

Weather and Air Quality: Reflection and Outlook During Smoke Conditions

Presenter: Megan Christiansen
Date: July 31, 2023

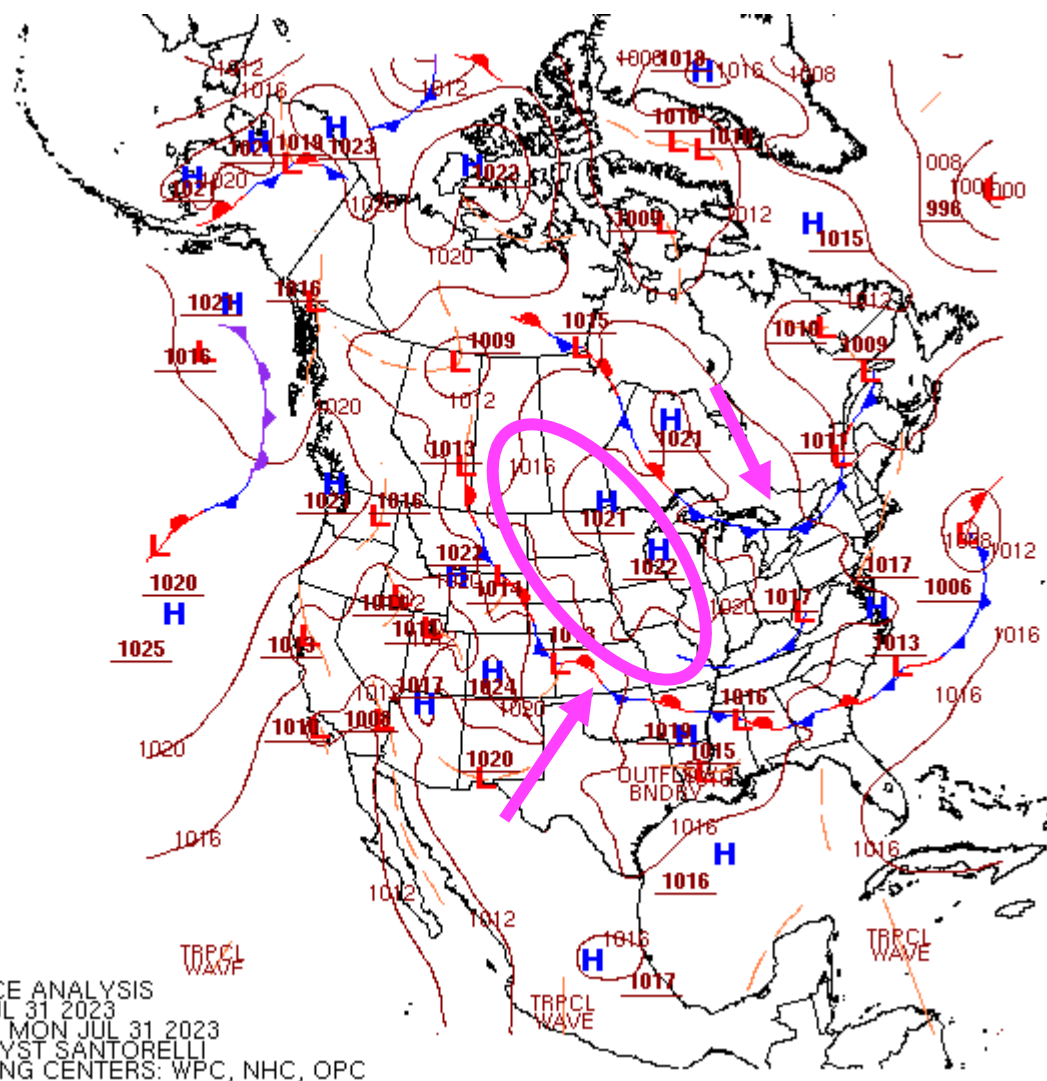


We thank GMAO (GEOS-FP and GEOS-CF) and NRL (NAAPS) for providing the model data products

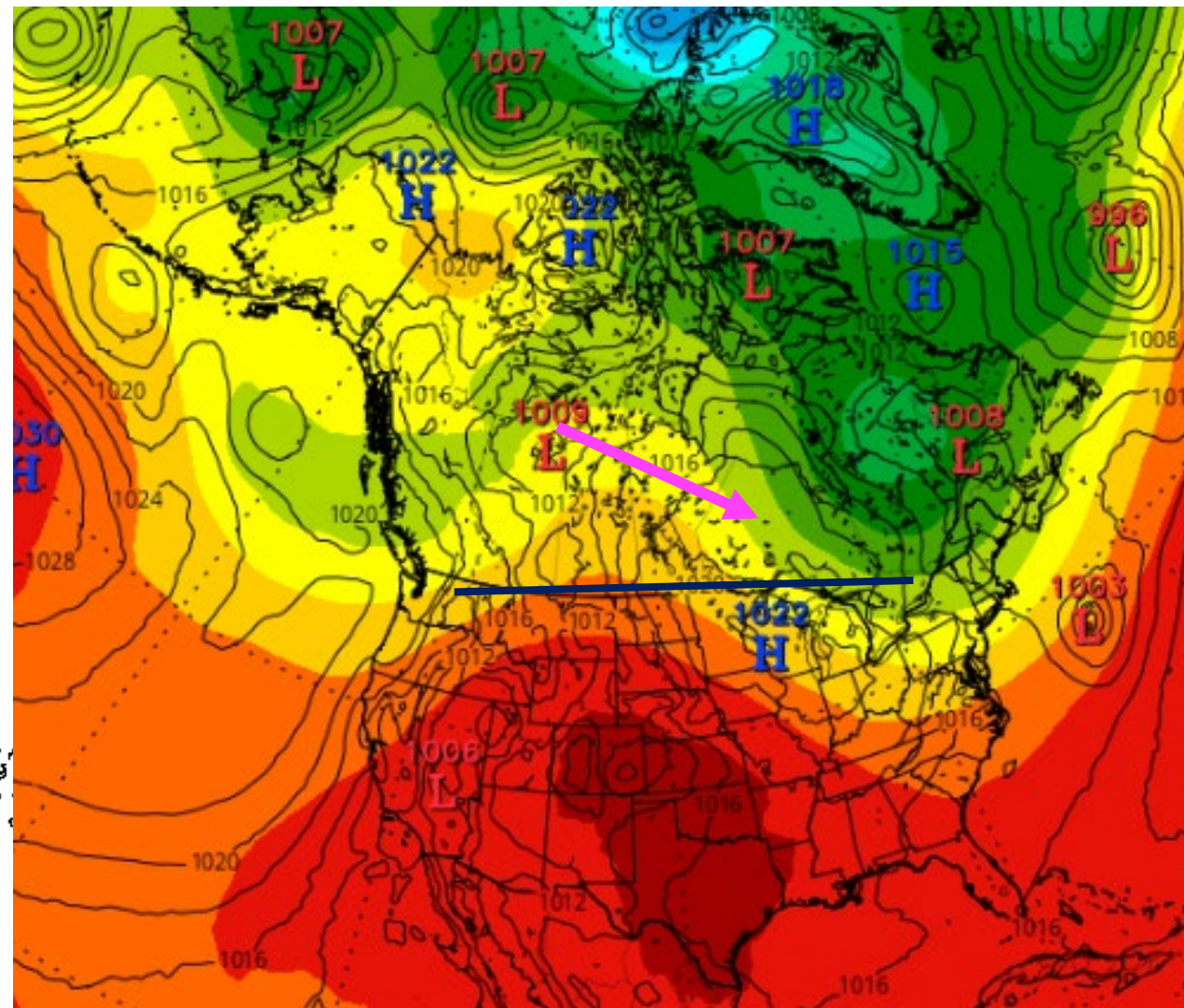
**EARTH SCIENCE
APPLIED SCIENCES**

Current Status: July 31, 2023

Surface Analysis

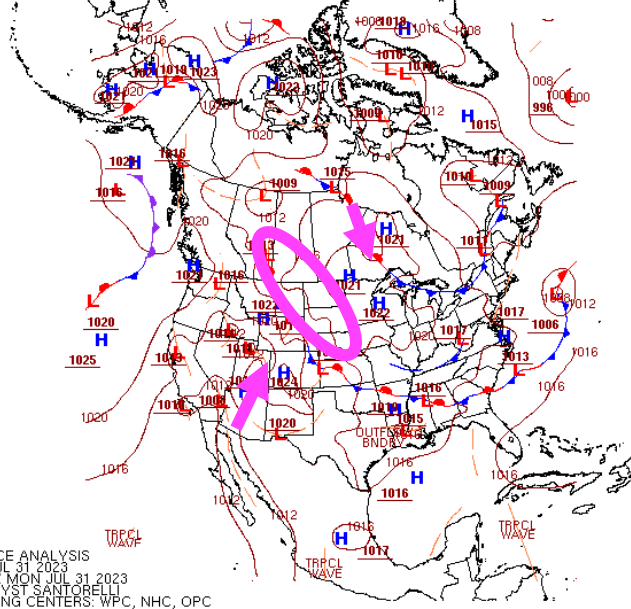


500 mb Contours

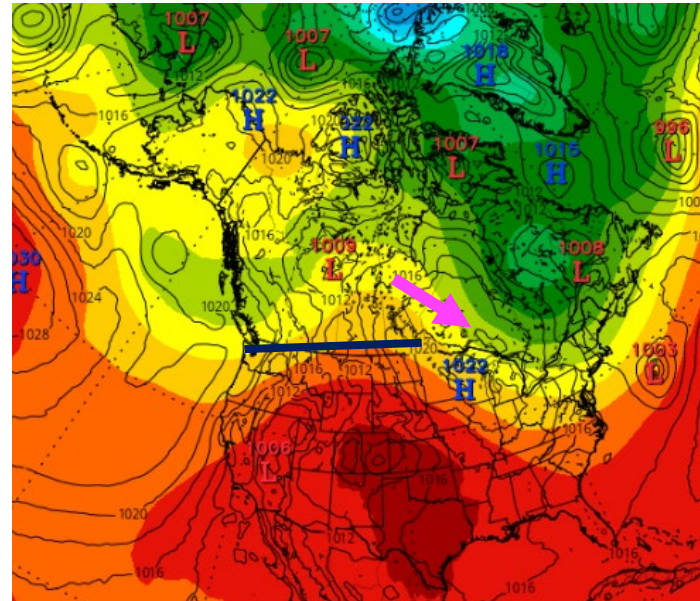


Current Status: July 31, 2023

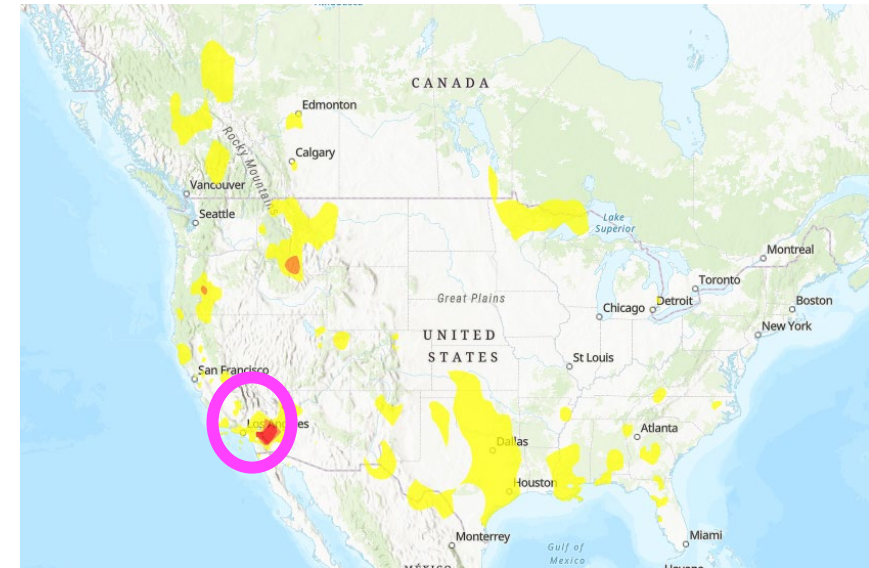
Surface Analysis



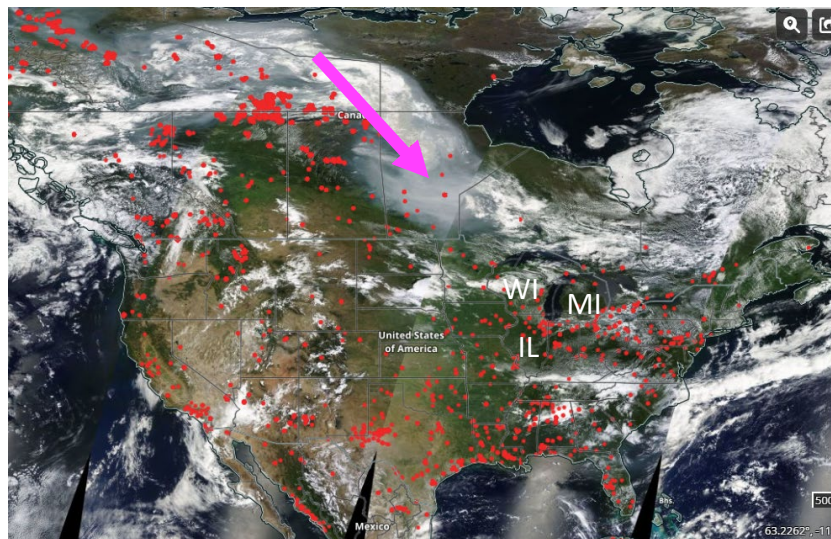
500 mb Contours



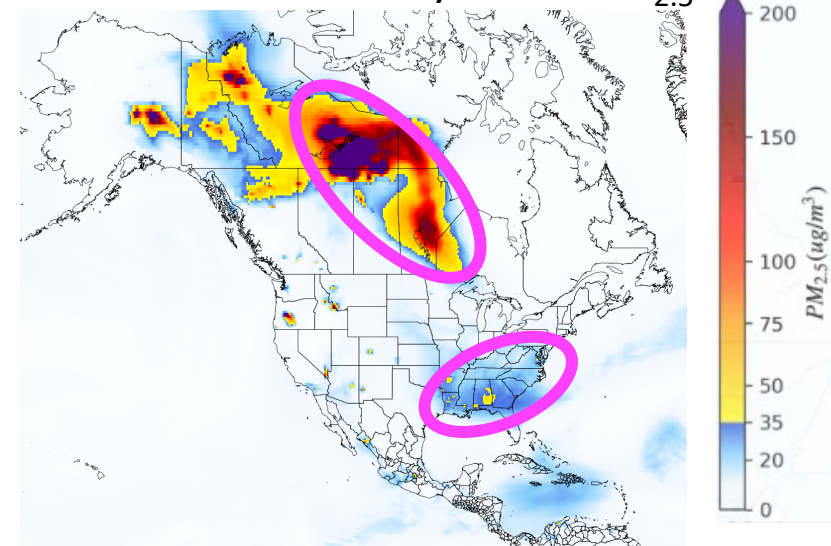
AirNow AQI



NASA Suomi Fire anomalies (Sun 7/30)

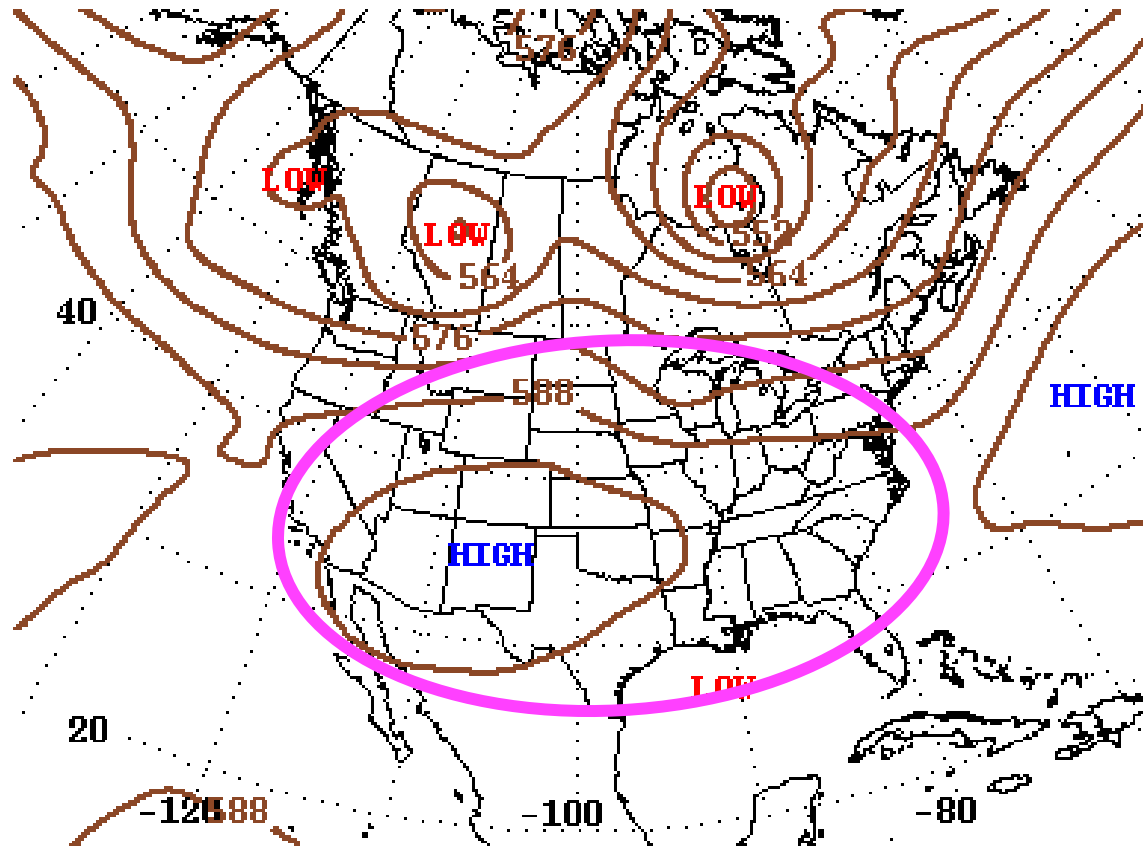


Ensemble Daily Mean PM_{2.5}



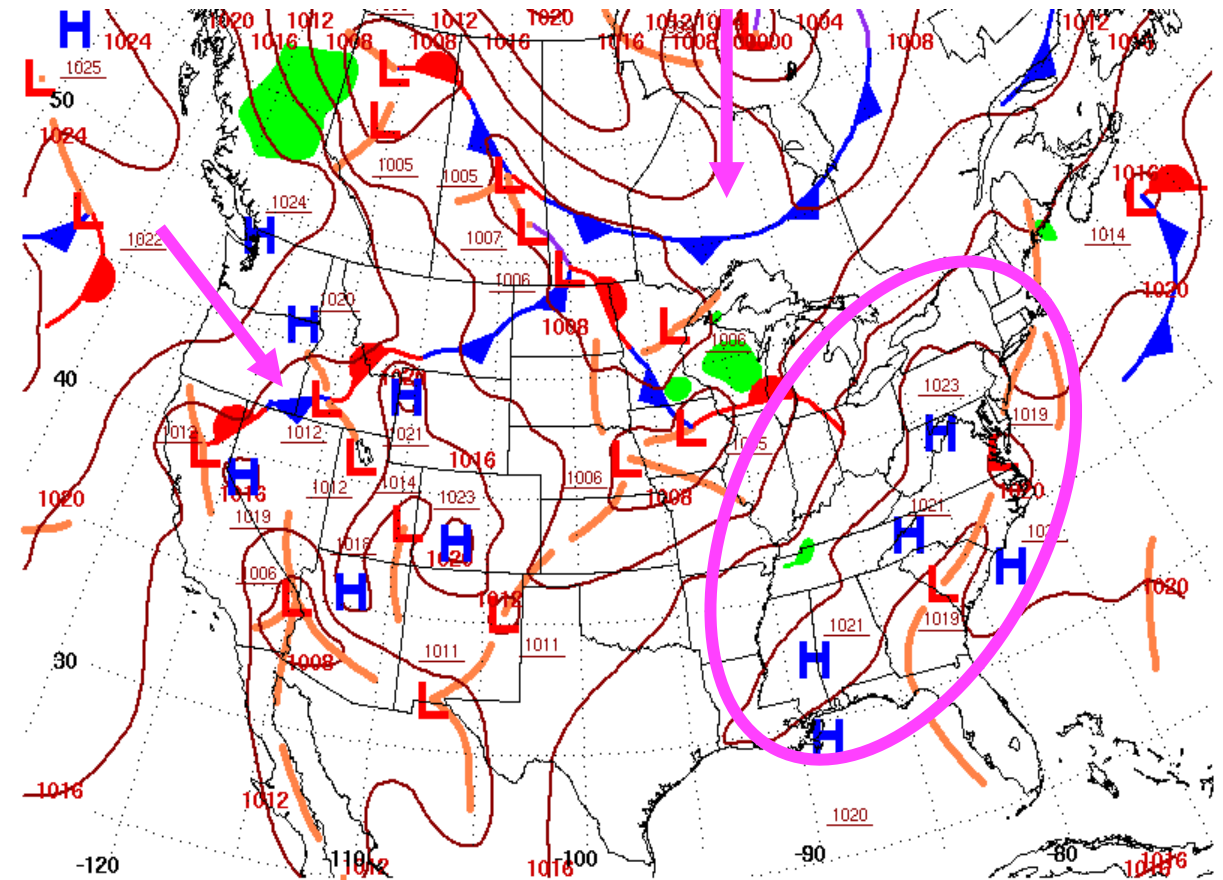
Air Quality Reflection: Wednesday July 26, 2023

500 hPa Contours



500-Millibar Height Contour at 7:00 A.M. E.S.T.

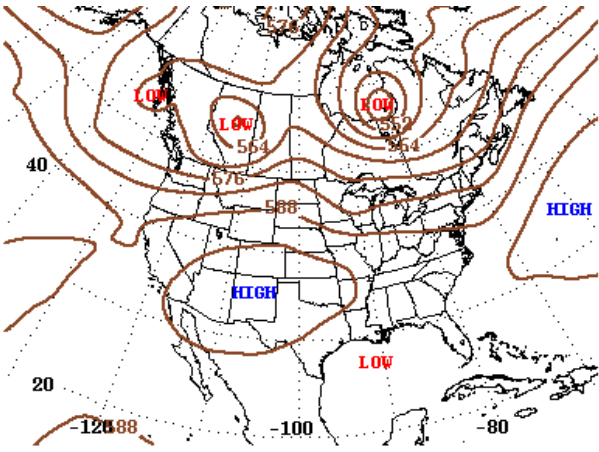
Surface Weather



Surface Weather Map at 7:00 A.M. E.S.T.

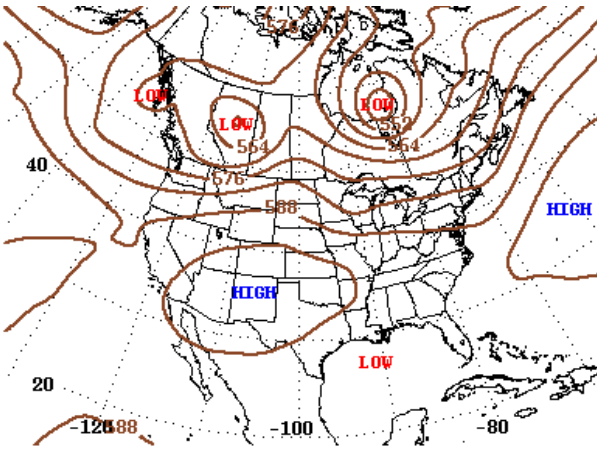
Air Quality Reflection: Wednesday July 26, 2023

500 hPa Contours



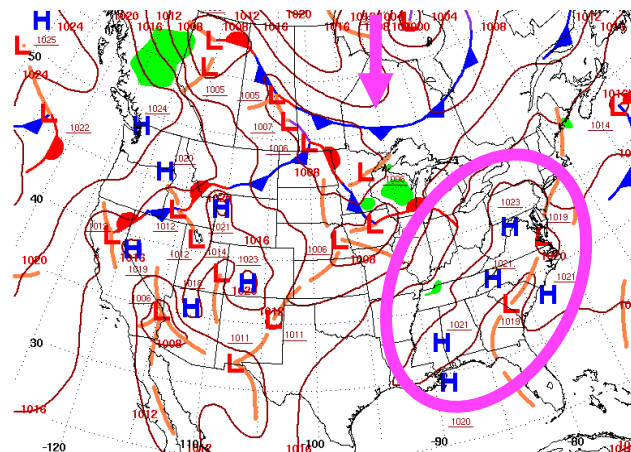
Air Quality Reflection: Wednesday July 26, 2023

500 hPa Contours



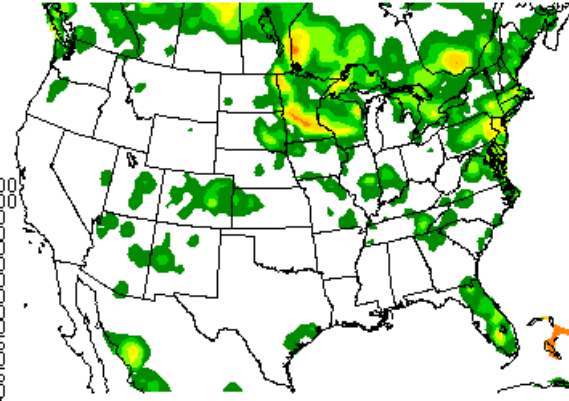
500-Millibar Height Contour at 7:00 A.M. E.S.T.

Surface Weather



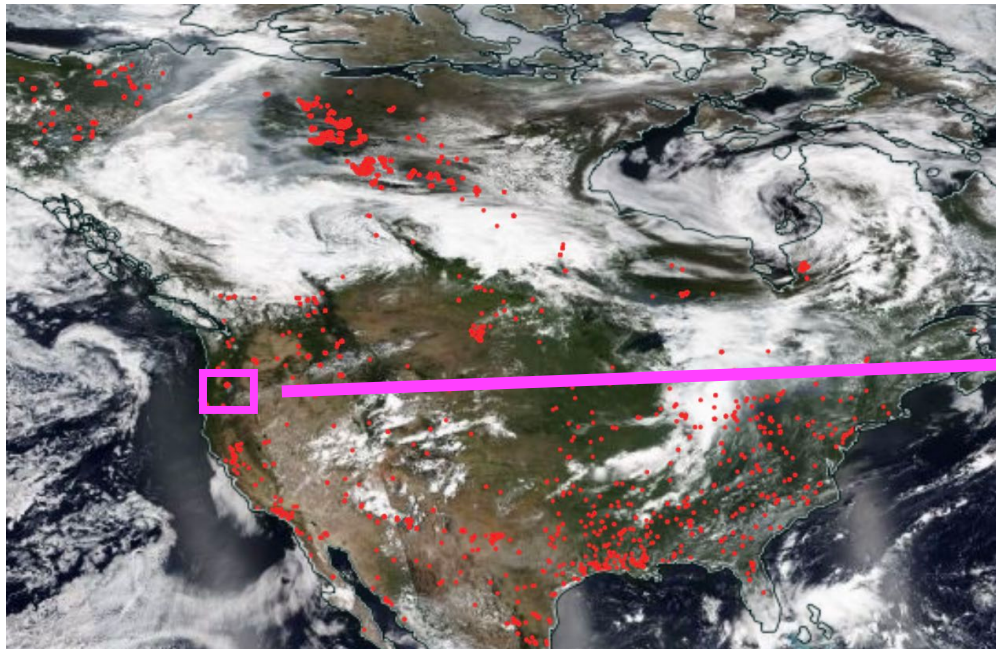
Surface Weather Map at 7:00 A.M. E.S.T.

Precipitation



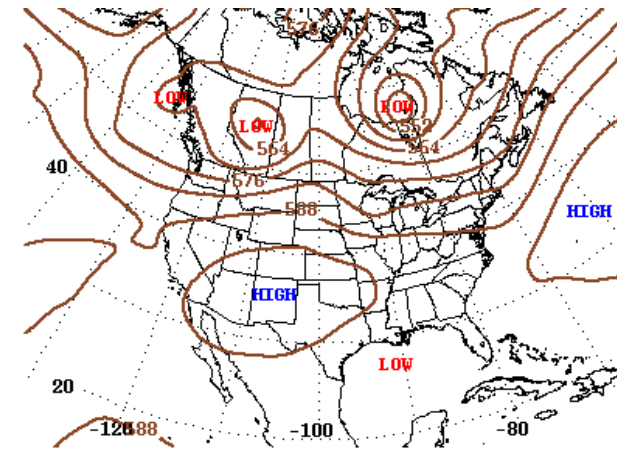
24-hr Precipitation (in.) Ending at 7:00 A.M. E.S.T.

AirNow AQI



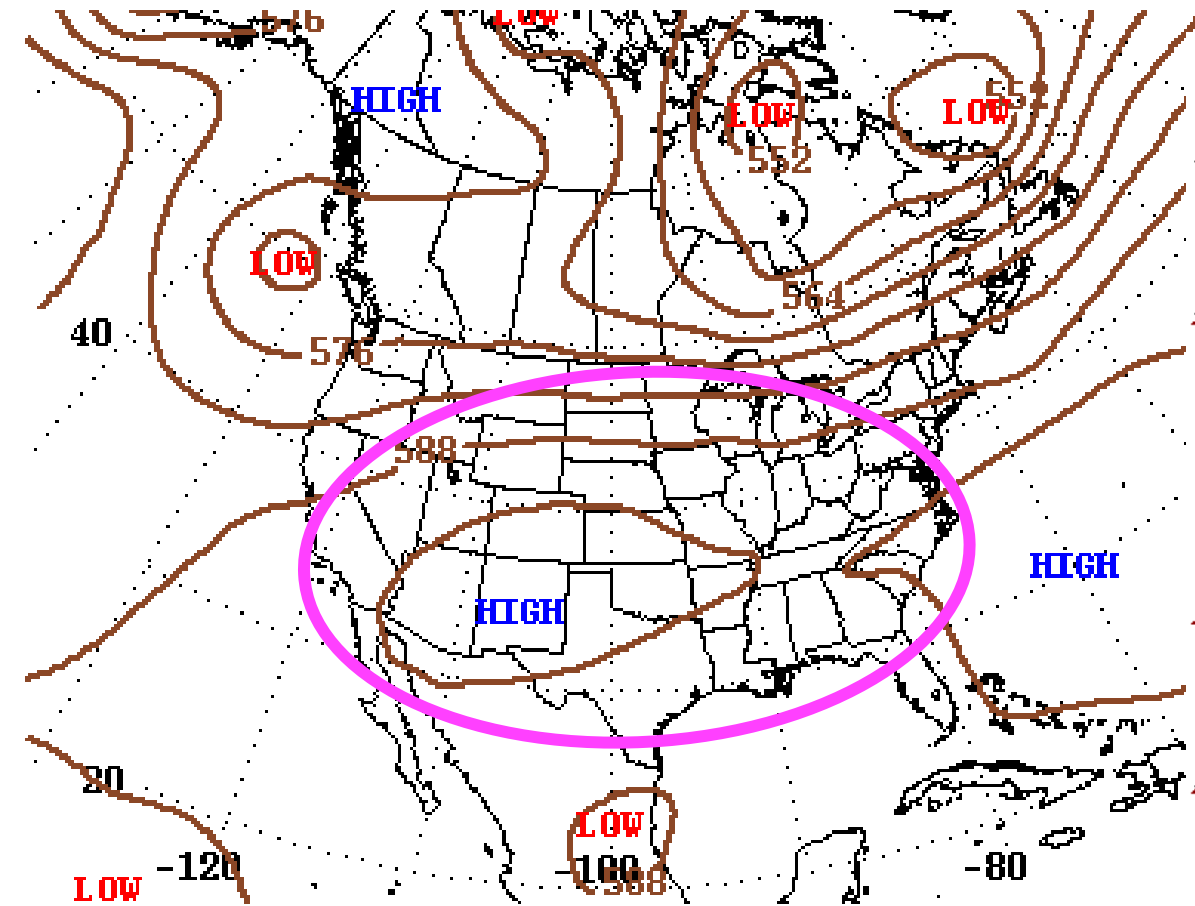
Air Quality Reflection: Wednesday July 26, 2023

500 hPa Contours



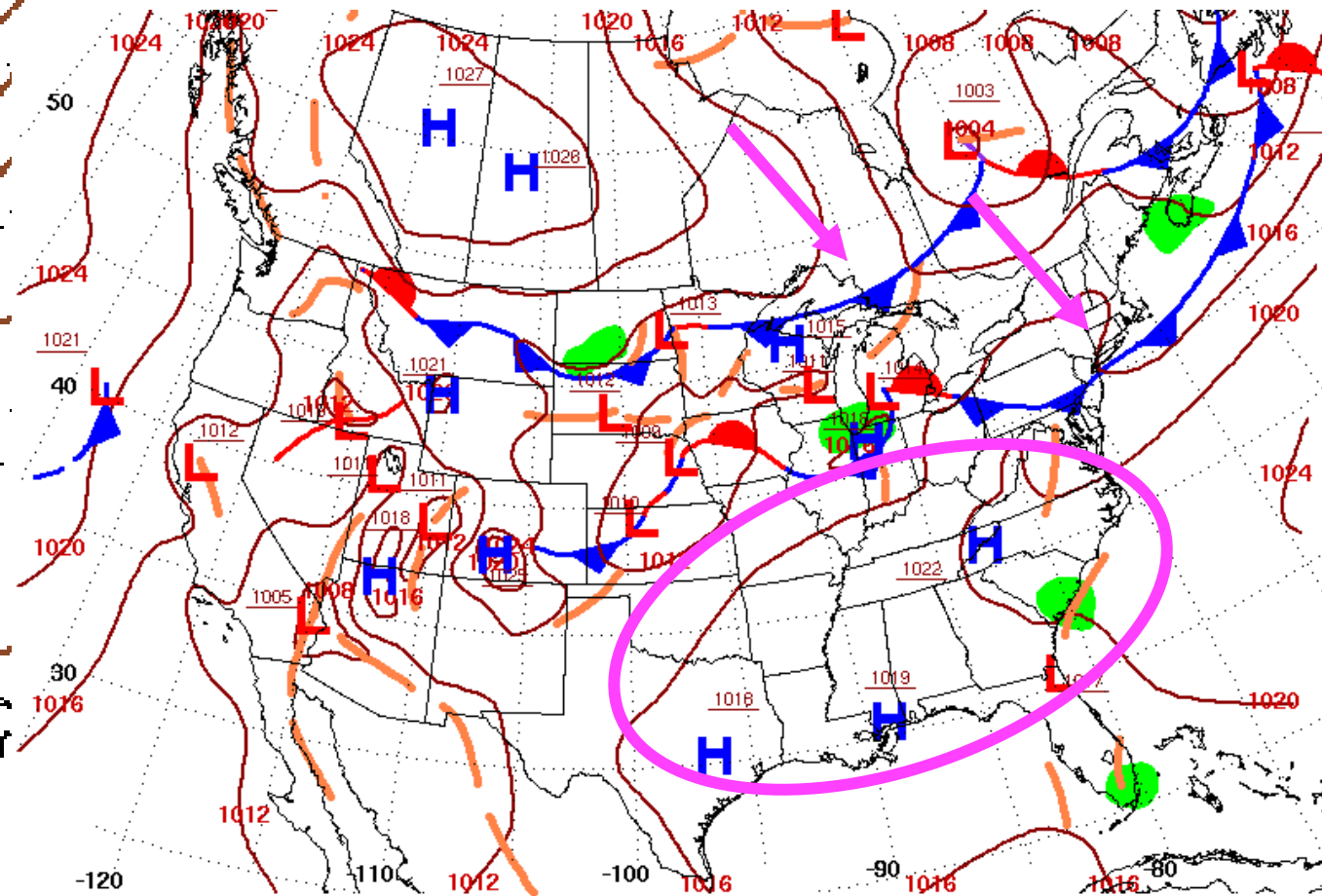
Air Quality Reflection: Friday July 28, 2023

500 hPa Contours



500-Millibar Height Contour at 7:00 A.M. E.S.T.

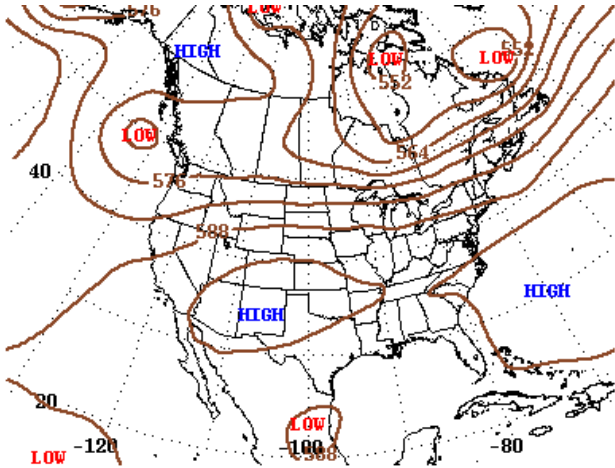
Surface Weather



Surface Weather Map at 7:00 A.M. E.S.T.

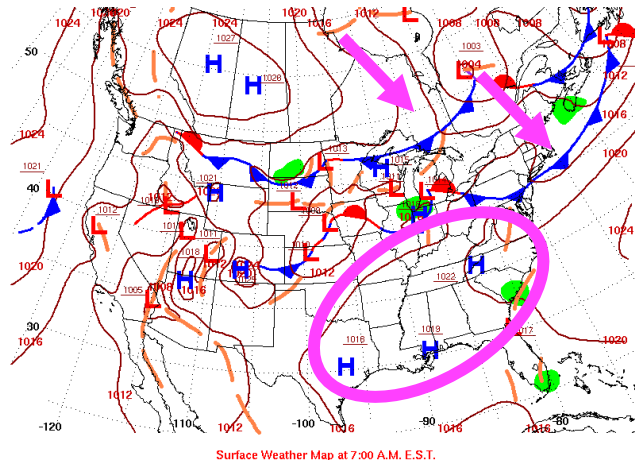
Air Quality Reflection: Friday July 28, 2023

500 hPa Contours

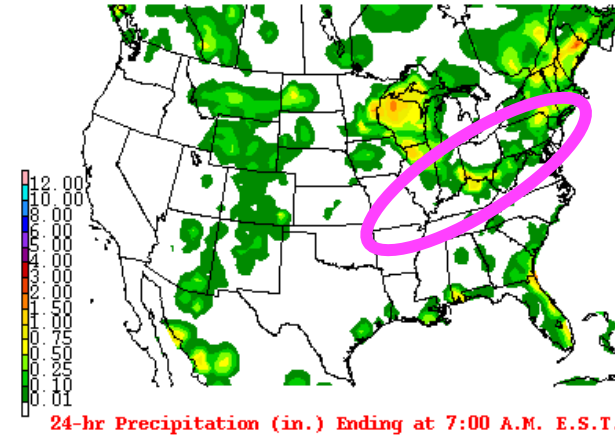


500-Millibar Height Contour at 7:00 A.M. E.S.T.

Surface Weather

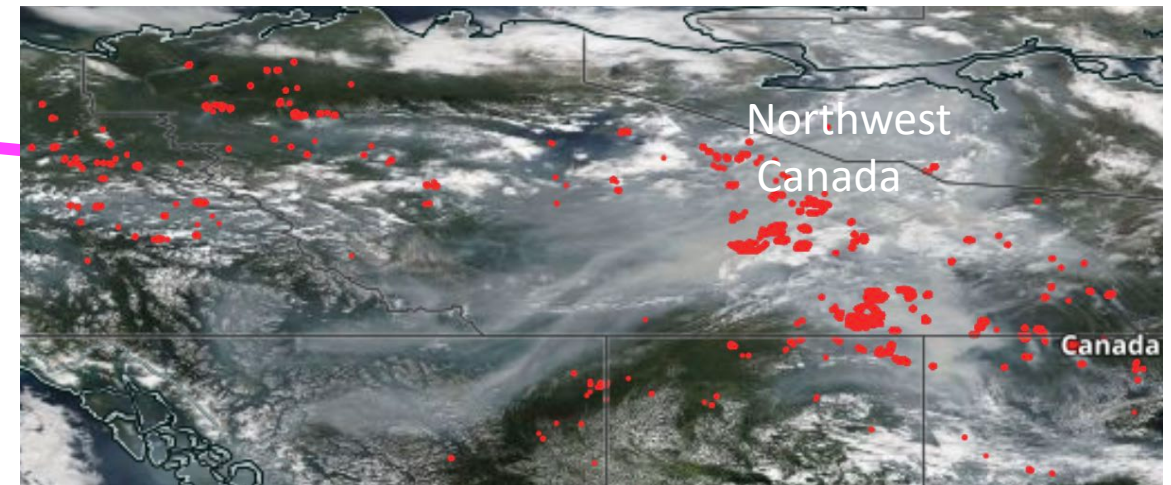
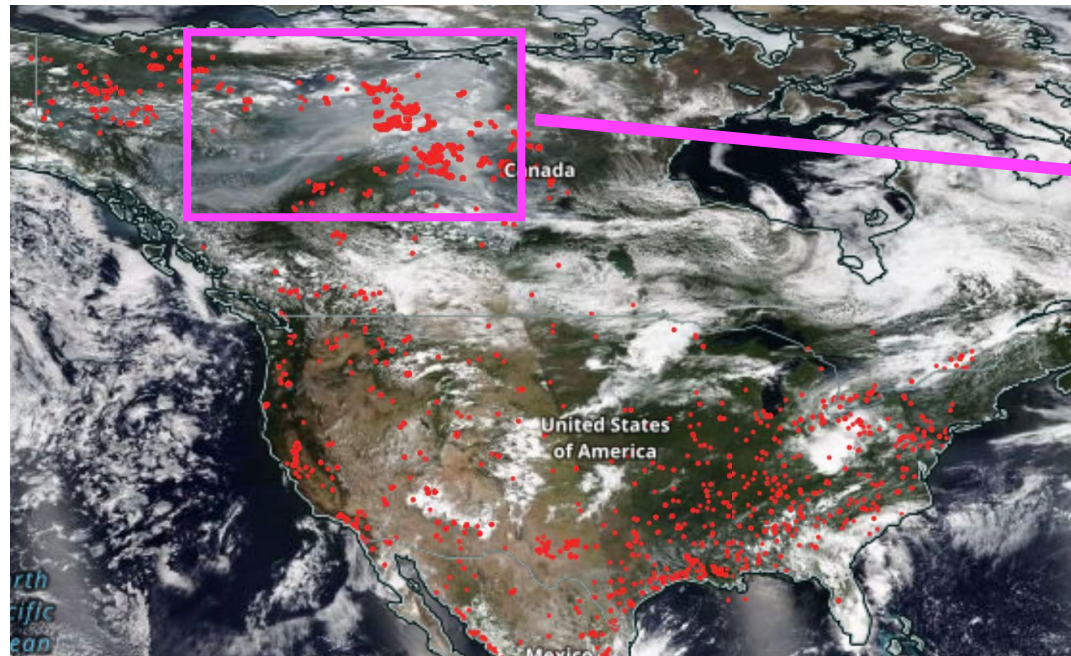
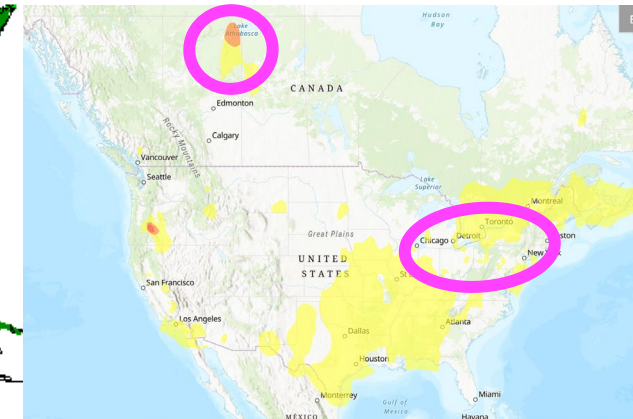


Precipitation



24-hr Precipitation (in.) Ending at 7:00 A.M. E.S.T.

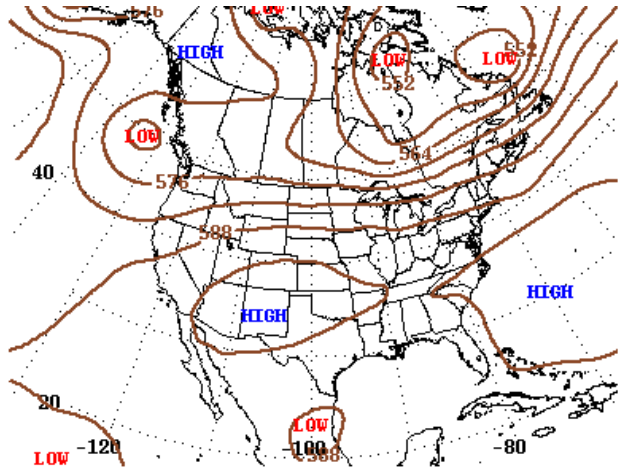
AirNow AQI



NASA Worldview Suomi Fire anomalies

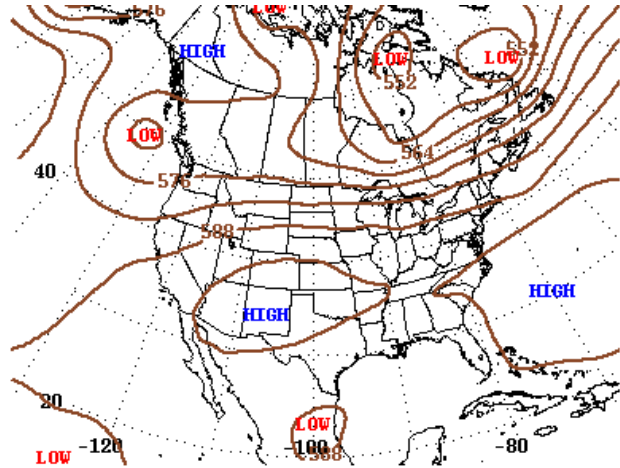
Air Quality Reflection: Wednesday July 26, 2023

500 hPa Contours



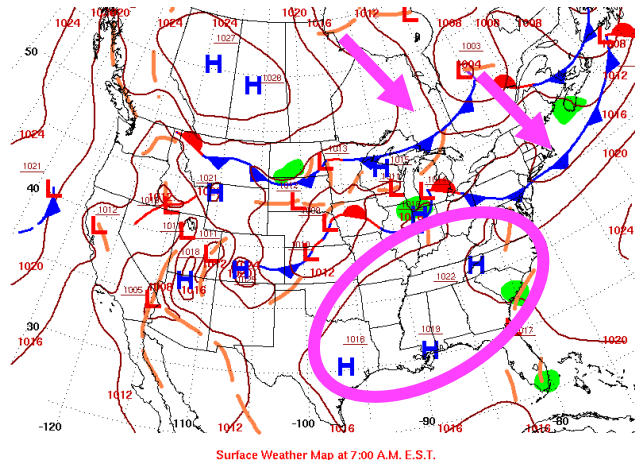
Air Quality Reflection: Wednesday July 26, 2023

500 hPa Contours



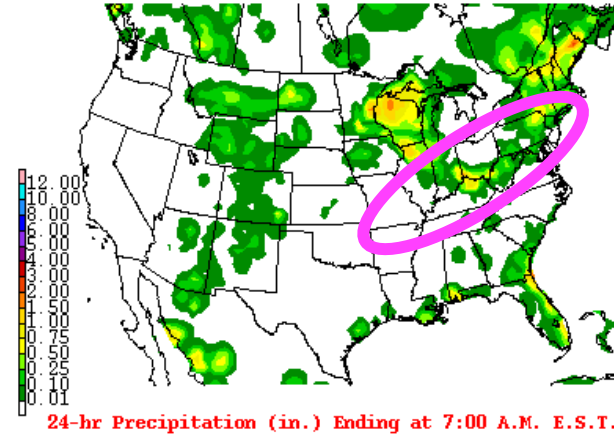
500-Millibar Height Contour at 7:00 A.M. E.S.T.

Surface Weather



Surface Weather Map at 7:00 A.M. E.S.T.

Precipitation

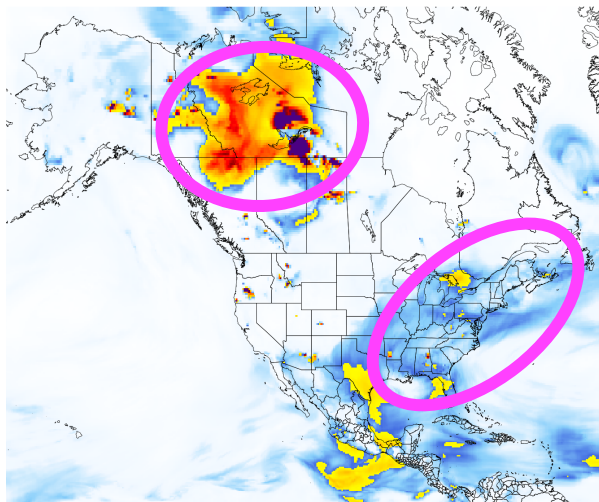


24-hr Precipitation (in.) Ending at 7:00 A.M. E.S.T.

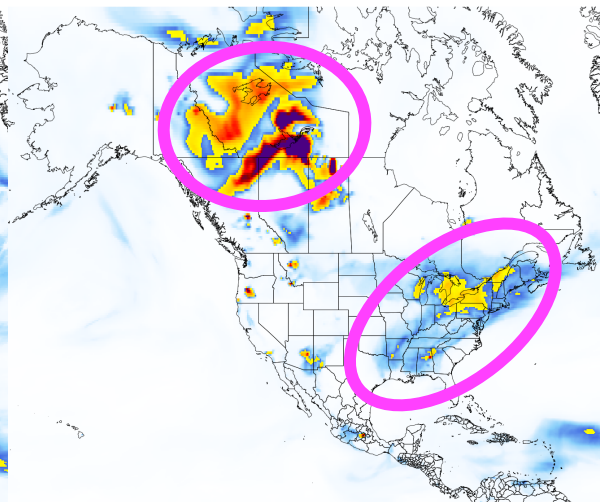
AirNow AQI



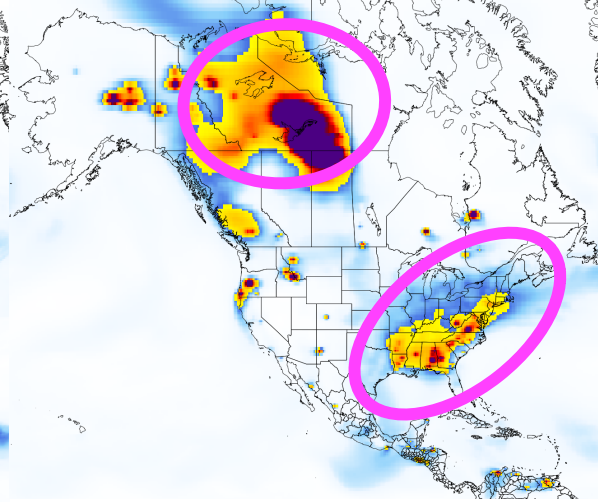
GEOS-FP



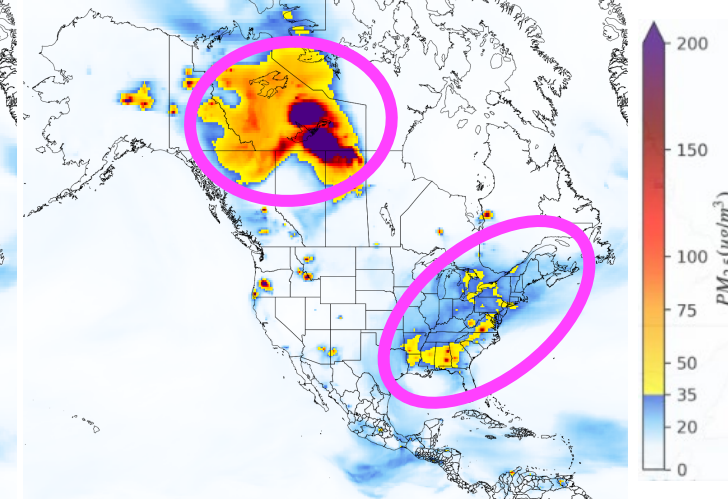
GEOS-CF



NAAPS



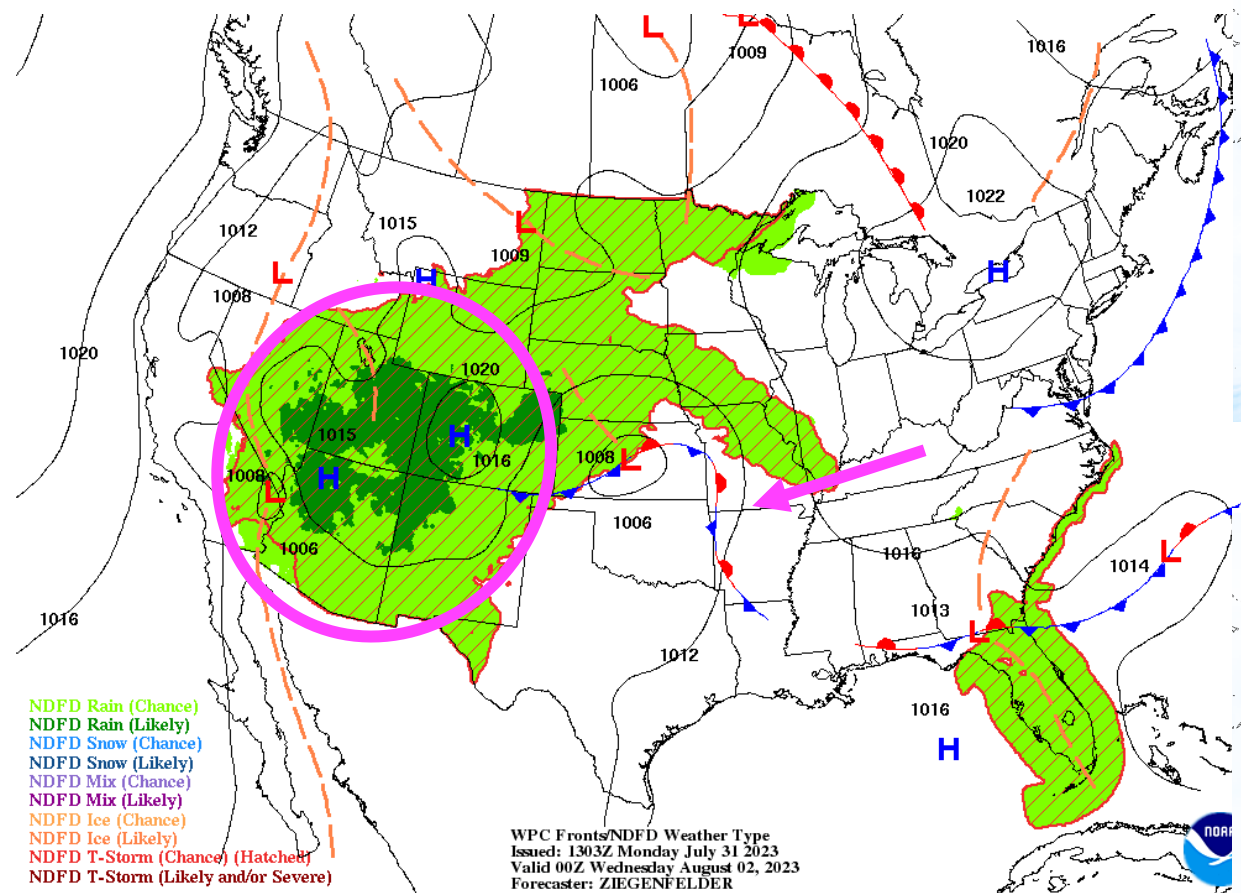
Ensemble



PM_{2.5}($\mu\text{g}/\text{m}^3$)

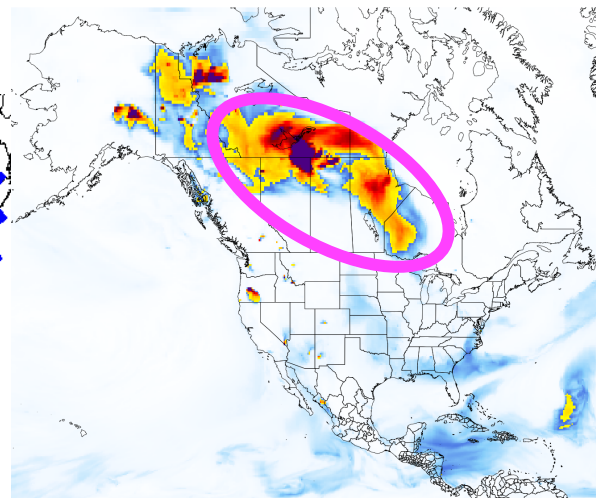
Outlook: Short Range (1–3 days)

Surface Forecast (Monday 7/31 – Wed 8/2)

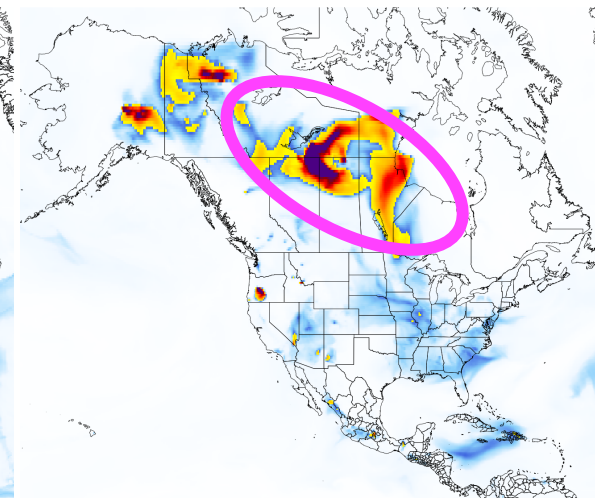


Model Means $PM_{2.5}$ (Tues 8/1)

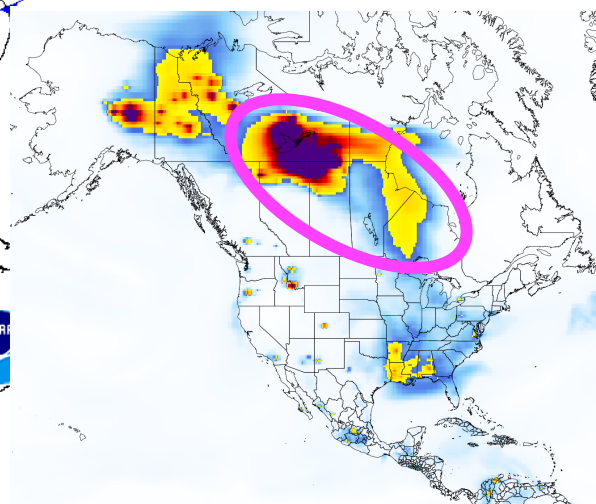
GEOS-FP



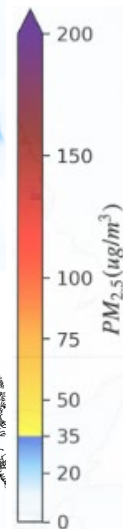
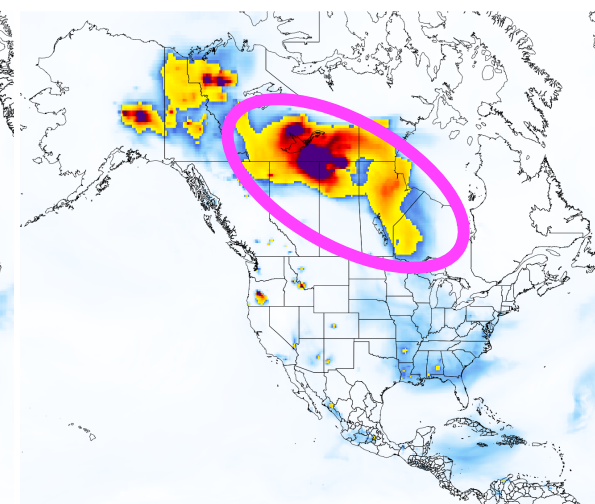
GEOS-CF



NAAPS

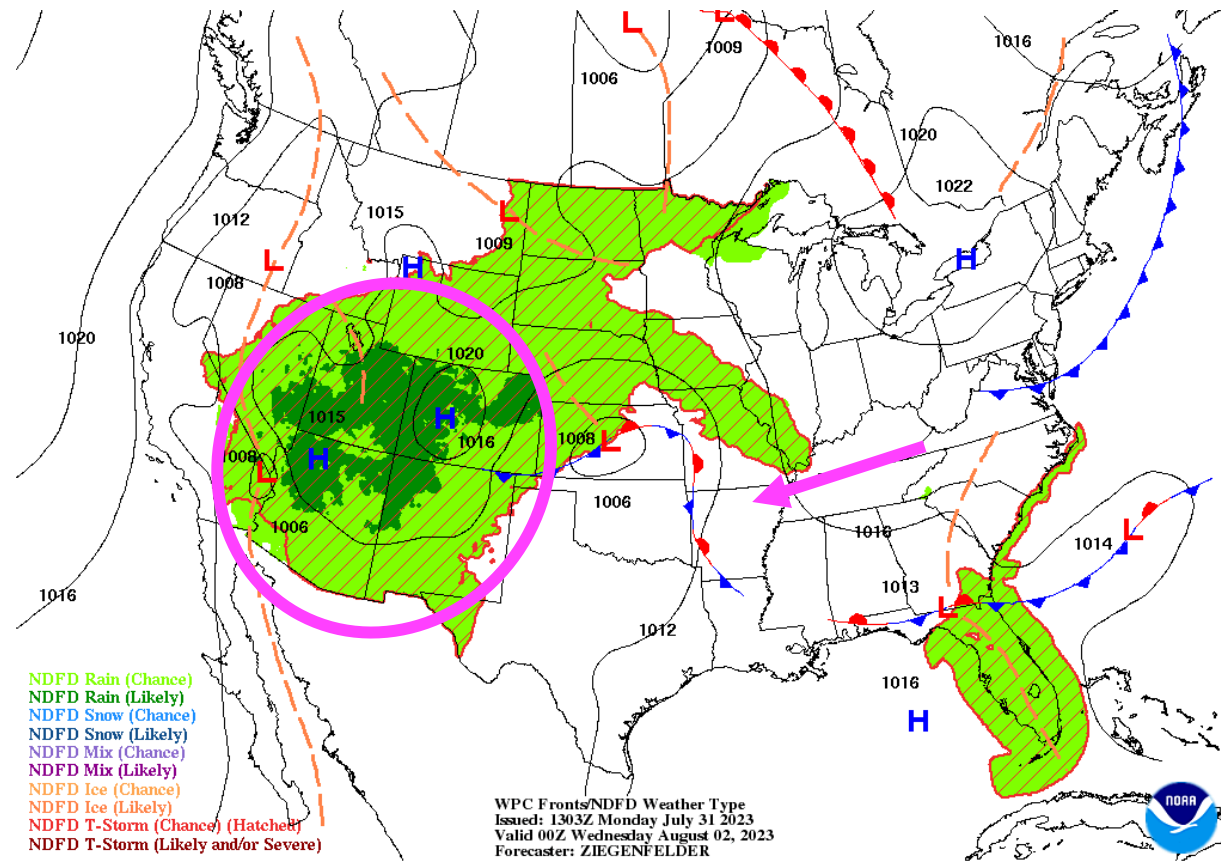


Ensemble

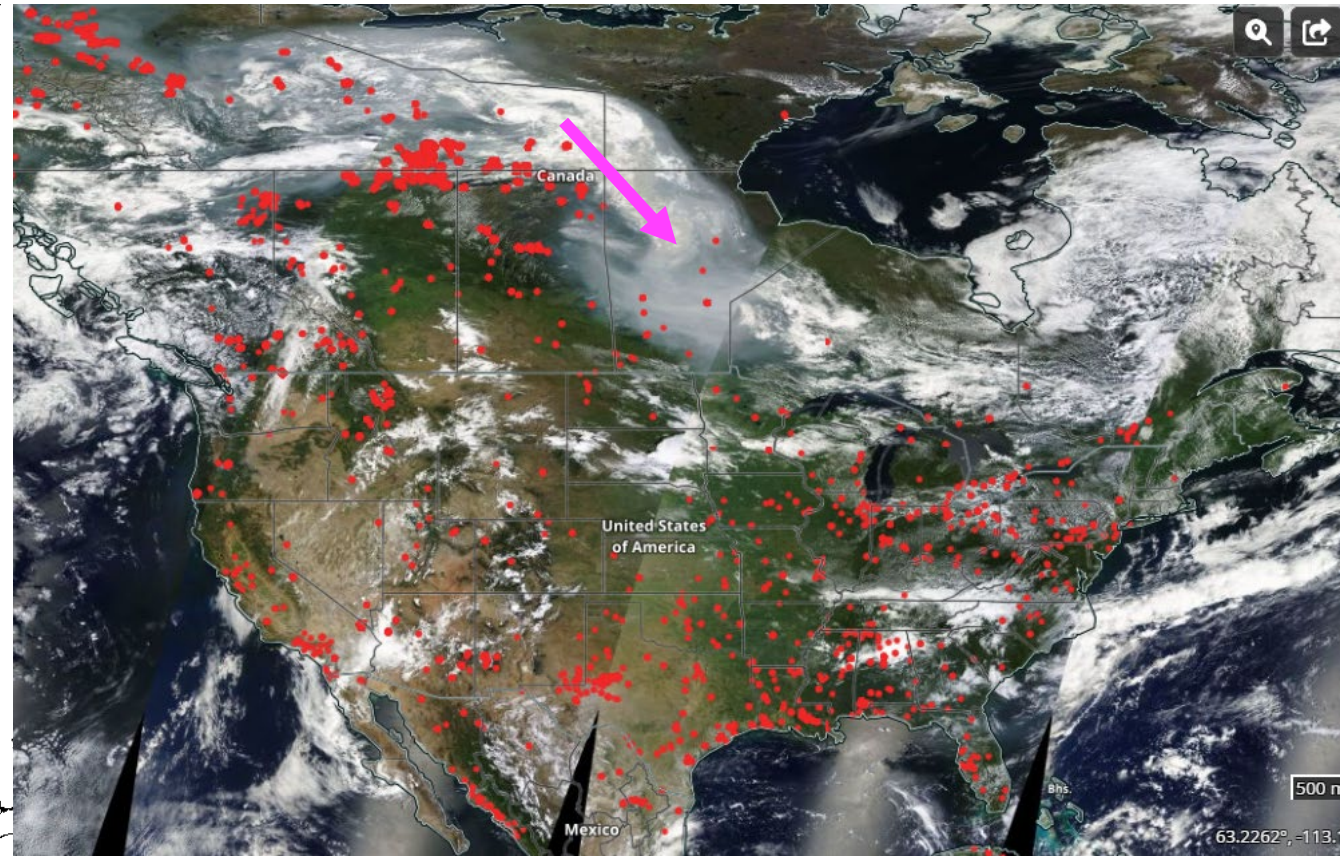


Outlook: Short Range (1–3 days)

Surface Forecast (**Monday 7/31 – Wed 8/2**)

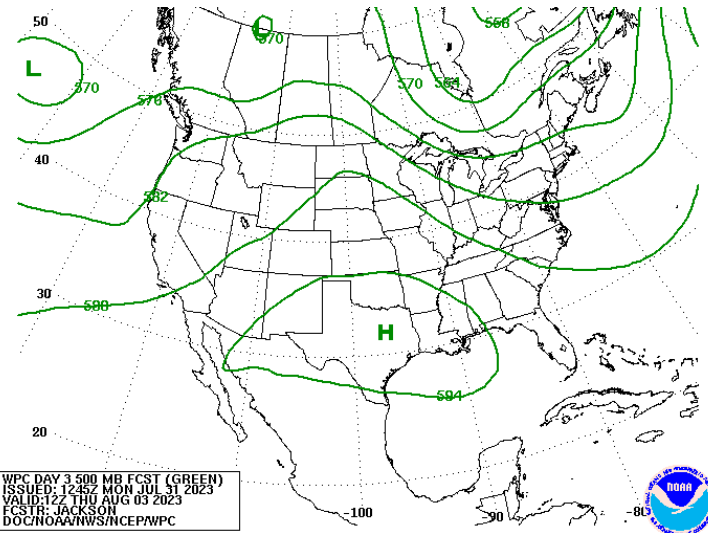
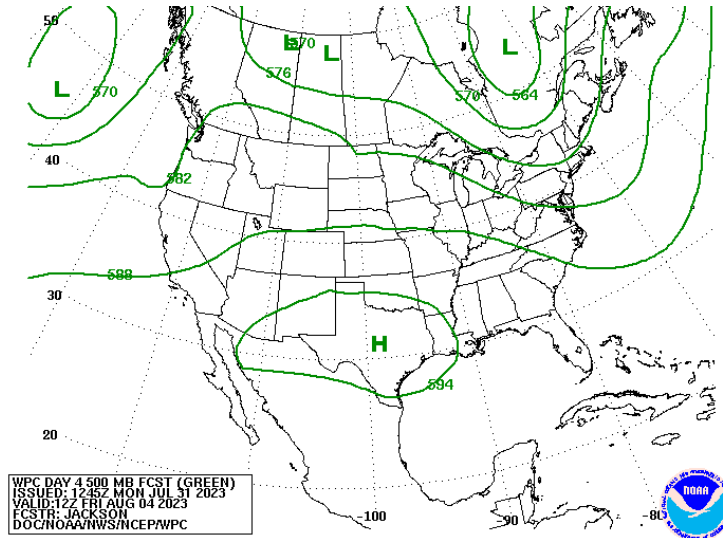


NASA Suomi Fire Anomalies
Sunday (7/30)

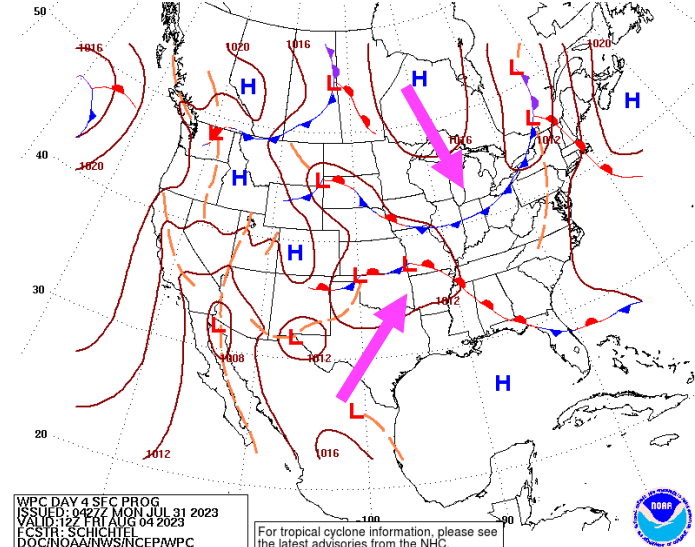
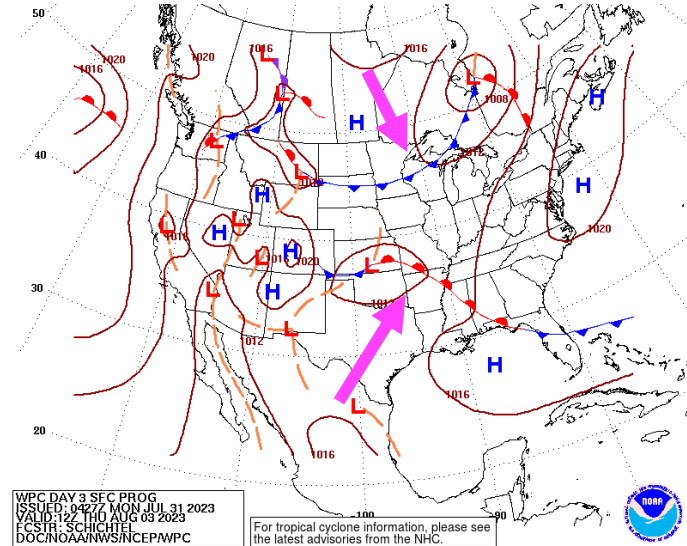


Outlook: Medium Range

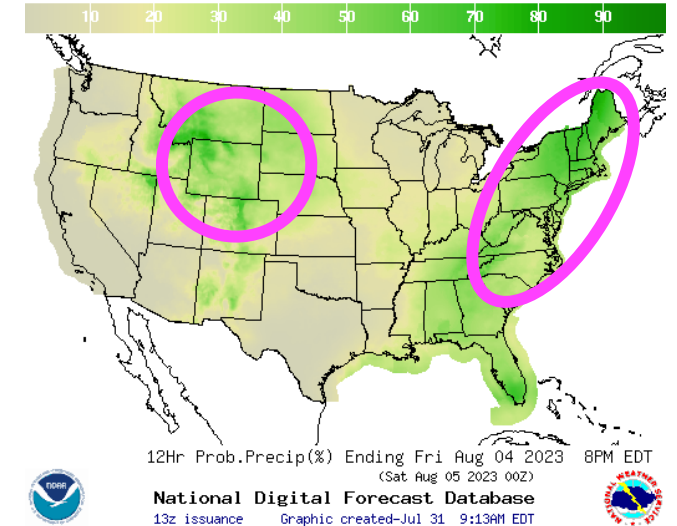
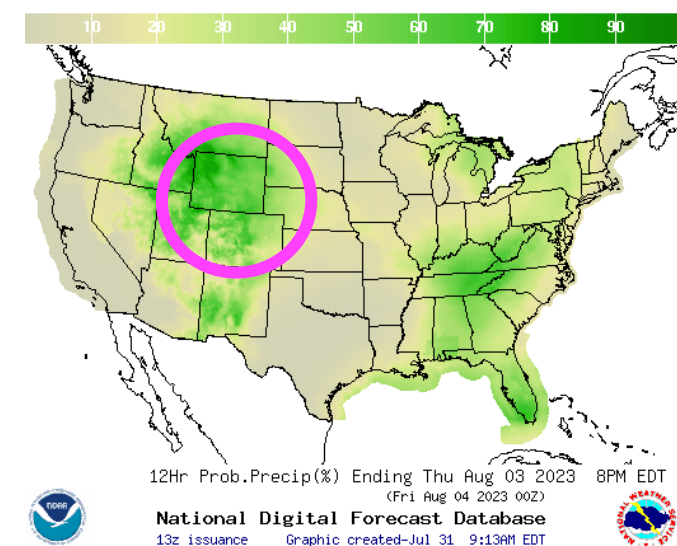
500 hPa Contours



Sea Level



Precip Prob.



Summary

Monday : Pocket of unhealthy air quality around Los Angeles CA under local fire conditions. Stationary front along NW to SE US separating high pressure systems with little chance of rain.

Monday AQI

M → W : Likely chance of rain over the SW US while stationary front persists. Unlikely chance of any smoke transport from any western US fires inland (at least to the surface)

Monday – Wednesday

Th → F : A cold front, followed by a high pressure system, sets up in the northern US while a warm front is situated over southern US. Central US could see smoke aloft should Canadian fires persist, with a chance of transport to the surface.

Thursday - Friday