

Weather and Air Quality: Reflection and Outlook During Smoke Conditions

Presenter: Megan Christiansen
Date: October 2, 2023

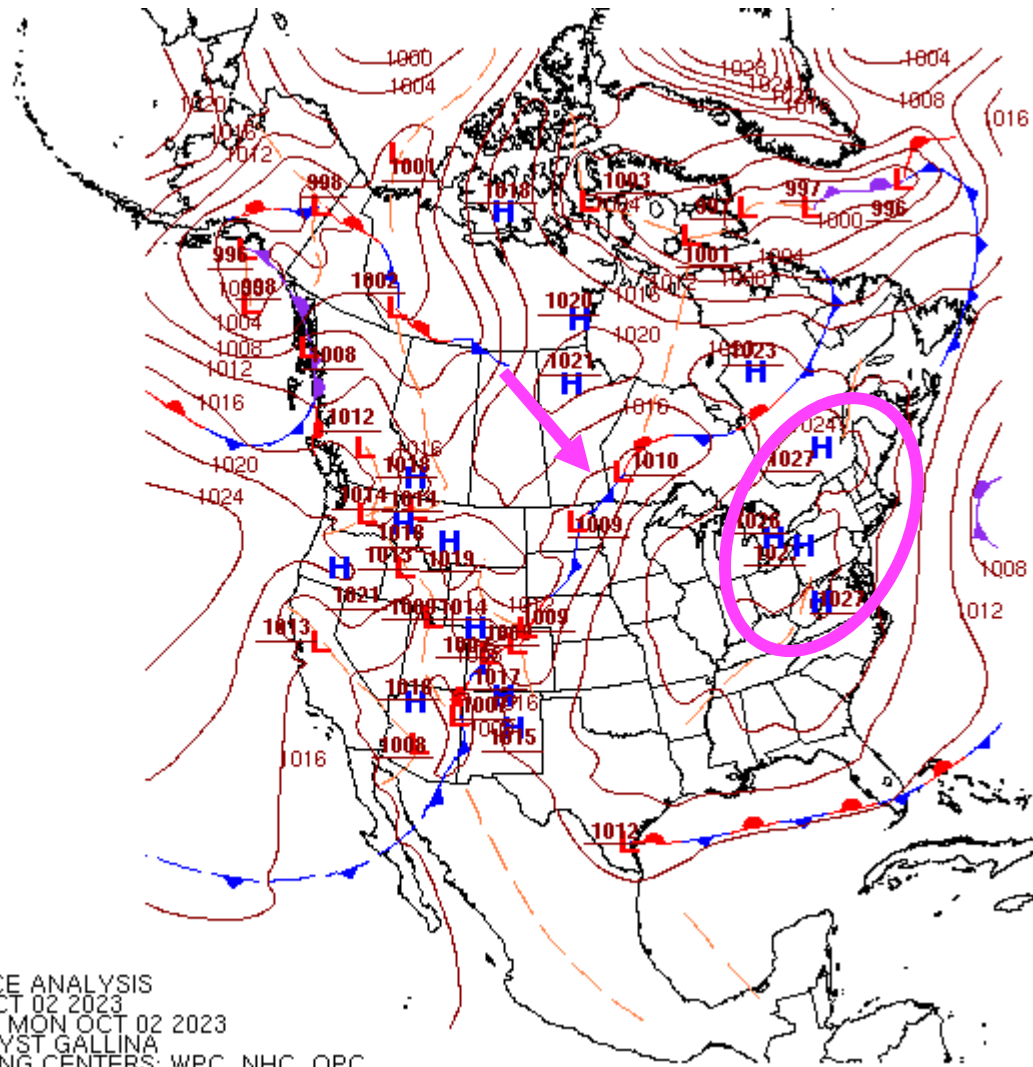


FireAQ is funded by NASA HAQ. We thank NASA GMAO and
NRL for the model data products.

EARTH SCIENCE
APPLIED SCIENCES

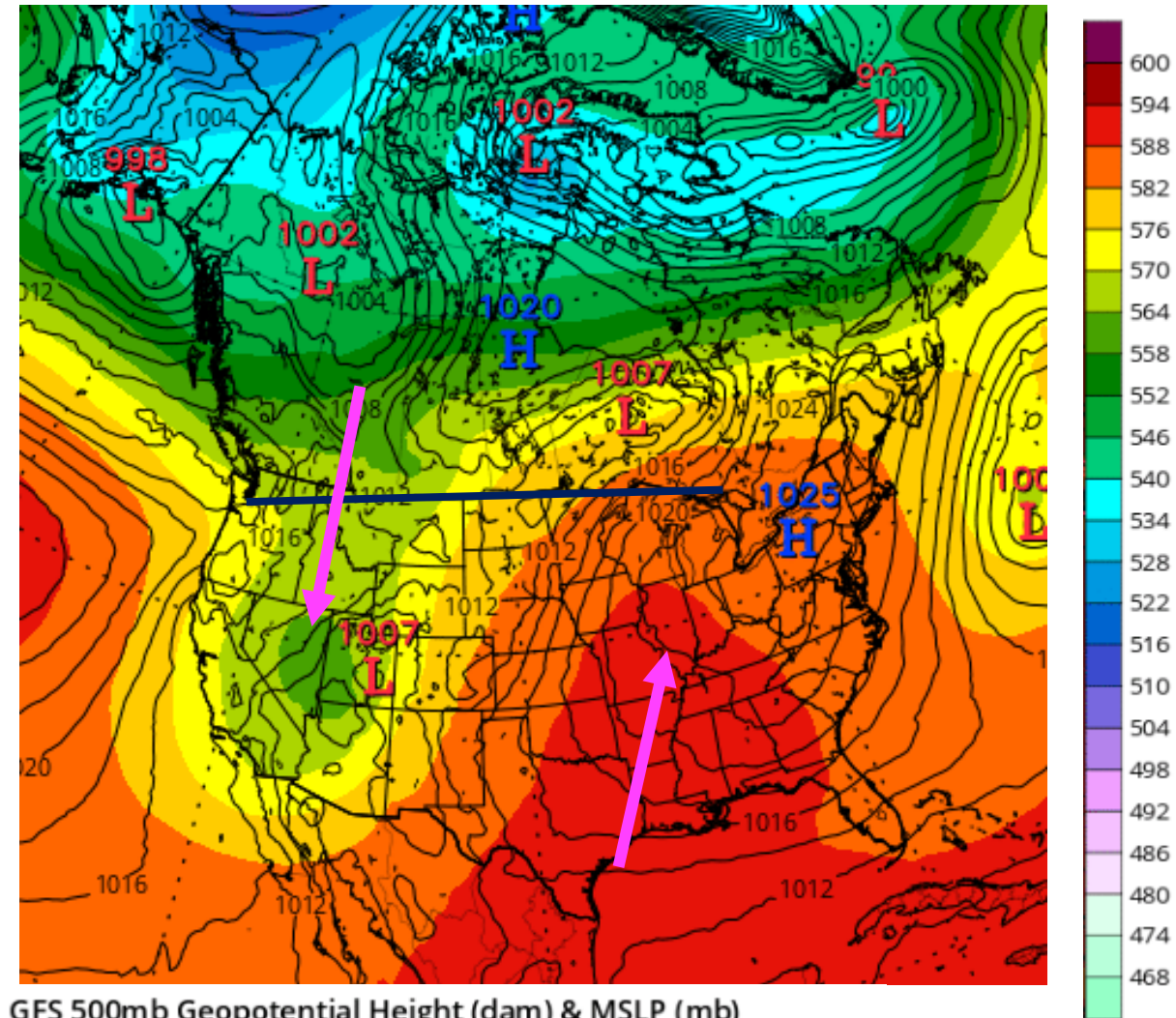
Current Status: October 2, 2023

Surface Analysis



0900Z SURFACE ANALYSIS
DATE: MON OCT 02 2023
ISSUED: 1014Z MON OCT 02 2023
BY WPC ANALYST GALLINA
COLLABORATING CENTERS: WPC, NHC, OPC

500 mb Contours

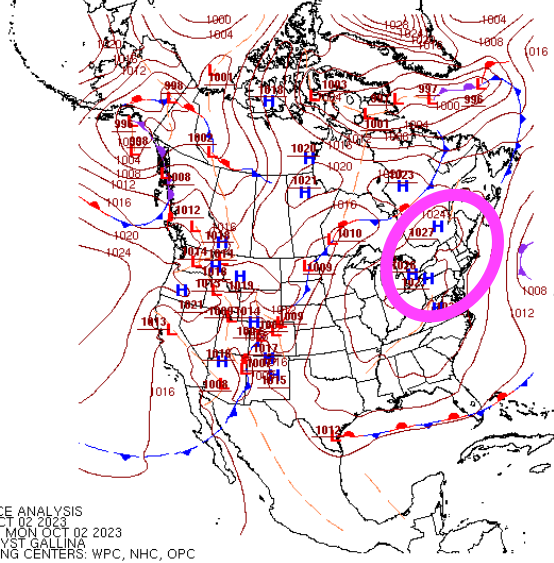


GFS 500mb Geopotential Height (dam) & MSLP (mb)

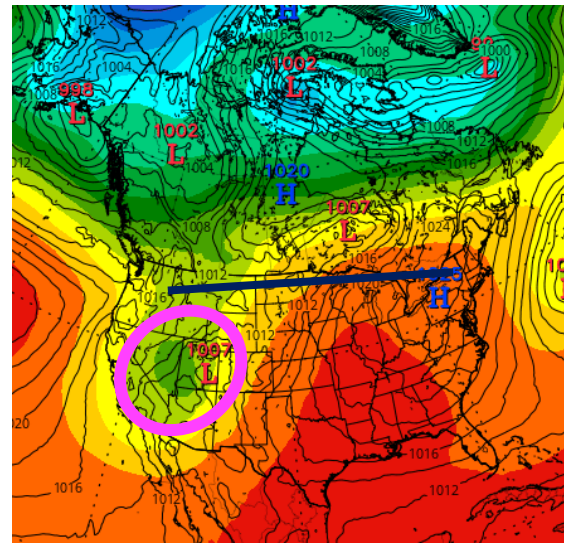
Init: 06z Sep 25 2023 Forecast Hour: [12] valid at 18z Mon, Sep 25 2023

Current Status: October 2, 2023

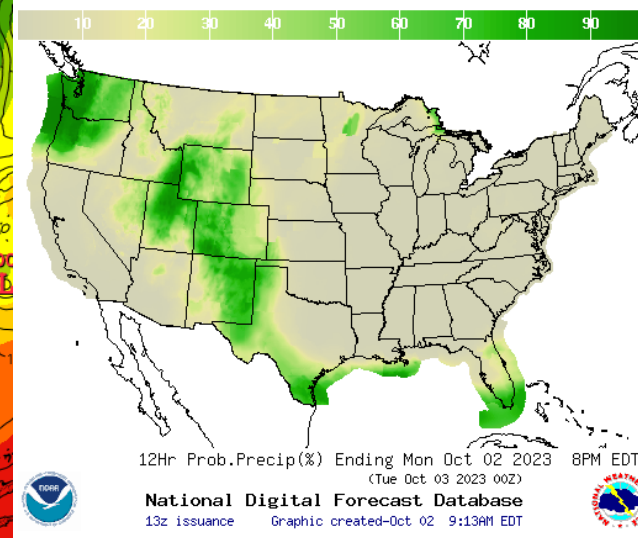
Surface Analysis



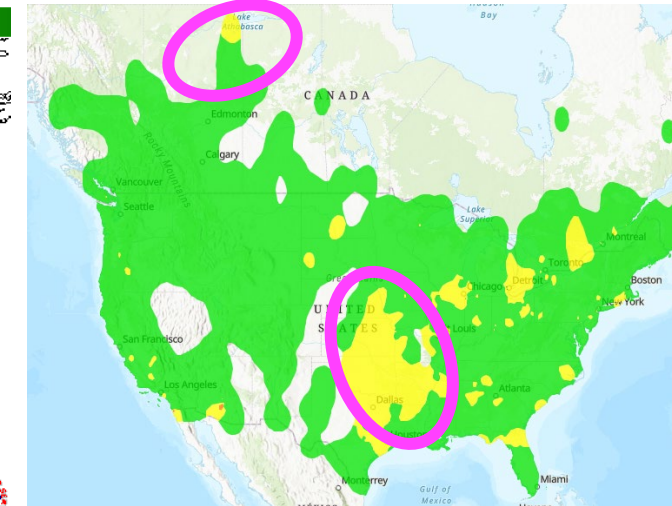
500 mb Contours



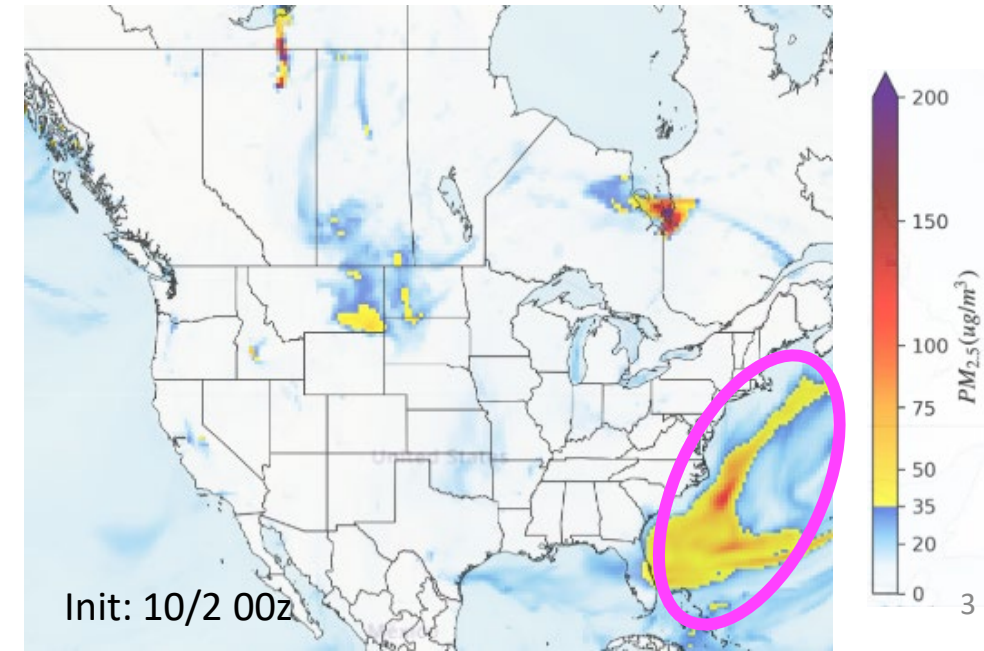
Precip. Prob.



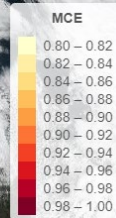
AirNow PM_{2.5} AQI



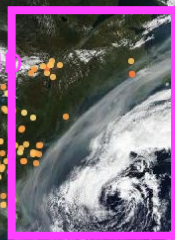
GEOS-FP 9/25 16 UTC PM_{2.5}



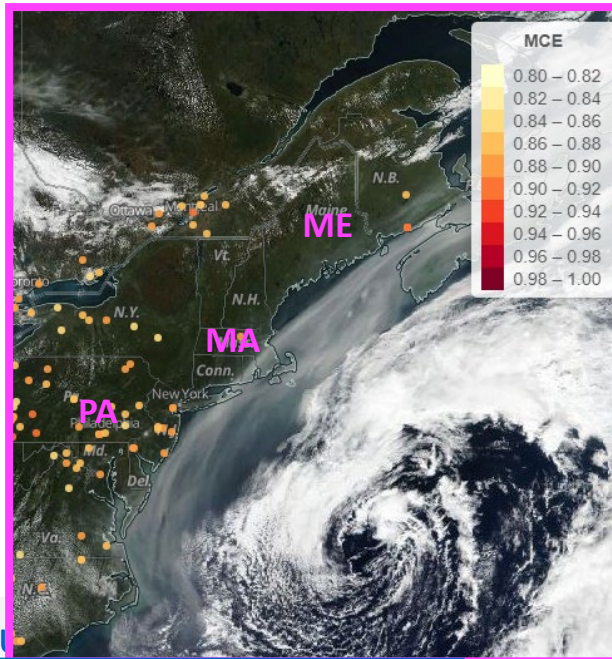
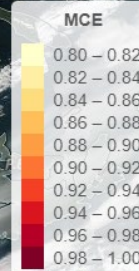
Sun 9/24



Alb.
WA MT N

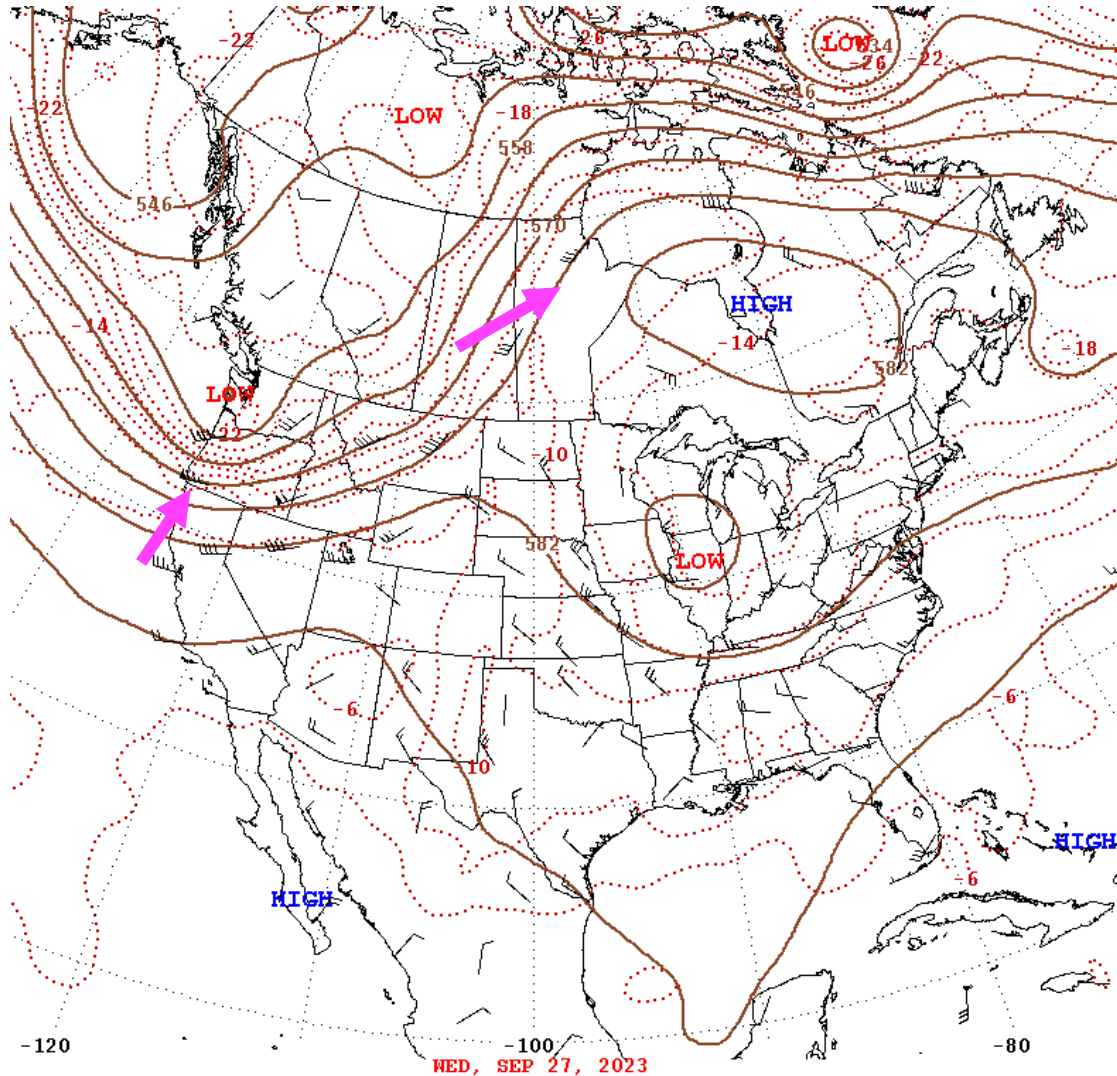


FILDA2 MCE <http://esmc.uiowa.edu>



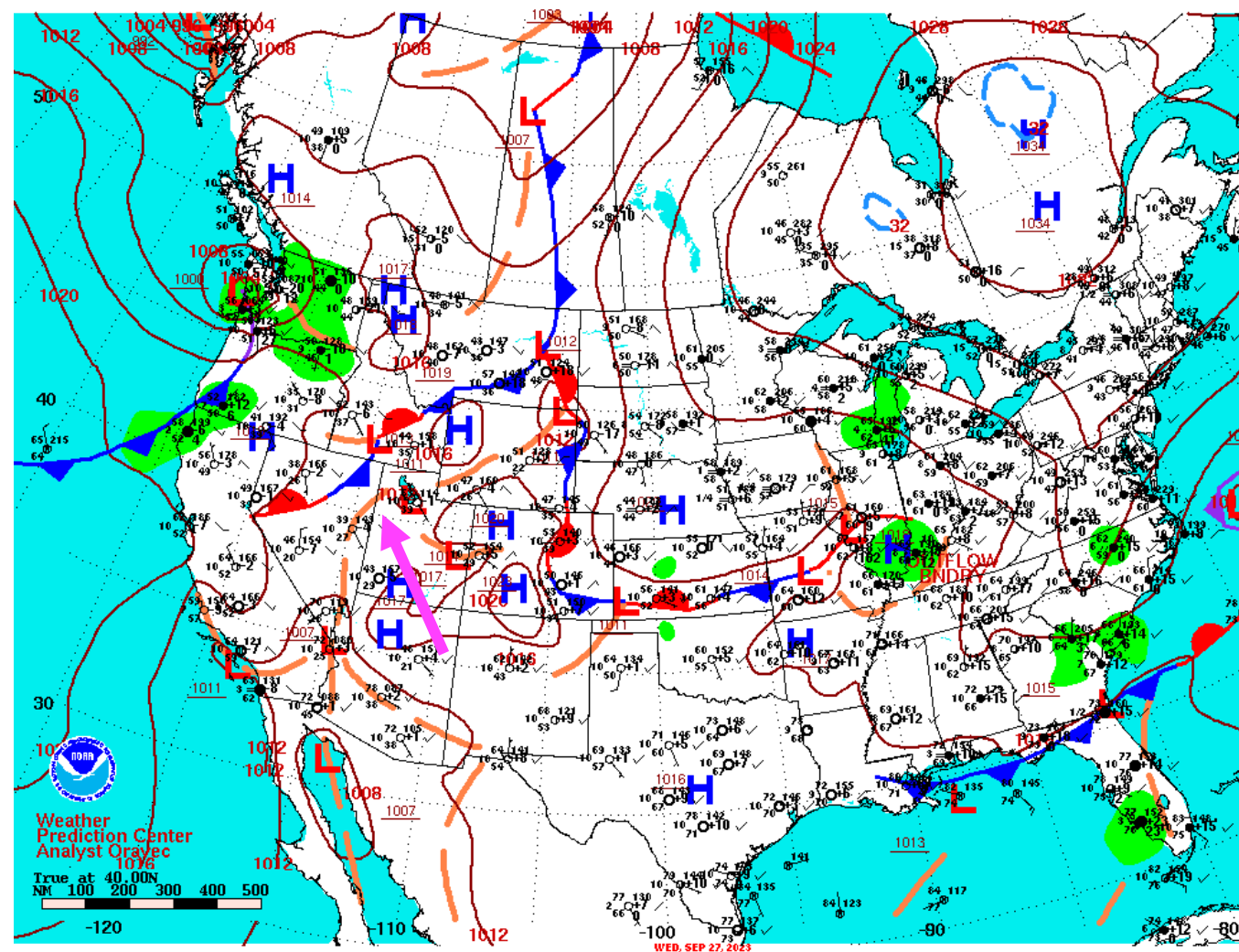
Air Quality Reflection: Wednesday Sept. 27, 2023

500 hPa Contours



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

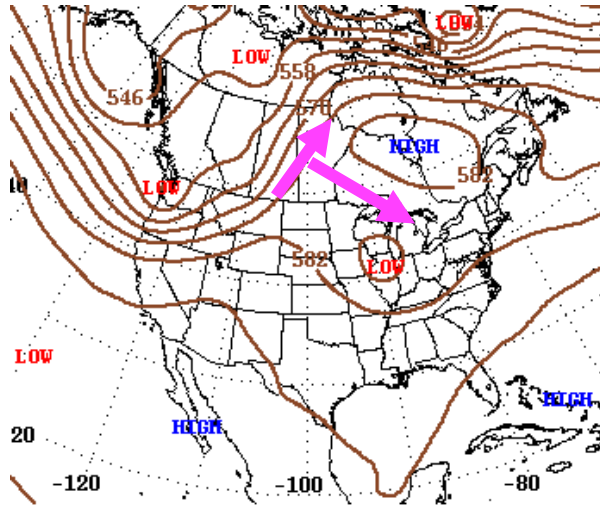
Surface Weather



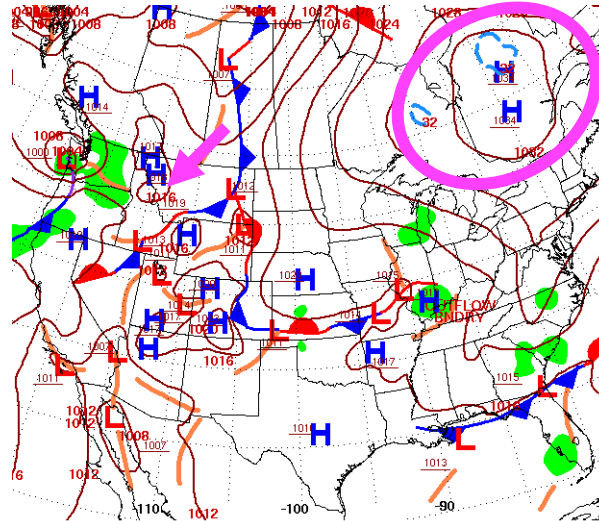
Surface Weather Map and Station Weather at 7:00 A.M. E.S.T.

Air Quality Reflection: Wednesday Sept. 27, 2023

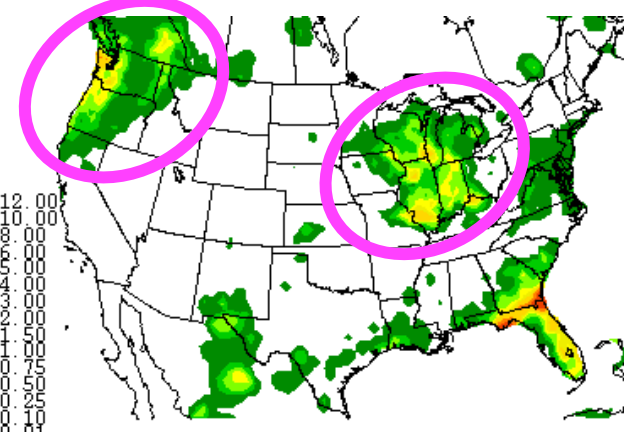
500 hPa Contours



Surface Weather

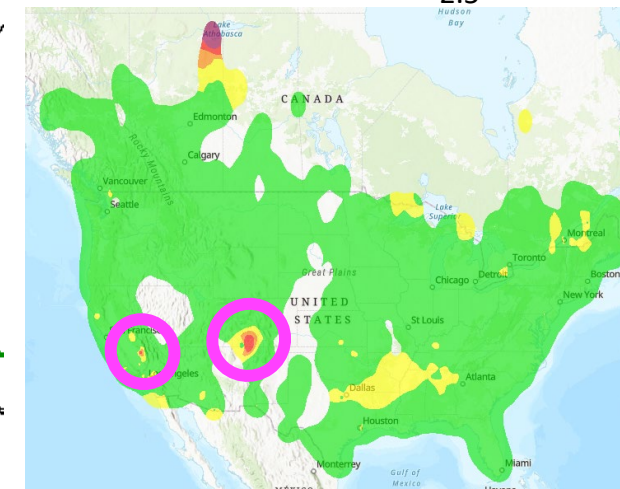


Precipitation

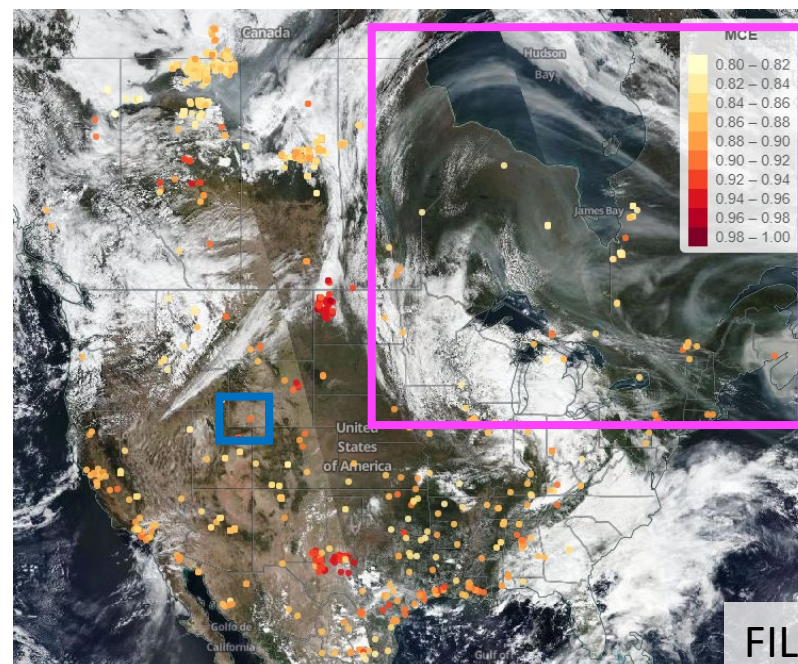


24-hr Precipitation (in.) Ending at 7:00 A.M. E.S.T.

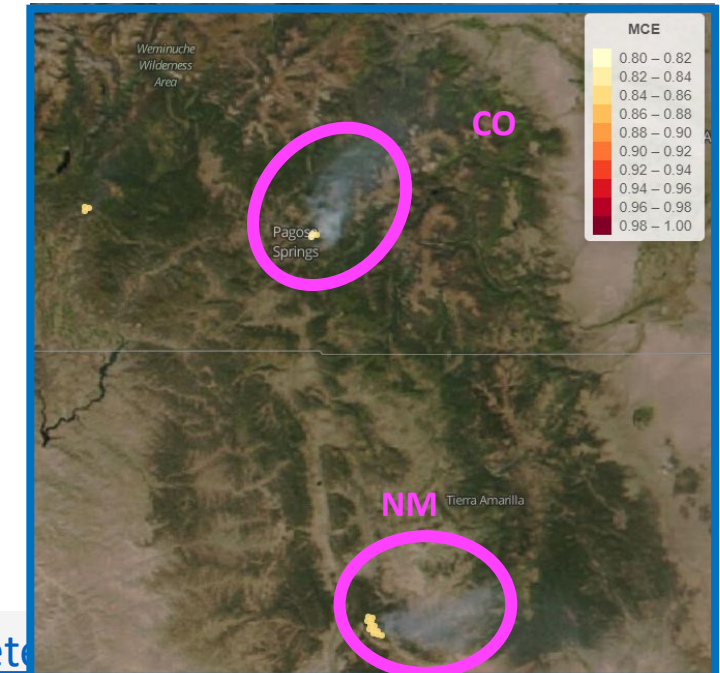
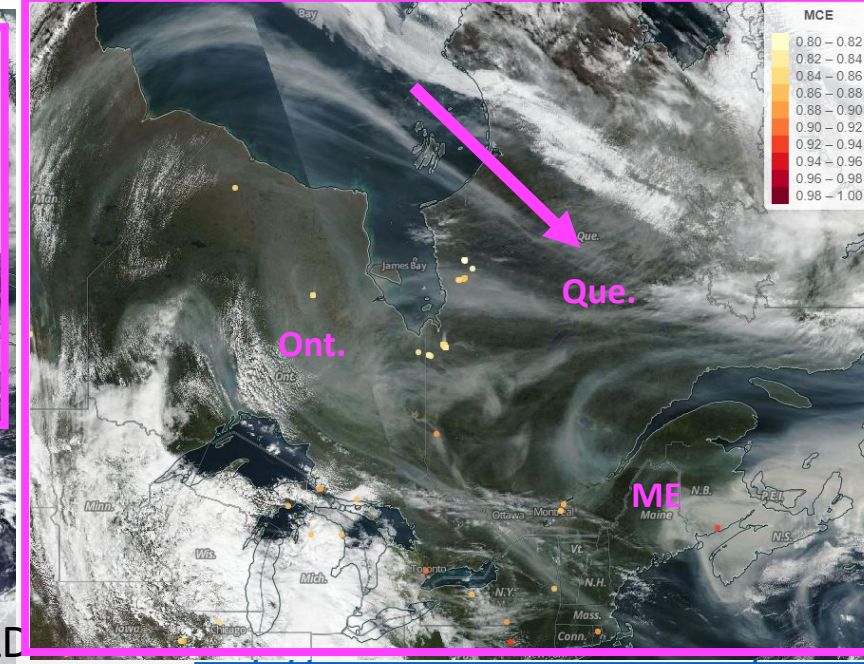
AirNow PM_{2.5} AQI



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

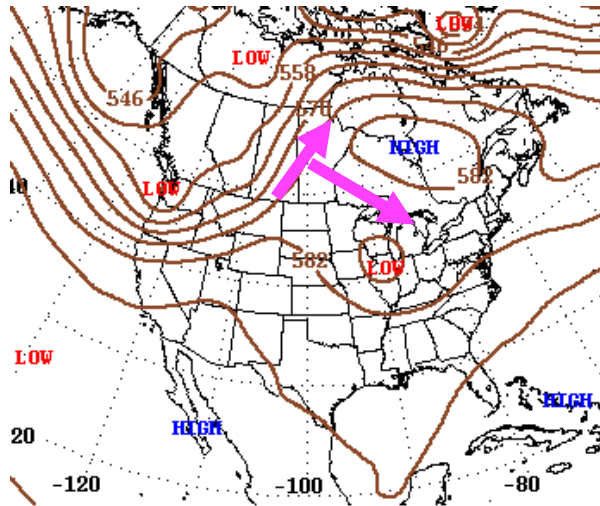


Surface Weather Map at 7:00 A.M. E.S.T.



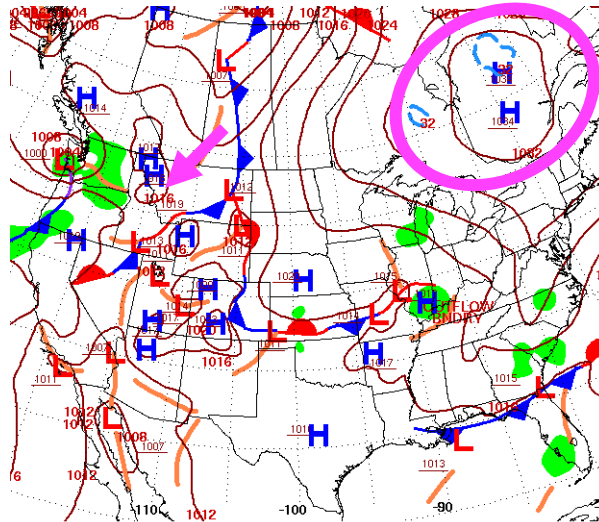
Air Quality Reflection: Wednesday Sept. 27, 2023

500 hPa Contours



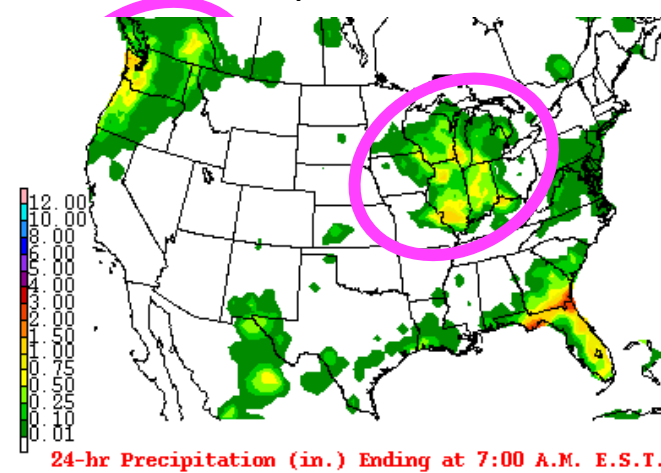
500-Millibar Height Contour at 7:00 A.M. E.S.T.

Surface Weather



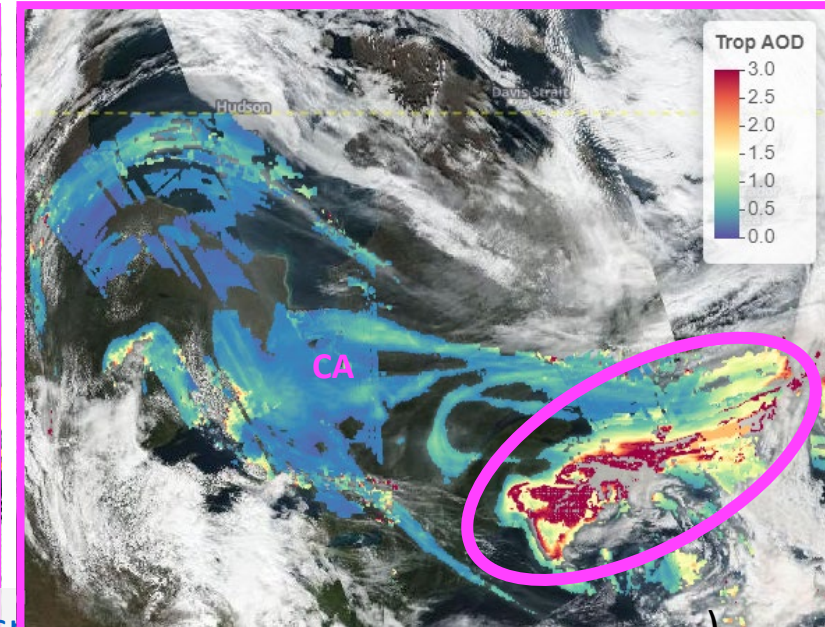
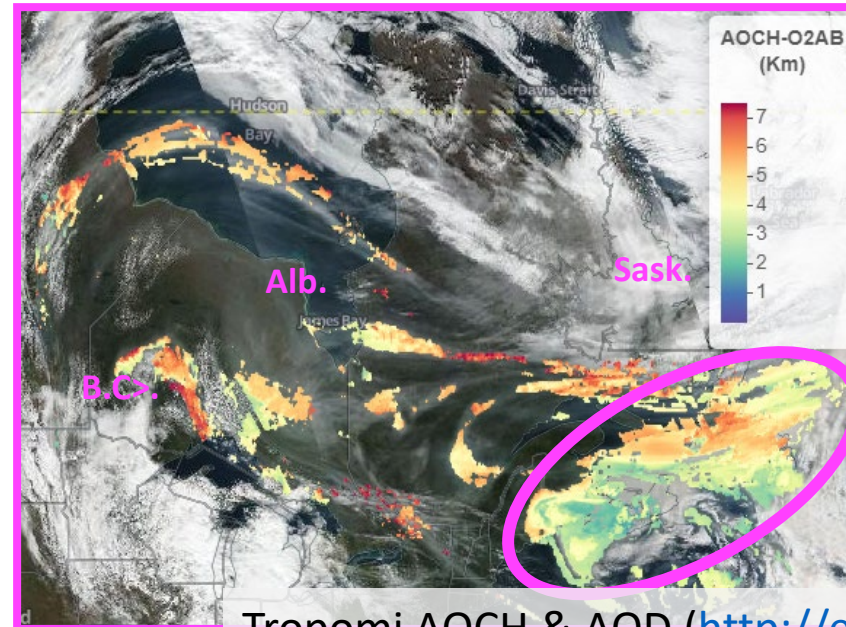
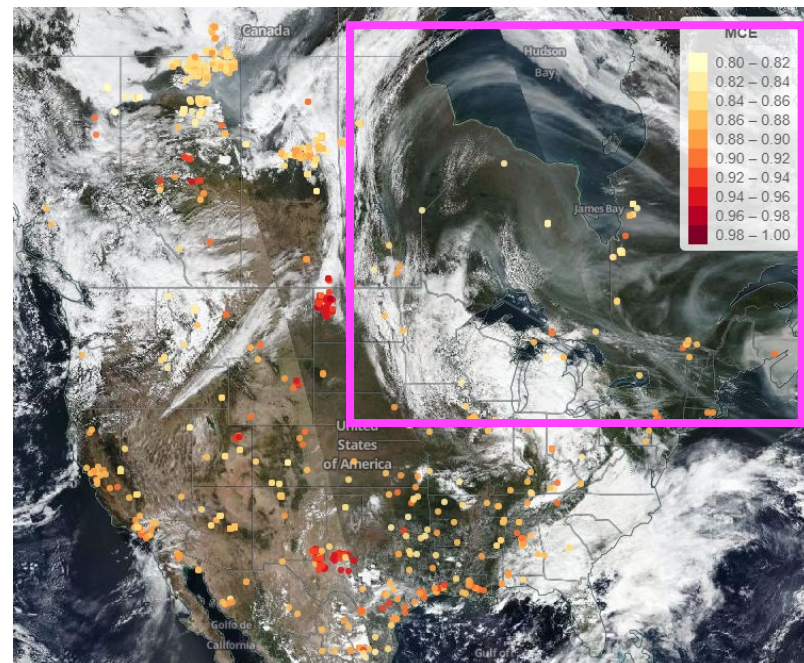
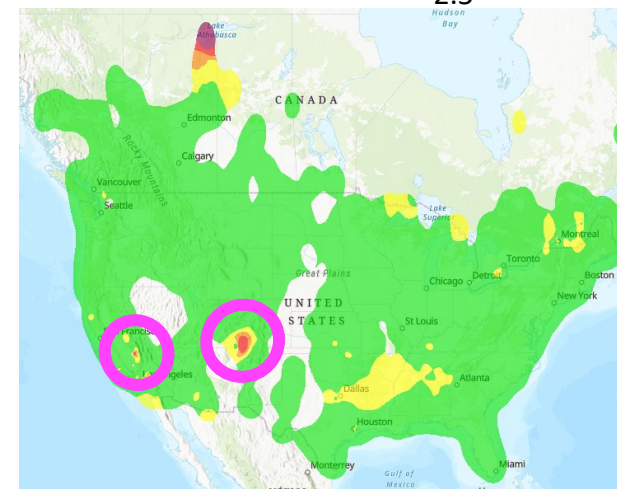
Surface Weather Map at 7:00 A.M. E.S.T.

Precipitation



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

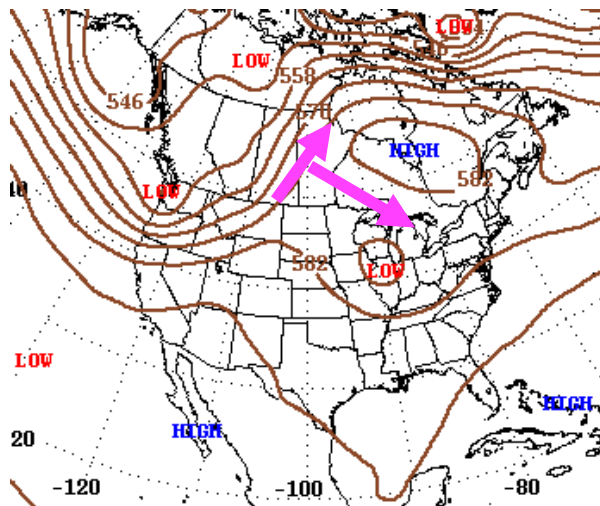
AirNow PM_{2.5} AQI



Tropomi AOC & AOD (<http://es.hawaii.edu/maui/tropomi-aod/>)

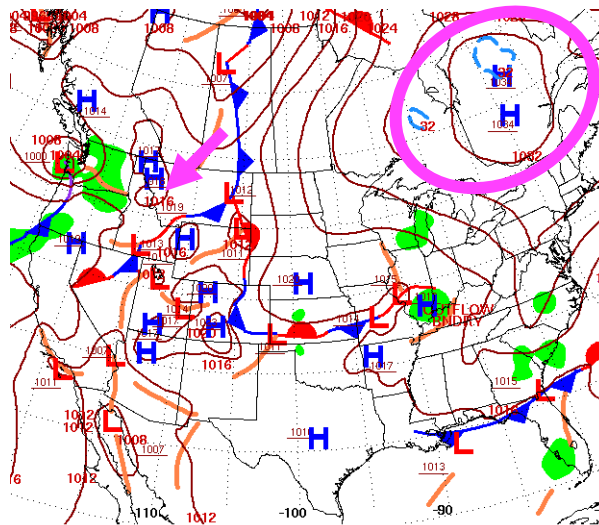
Air Quality Reflection: Wednesday Sept. 27, 2023

500 hPa Contours



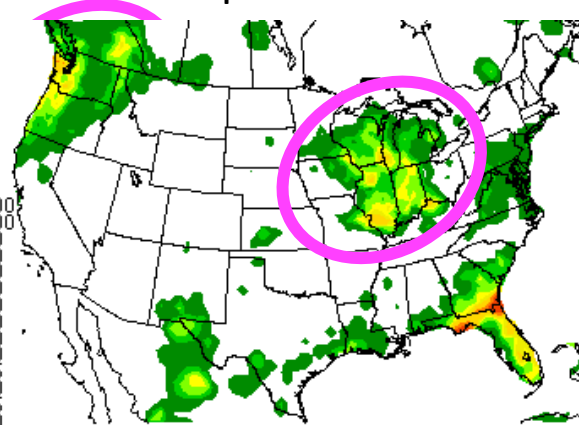
500-Millibar Height Contour at 7:00 A.M. E.S.T.

Surface Weather



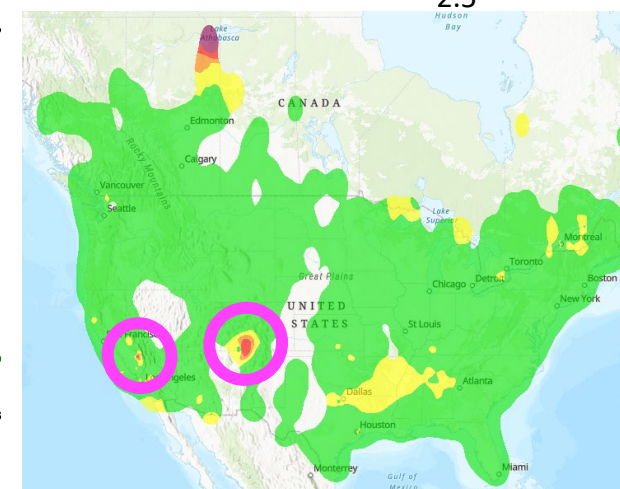
Surface Weather Map at 7:00 A.M. E.S.T.

Precipitation

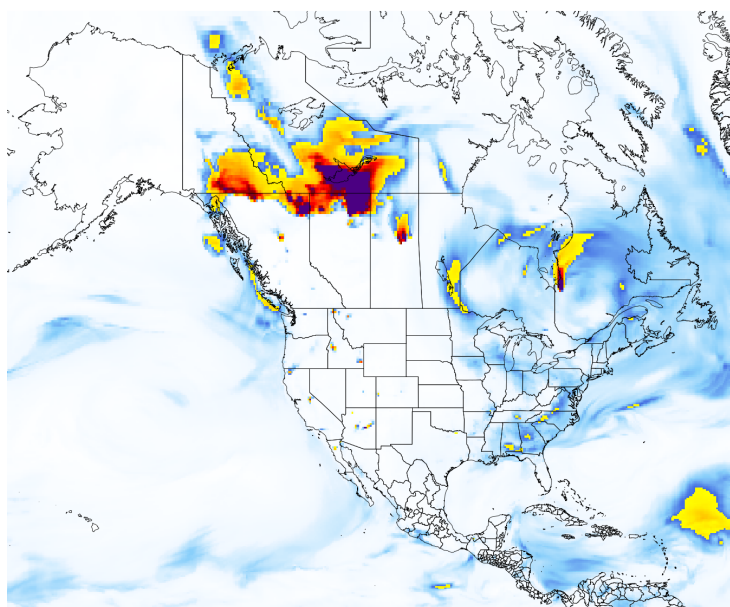


24-hr Precipitation (in.) Ending at 7:00 A.M. E.S.T.

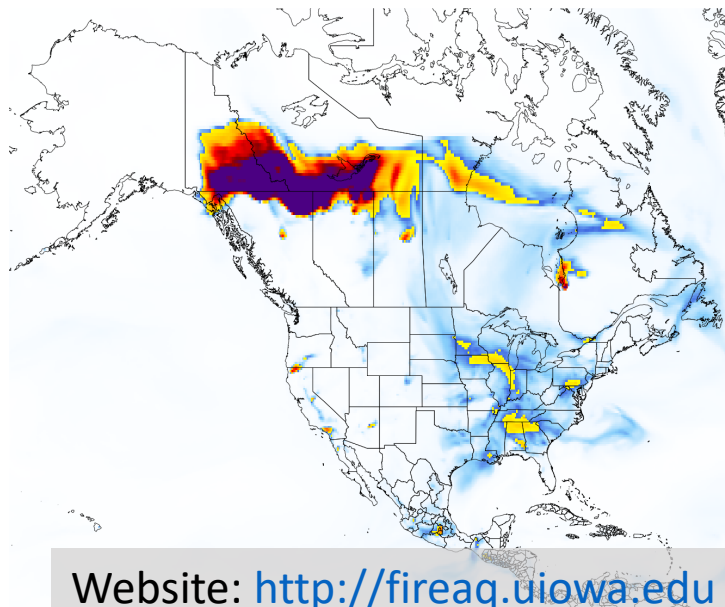
AirNow PM_{2.5} AQI



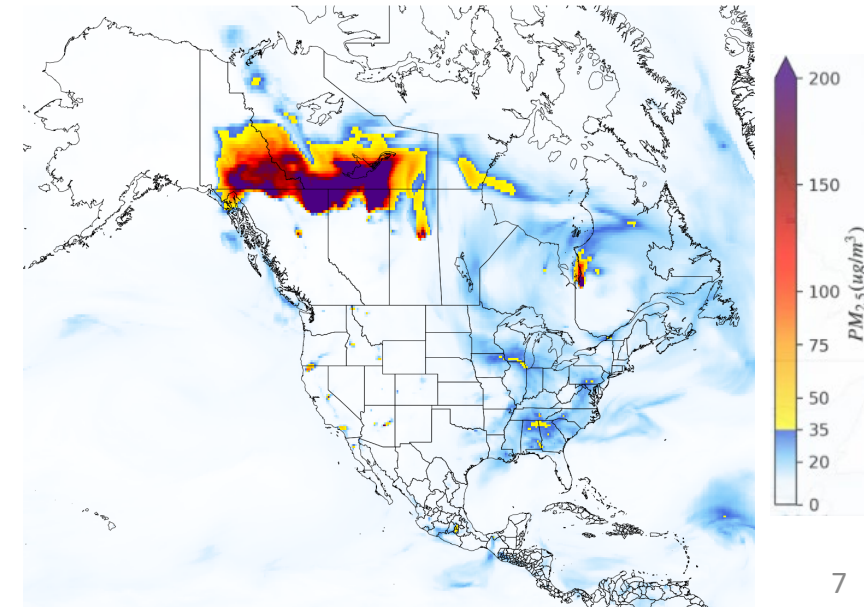
GEOS-FP



GEOS-CF



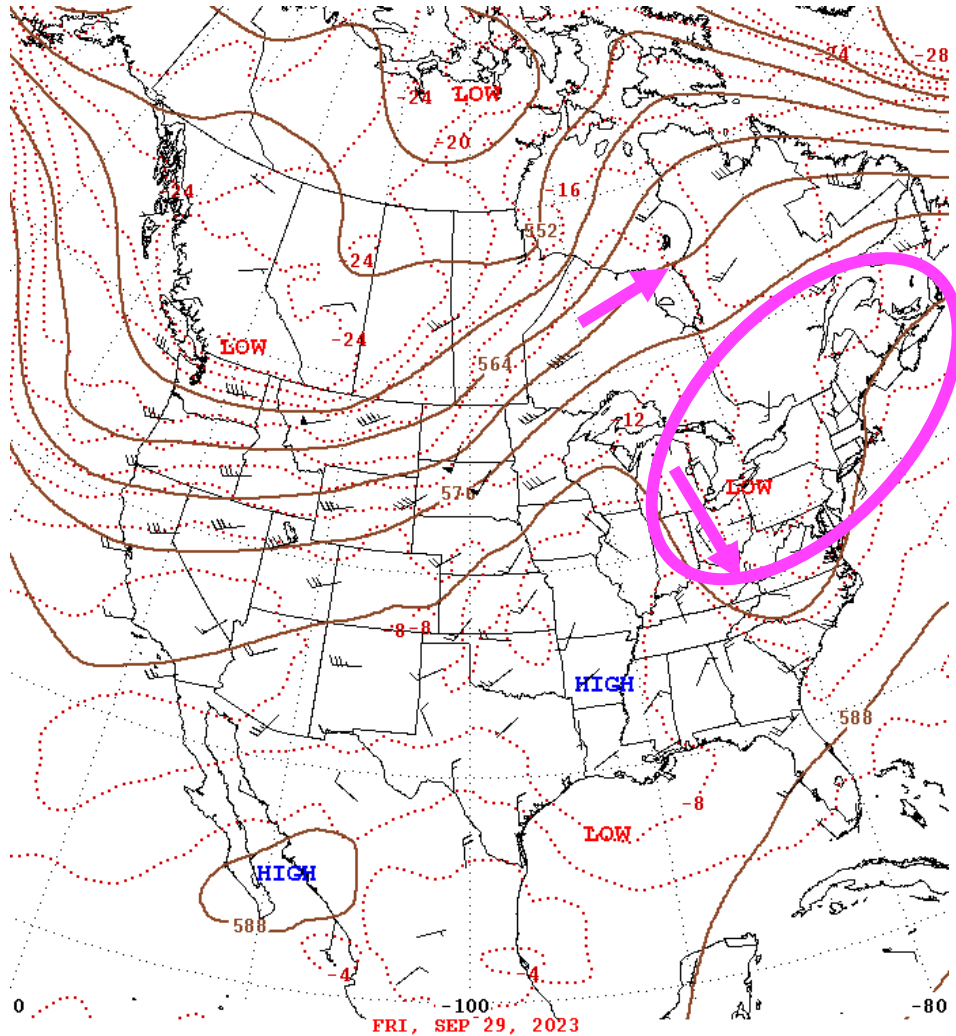
Ensemble (GEOS)



Website: <http://fireaq.uiowa.edu>

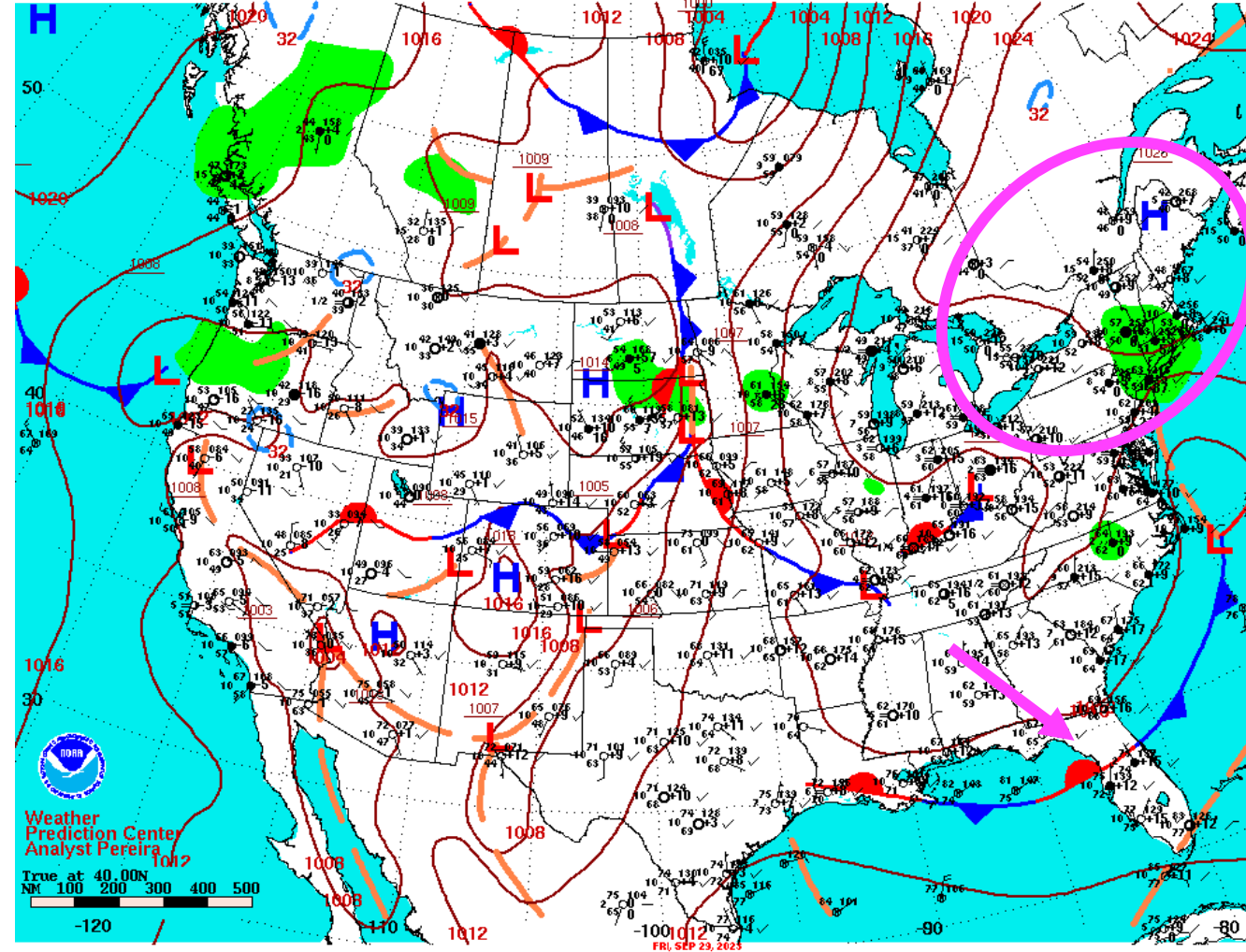
Air Quality Reflection: Friday Sept. 29, 2023

500 hPa Contours



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

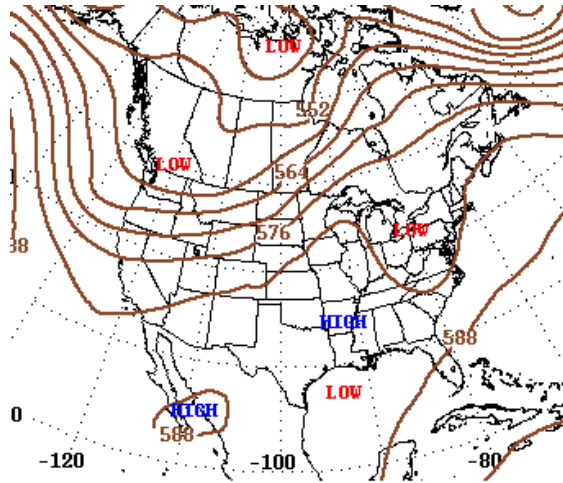
Surface Weather



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

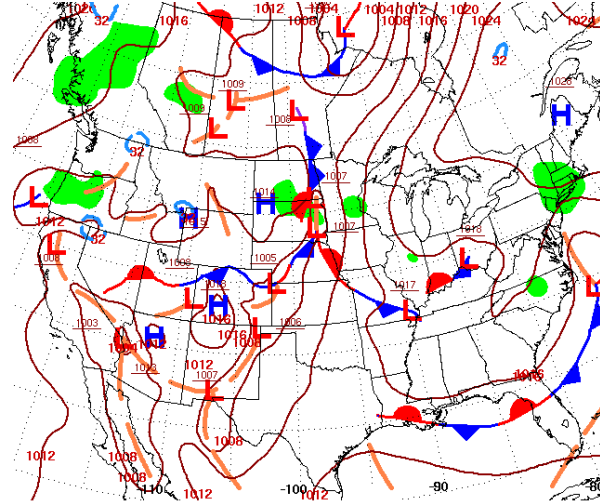
Air Quality Reflection: Friday Sept. 29, 2023

500 hPa Contours



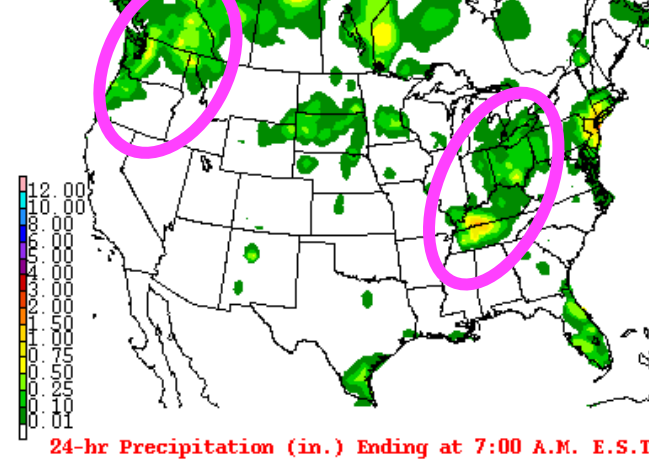
500-Millibar Height Contour at 7:00 A.M. E.S.T.

Surface Weather



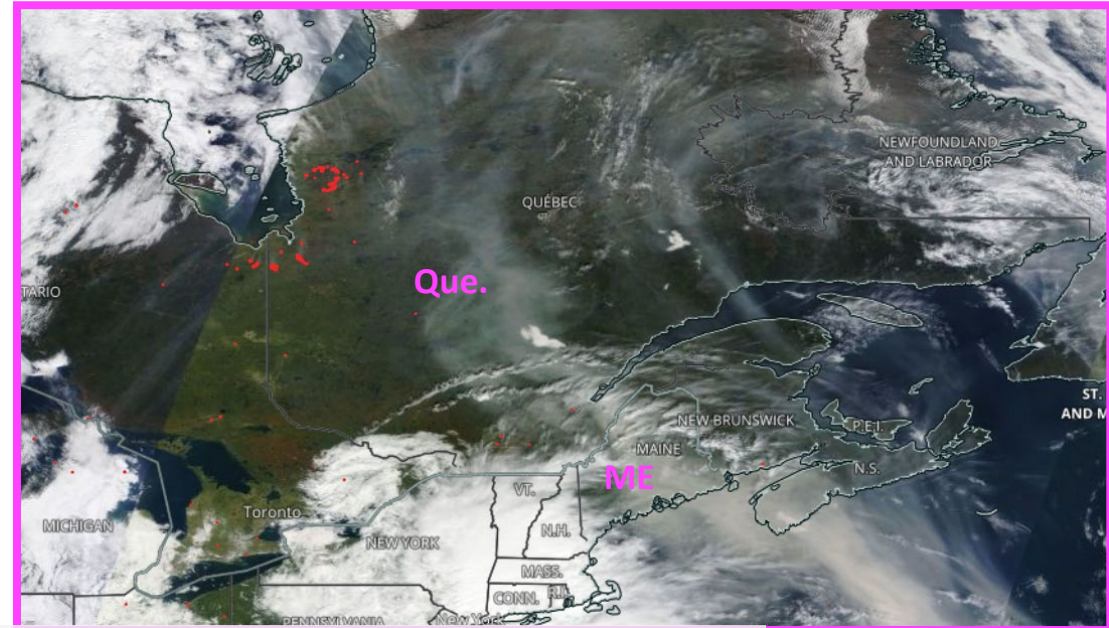
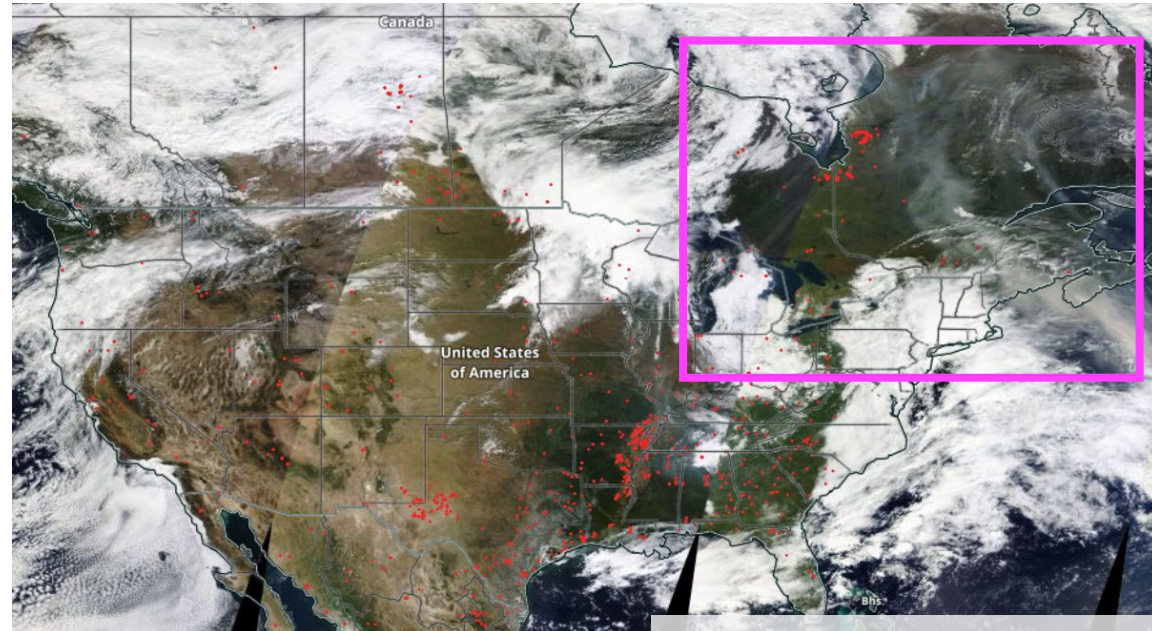
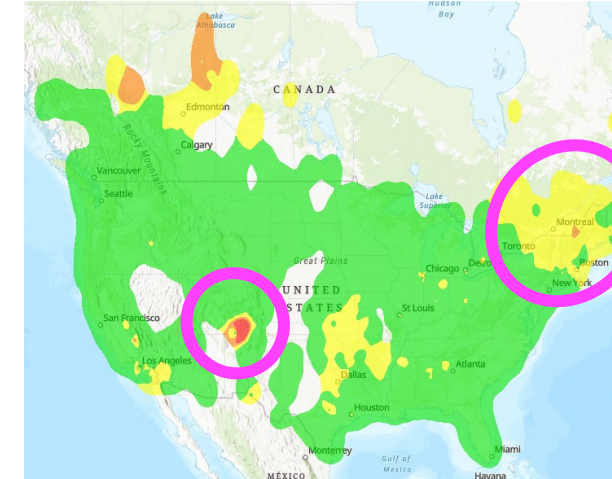
Surface Weather Map at 7:00 A.M. E.S.T.

Precipitation



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

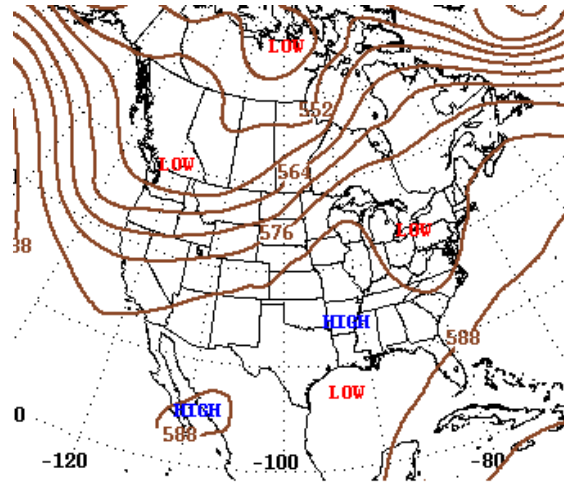
AirNow PM_{2.5} AQI



NASA Suomi Fire Anomalies <https://worldview.earthdata.nasa.gov>

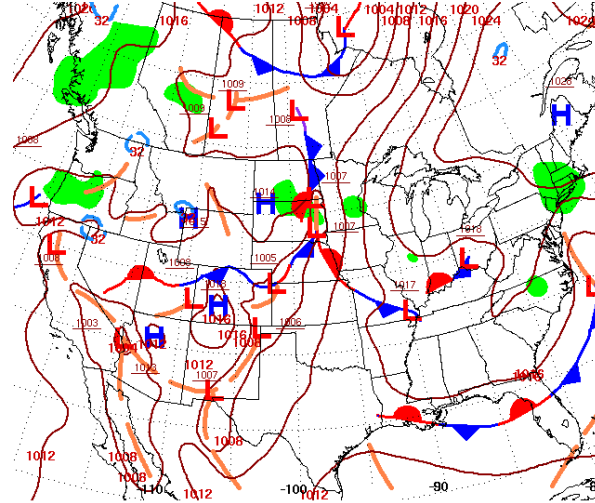
Air Quality Reflection: Friday Sept. 29, 2023

500 hPa Contours



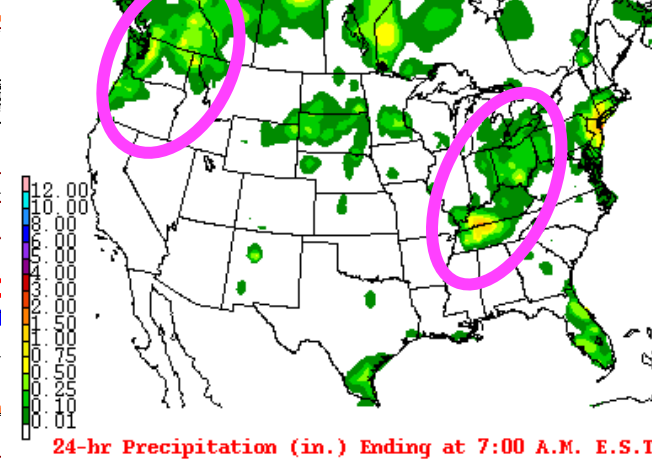
500-Millibar Height Contour at 7:00 A.M. E.S.T.

Surface Weather



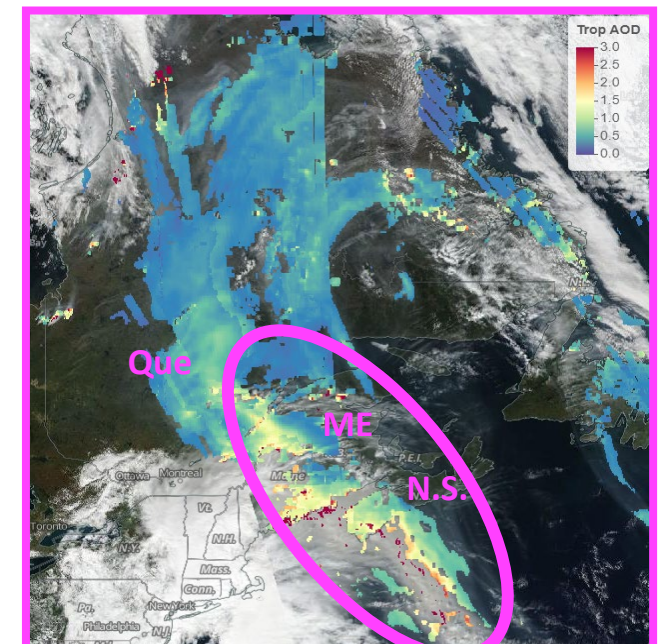
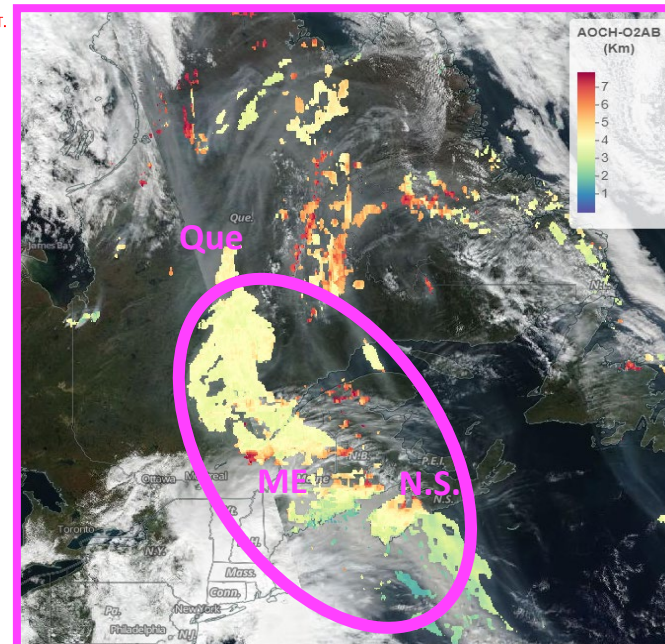
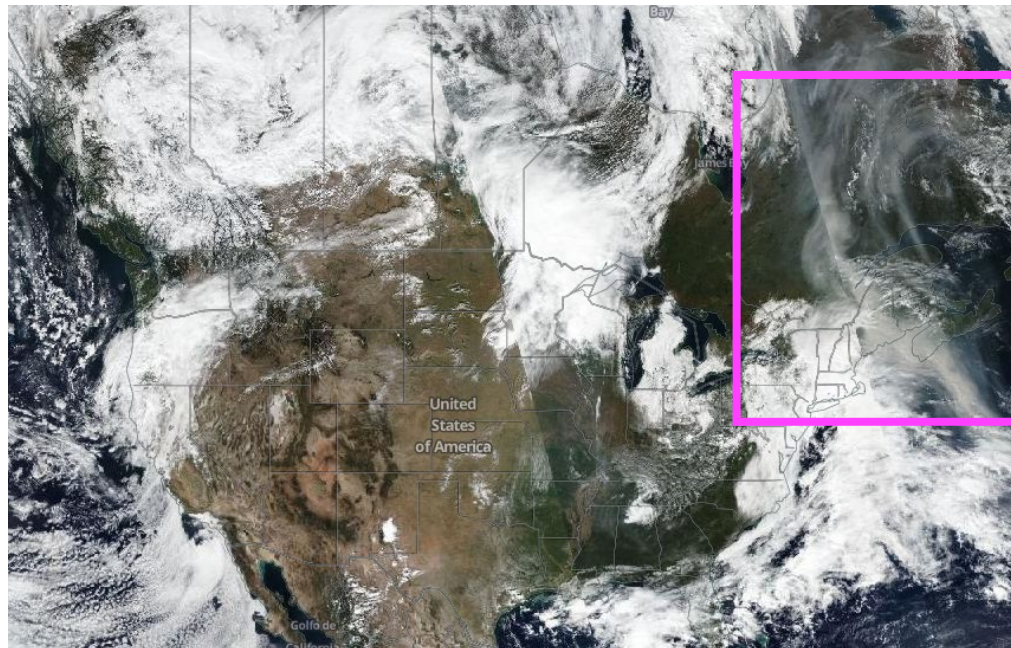
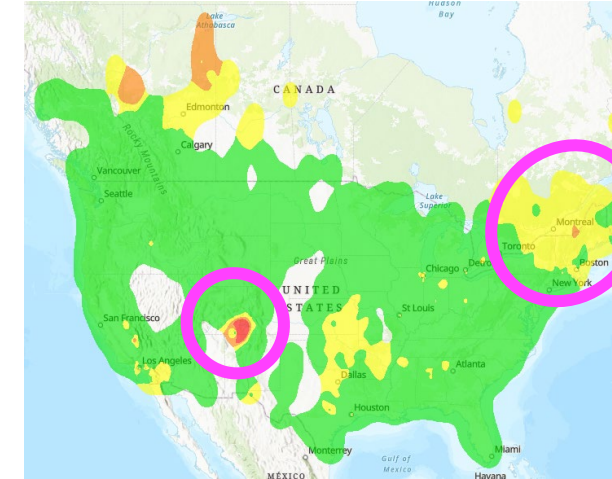
Surface Weather Map at 7:00 A.M. E.S.T.

Precipitation



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

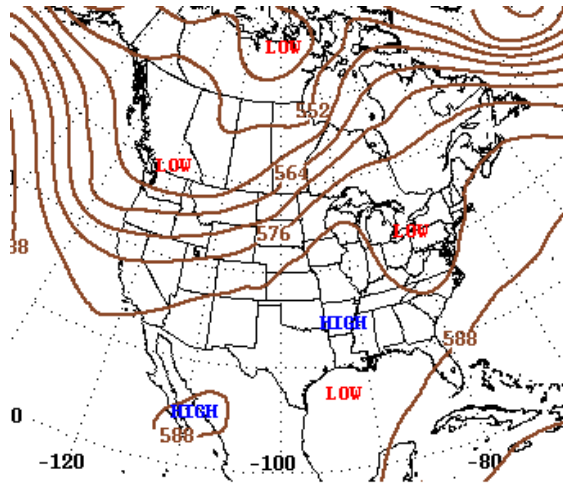
AirNow PM_{2.5} AQI



Tropomi AOD & AOD (http://esmc.uiowa.edu:3838/tropomi_aod/)

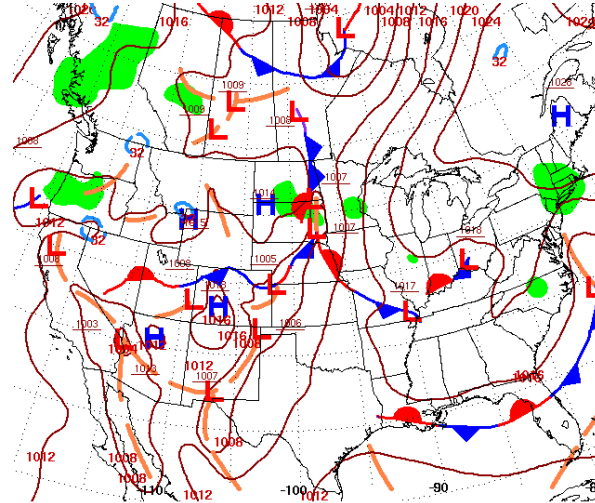
Air Quality Reflection: Friday Sept. 29, 2023

500 hPa Contours



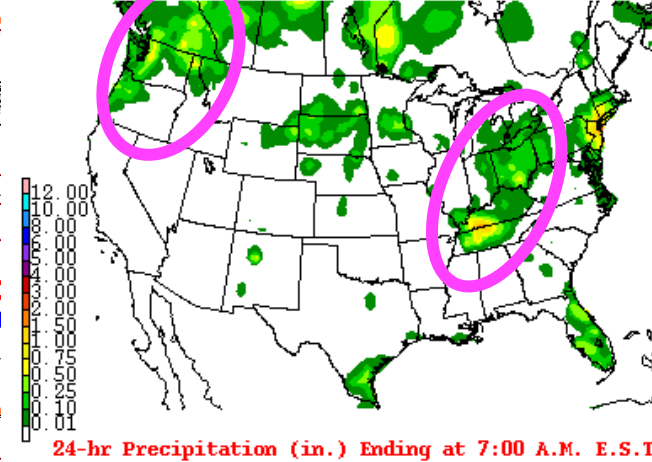
500-Millibar Height Contour at 7:00 A.M. E.S.T.

Surface Weather



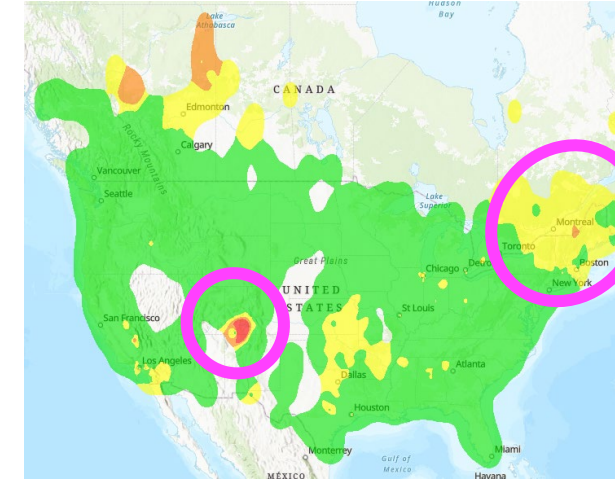
Surface Weather Map at 7:00 A.M. E.S.T.

Precipitation

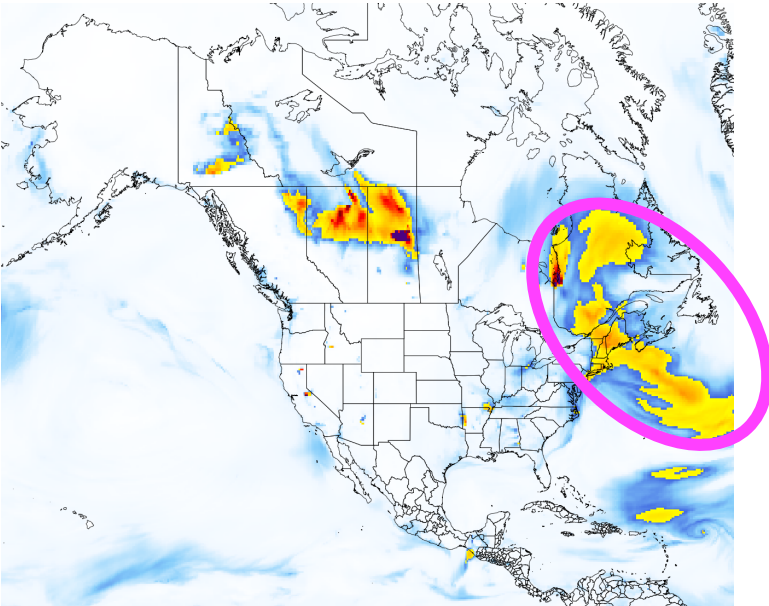


24-hr Precipitation (in.) Ending at 7:00 A.M. E.S.T.

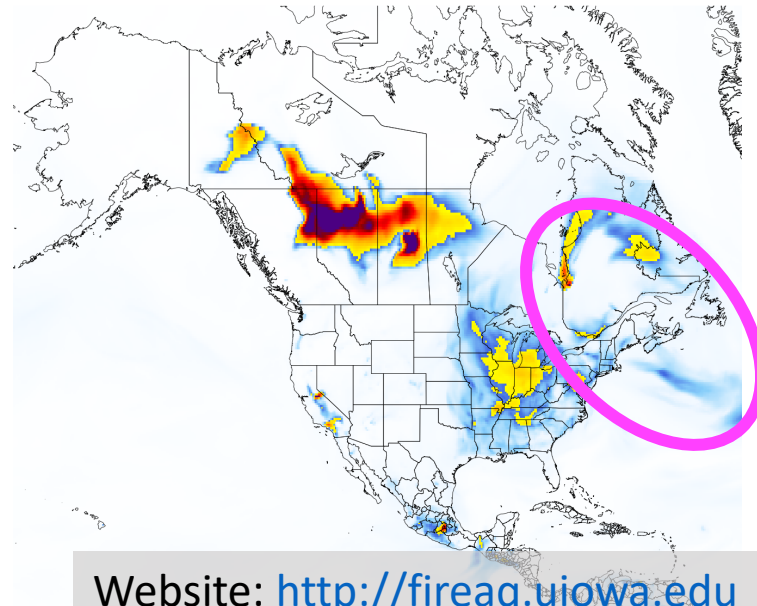
AirNow PM_{2.5} AQI



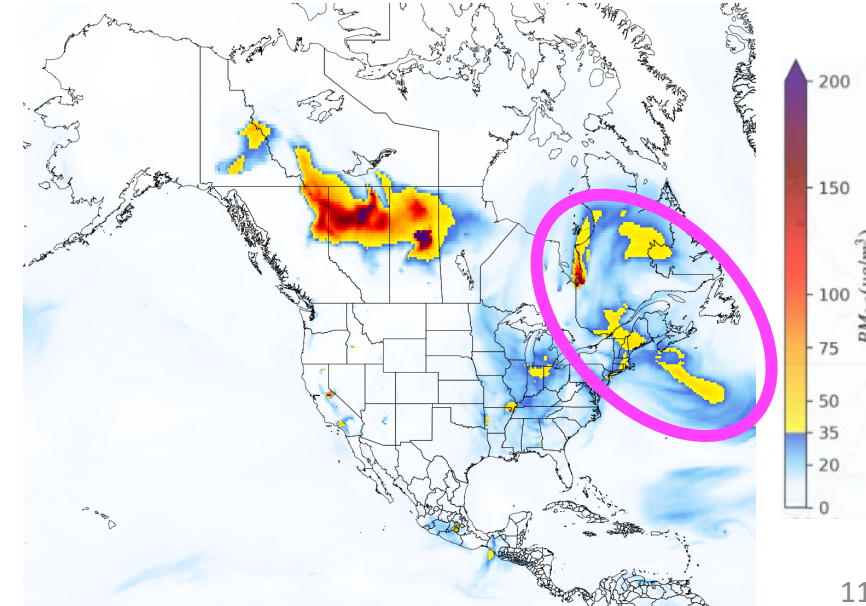
GEOS-FP



GEOS-CF



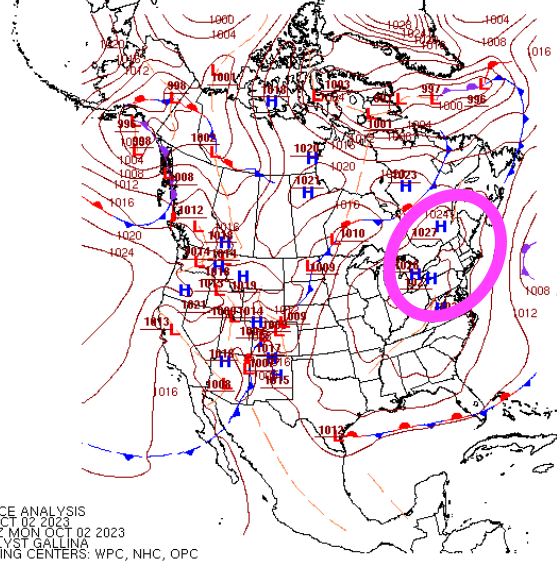
Ensemble (GEOS)



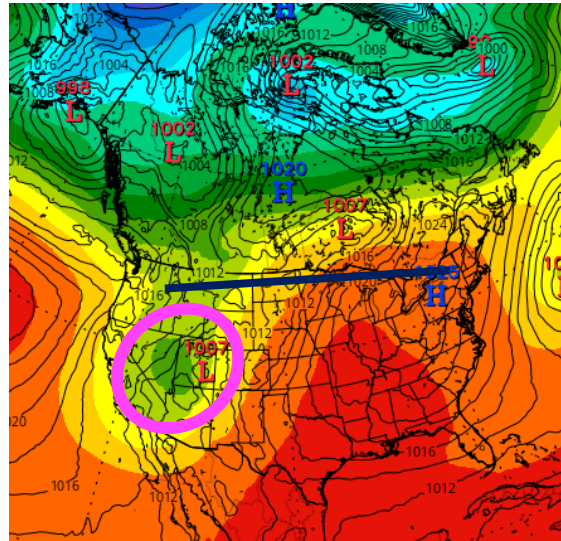
Website: <http://fireaq.uiowa.edu>

Current Status: October 2, 2023

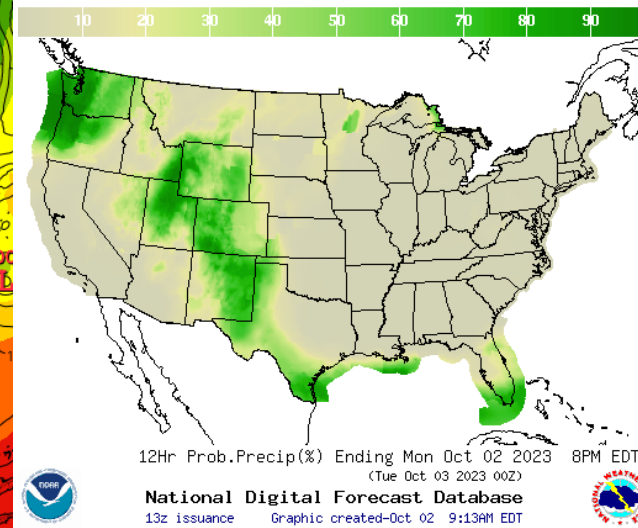
Surface Analysis



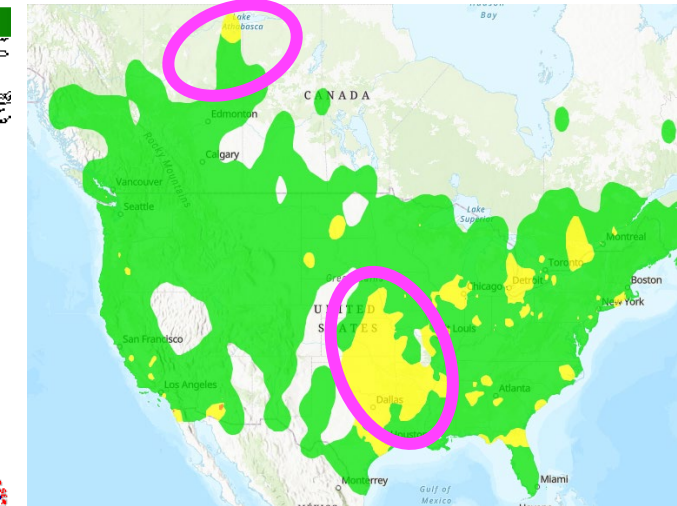
500 mb Contours



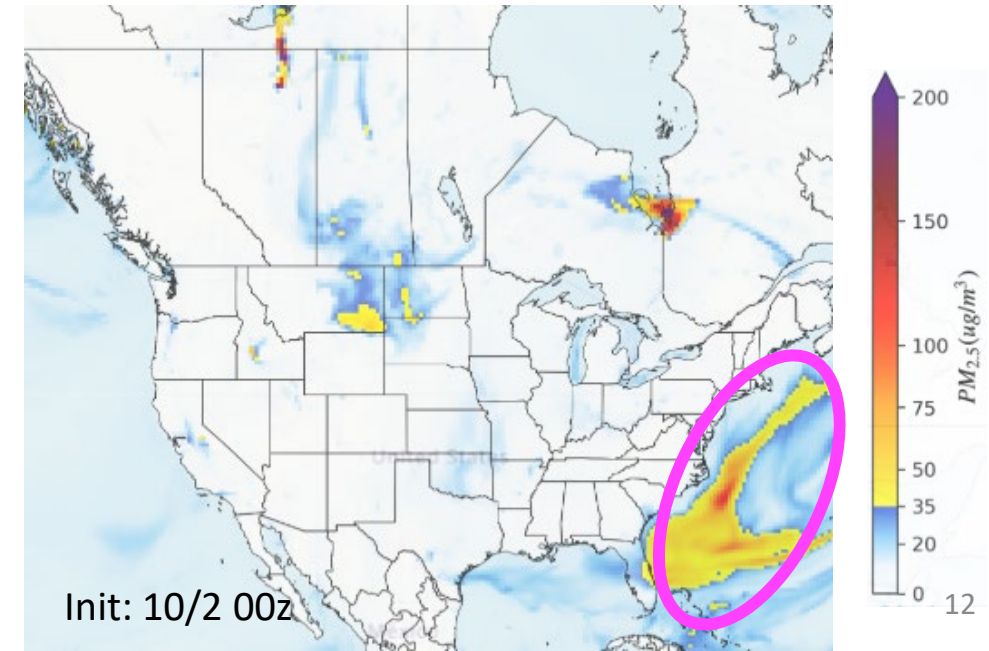
Precip. Prob.



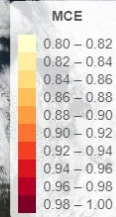
AirNow PM_{2.5} AQI



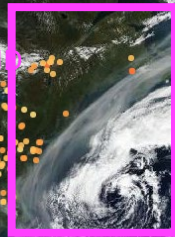
GEOS-FP 9/25 16 UTC PM_{2.5}



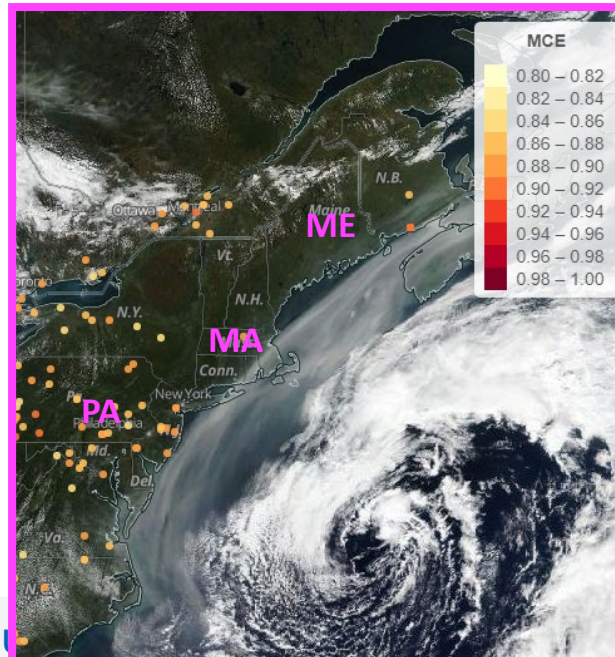
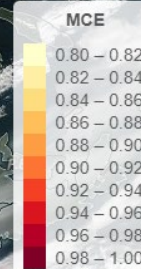
Sun 9/24



Alb.
WA MT N.Y.



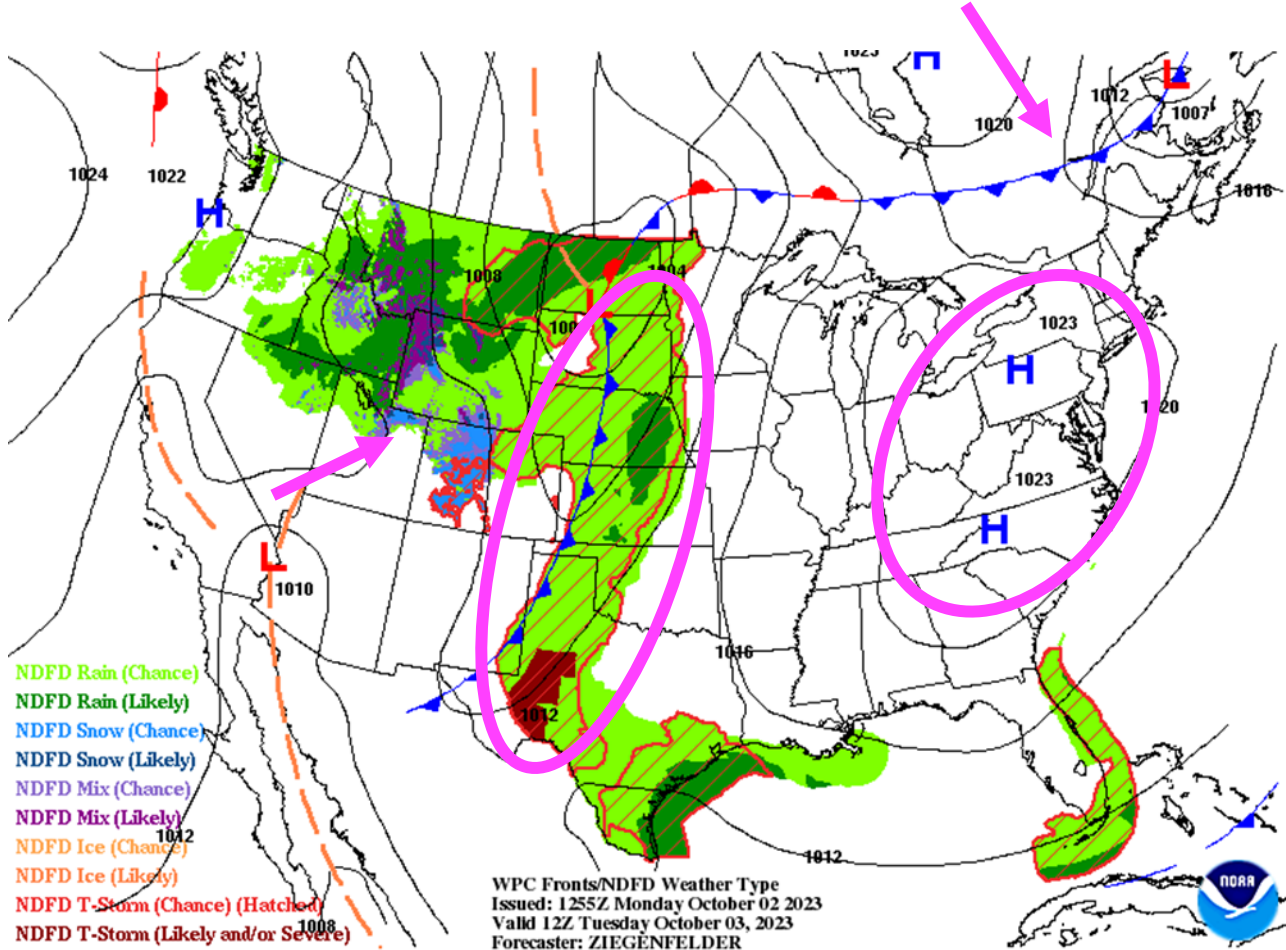
FILDA2 MCE <http://esmc.uiowa.edu>



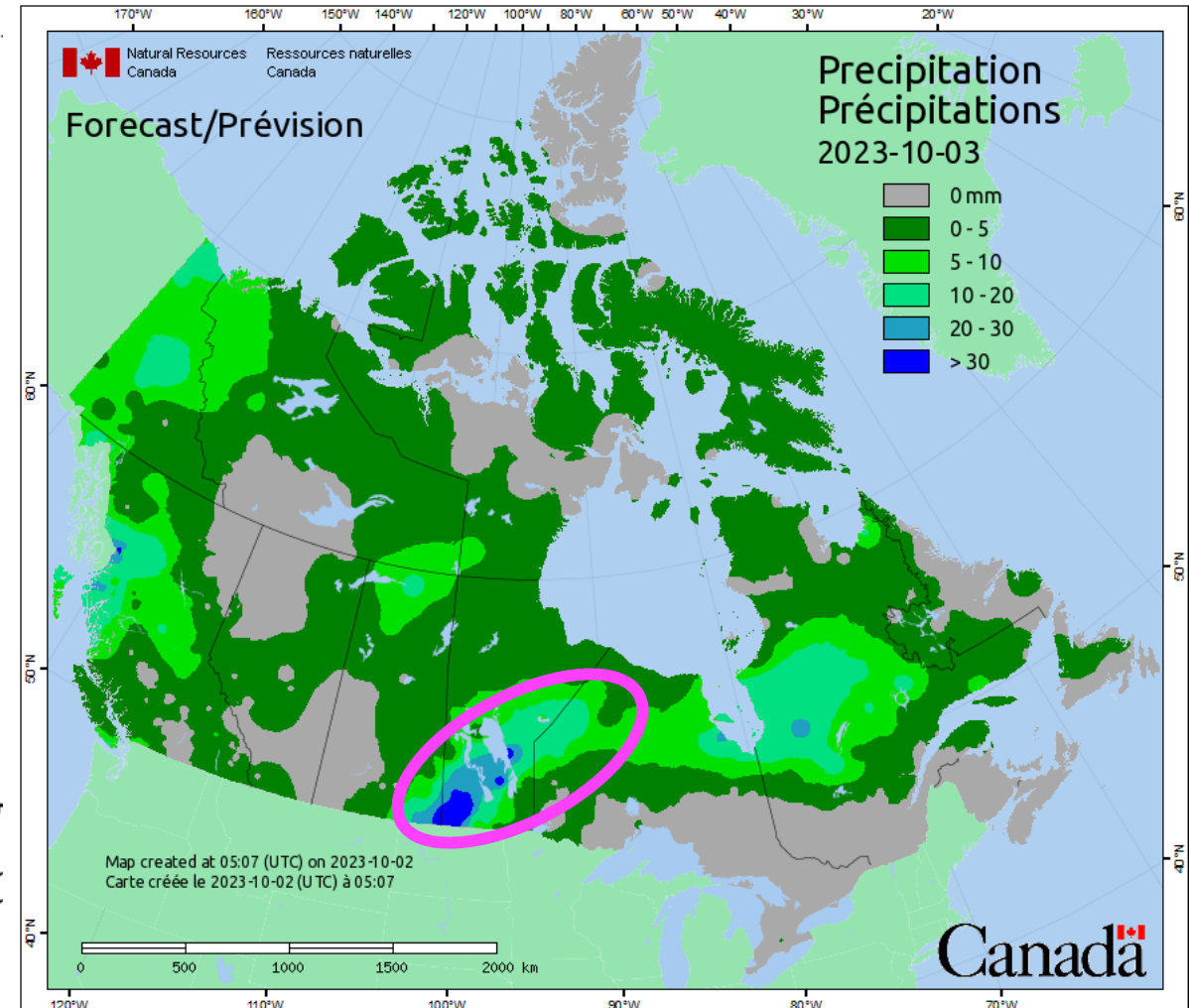
Outlook: Short Range (1–3 days)

Surface Forecast (Tuesday 10/3)

US NWS Forecast

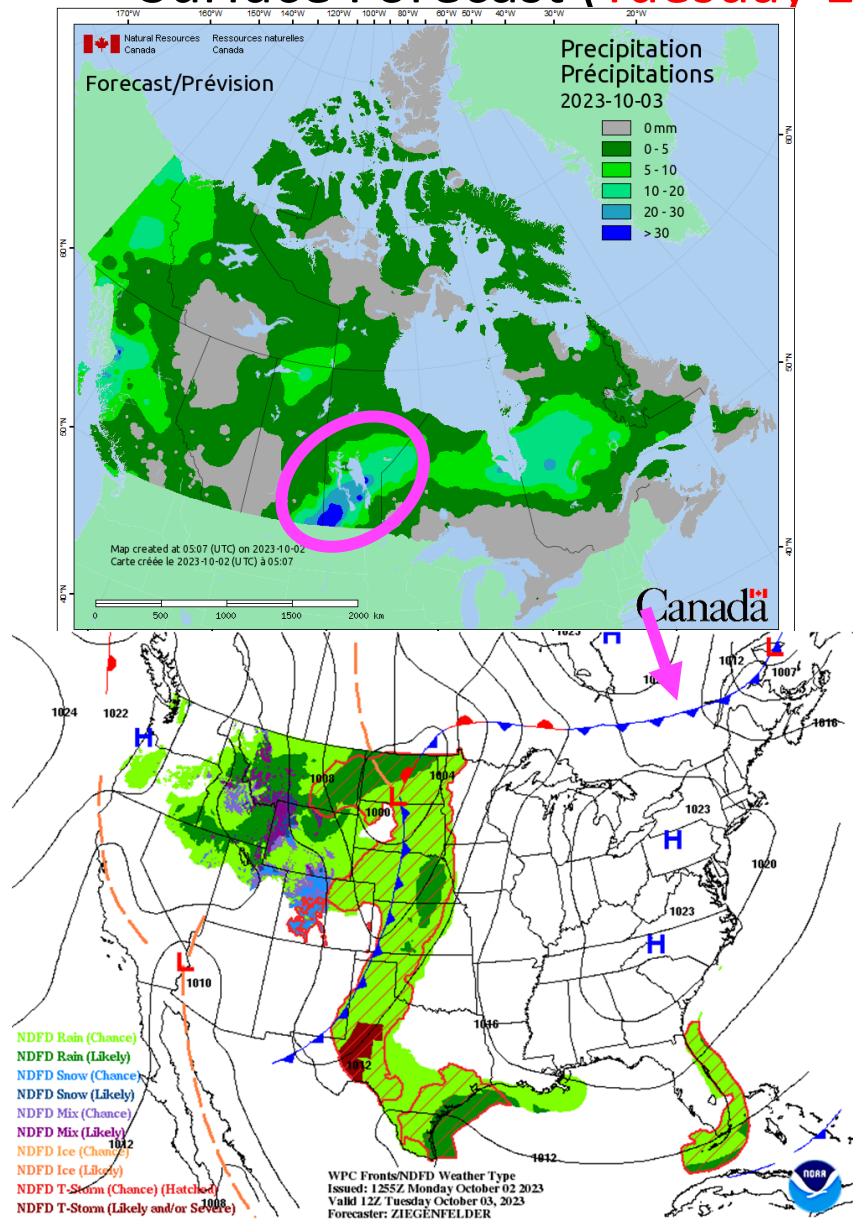


Environment Canada Forecast

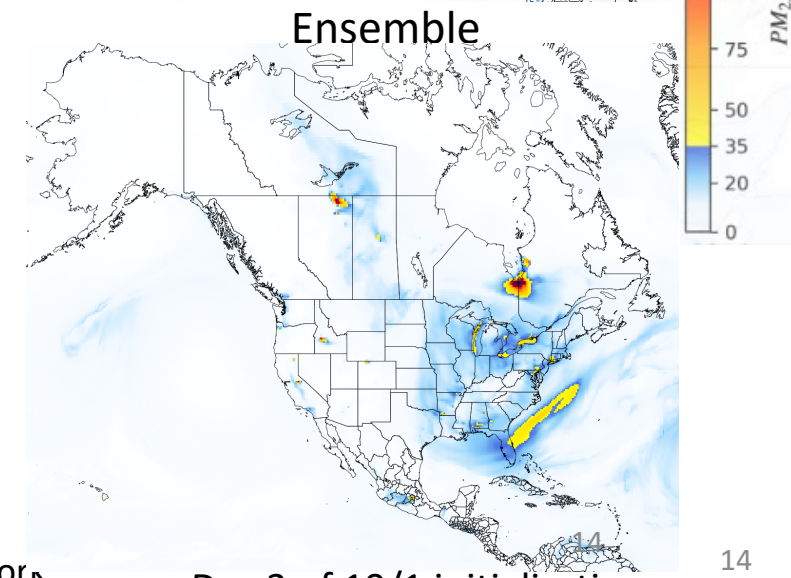
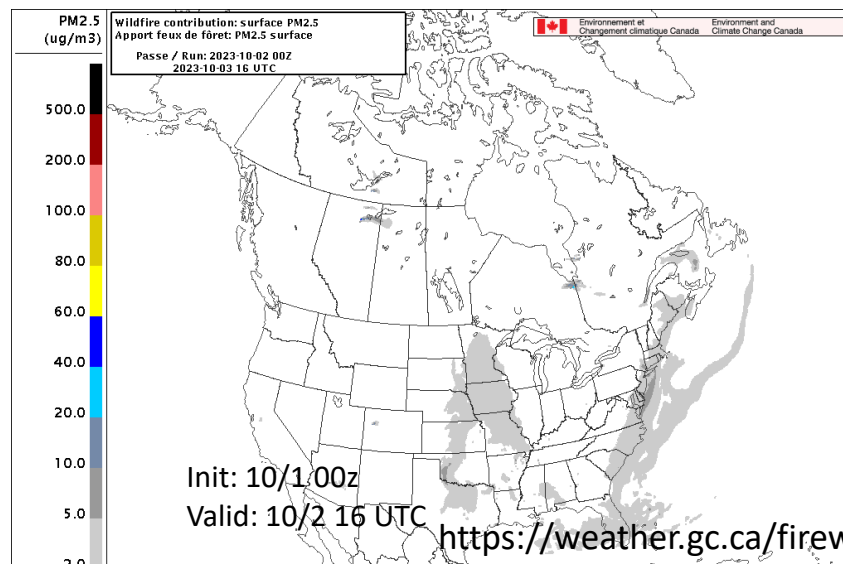
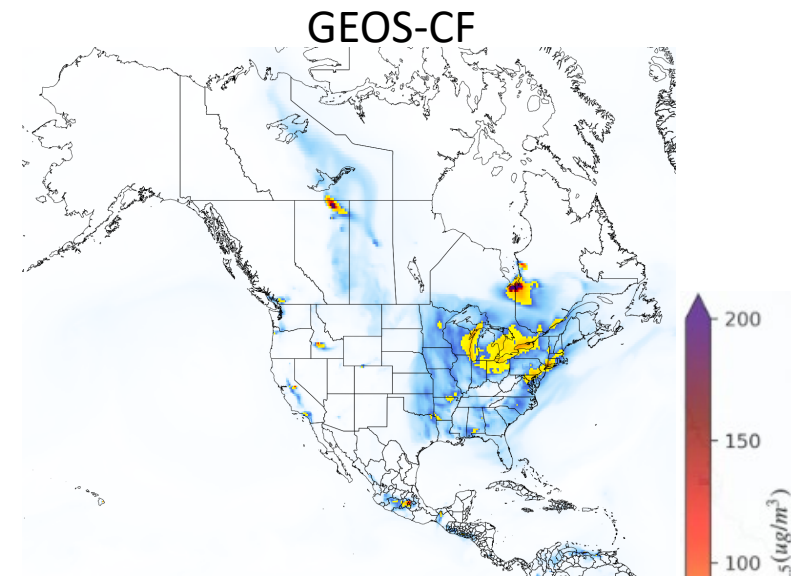
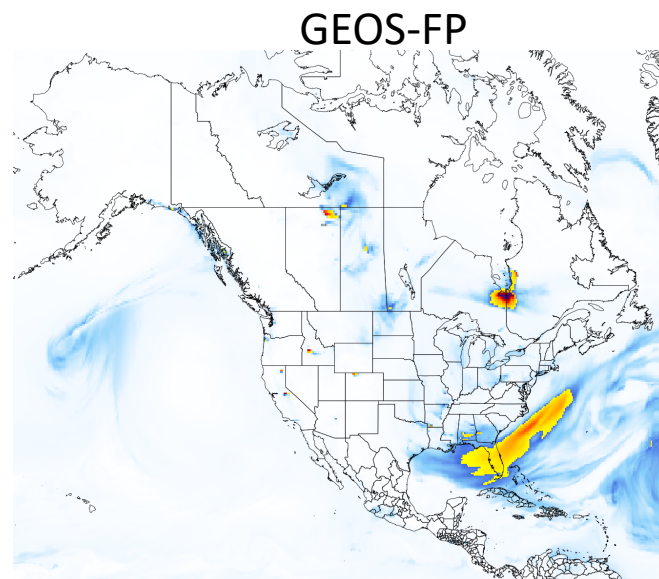


Outlook: Short Range (1–3 days)

Surface Forecast (Tuesday 10/3)



Model Means PM_{2.5} (Tues 10/3)

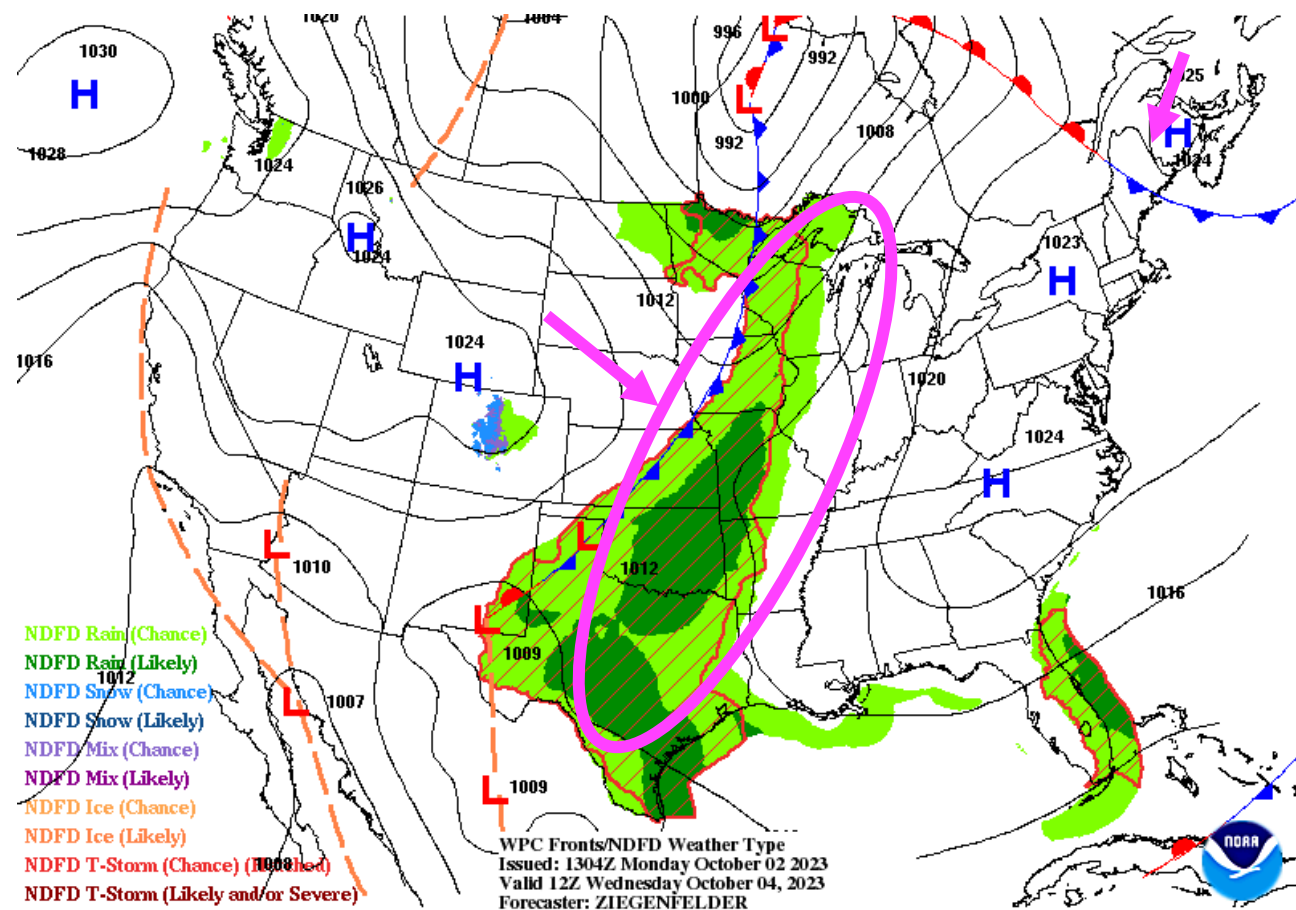


Day 3 of 10/1 initialization

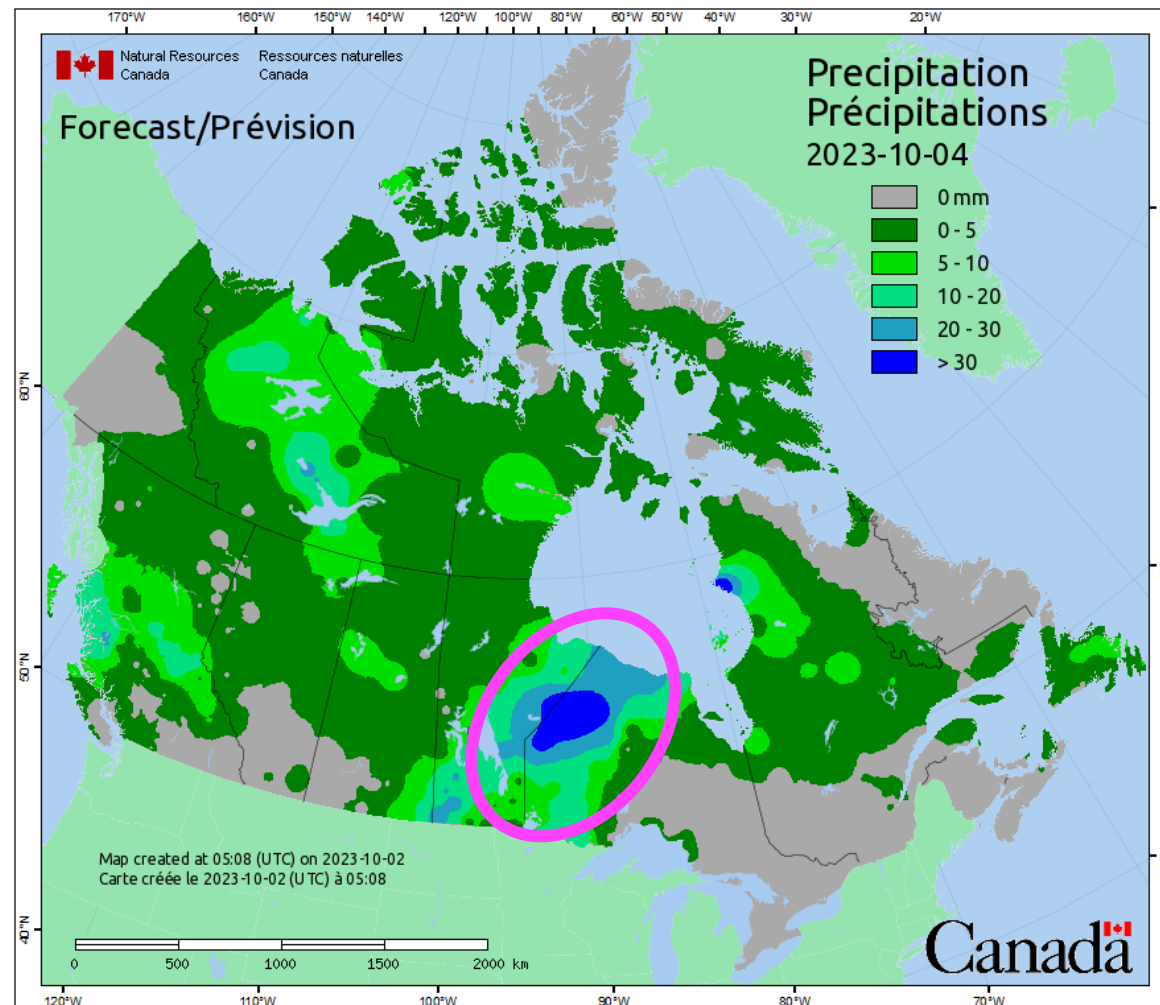
Outlook: Short Range (1–3 days)

Surface Forecast (**Wednesday 10/4**)

US NWS Forecast

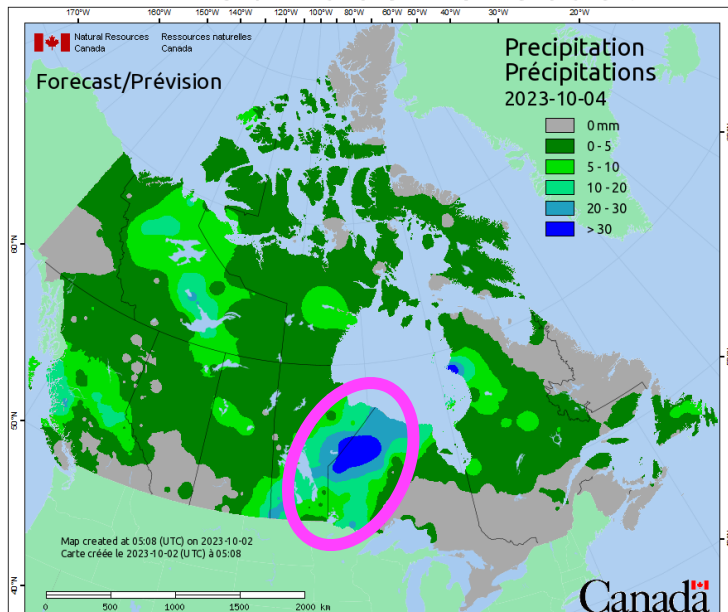


Environment Canada Forecast

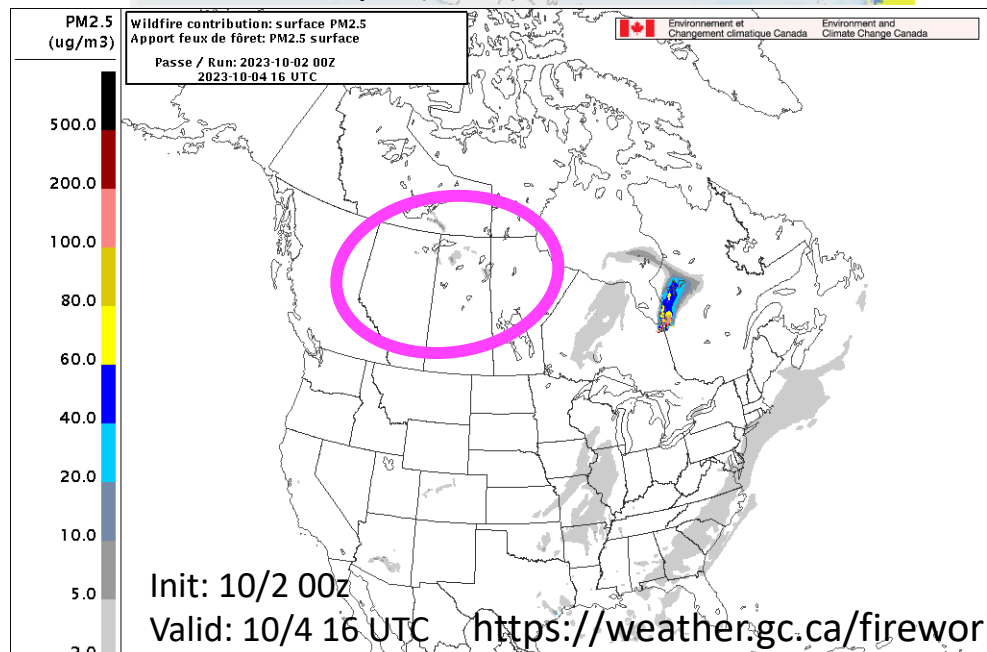
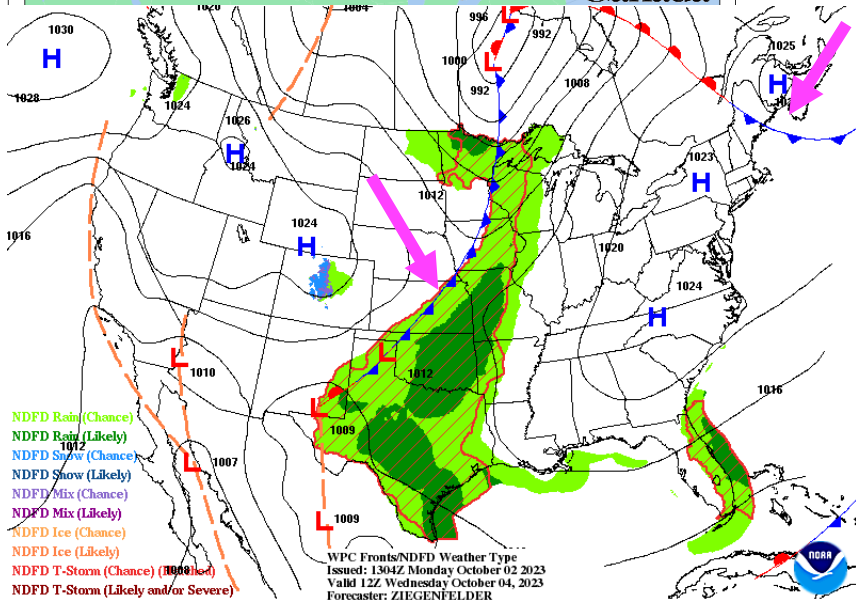
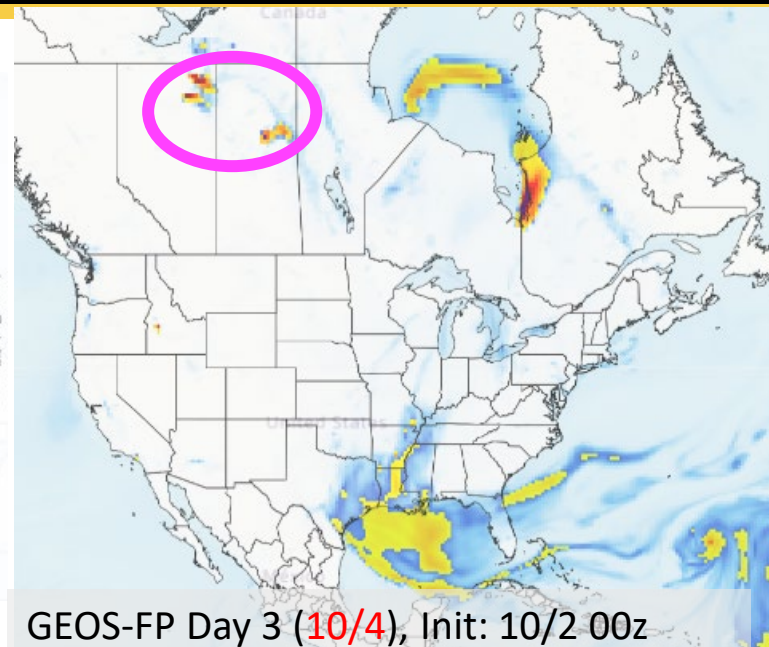
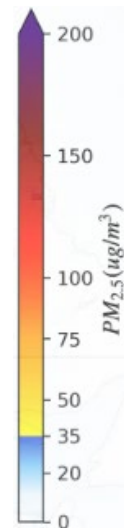


Outlook: Short Range (1–3 days)

Surface Forecast



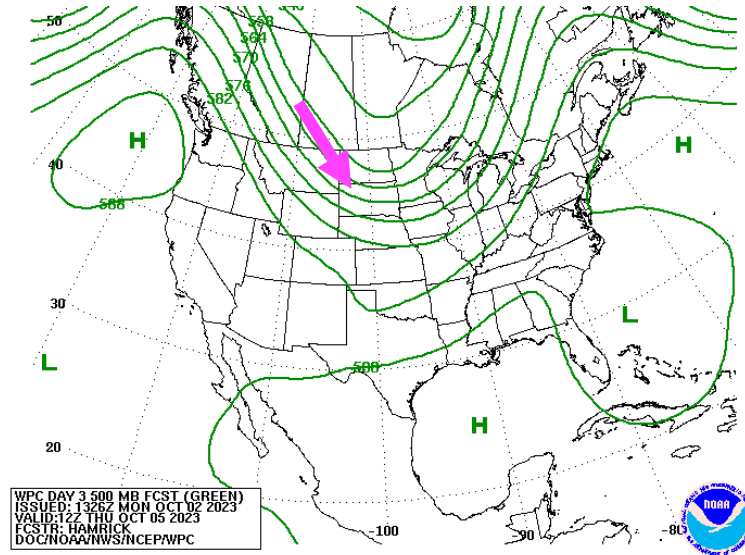
(Wednesday 10/4)



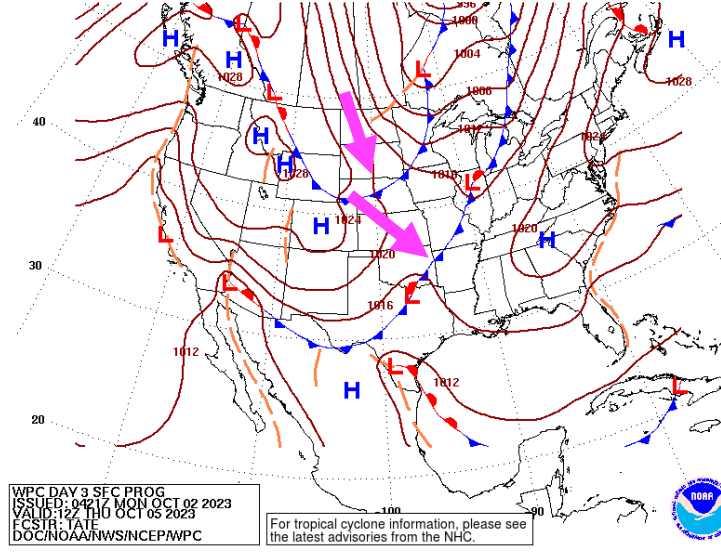
Outlook: Medium Range

Thursday
10/5

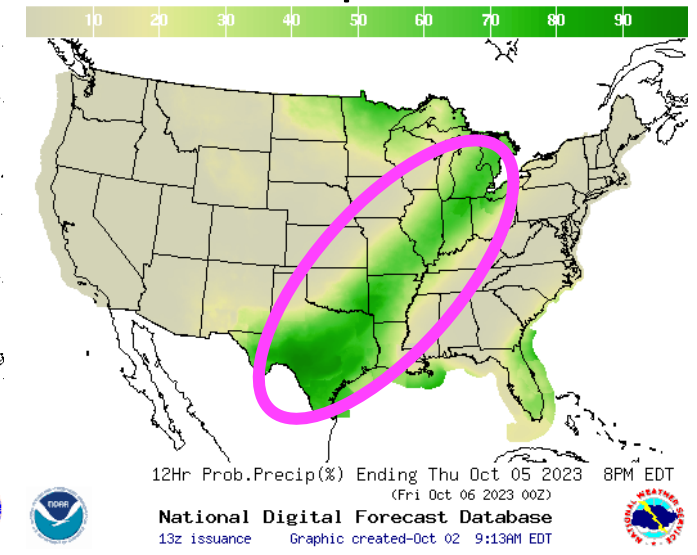
500 hPa Contours



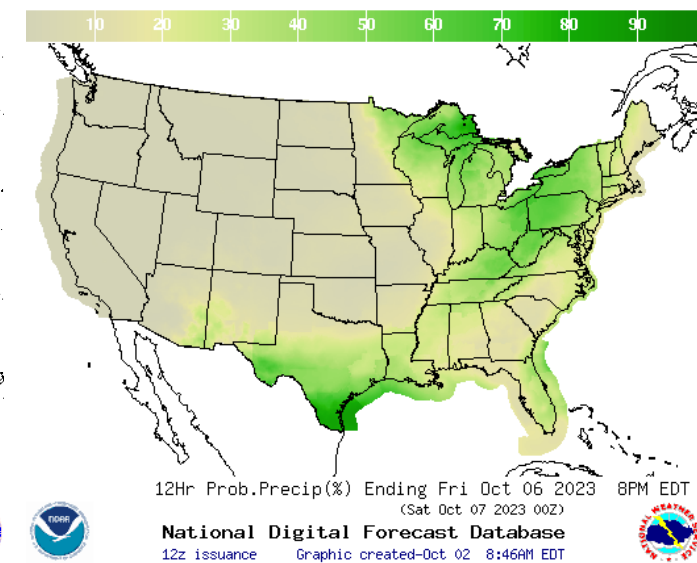
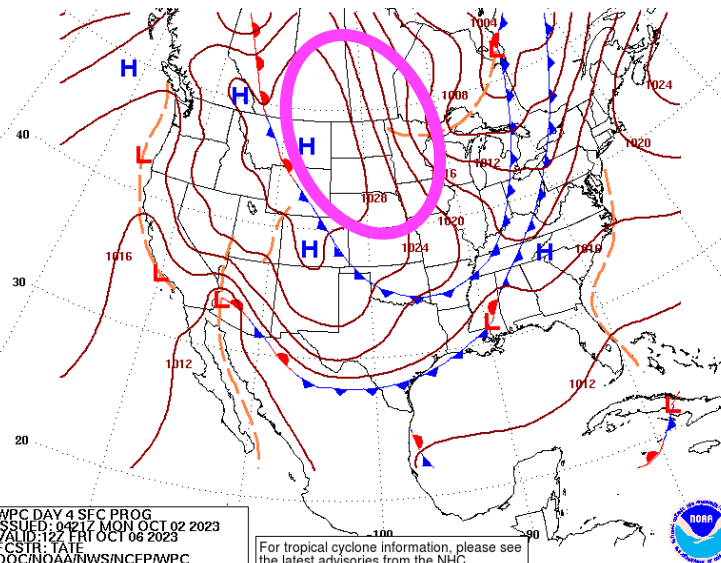
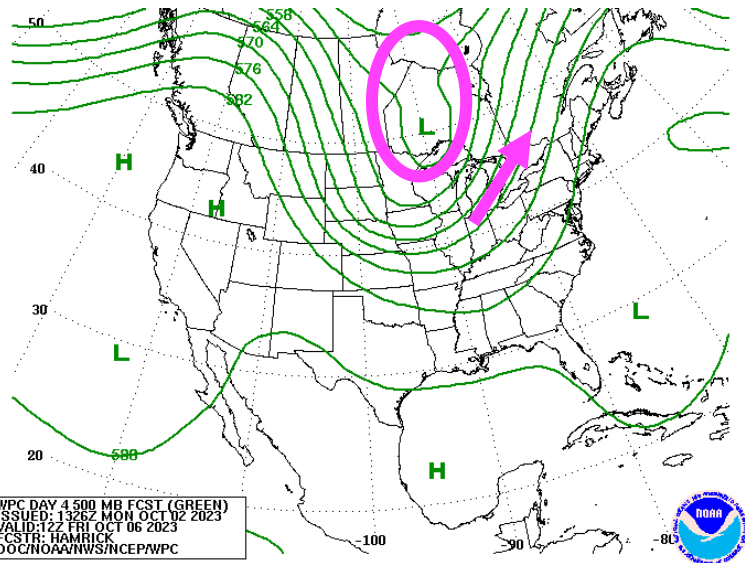
Sea Level



Precip Prob.



Friday
10/6



Summary

Monday : In general, the US air quality is not being impacted by wildfire smoke. A few patches of moderate air quality are present in the Central and Eastern US.

M → W : Likely chances of rain ahead of the cold front in the Central US and snow in the Northwestern US. Canadian wildfires are predicted to subside. However, aged smoke off shore the east coast is forecasted to be transported back on shore in the southern US and potentially have a moderate impact to air quality in the region.

Th → F: Forecasted low pressure aloft with strong winds over Canada and northern US coupled with a high pressure system at the surface could transport smoke into the US if any wildfires were to begin.

