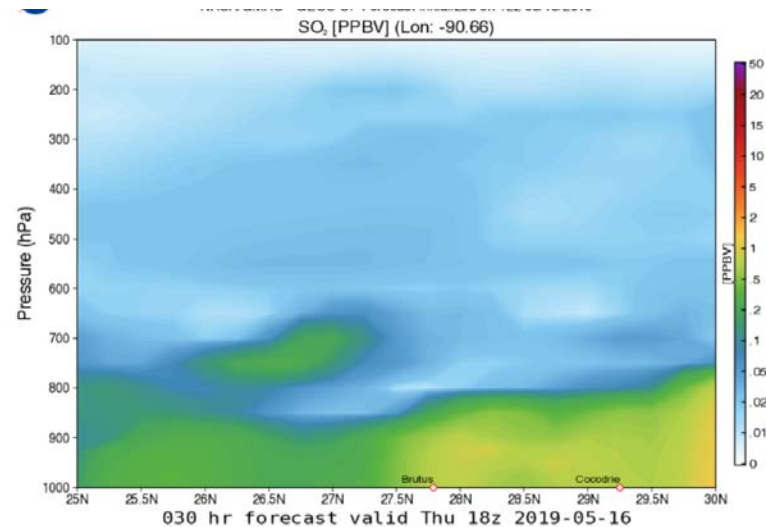
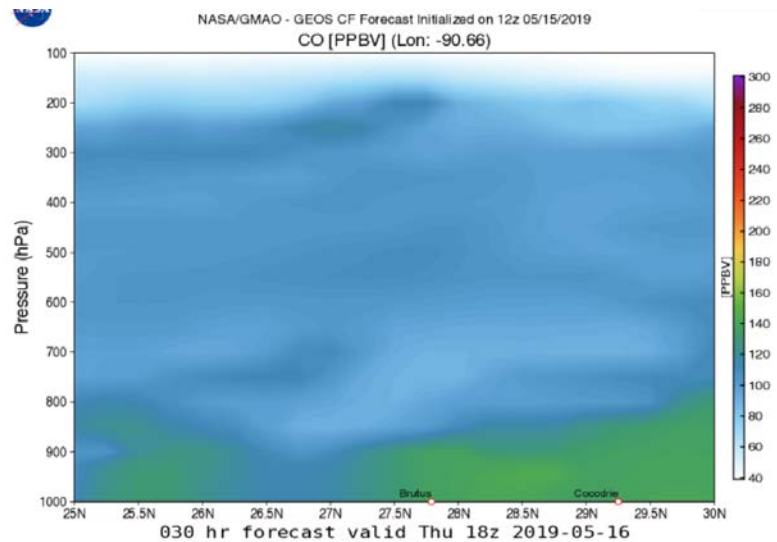
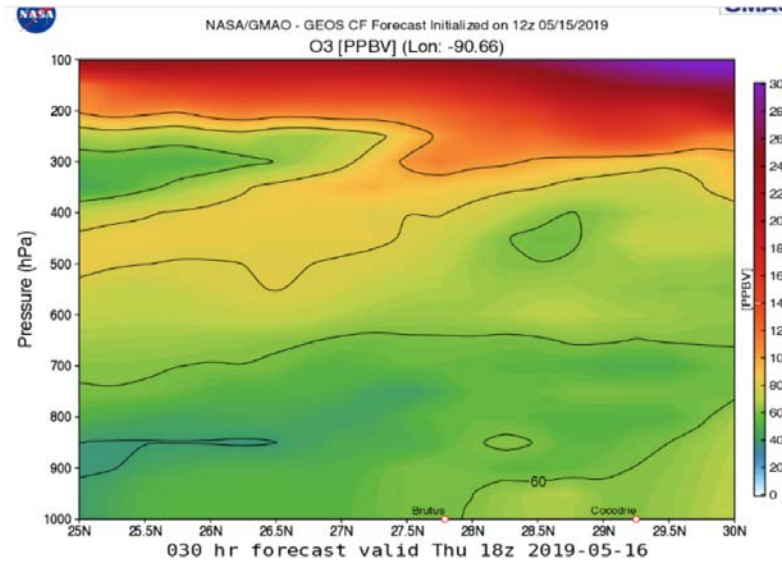
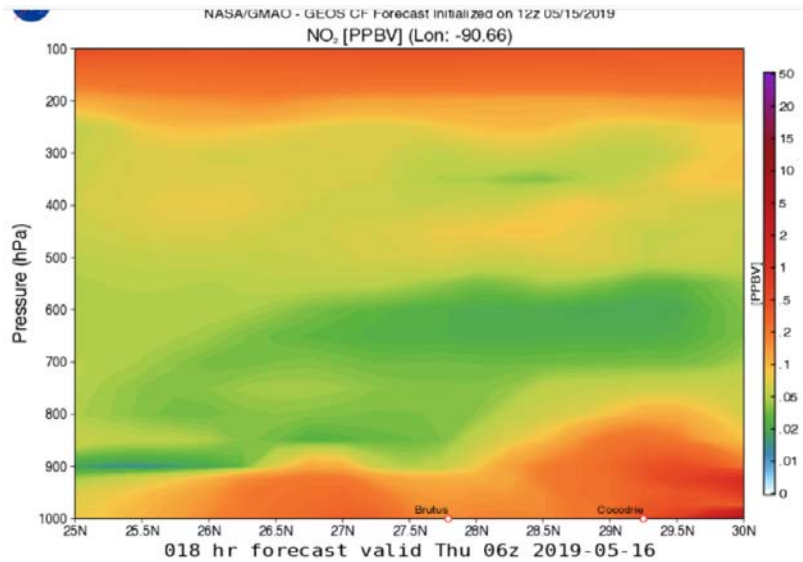


Surface level Ozone (CP)

Saturday 1 PM: Onshore flow cleans out study area.

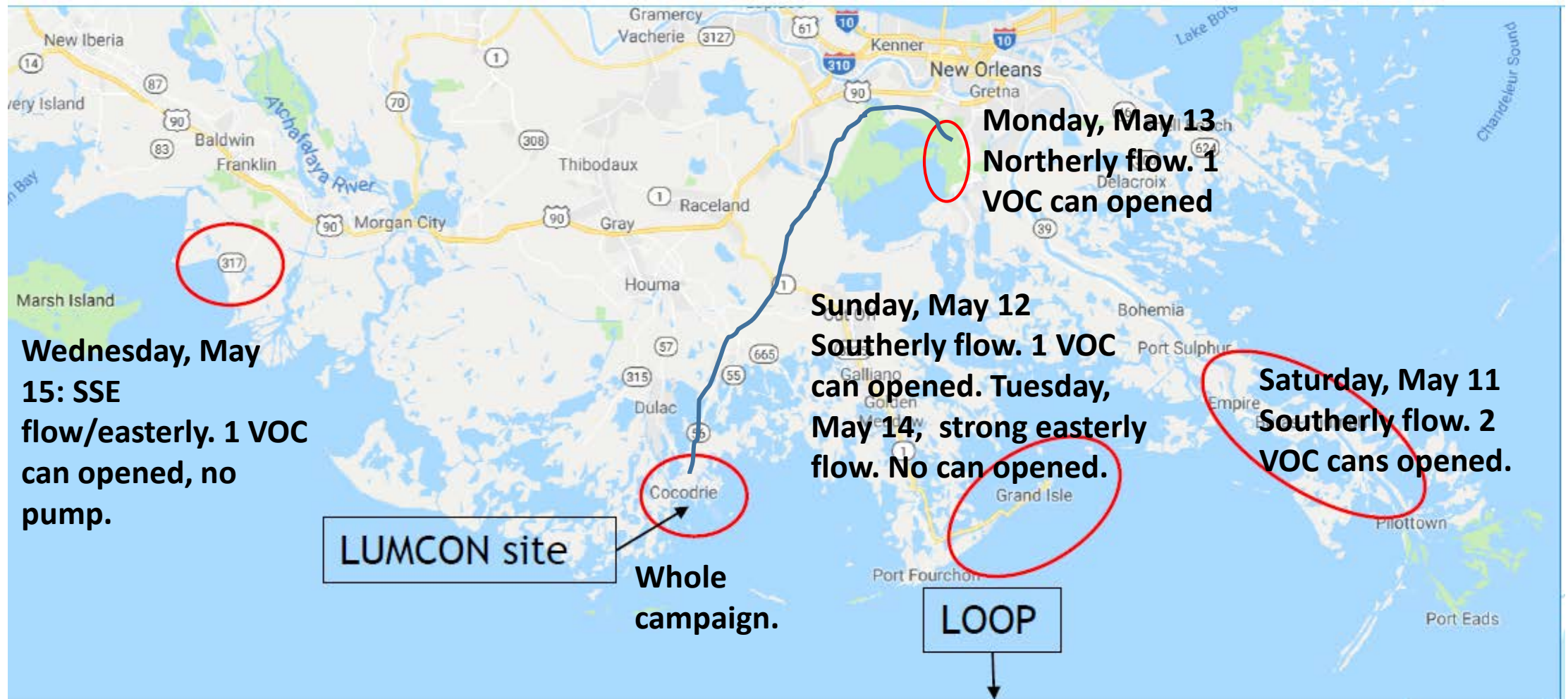


Cross Sections (CP) : Thursday 1 pm



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 (Wednesday)

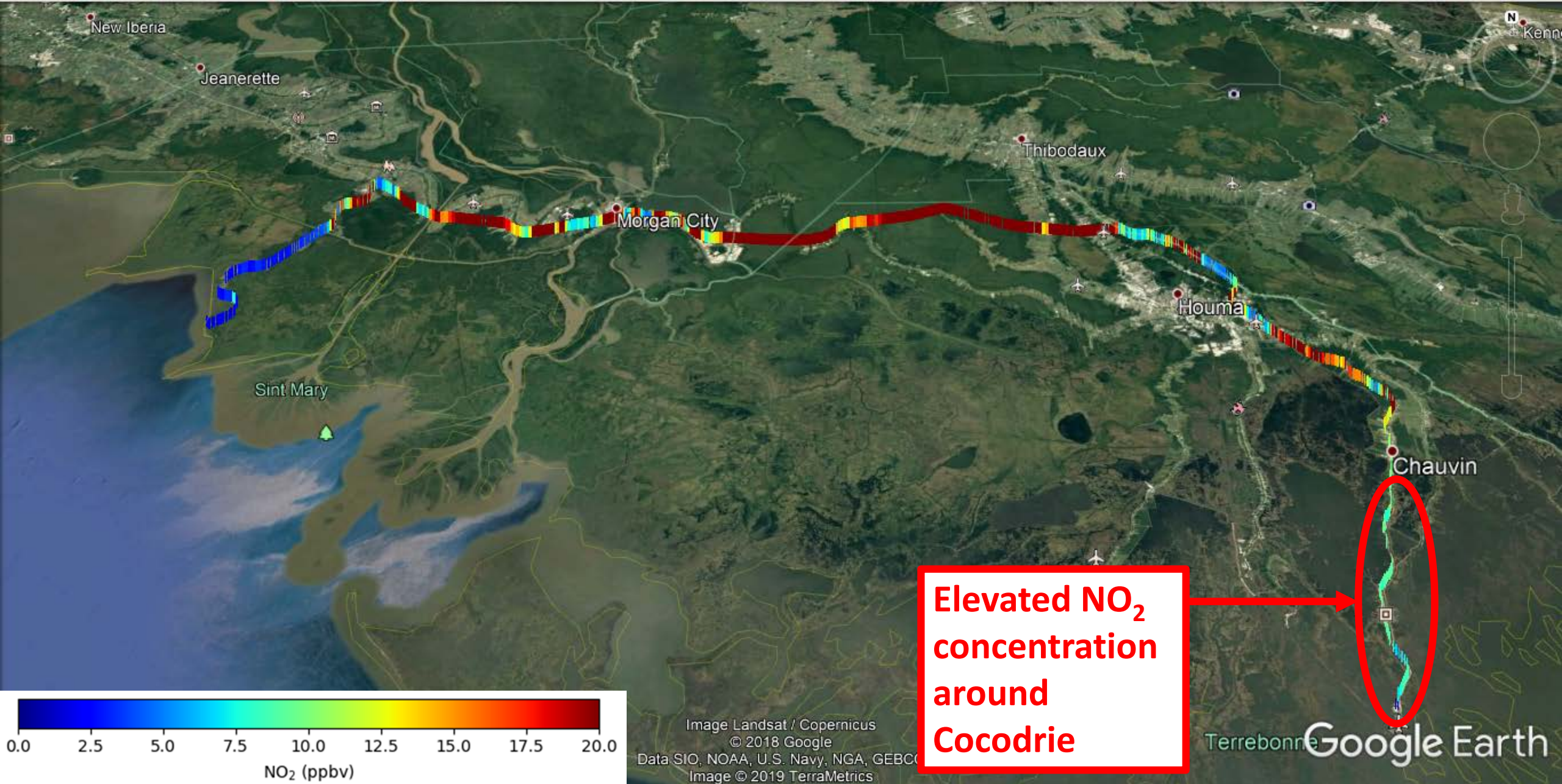
Cocodrie to Burns Point State Park & Back

- Easterly flow was not ideal for sampling onshore flow at any of the stations so we went to Burns Point State Park.
- Mirjam and Bryan agreed that this site could be a good candidate site for a potential drone/no₂-sonde experiment next year.

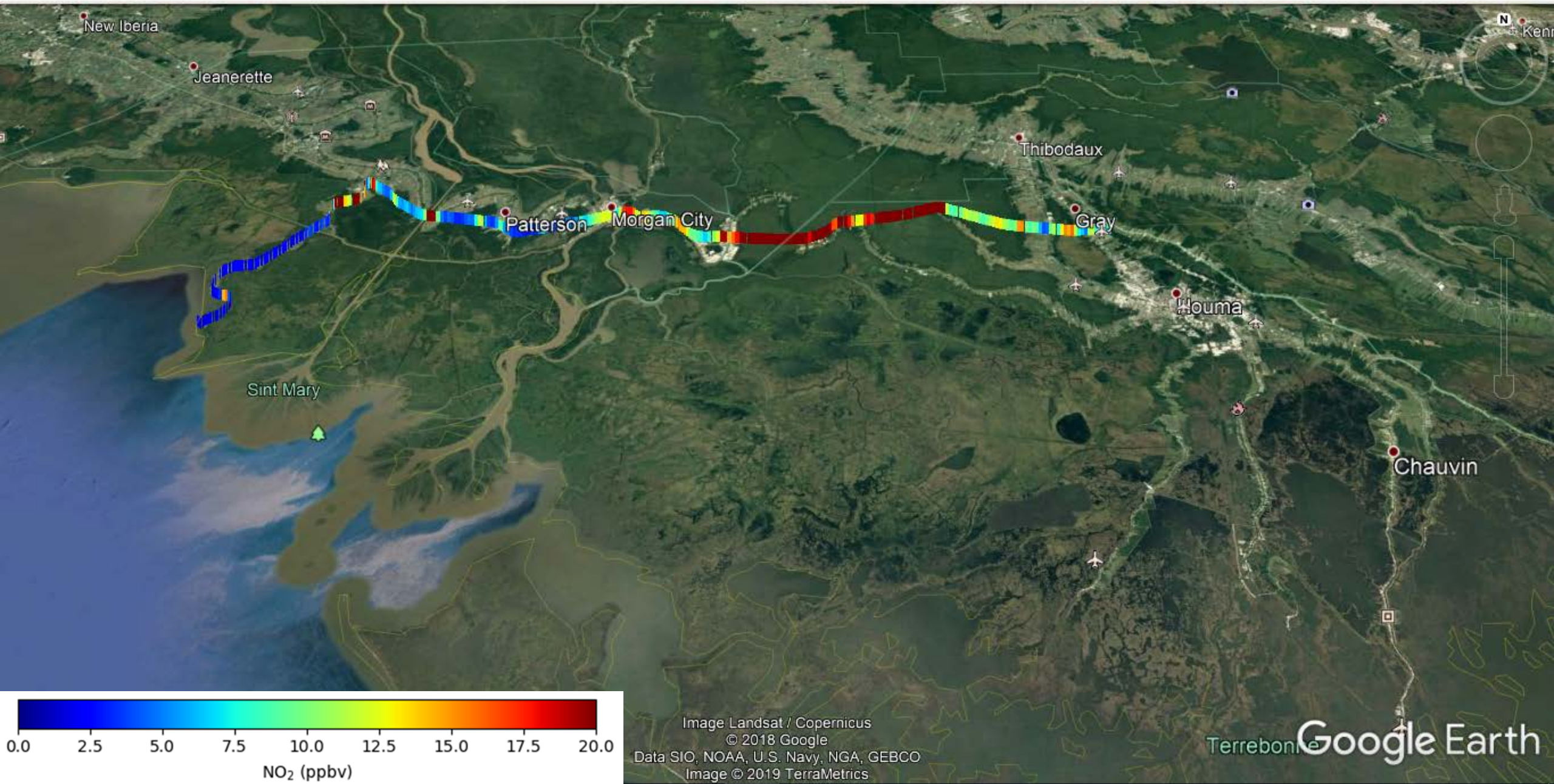
NO₂-sonde measurements from Cocodrie to Burns Point State Park

- Sampling site: Burns Point State Park
- Easterly flow in general (SSE at site – micrometeorology?) winds 70's – low 80's.
- Mostly clear skies.
- Remote site though some industry nearby.
- VOC can was collected at TROPOMI overpass, but since intake was bent we did not pressurize.

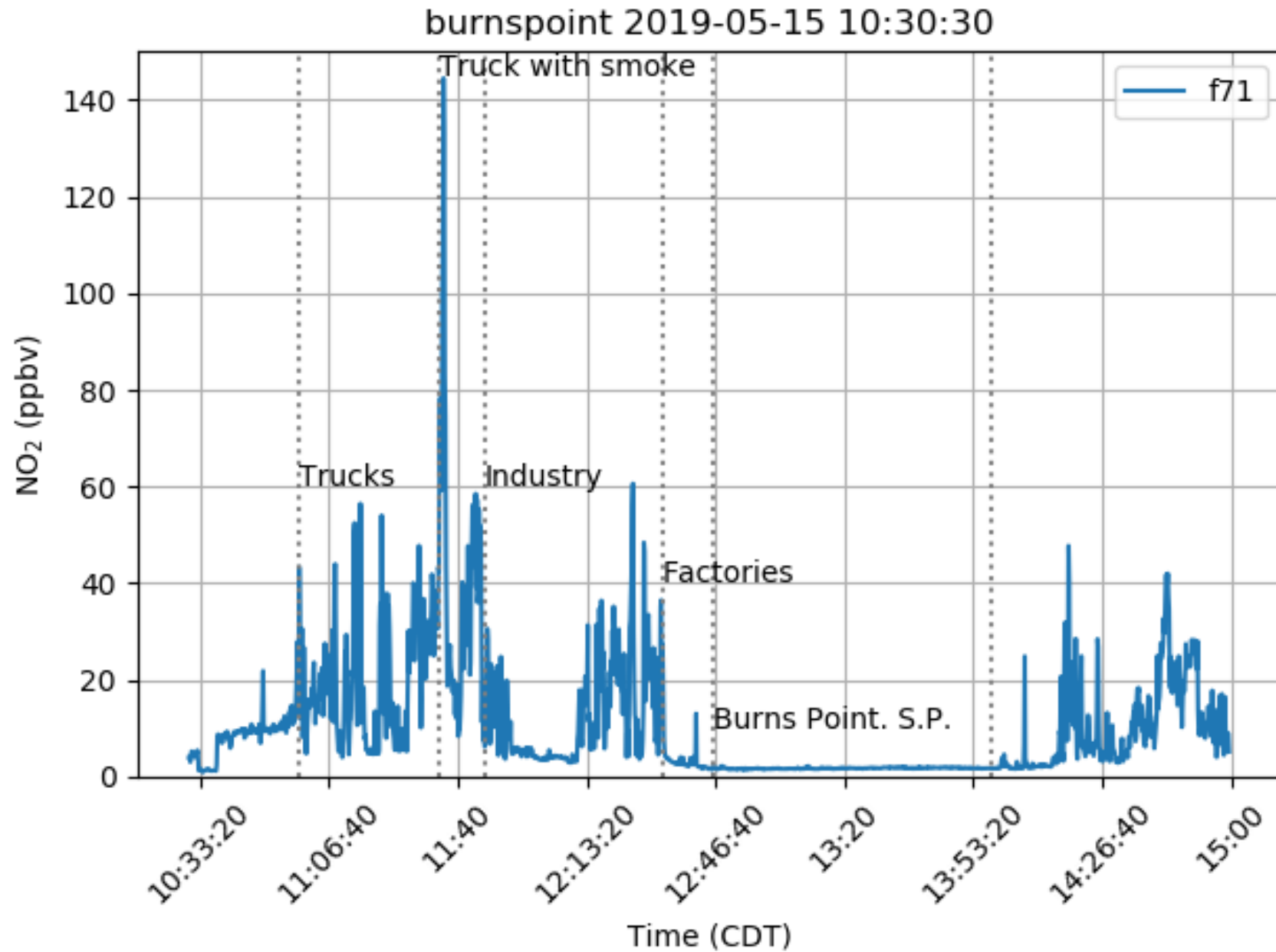
15 May 2019 Car drive to Burns Point State Park: much more NO₂ than yesterday



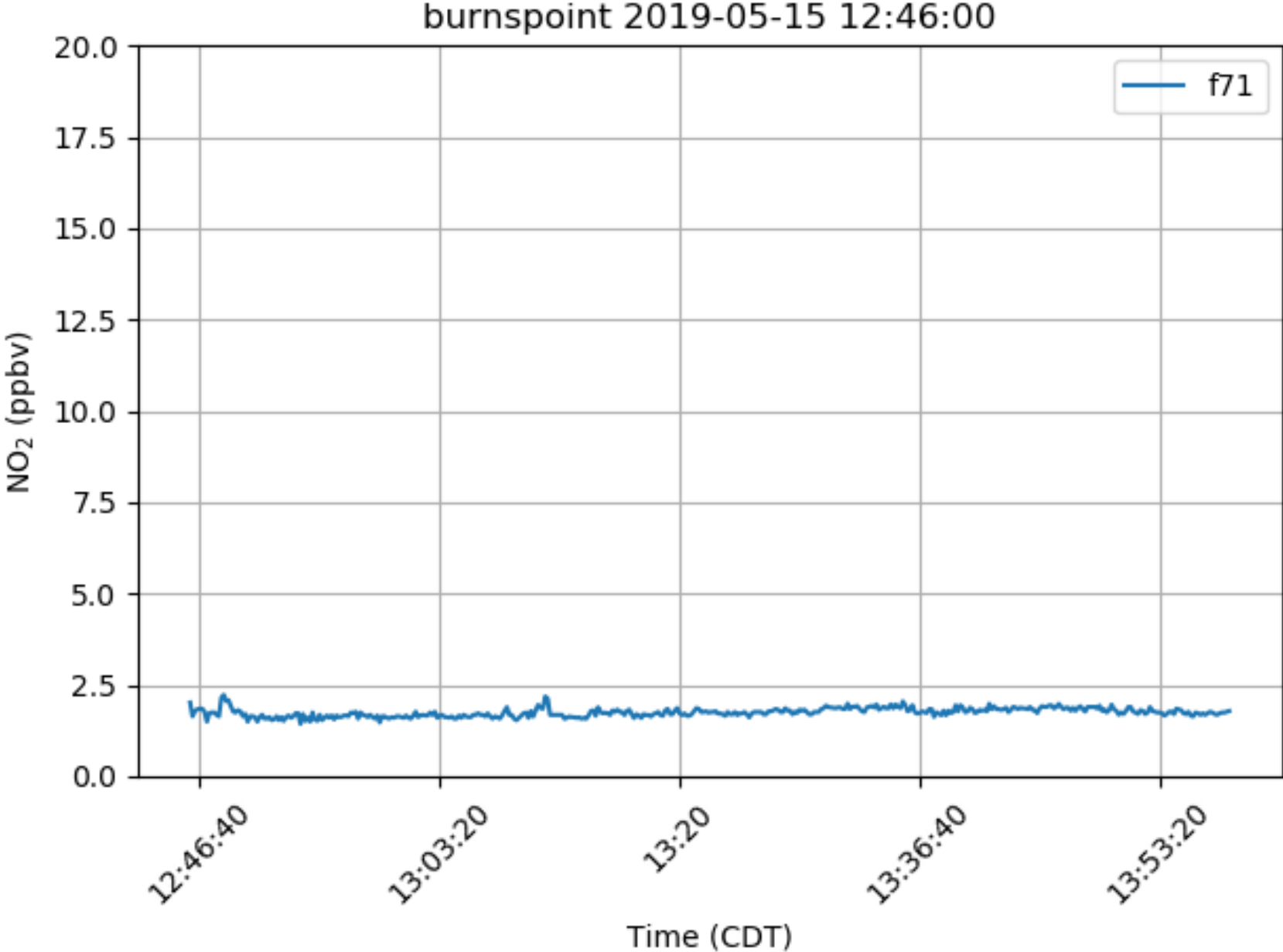
15 May 2019 Car drive from Burns Point State Park: high NO₂ at US Route 90



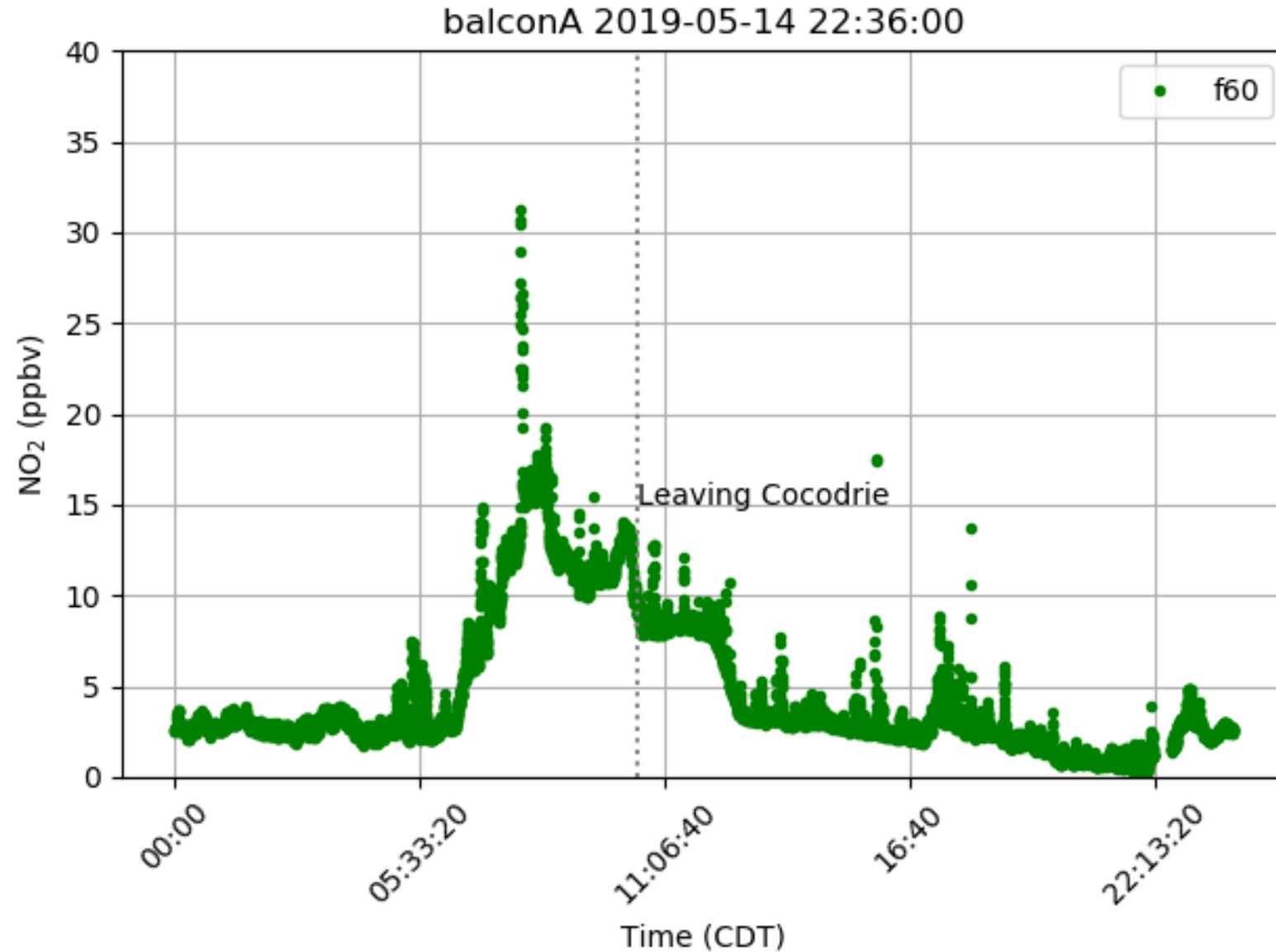
15 May 2019 Time series car drive towards & away from Burns Point State Park



15 May 2019 Time series measurements at Burns Point State park: Low NO₂



15 May 2019 NO₂-sonde measurements at LUMCON confirm elevated NO₂ concentrations at Cocodrie around the time we left for Burns Point S.P.

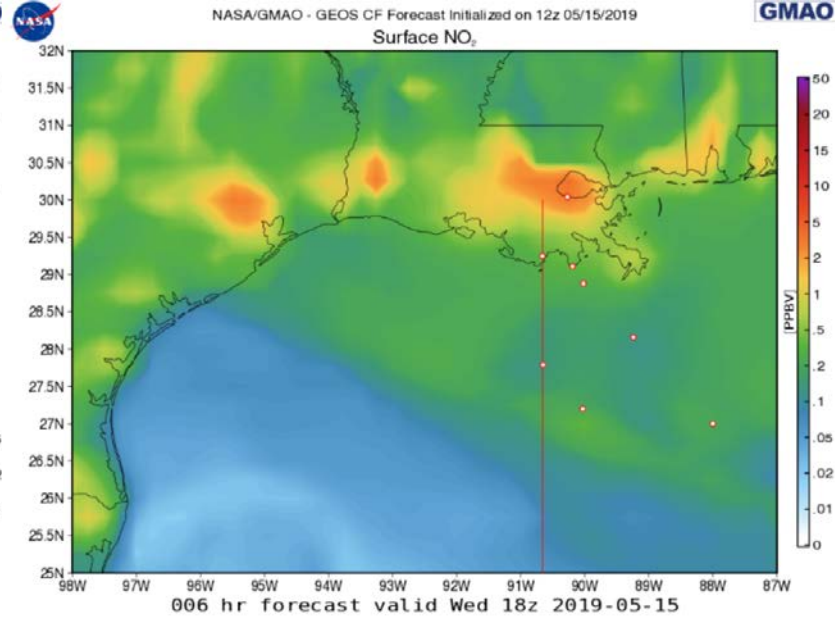
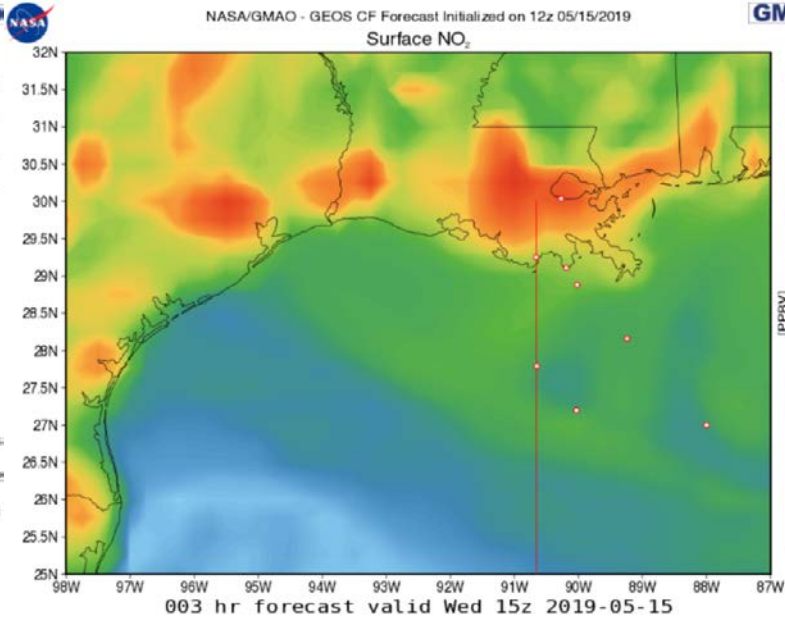
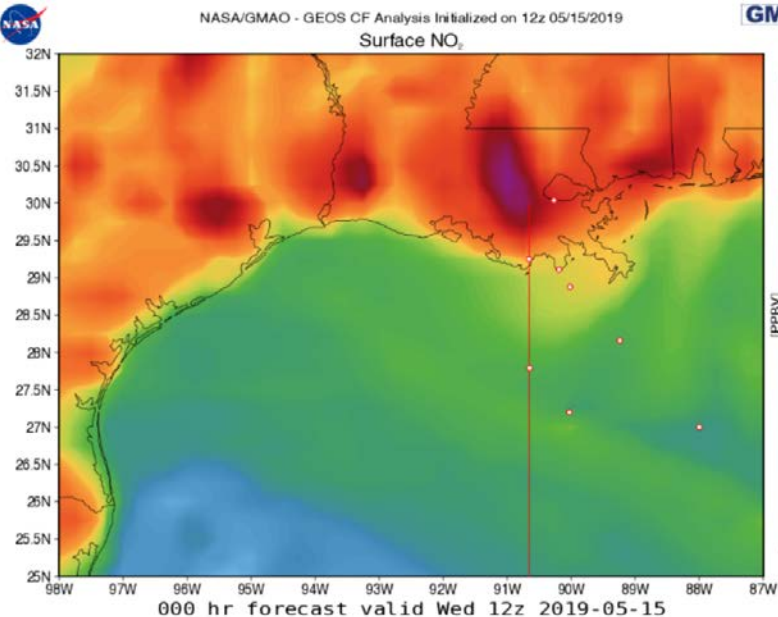


15 May 2019 GEOS-CF model indicates that pollution from Baton Rouge & New Orleans may have affected Cocodrie

Wednesday 7 am

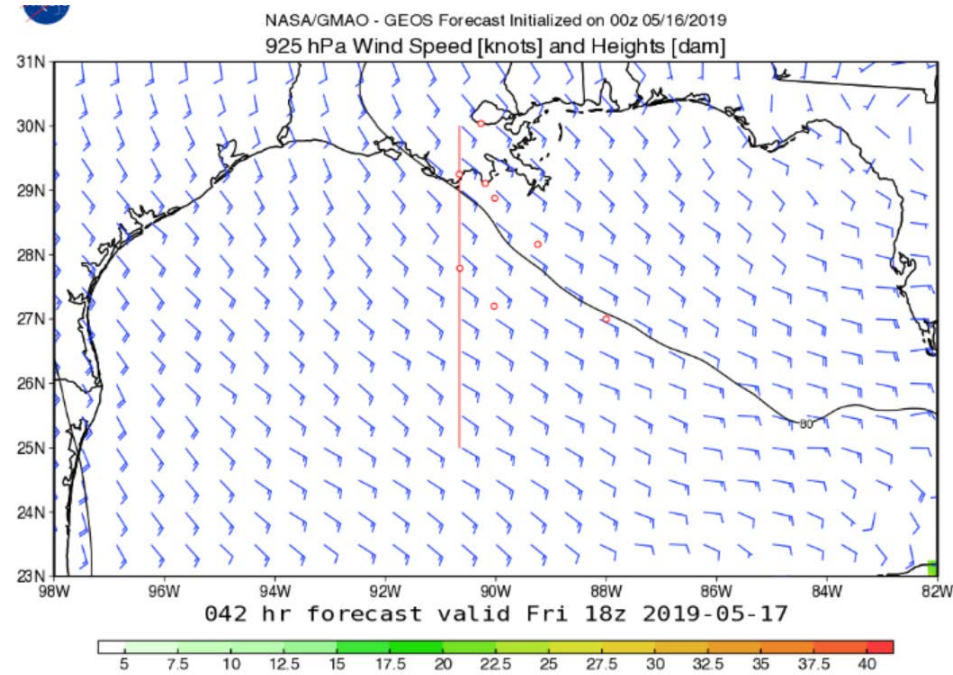
Wednesday 10 am

Wednesday 1 pm



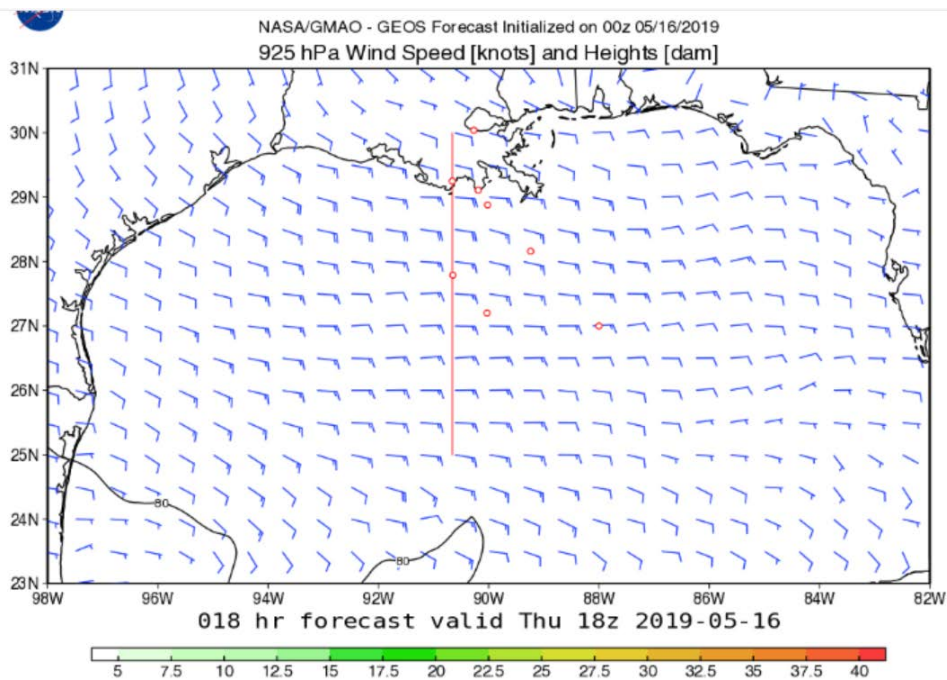
Wind direction

Friday 1 pm

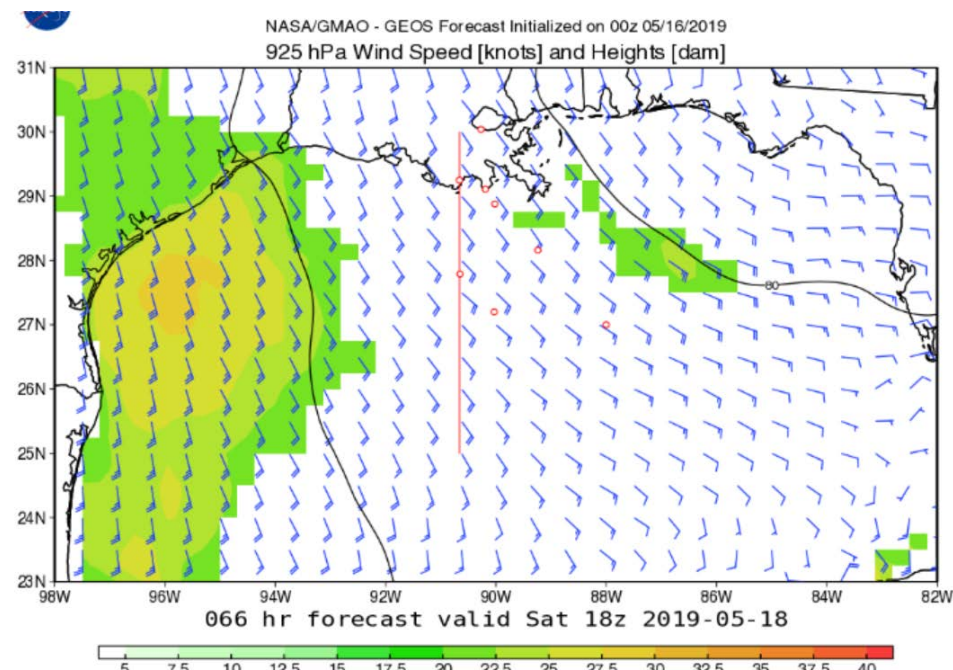


Friday and Saturday seem like best days to observe onshore flow.

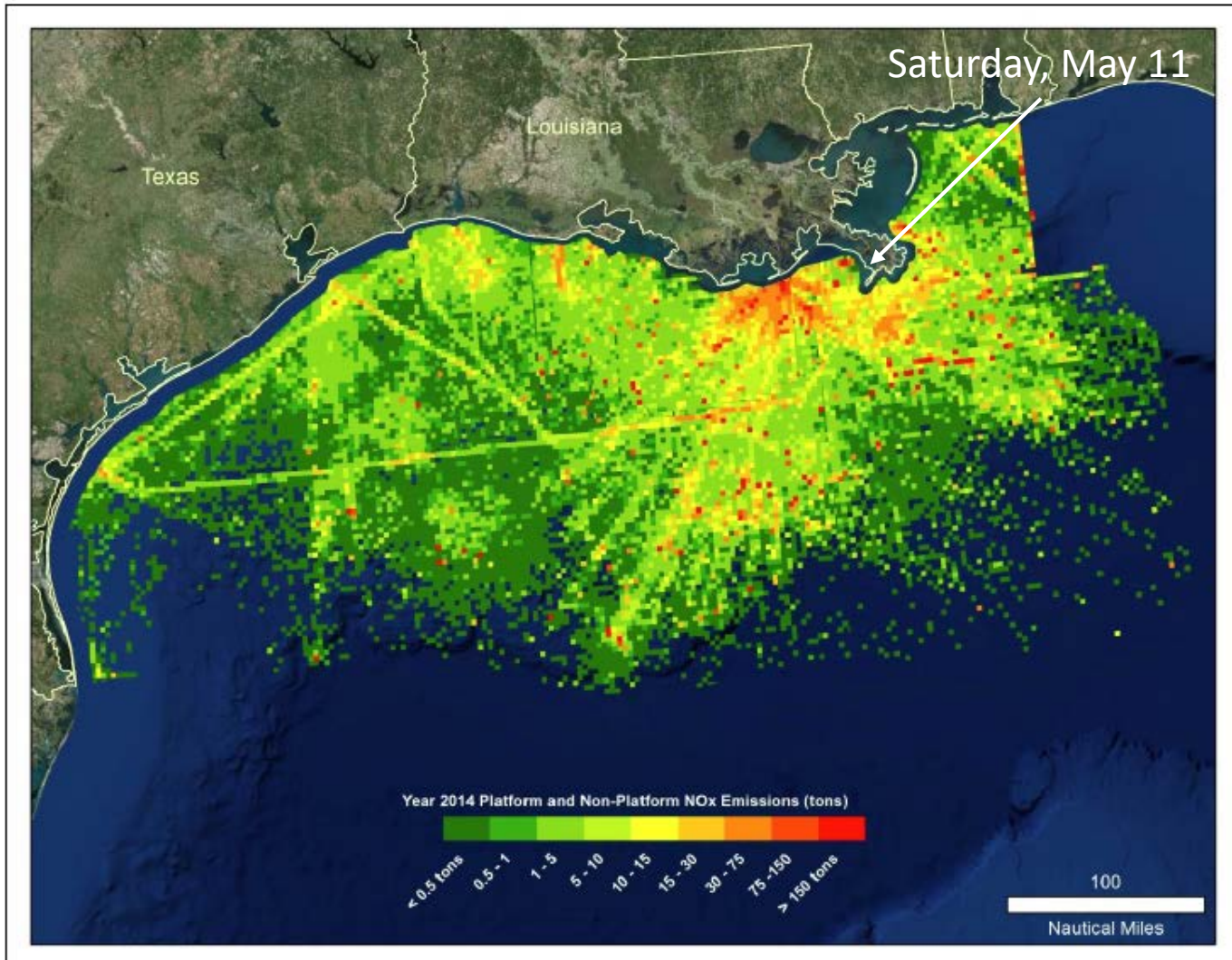
Thursday 1 pm



Saturday 1 pm



Onshore Team Plan of Action: Boat Positions and Emission Sources relative to Targets



Because of bad weather farther west, ship following yellow route over weekend.

