

Weather and Air Quality: Reflection and Outlook During Smoke Conditions

Presenter: Megan Christiansen
Date: September 25, 2023

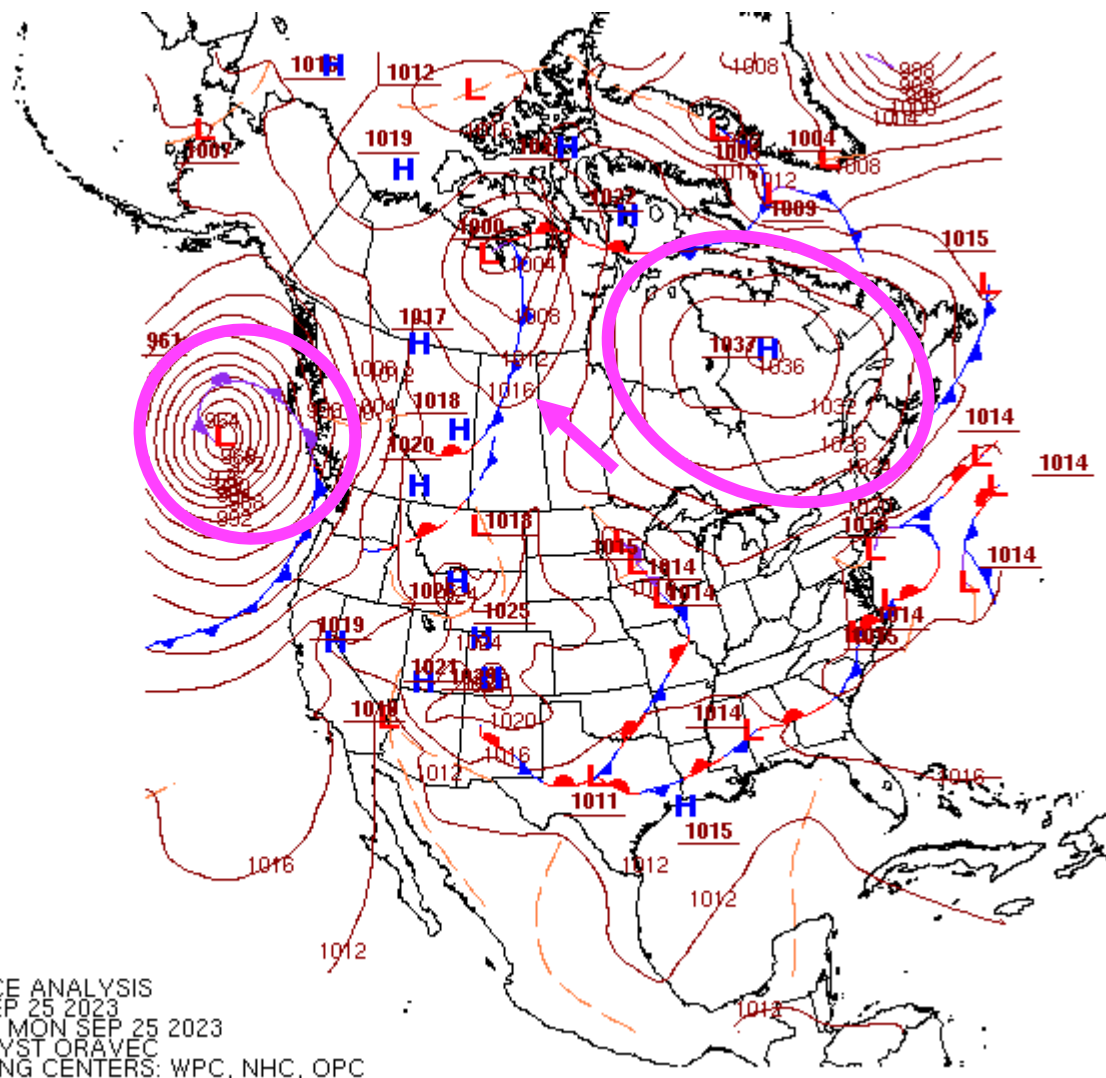


FireAQ is funded by NASA HAQ. We thank NASA GMAO and
NRL for the model data products.

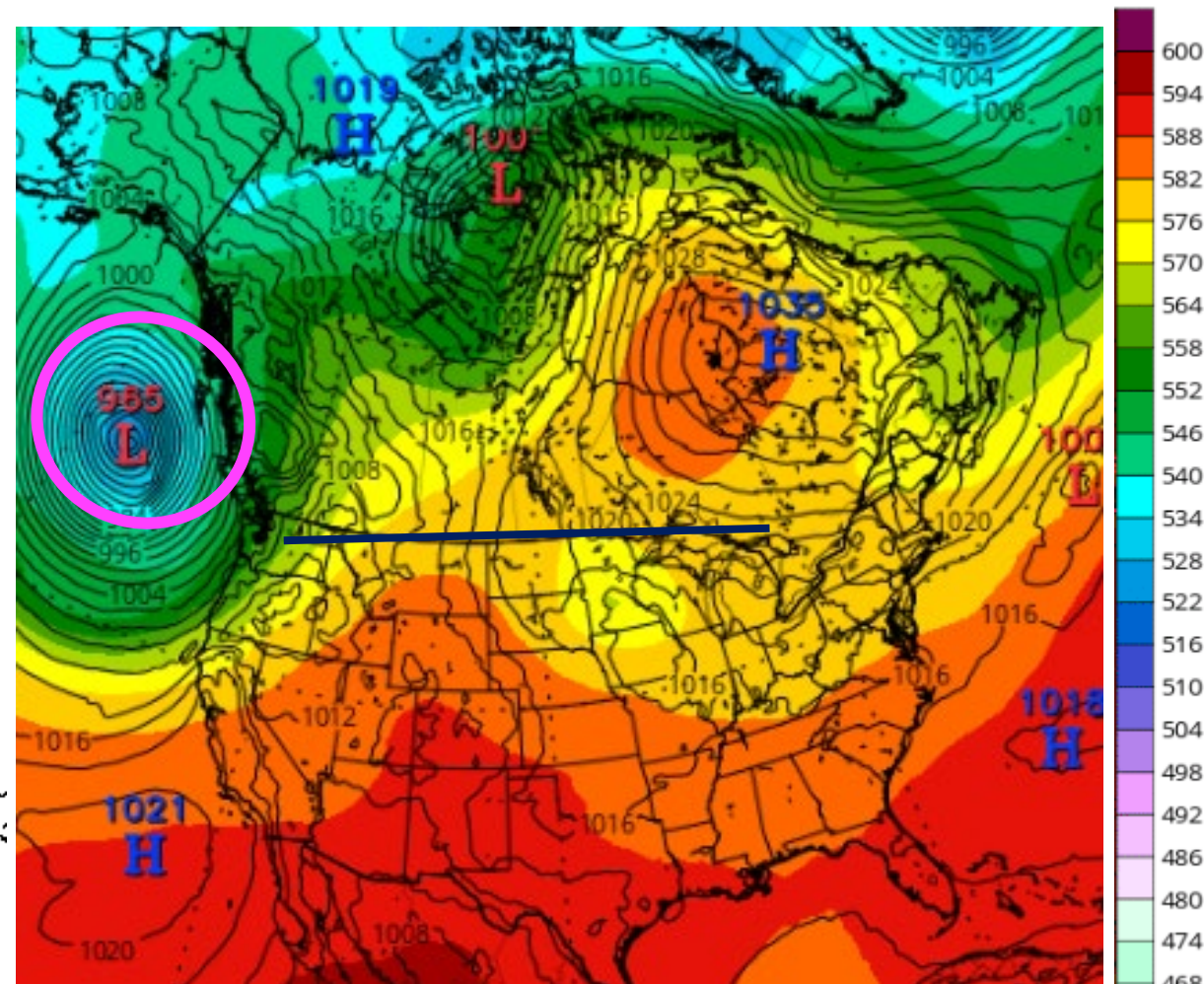
EARTH SCIENCE
APPLIED SCIENCES

Current Status: September 25, 2023

Surface Analysis



500 mb Contours

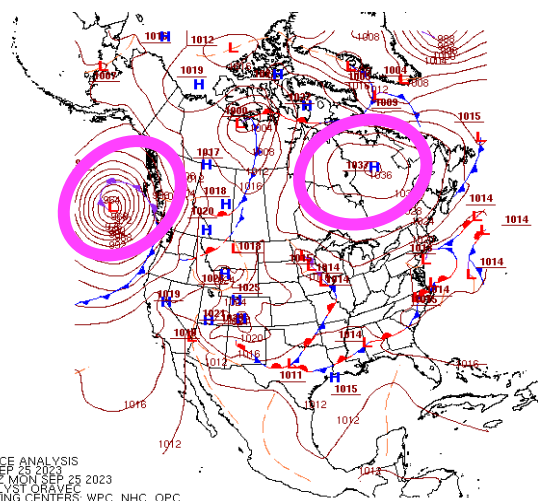


GFS 500mb Geopotential Height (dam) & MSLP (mb)

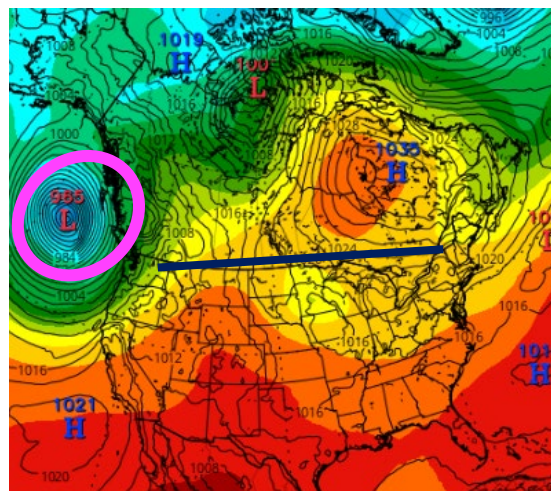
Init: 06z Sep 25 2023 Forecast Hour: [12] valid at 18z Mon, Sep 25 2023

Current Status: September 25, 2023

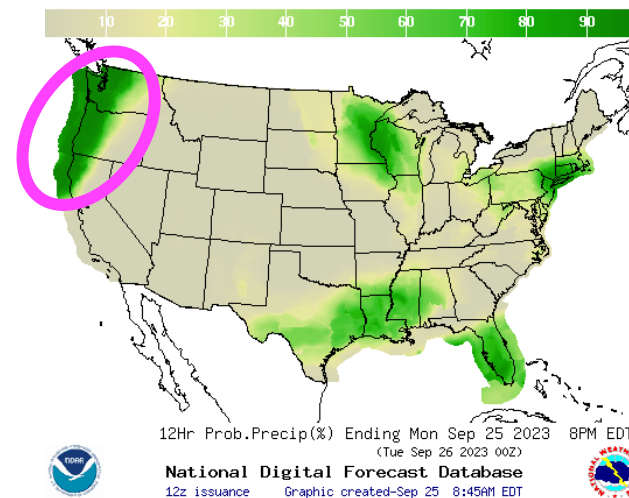
Surface Analysis



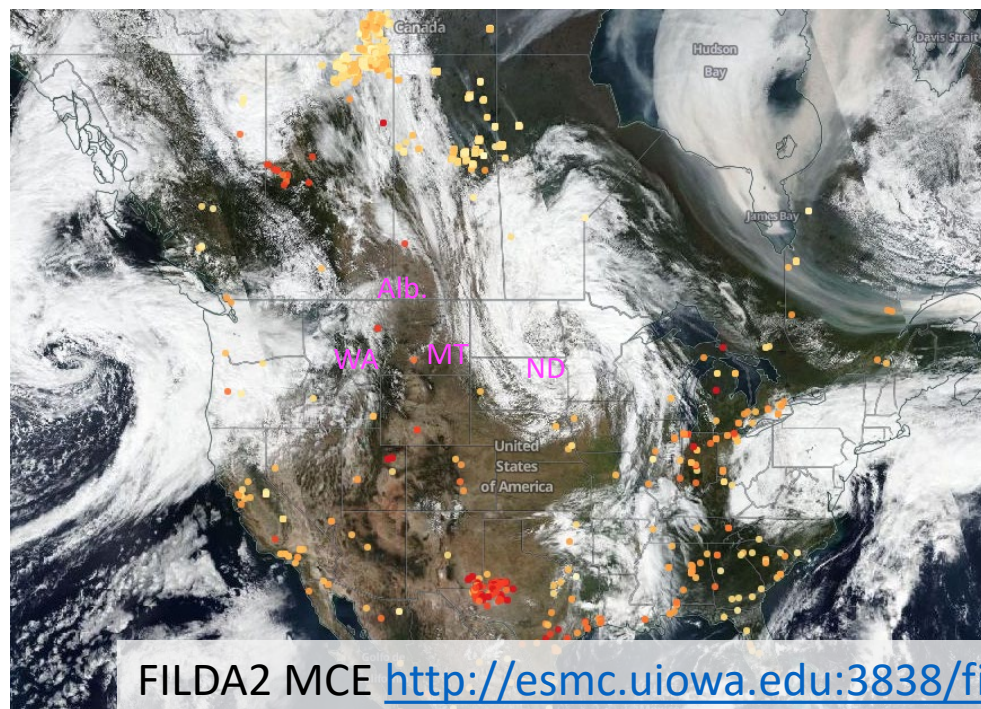
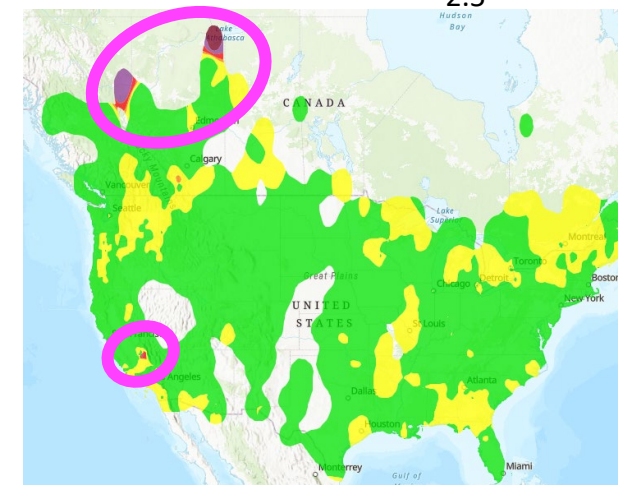
500 mb Contours



Precip. Prob.

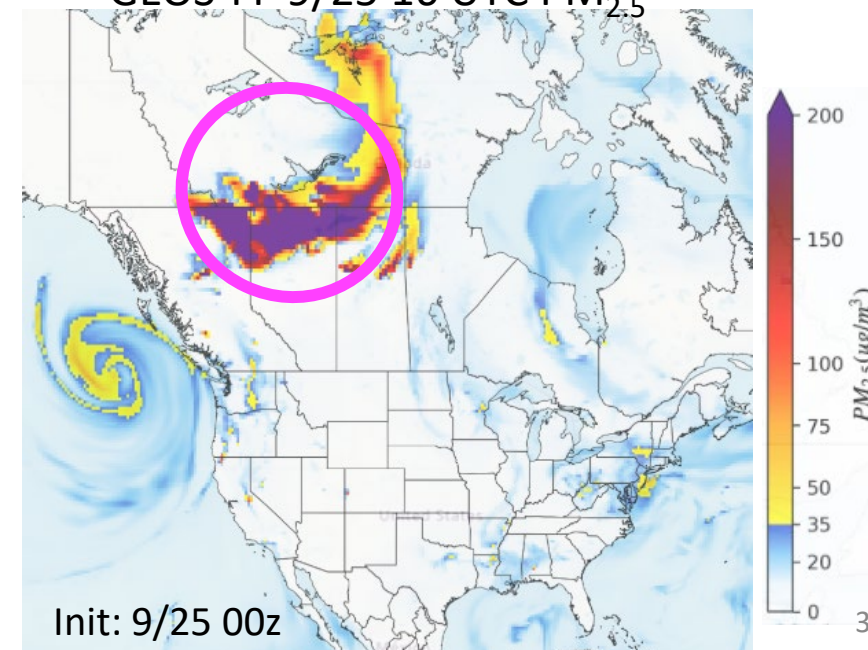


AirNow PM_{2.5} AQI



Sun 9/24

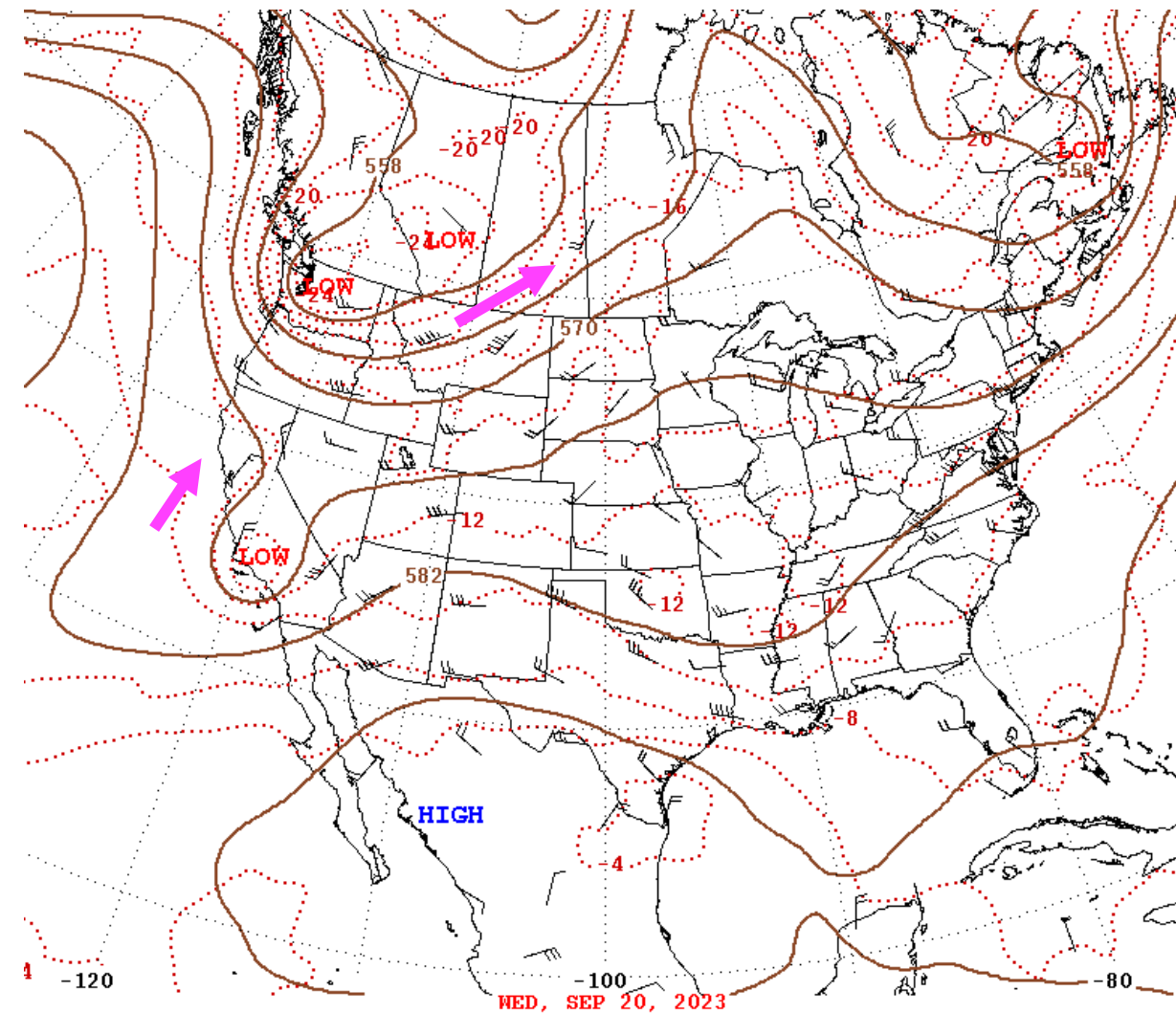
GEOS-FP 9/25 16 UTC PM_{2.5}



FILDA2 MCE http://esmc.uiowa.edu:3838/fires_detection/

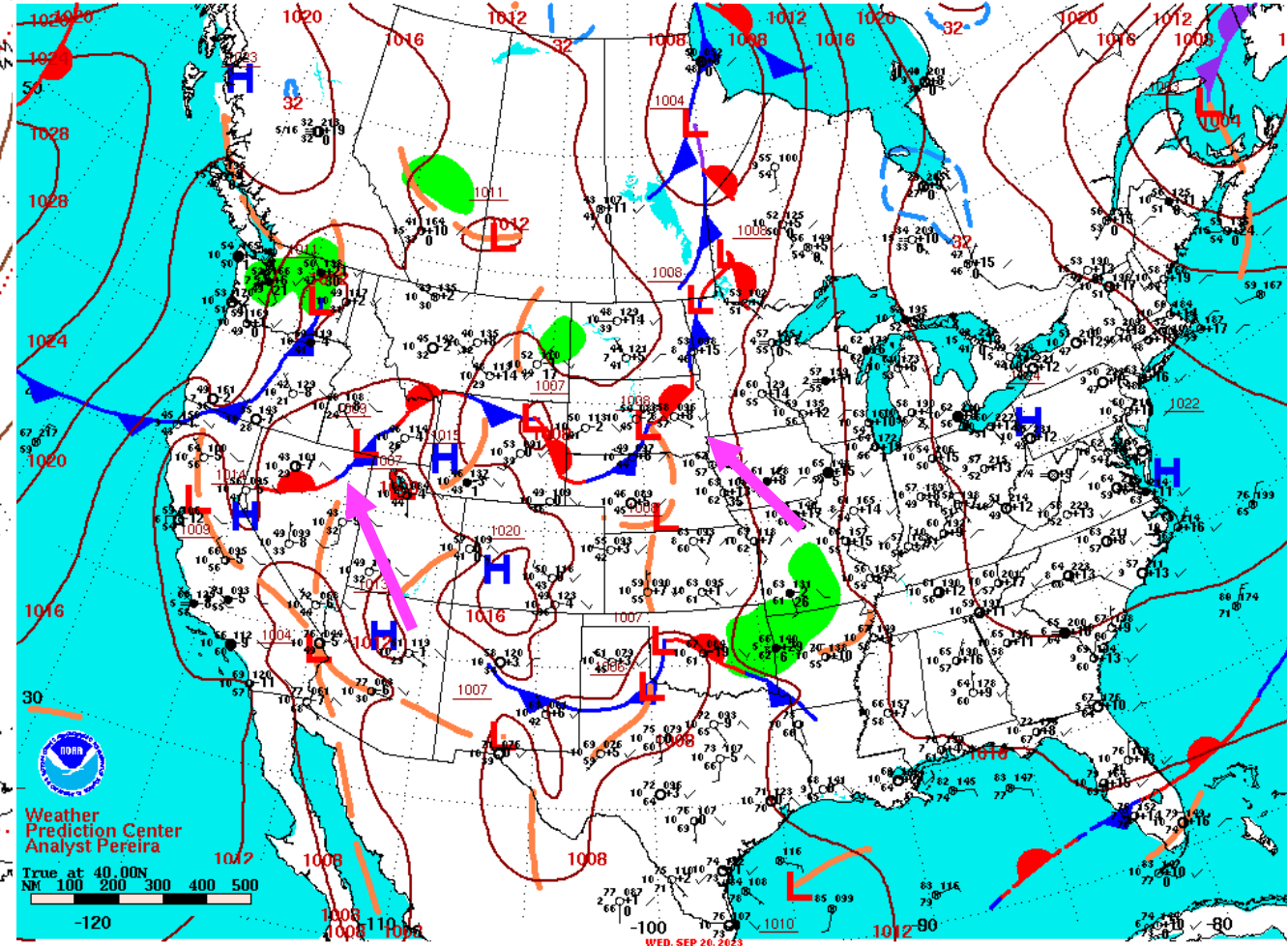
Air Quality Reflection: Wednesday Sept. 20, 2023

500 hPa Contours



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

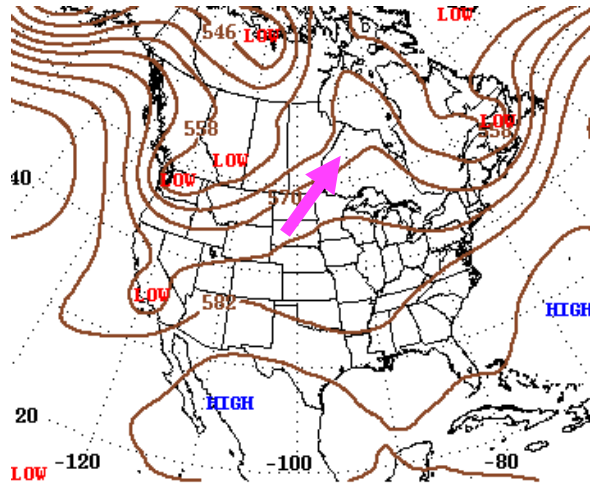
Surface Weather



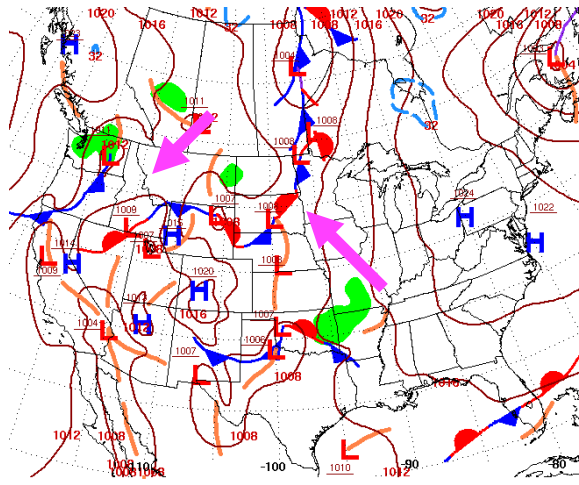
Surface Weather Map and Station Weather at 7:00 A.M. E.S.T.

Air Quality Reflection: Wednesday Sept. 20, 2023

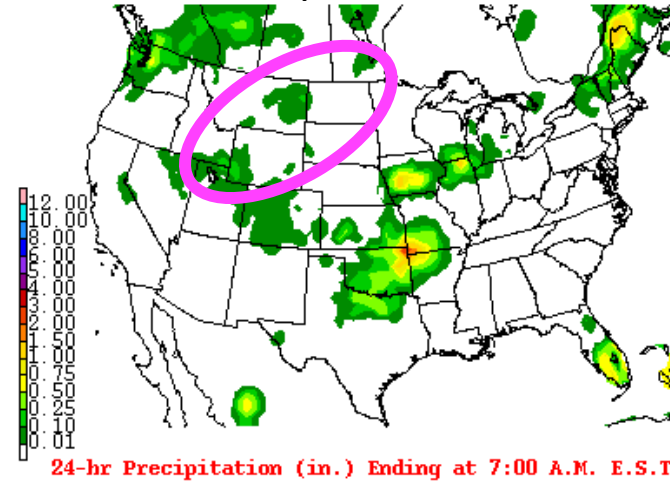
500 hPa Contours



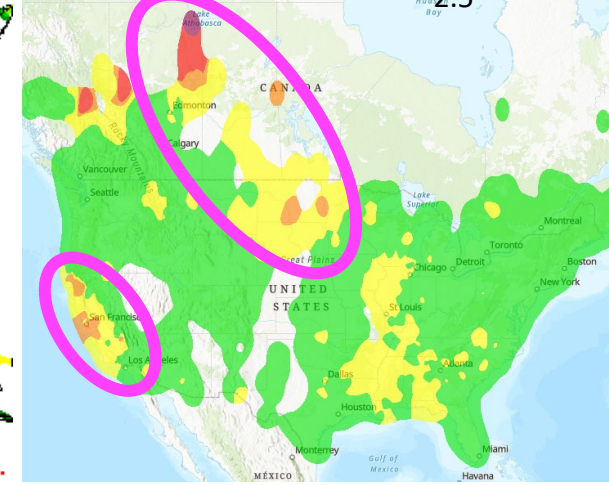
Surface Weather



Precipitation

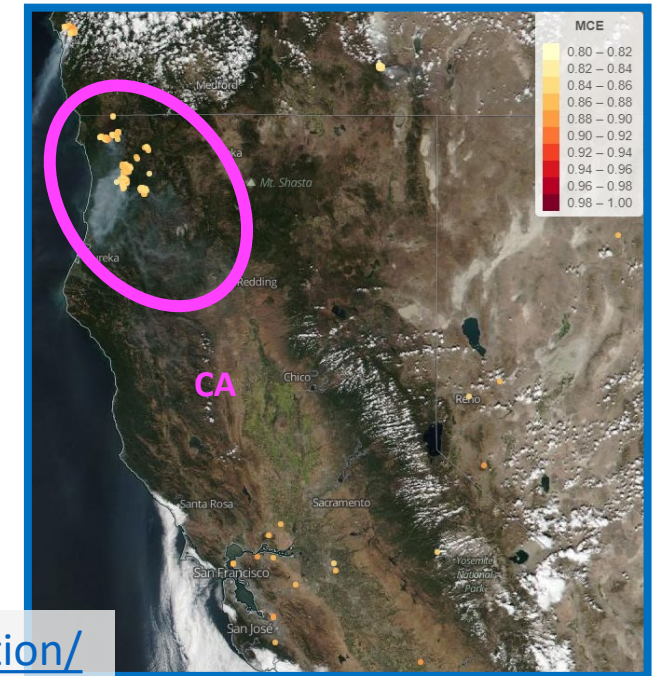
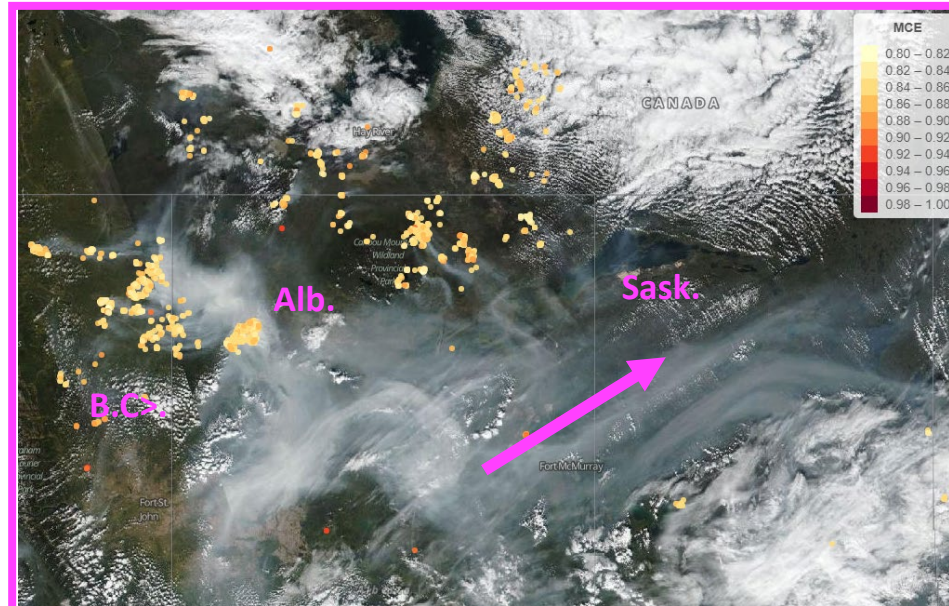
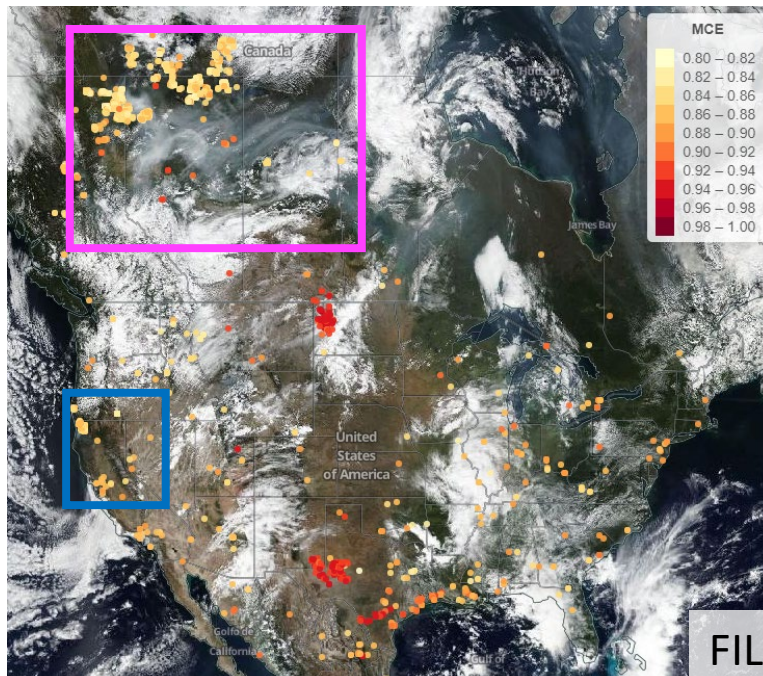


AirNow PM_{2.5} AQI



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

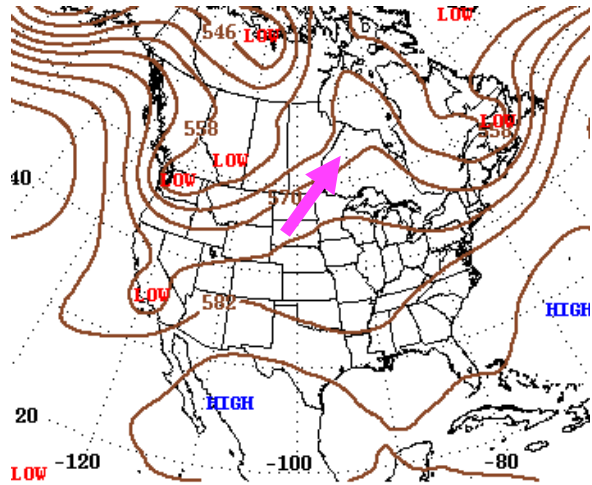
Surface Weather Map at 7:00 A.M. E.S.T.



FILDA2 MCE http://esmc.uiowa.edu:3838/fires_detection/

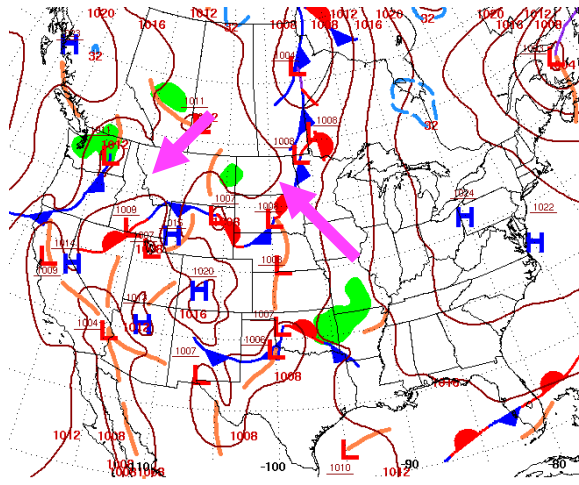
Air Quality Reflection: Wednesday Sept. 20, 2023

500 hPa Contours



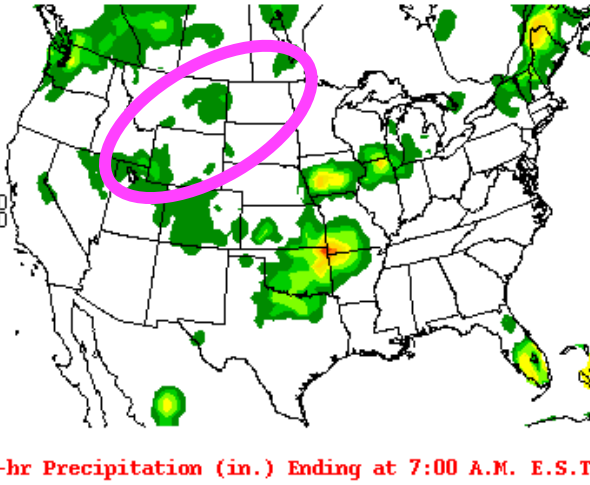
500-Millibar Height Contour at 7:00 A.M. E.S.T.

Surface Weather



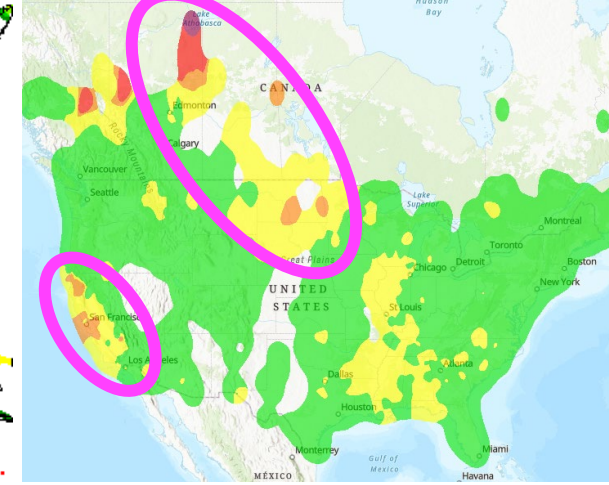
Surface Weather Map at 7:00 A.M. E.S.T.

Precipitation

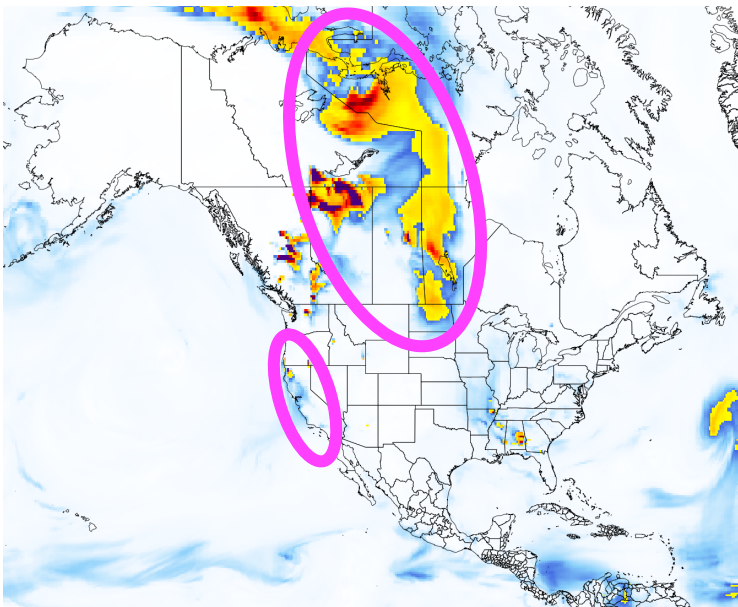


24-hr Precipitation (in.) Ending at 7:00 A.M. E.S.T.

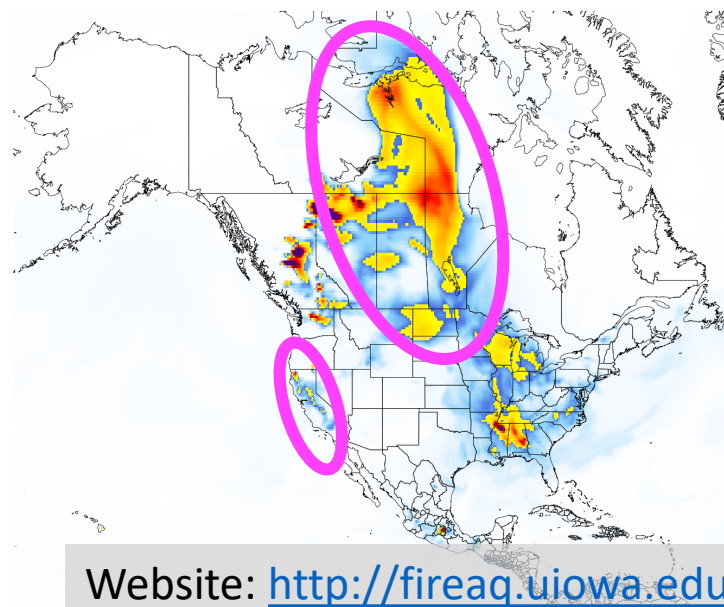
AirNow PM_{2.5} AQI



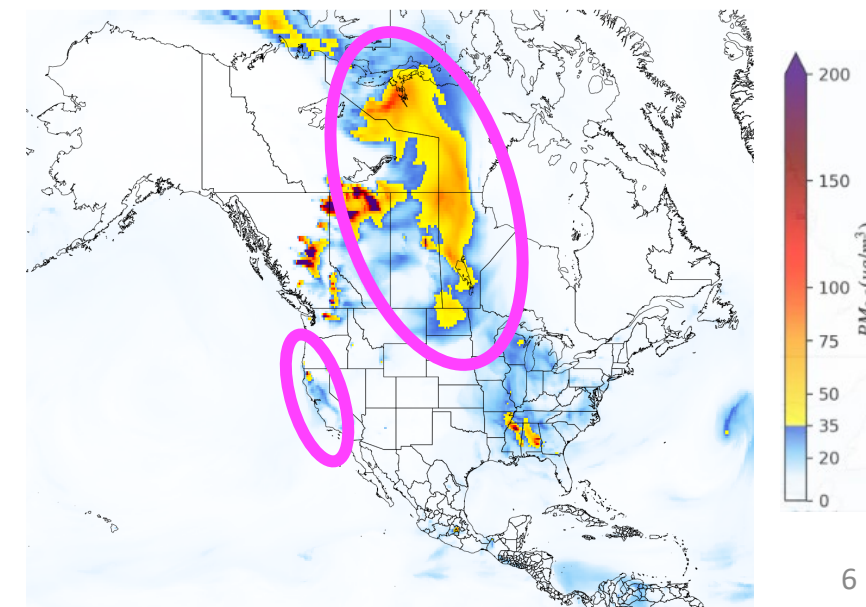
GEOS-FP



GEOS-CF



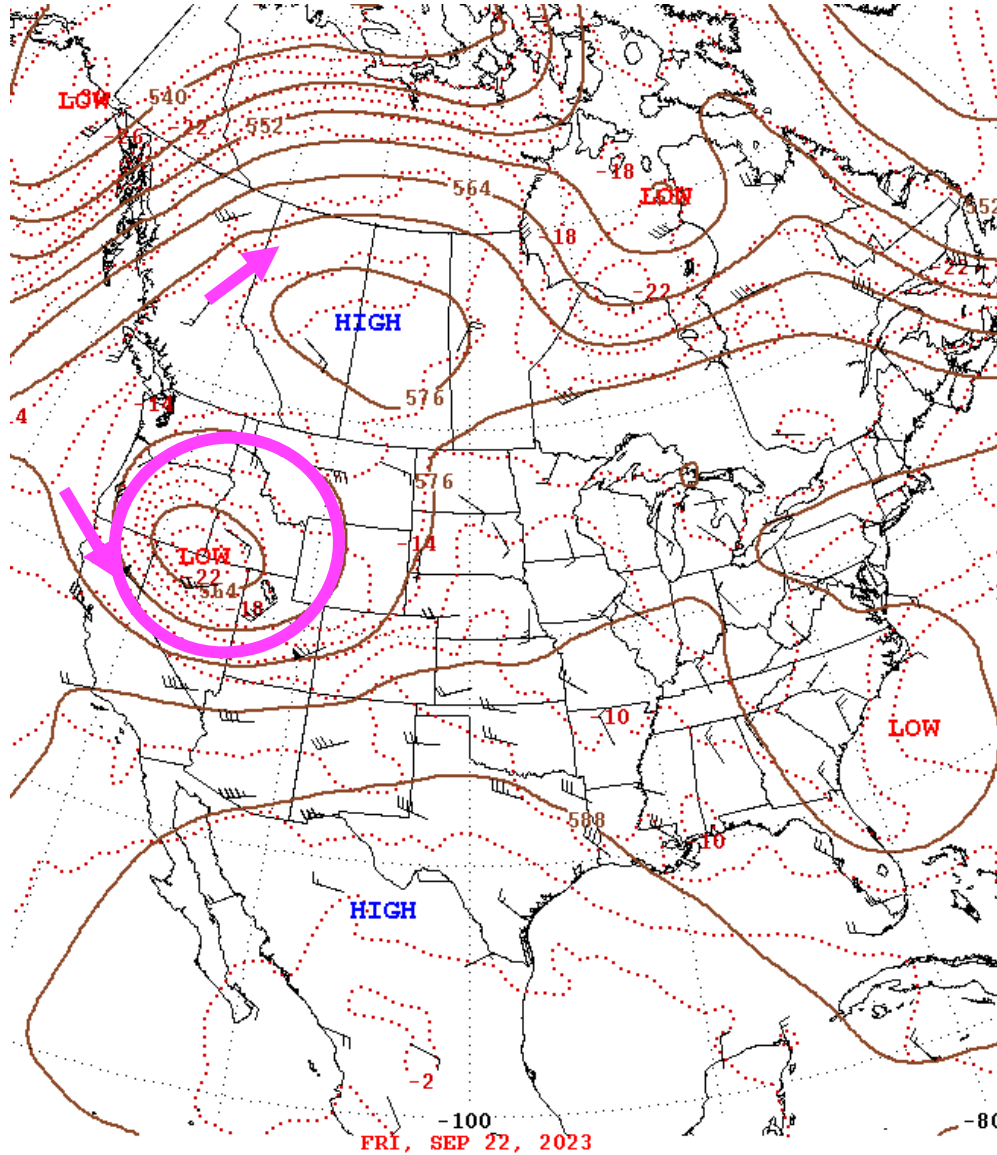
Ensemble (GEOS)



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

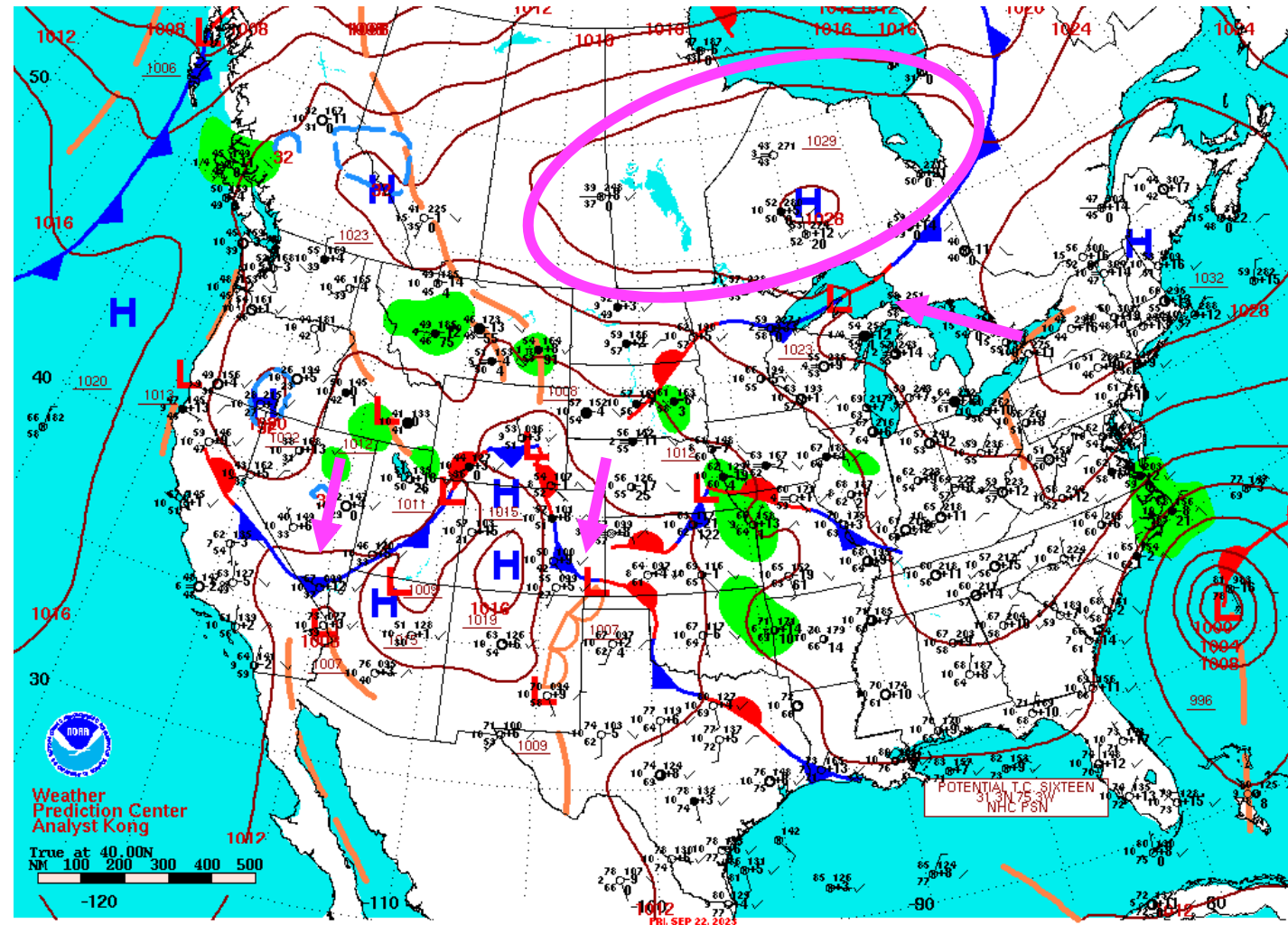
Air Quality Reflection: Friday Sept. 22, 2023

500 hPa Contours



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

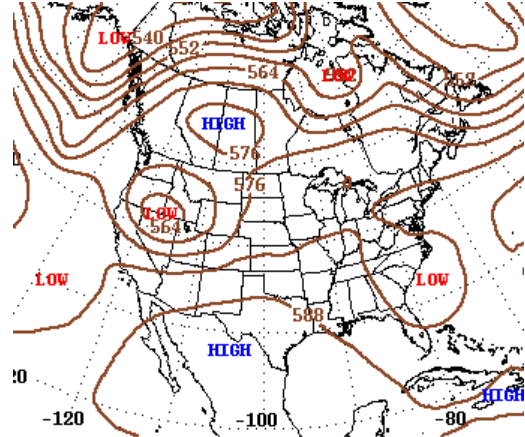
Surface Weather



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

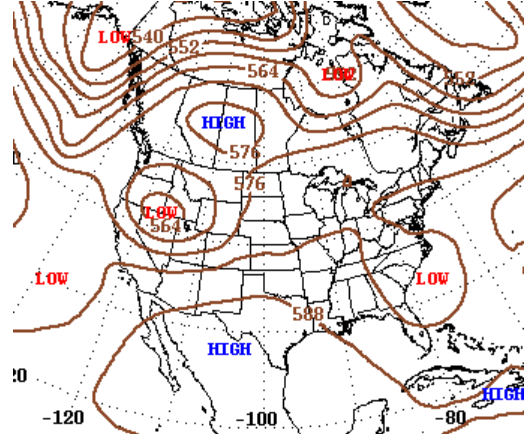
Air Quality Reflection: Friday Sept. 22, 2023

500 hPa Contours



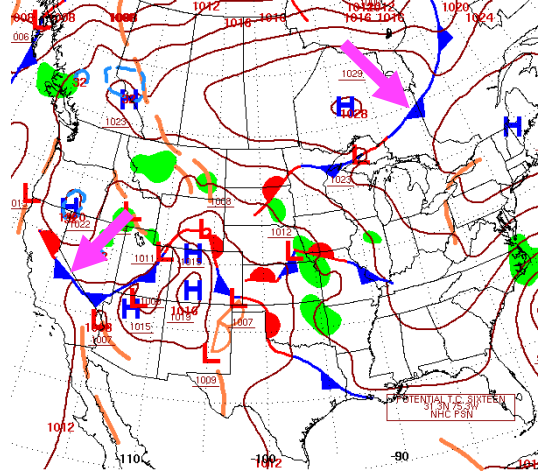
Air Quality Reflection: Friday Sept. 22, 2023

500 hPa Contours



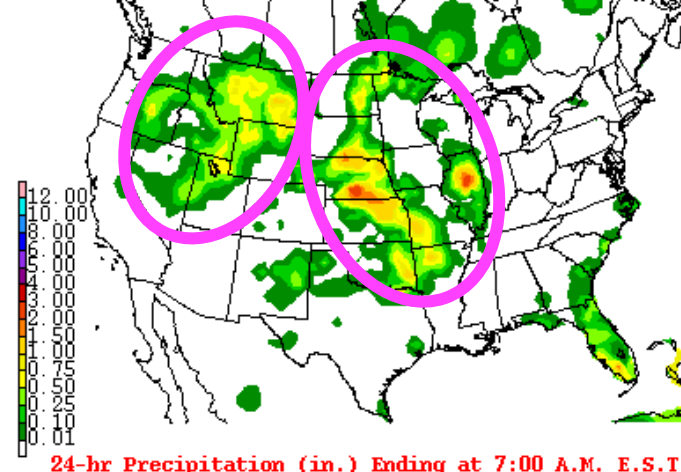
500-Millibar Height Contour at 7:00 A.M. E.S.T.

Surface Weather



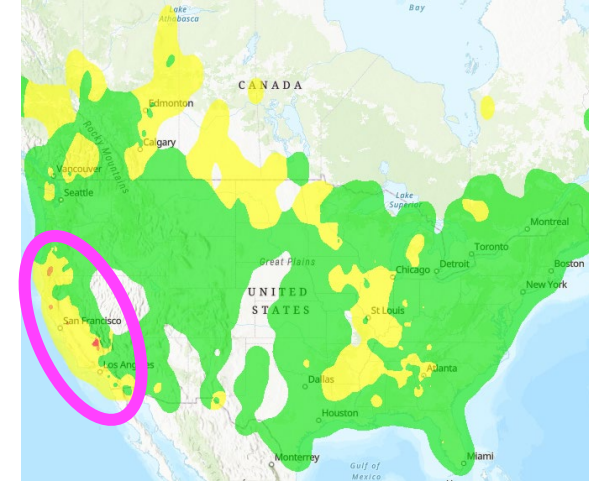
Surface Weather Map at 7:00 A.M. E.S.T.

Precipitation

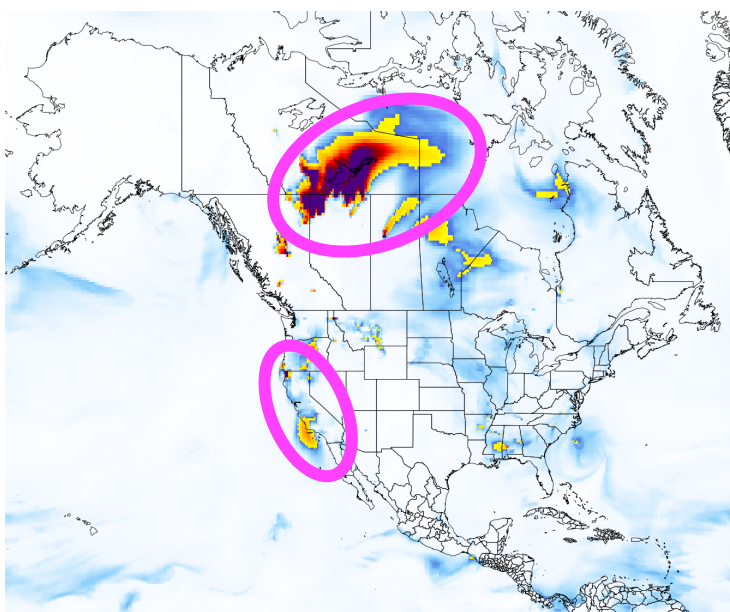


24-hr Precipitation (in.) Ending at 7:00 A.M. E.S.T.

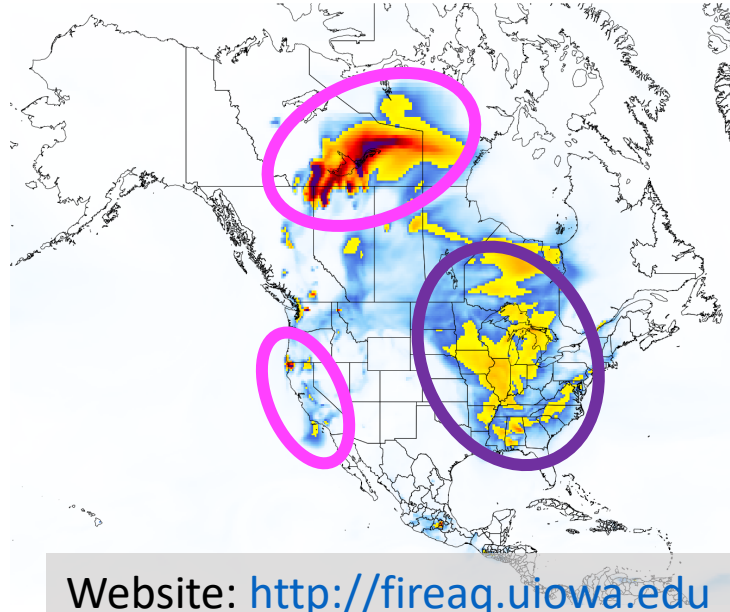
AirNow PM_{2.5} AQI



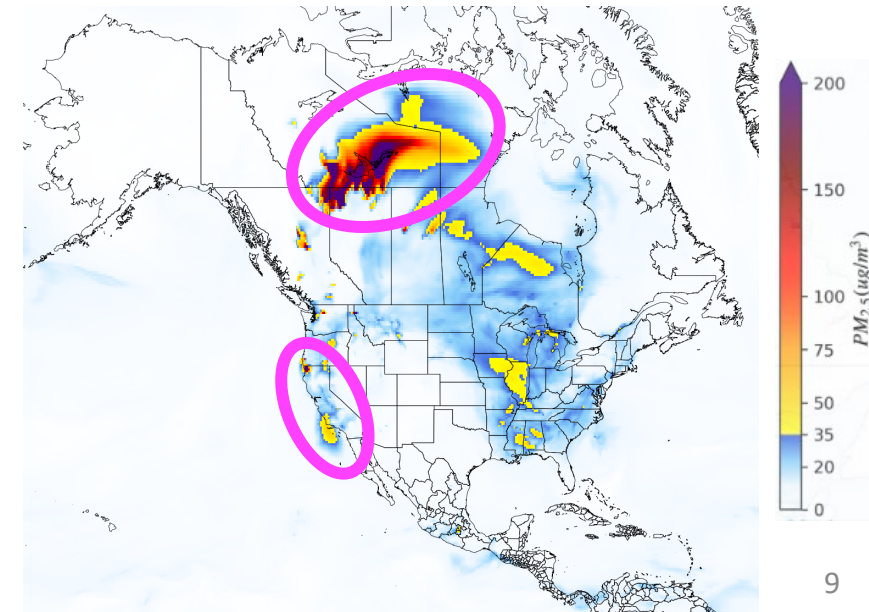
GEOS-FP



GEOS-CF

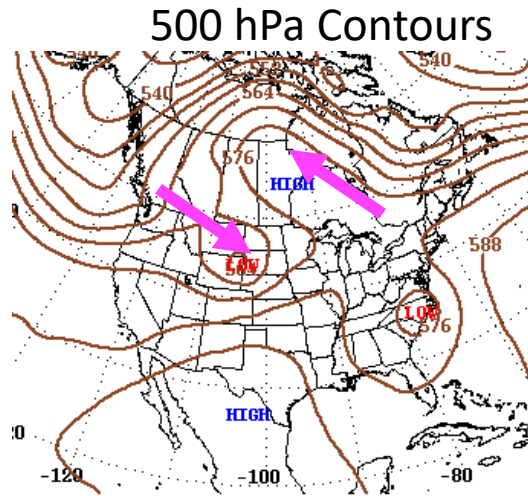


Ensemble (GEOS)

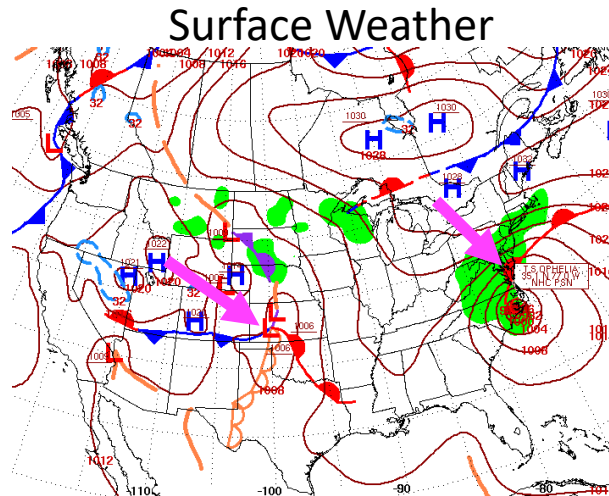


Website: <http://fireaq.uiowa.edu>

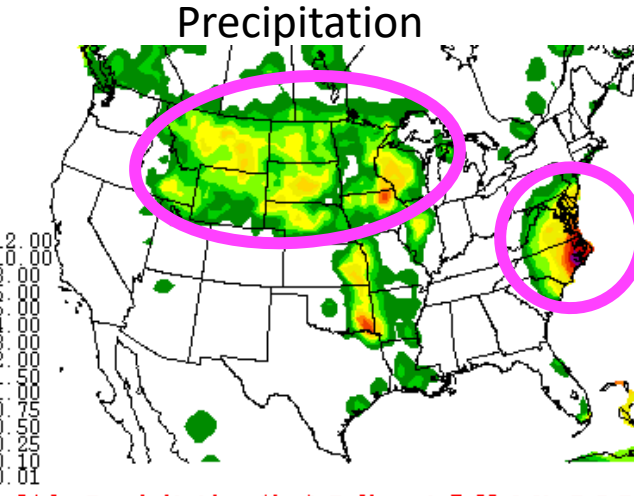
Air Quality Reflection: Saturday Sept. 23, 2023



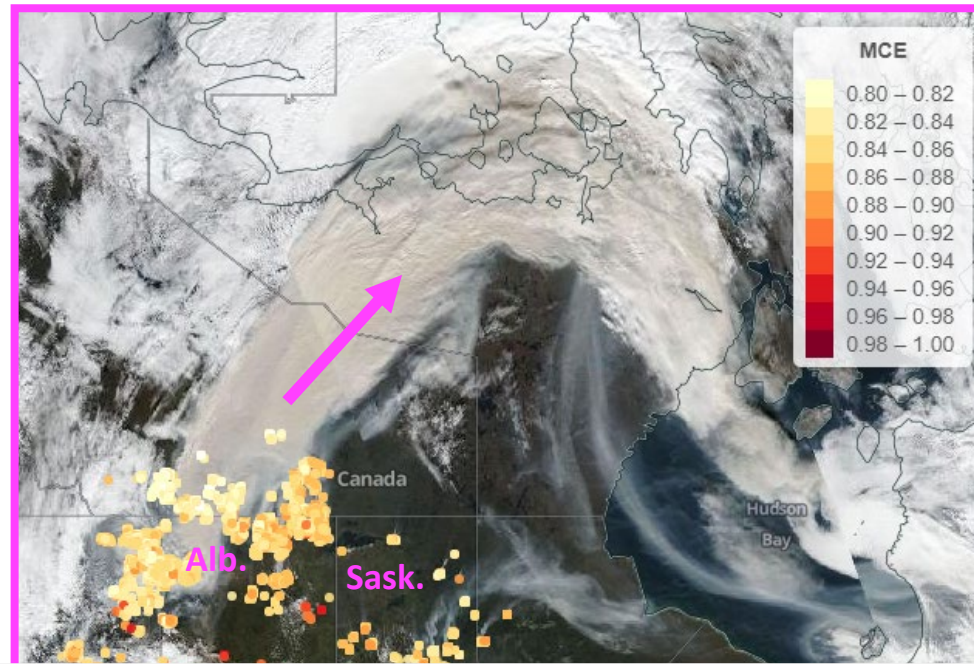
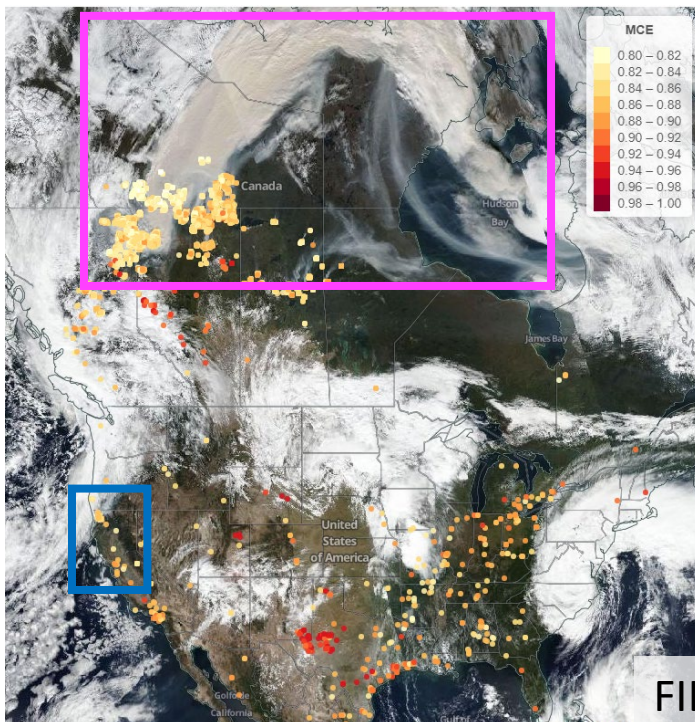
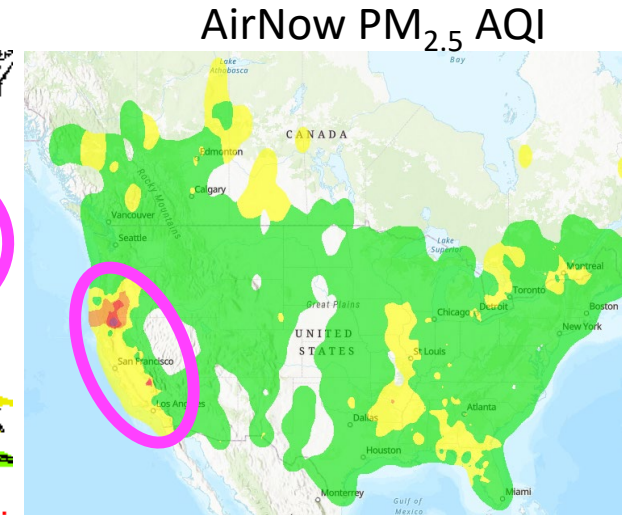
500-Millibar Height Contour at 7:00 A.M. E.S.T.



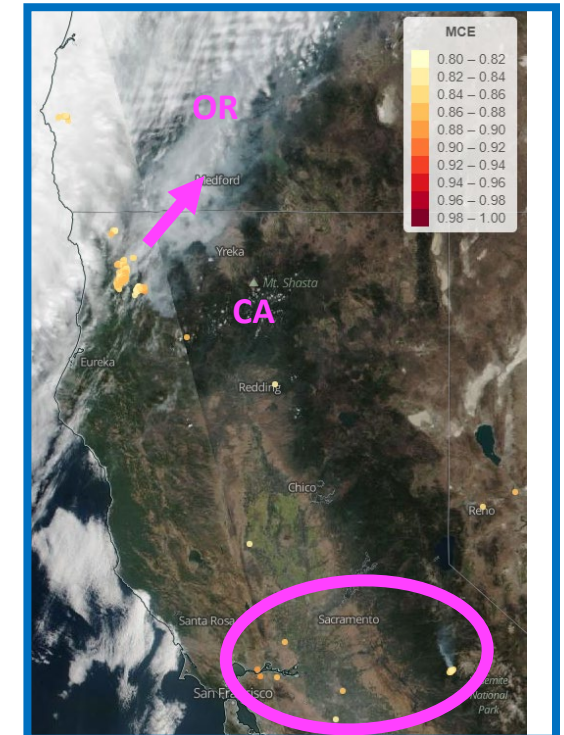
Surface Weather Map at 7:00 A.M. E.S.T.



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

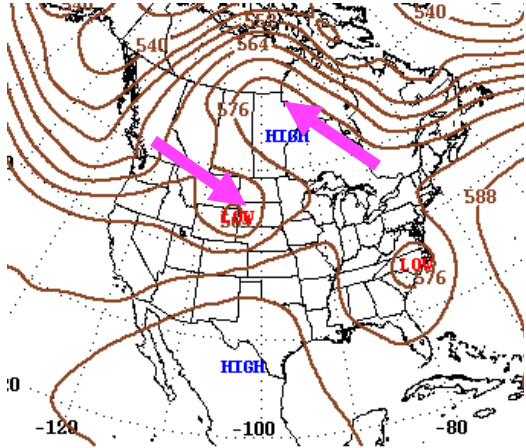


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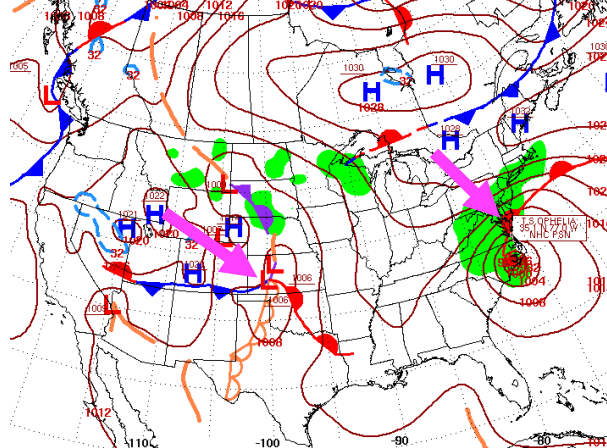
Air Quality Reflection: Saturday Sept. 23, 2023

500 hPa Contours



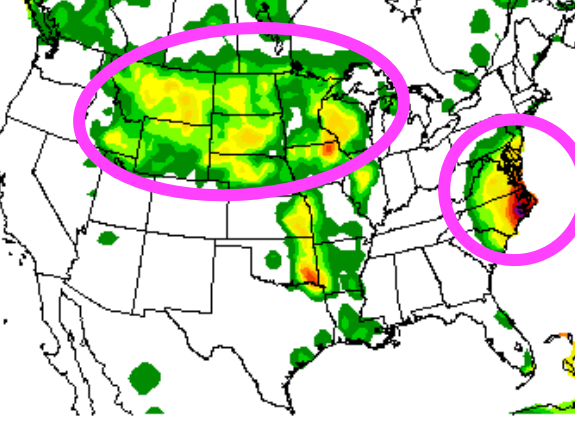
500-Millibar Height Contour at 7:00 A.M. E.S.T.

Surface Weather



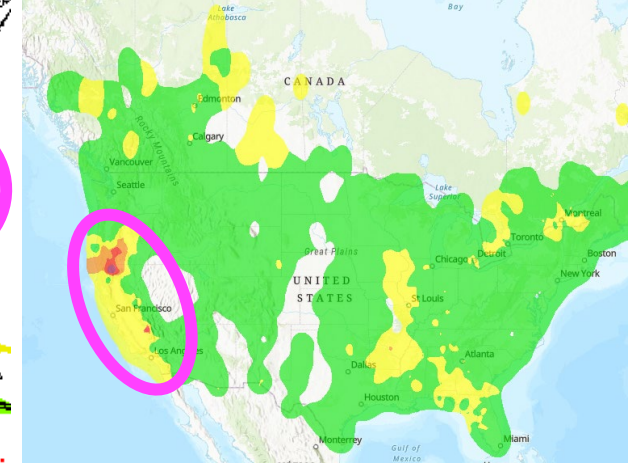
Surface Weather Map at 7:00 A.M. E.S.T.

Precipitation

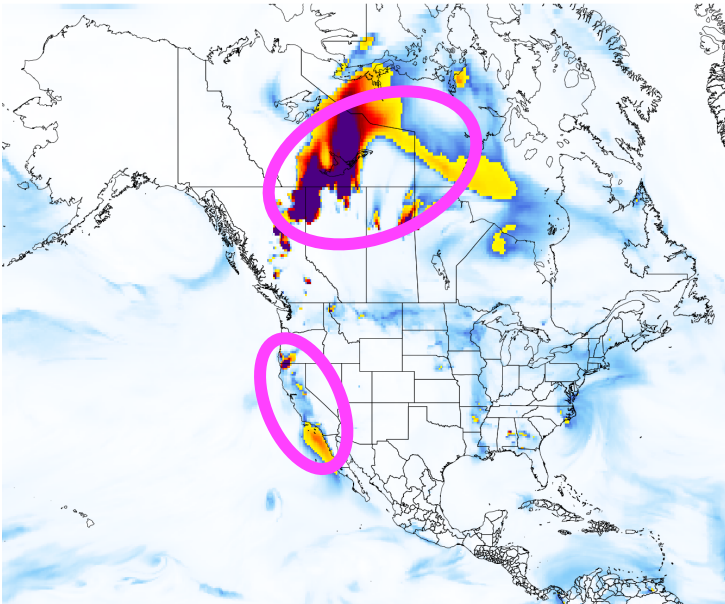


24-hr Precipitation (in.) Ending at 7:00 A.M. E.S.T.

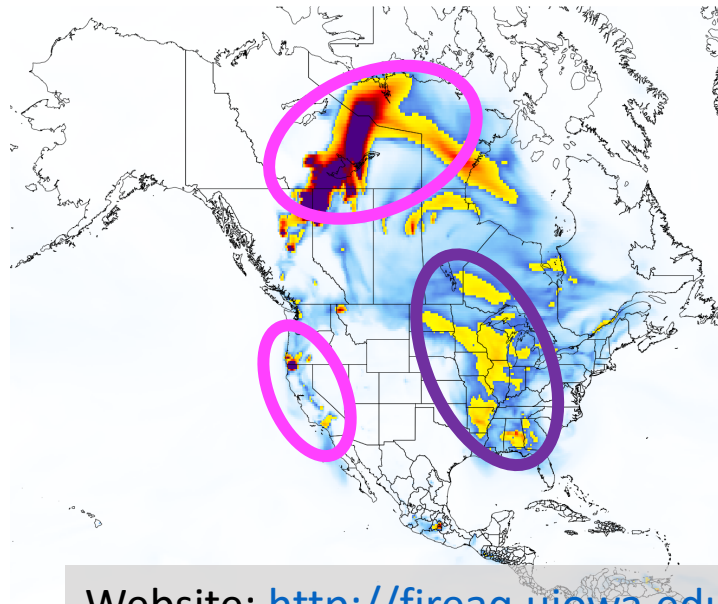
AirNow PM_{2.5} AQI



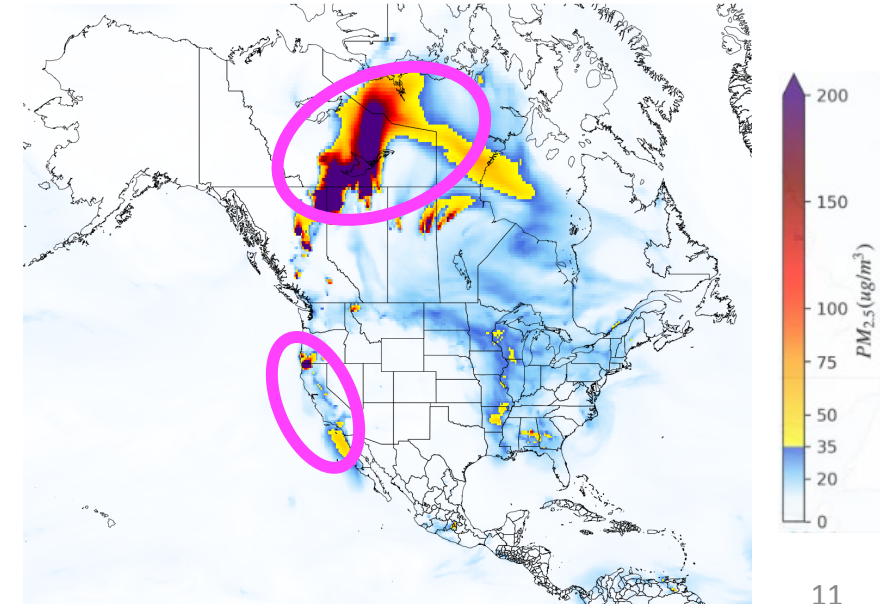
GEOS-FP



GEOS-CF

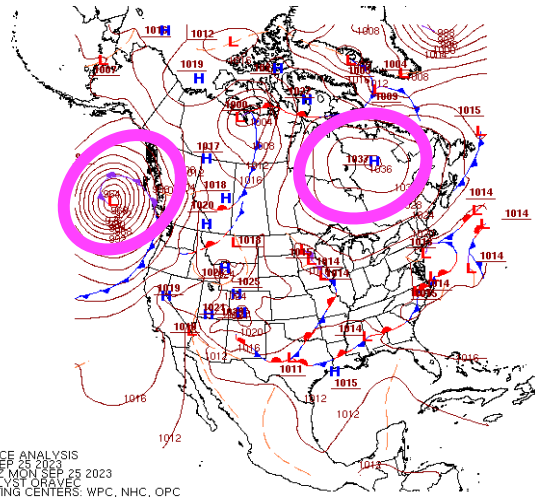


Ensemble (GEOS)

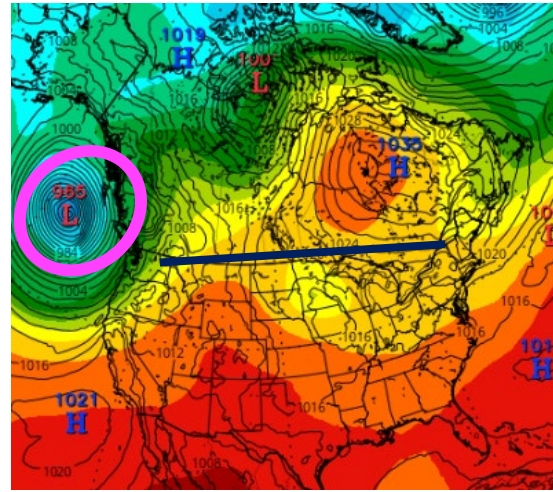


Current Status: September 25, 2023

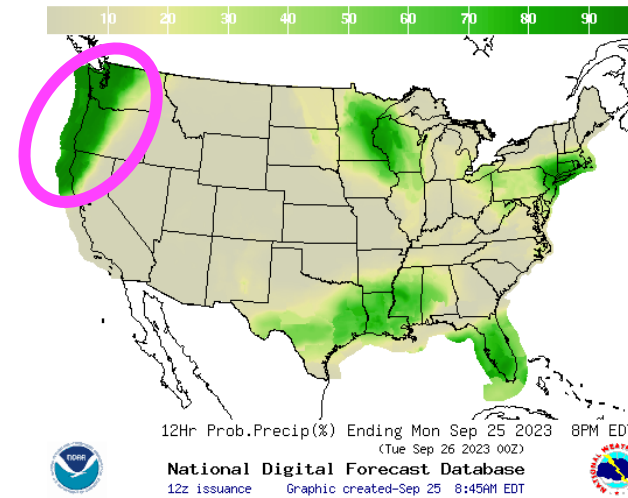
Surface Analysis



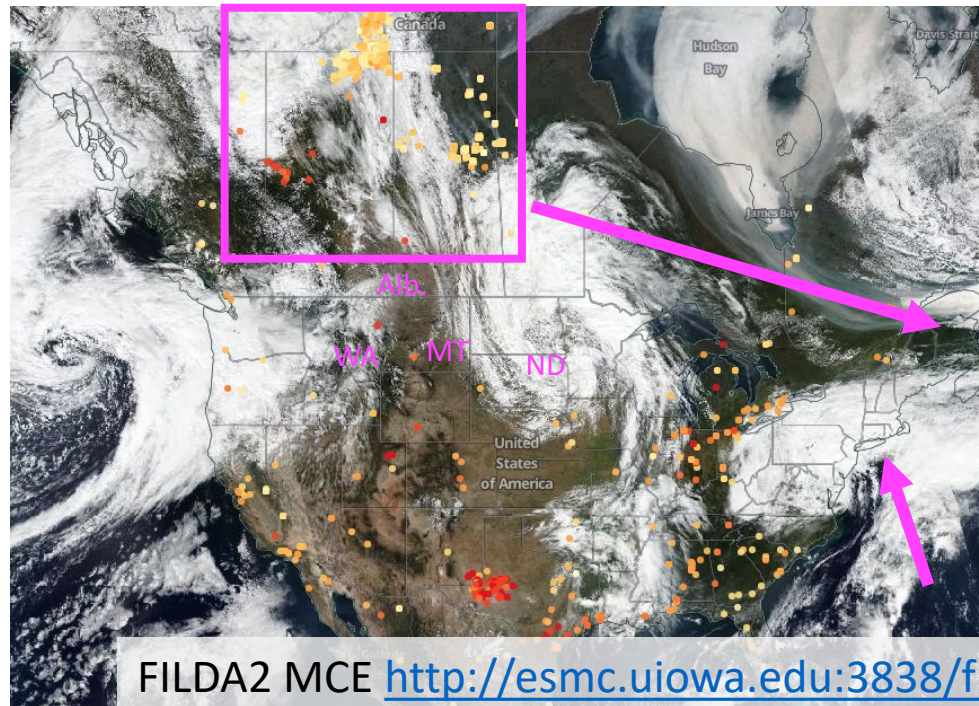
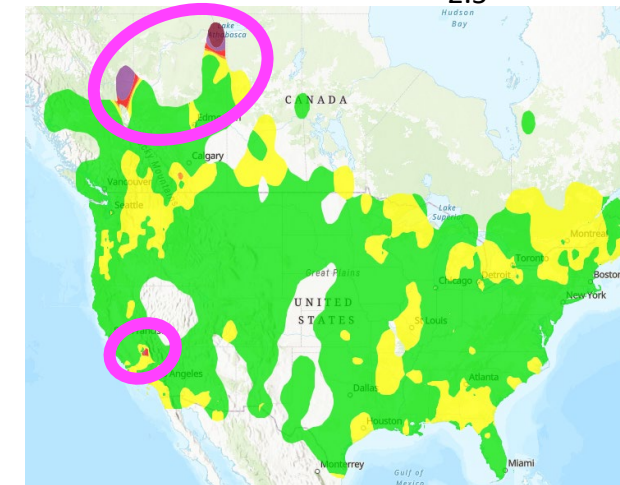
500 mb Contours



Precip. Prob.

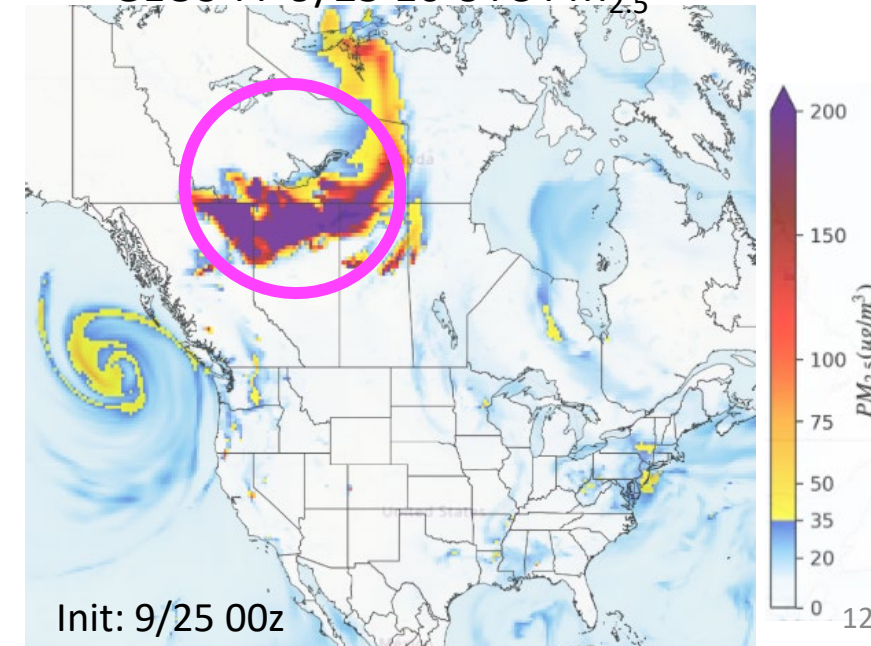


AirNow PM_{2.5} AQI



Sun 9/24

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

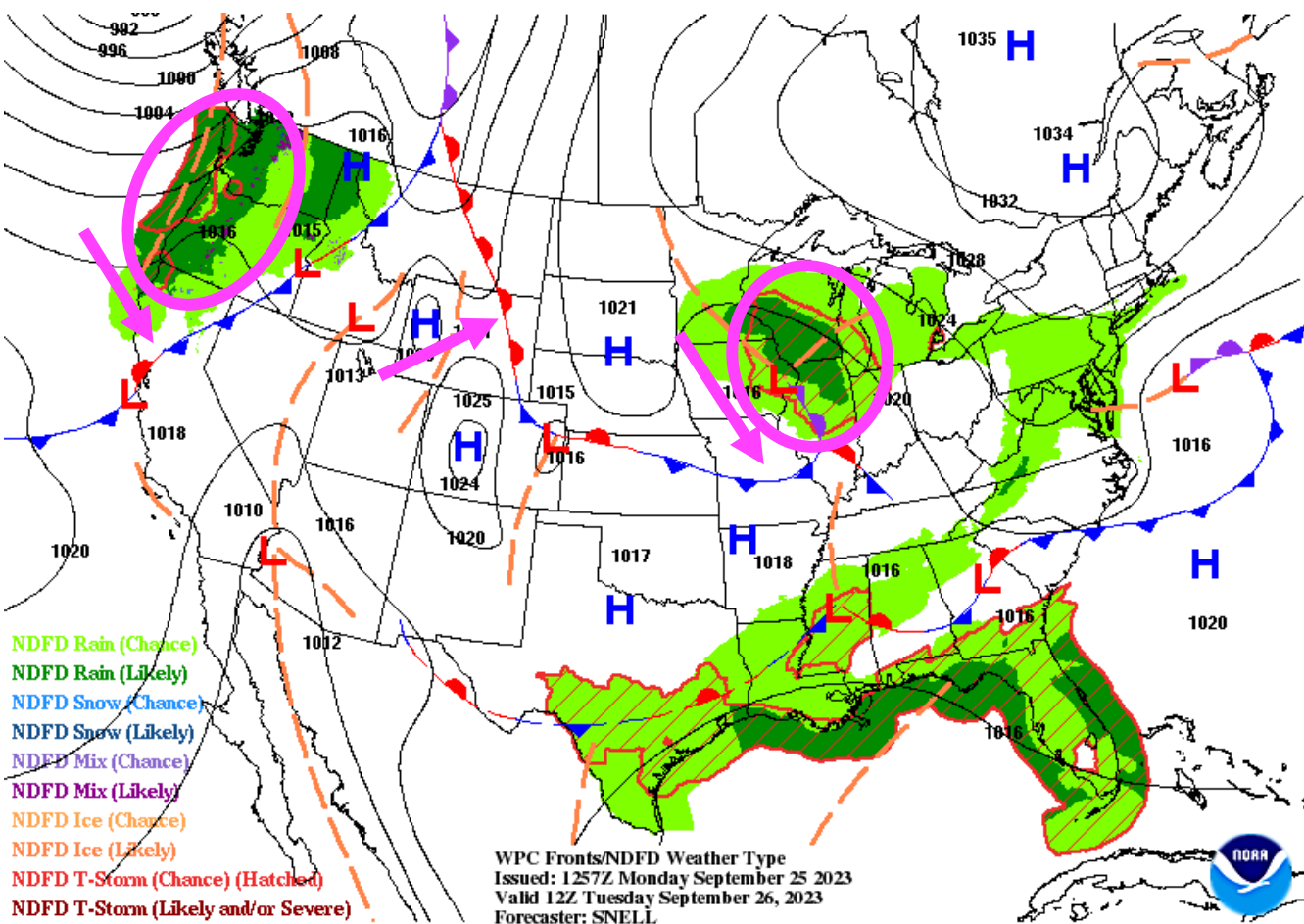


FILDA2 MCE http://esmc.uiowa.edu:3838/fires_detection/

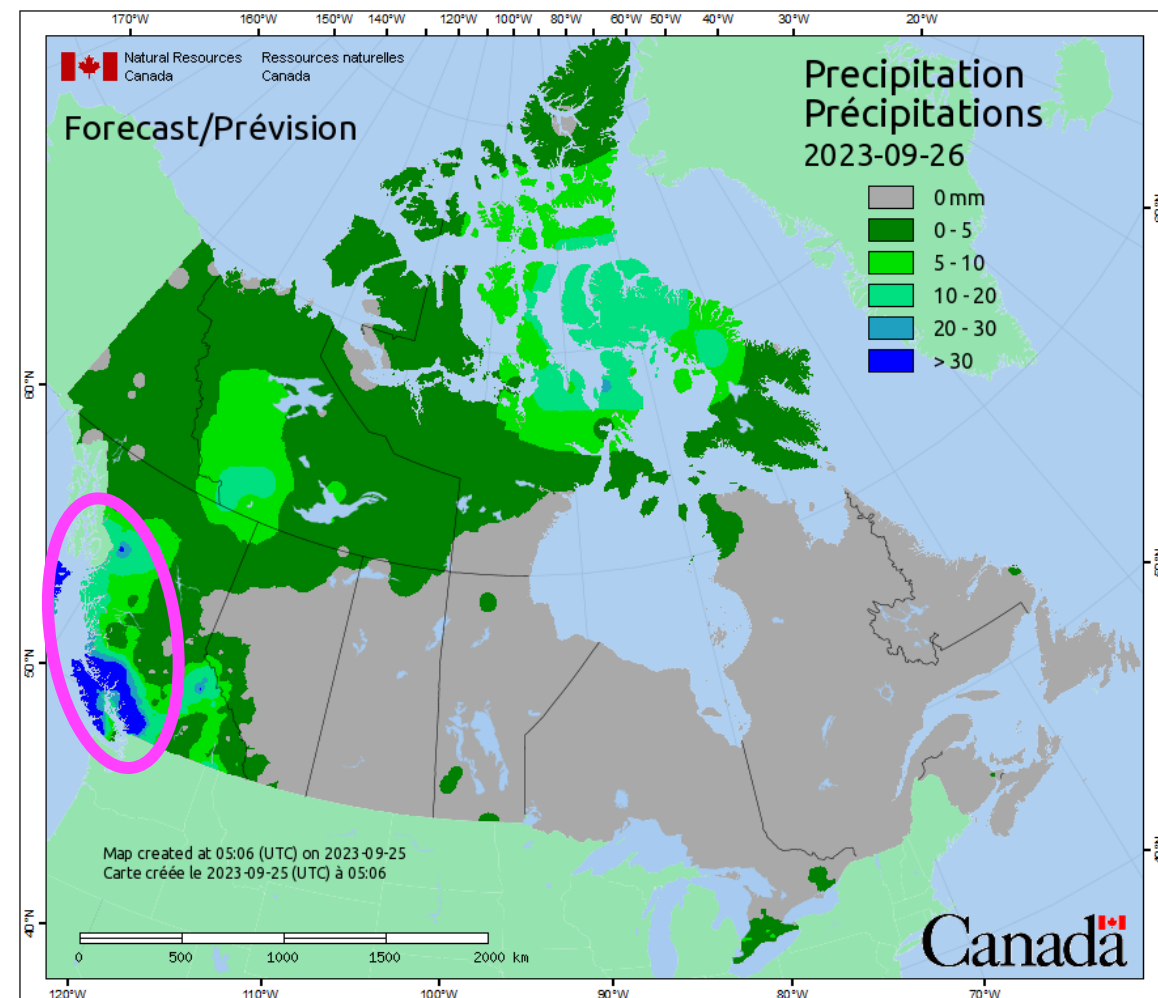
Outlook: Short Range (1-3 days)

Surface Forecast (Tuesday 9/26)

US NWS Forecast

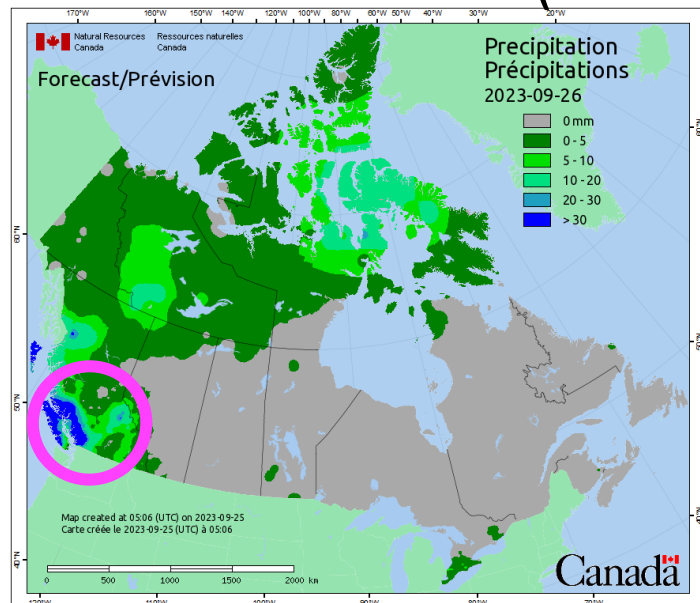


Environment Canada Forecast



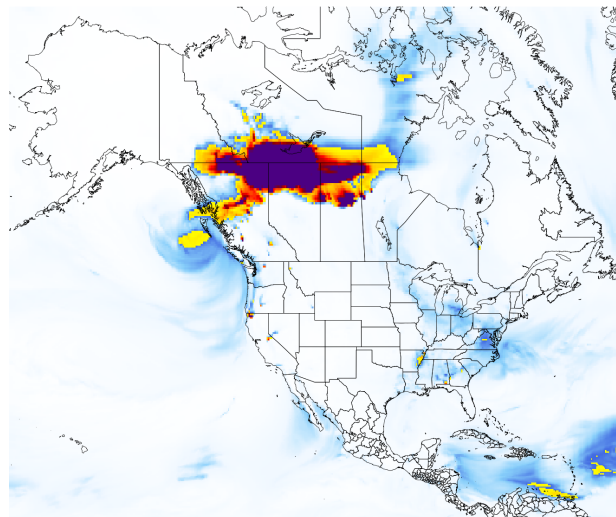
Outlook: Short Range (1–3 days)

Surface Forecast (Tuesday 9/26)

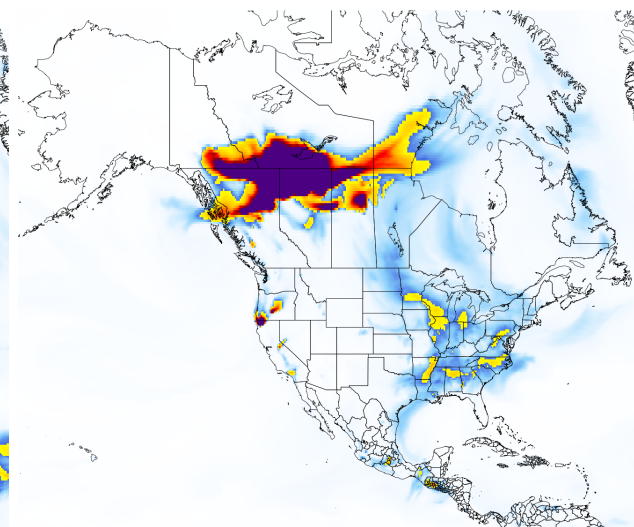


Model Means PM_{2.5} (Tues 9/26)

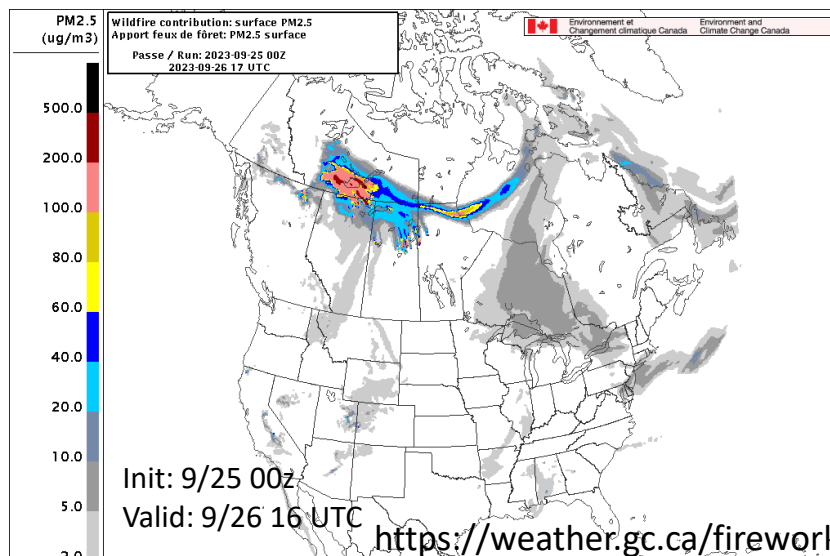
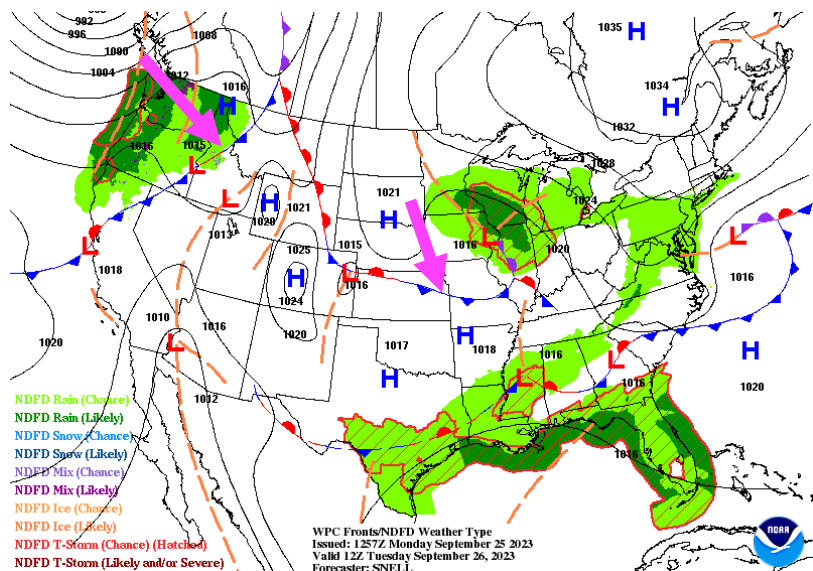
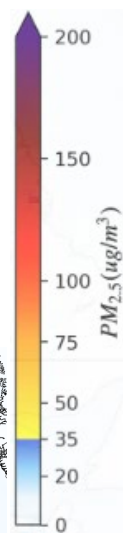
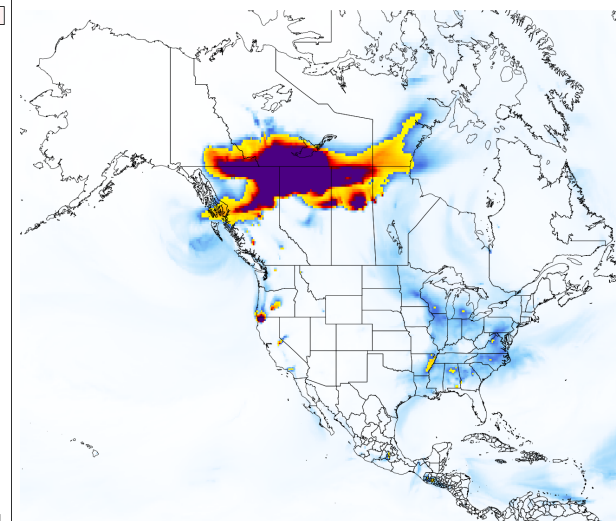
GEOS-FP



GEOS-CF



Ensemble

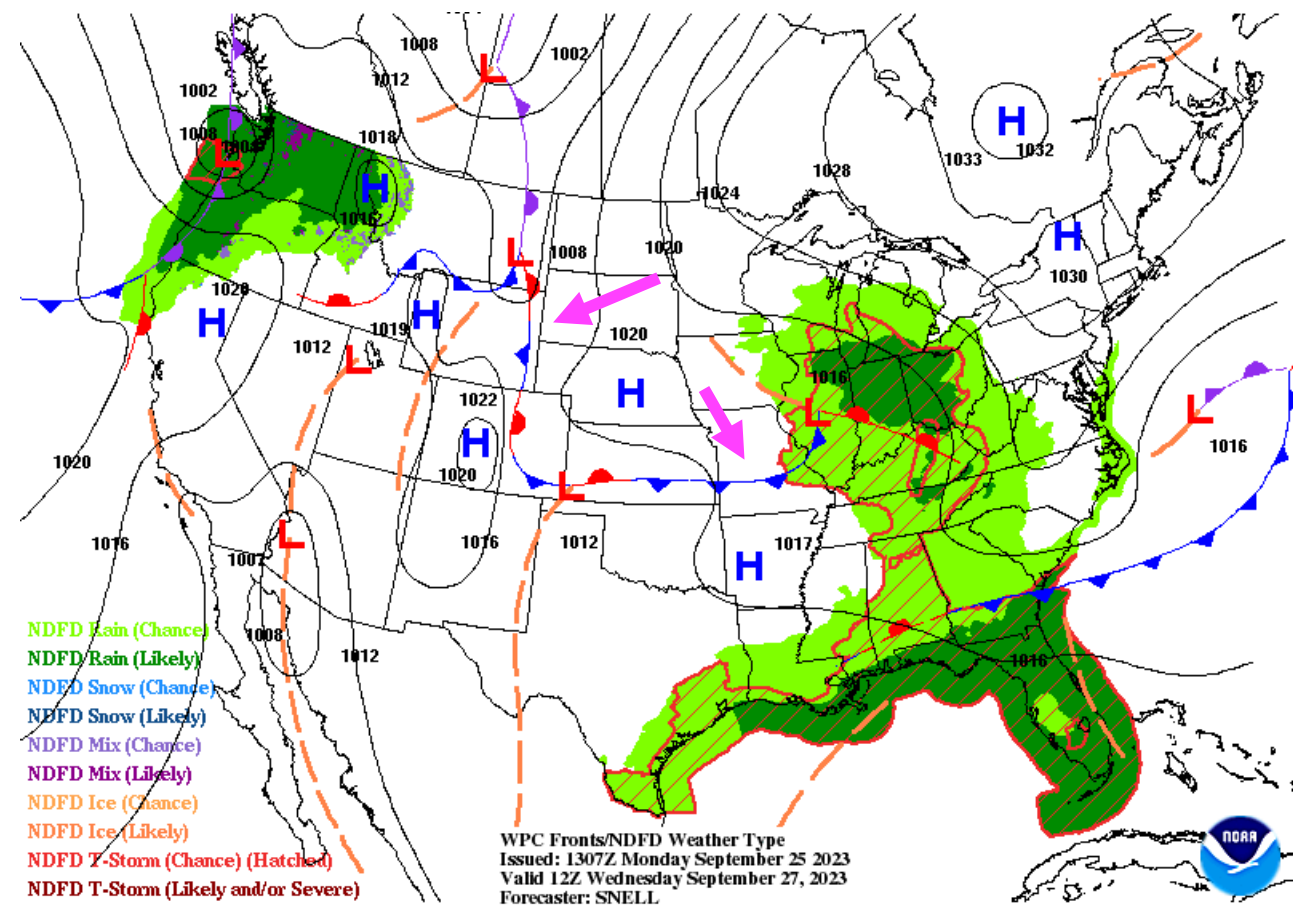


Day 3 of 9/24 initialization

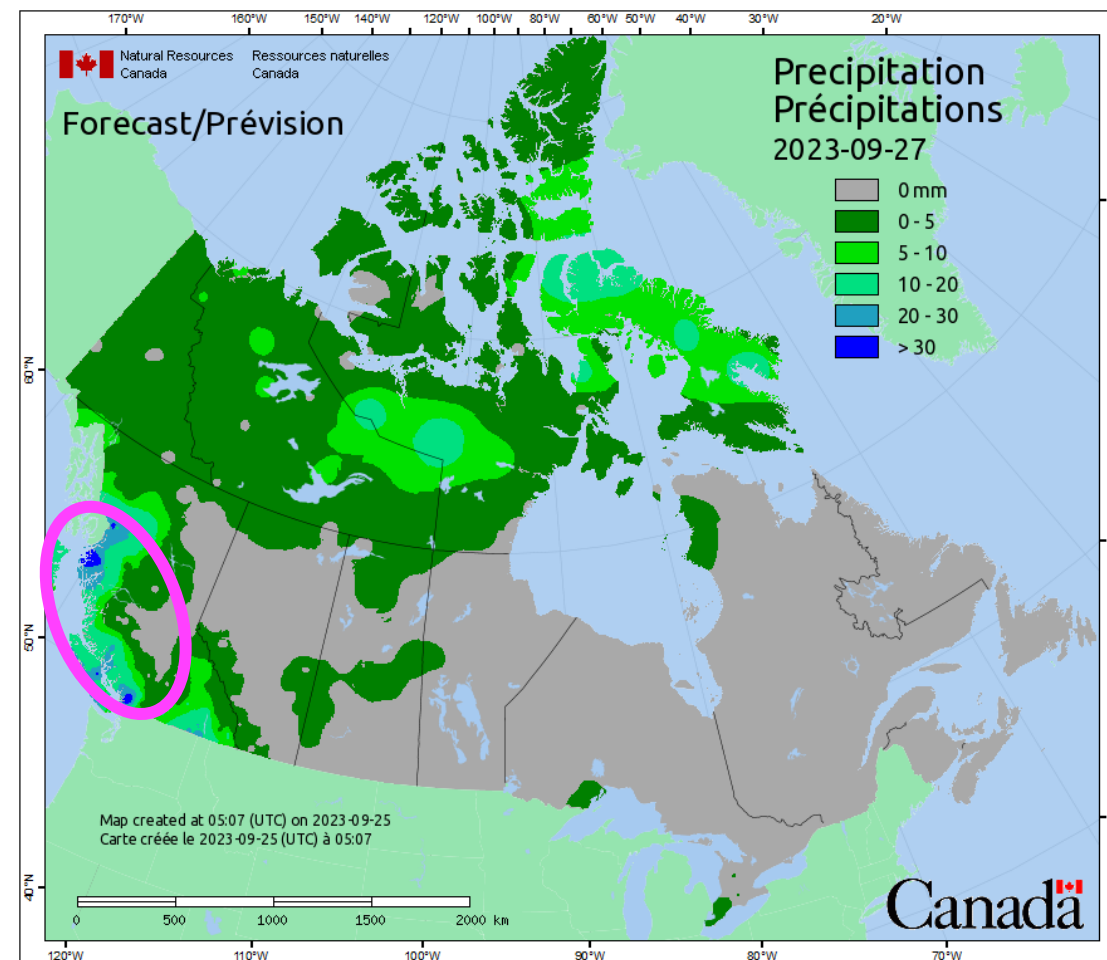
Outlook: Short Range (1–3 days)

Surface Forecast (**Wednesday 9/27**)

US NWS Forecast



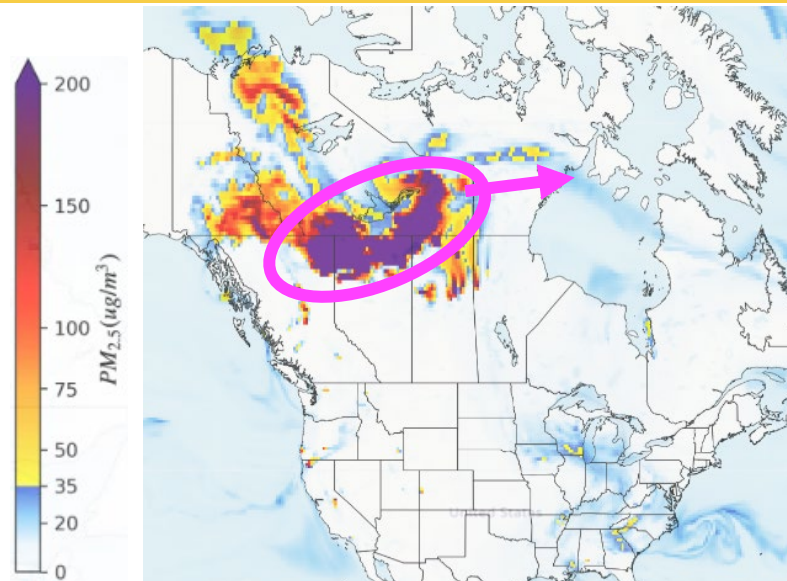
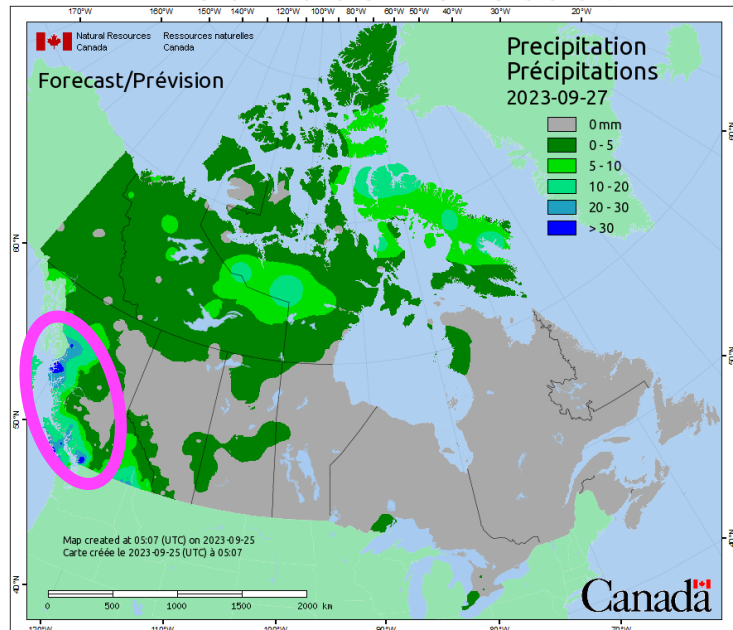
Environment Canada Forecast



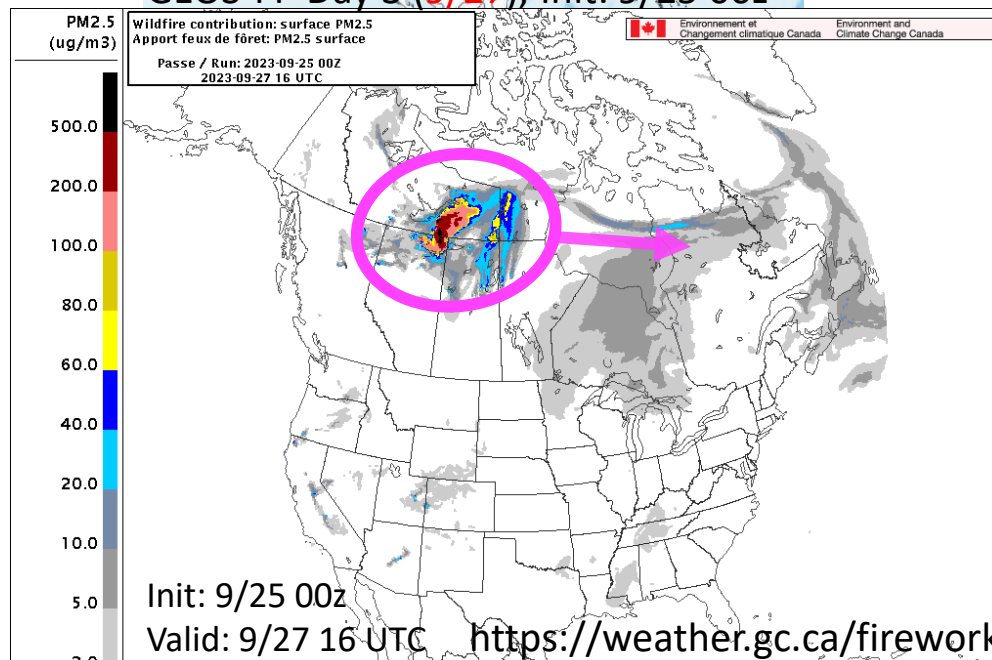
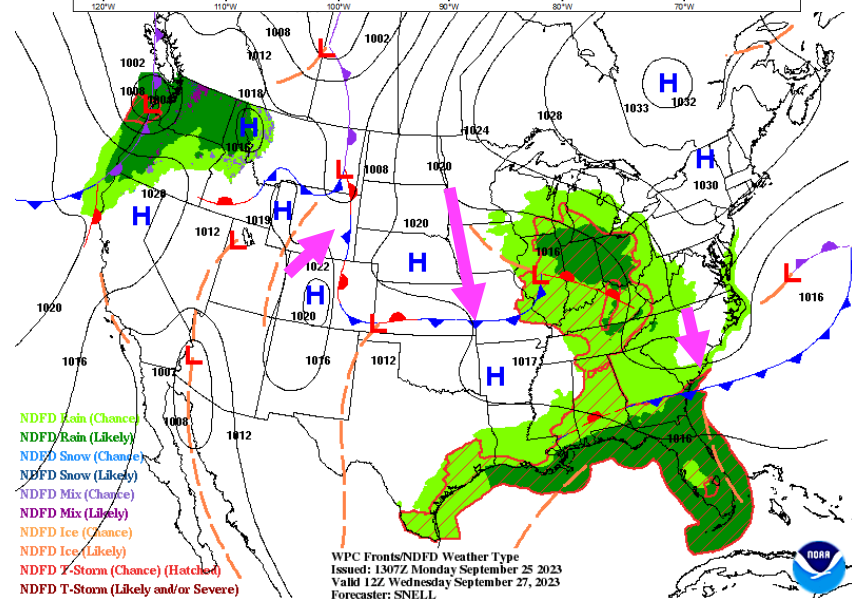
Outlook: Short Range (1–3 days)

(Wednesday 9/27)

Surface Forecast

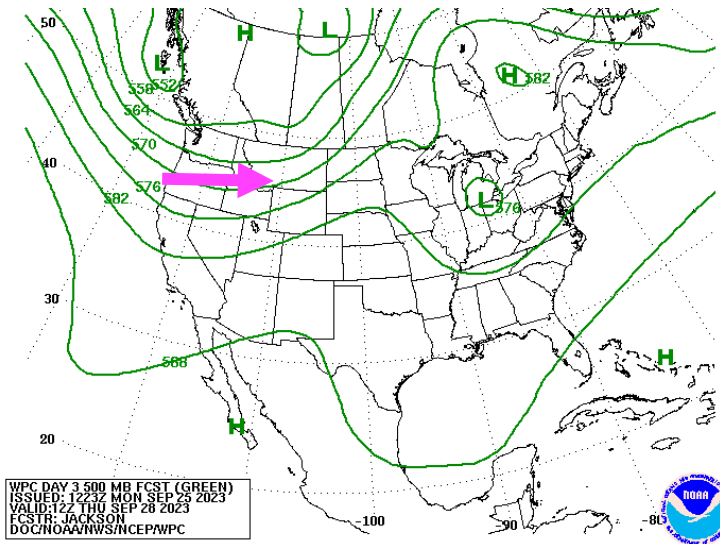


GEOS-FP Day 3 (9/27), Init: 9/25 00z



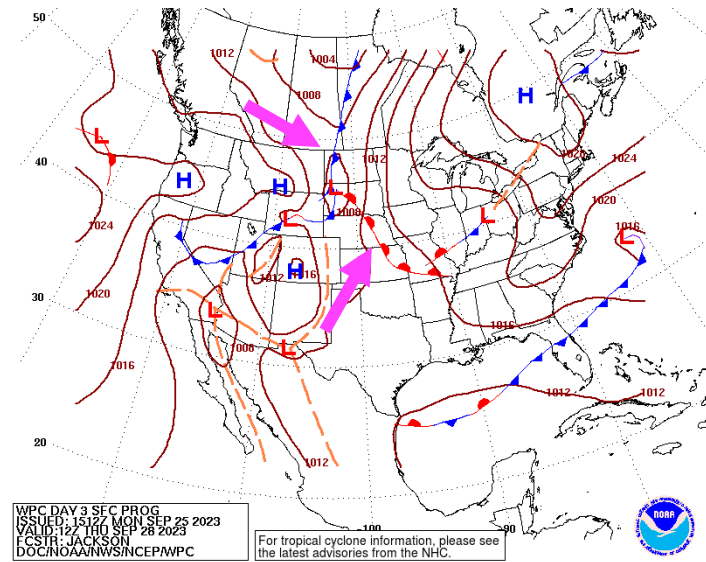
Outlook: Medium Range

500 hPa Contours

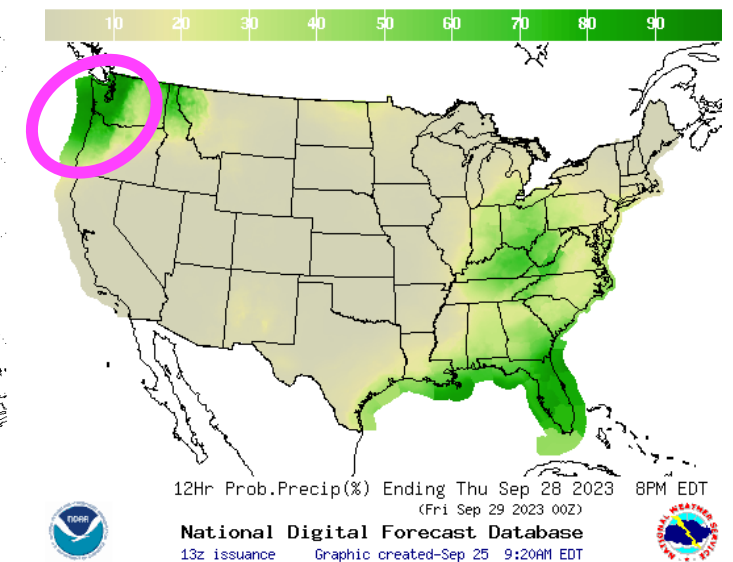


Thursday
9/28

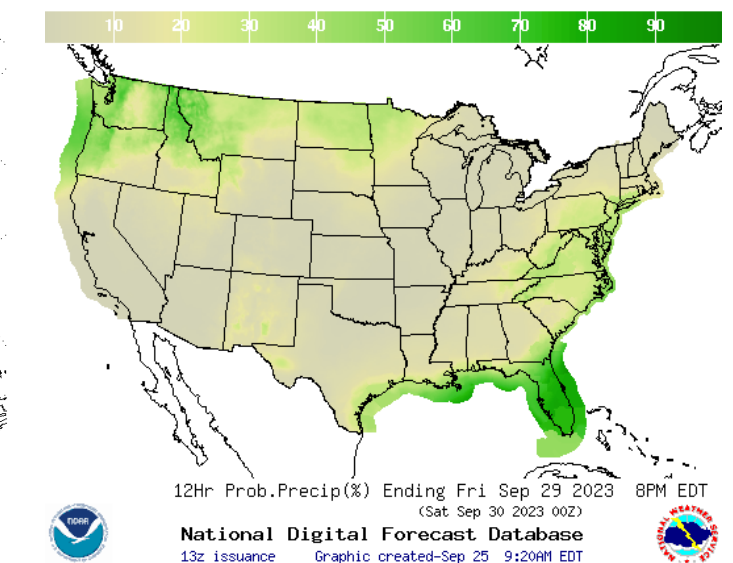
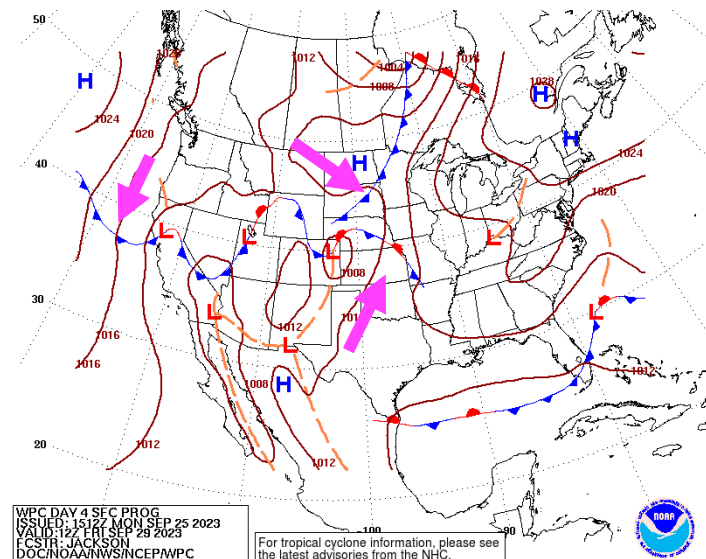
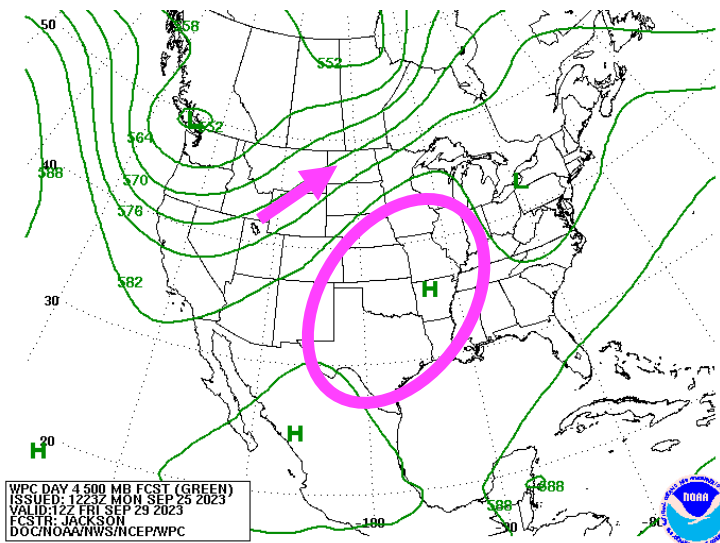
Sea Level



Precip Prob.



Friday
9/29



Summary

Monday : Smoke from Canadian wildfires is being transported north and is not impacting air quality in the US; however, southern CA fires are impacting the local region.

M → W : Cooler temperatures and likely chances of rain around cold fronts in the northwest and central US through Wednesday. Smoke transport from northern Canada (B.C. and Alberta) is not predicted to impact the US air quality.

Th → F: A forecasted low pressure aloft over northwest US with strong winds northeast coupled with cold fronts at the surface along the trough suggest little impact to the US air quality should Canadian fires persist; however, the high pressure system over the northeastern US could promote transport to the surface should smoke appear aloft.

