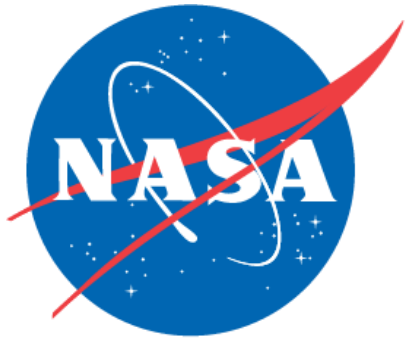
# Weather and Air Quality: Reflection and Outlook During Smoke Conditions

Presenter: Megan Christiansen
Date: September 16, 2024

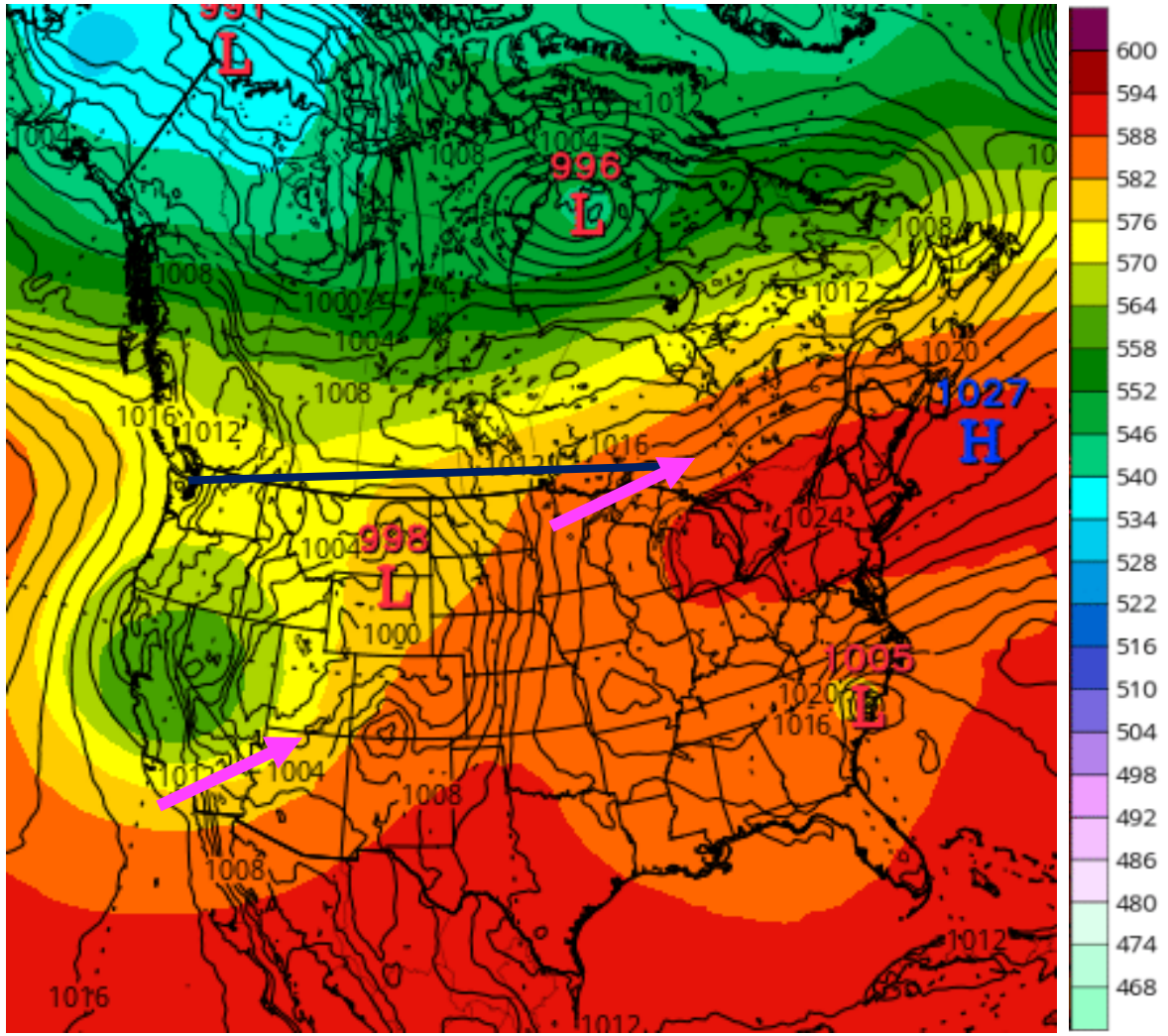



EARTH SCIENCE
APPLIED SCIENCES

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

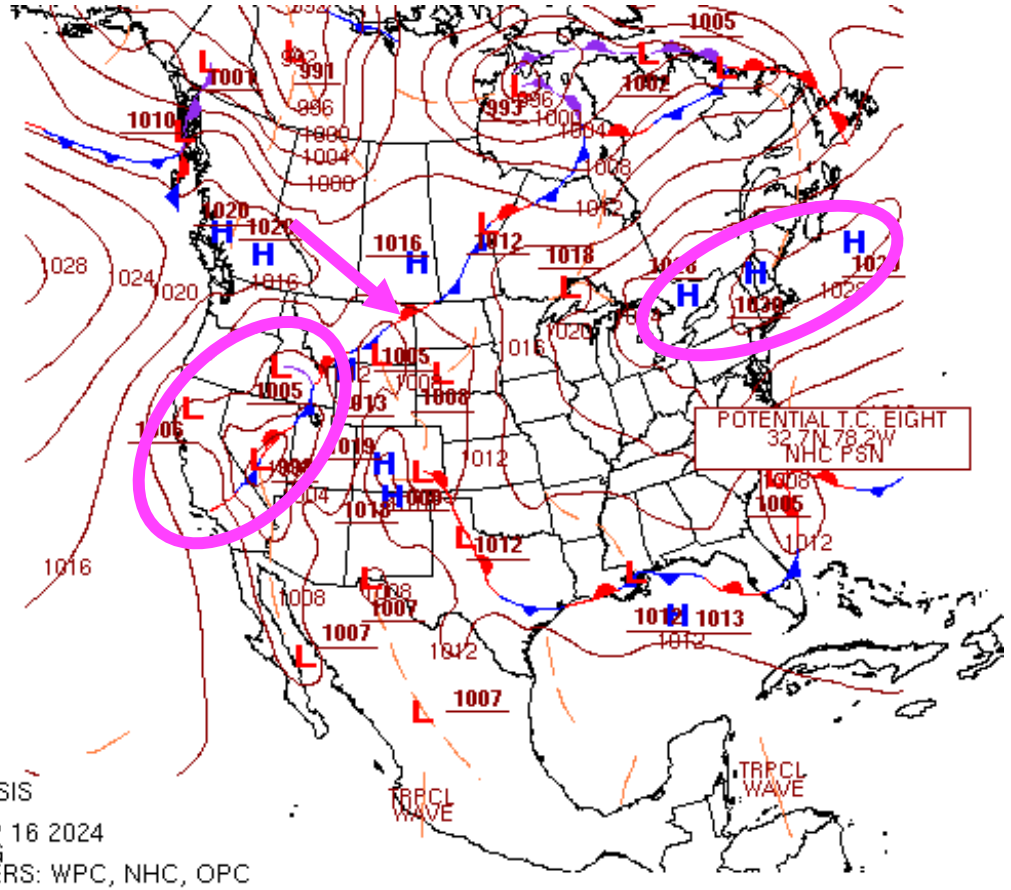
# Current Status: September 16, 2024

500 mb Contours




GFS 500mb Geopotential Height (dam) & MSLP (mb)
Init: 06z Sep 16 2024 Forecast Hour: [12] valid at 18z Mon, Sep 16 2024

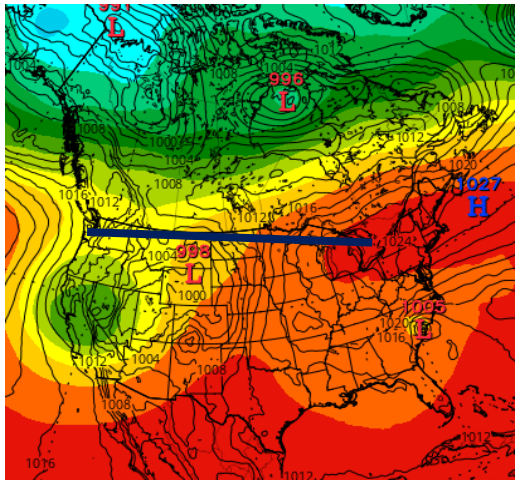
Surface Analysis



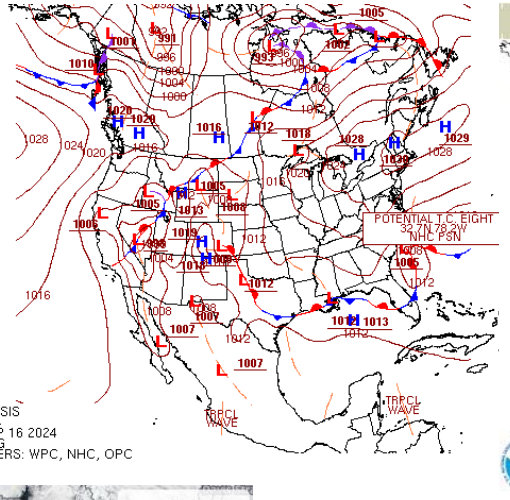

1200Z SURFACE ANALYSIS
DATE: MON SEP 16 2024
ISSUED: 1330Z MON SEP 16 2024
BY WPC ANALYST KONG
COLLABORATING CENTERS: WPC, NHC, OPC

# Current Status: September 16, 2024

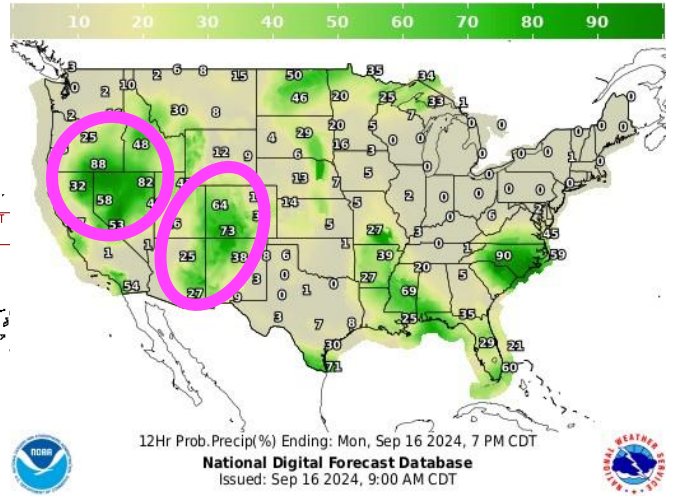
500 mb Contours



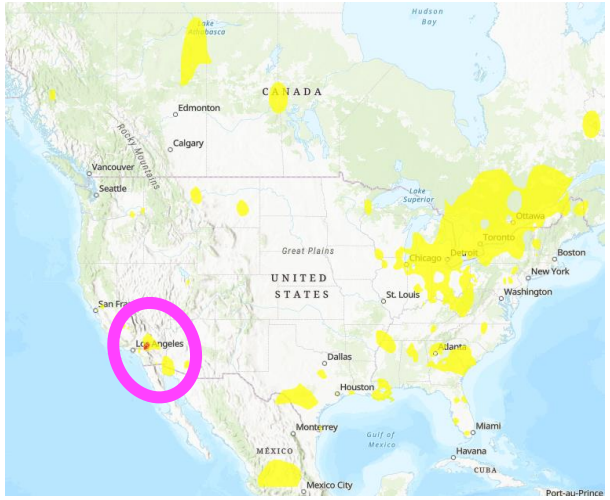
Surface Analysis

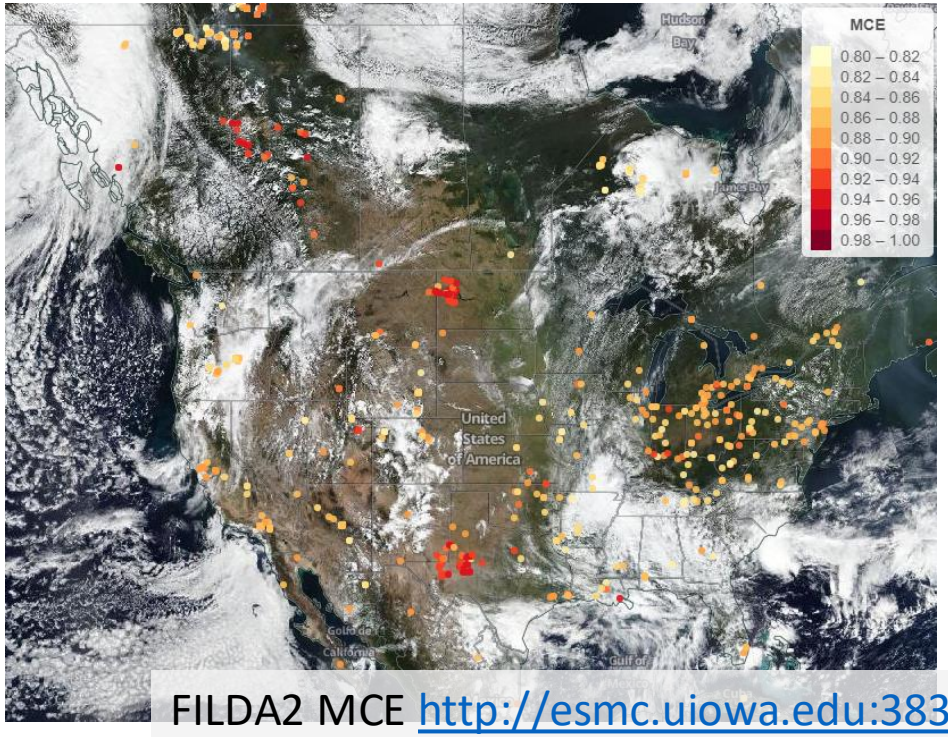



Precip. Prob.



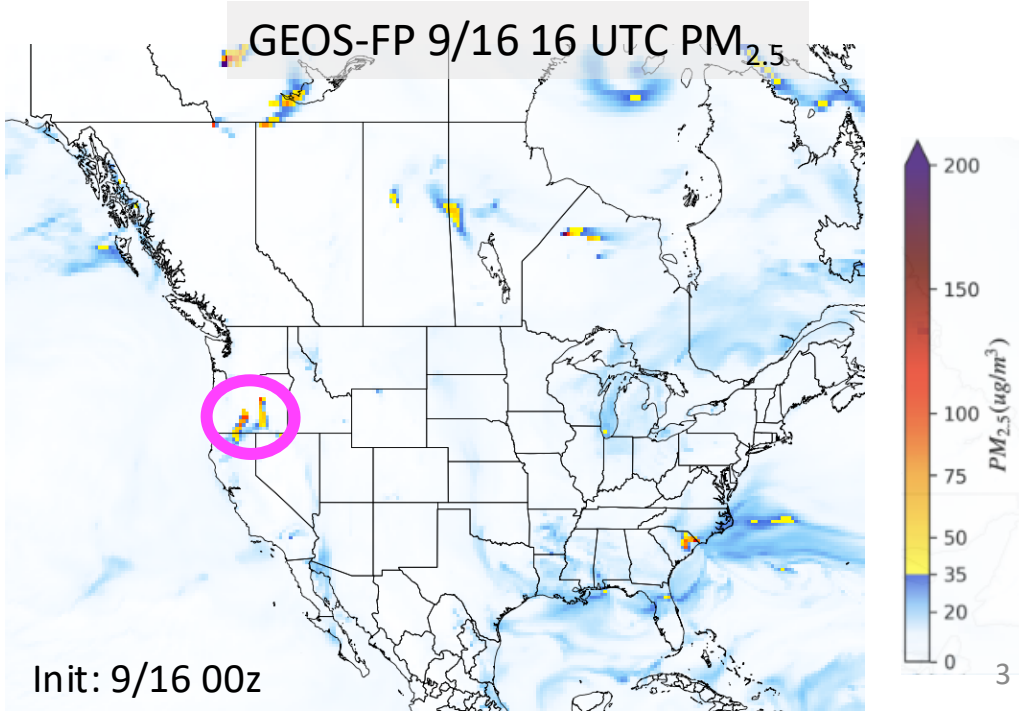

AirNow $PM_{2.5}$ AQI




Sun 9/15

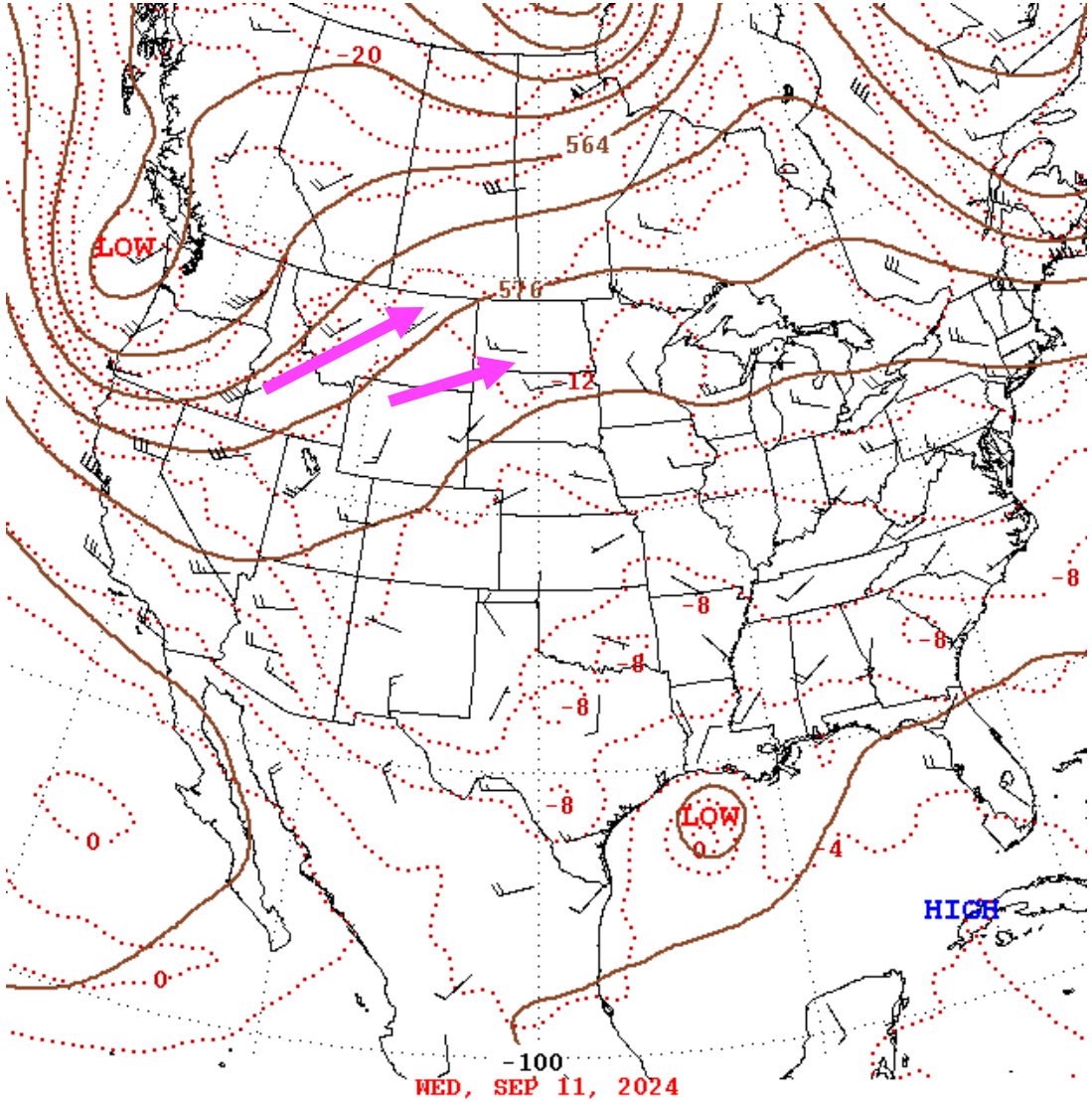
GEOS-FP 9/16 16 UTC $PM_{2.5}$



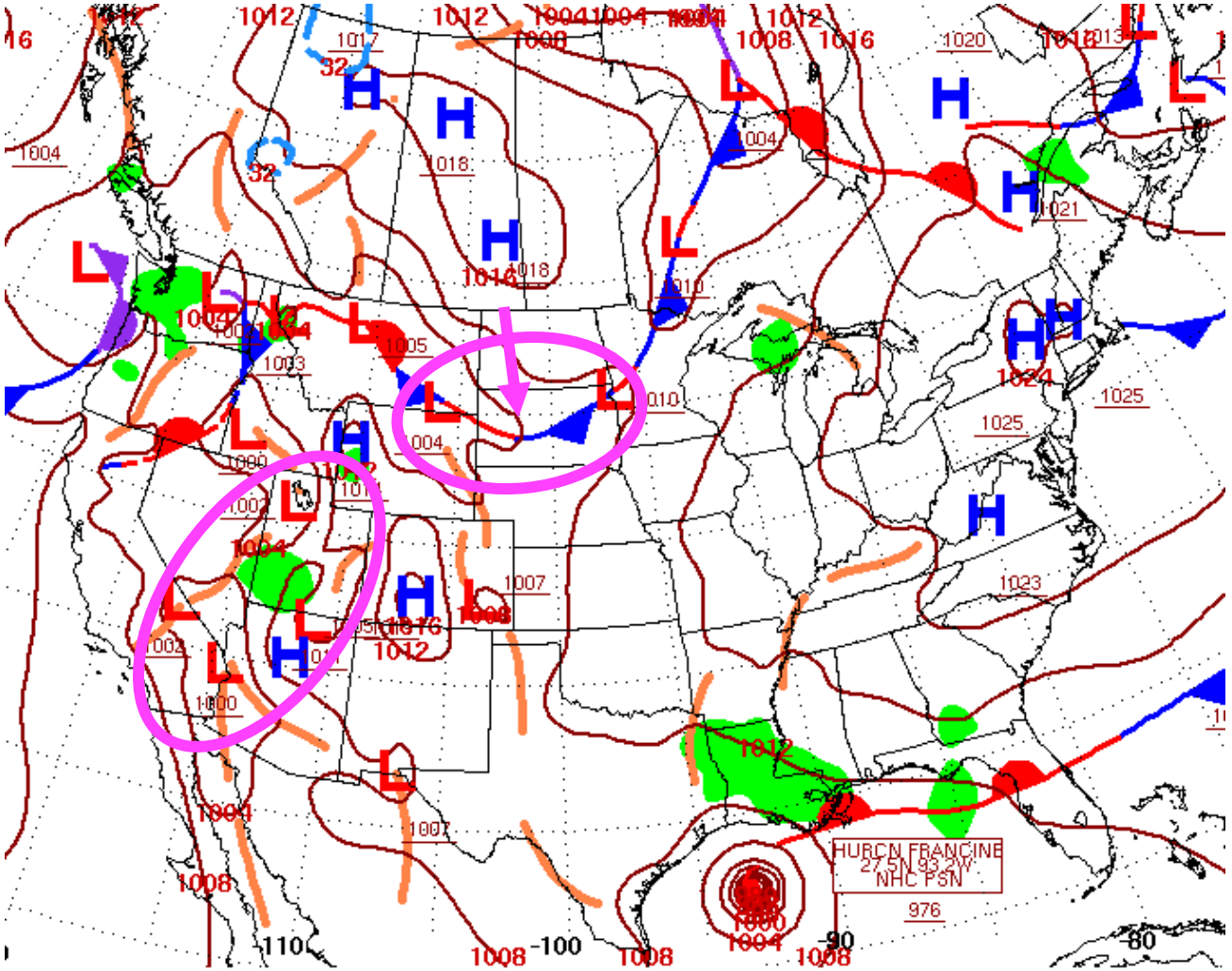

FILDA2 MCE http://esmc.uiowa.edu:3838/fires_detection/

# Air Quality Reflection: Wednesday Sept 11, 2024

## 500 mb Contours

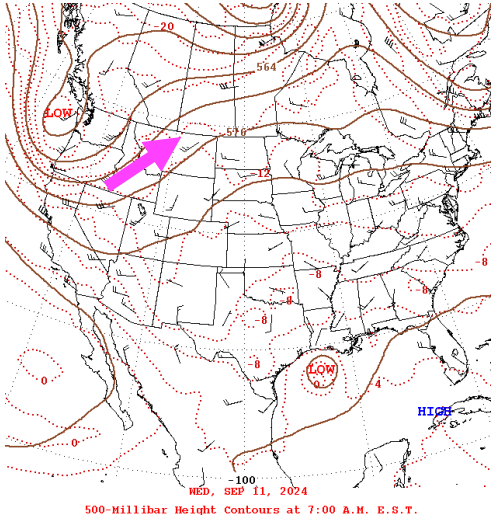



## Surface Weather

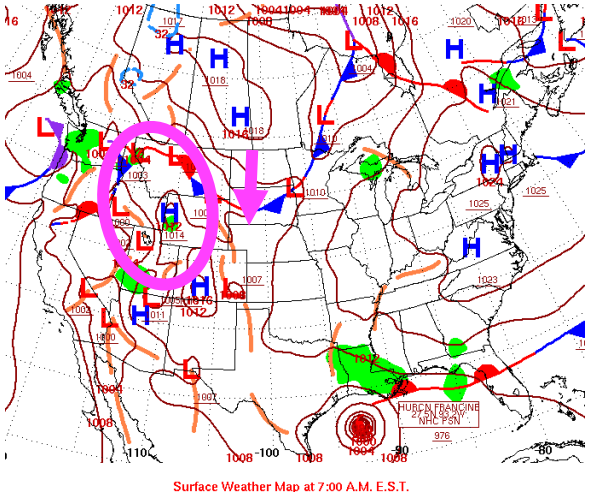


# Air Quality Reflection: Wednesday Sept 11, 2024

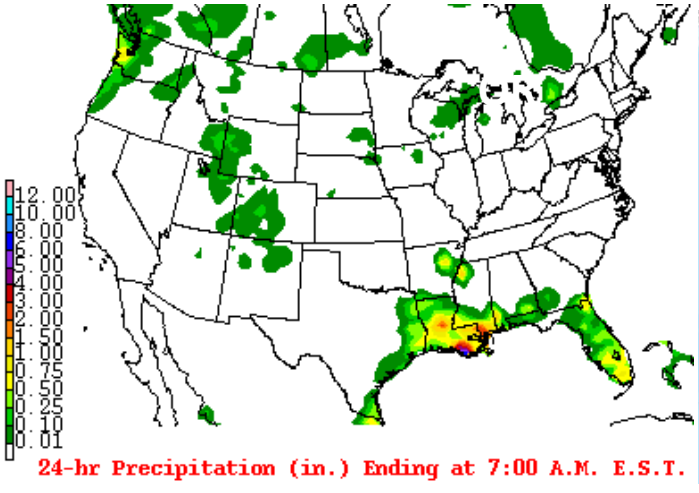
## 500 mb Contours



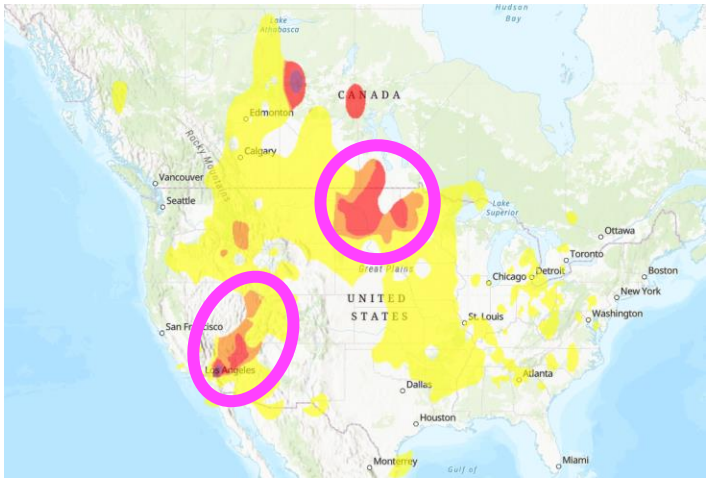

## Surface Weather

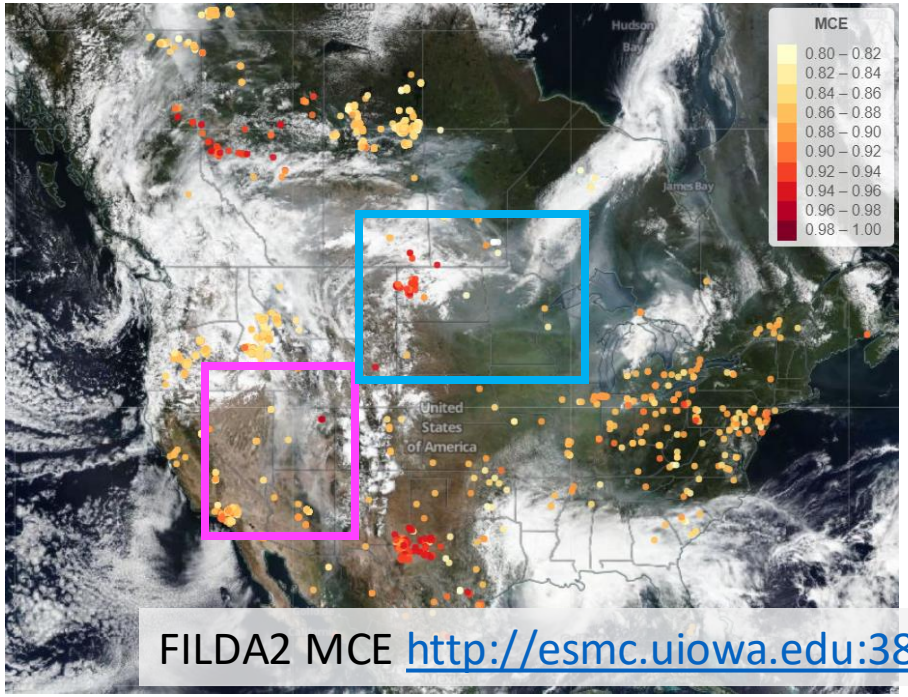



## Precipitation

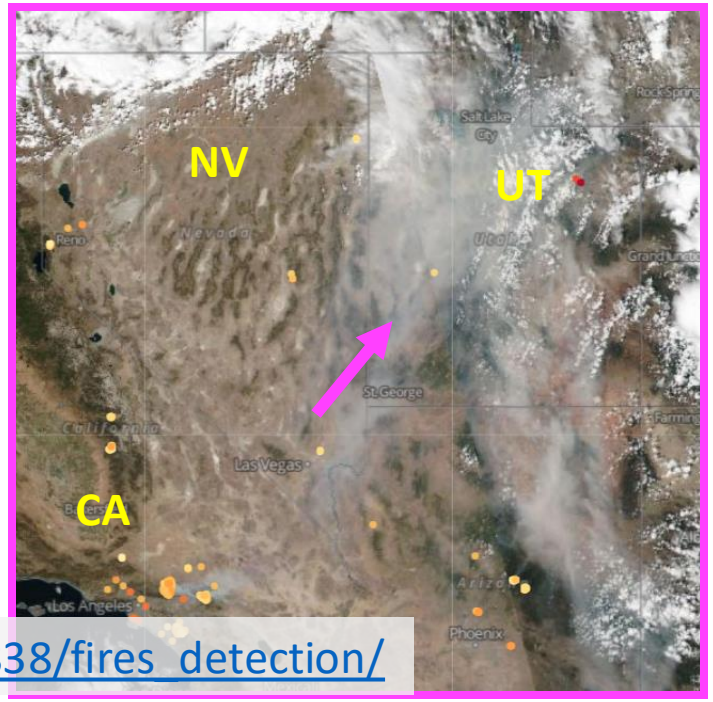


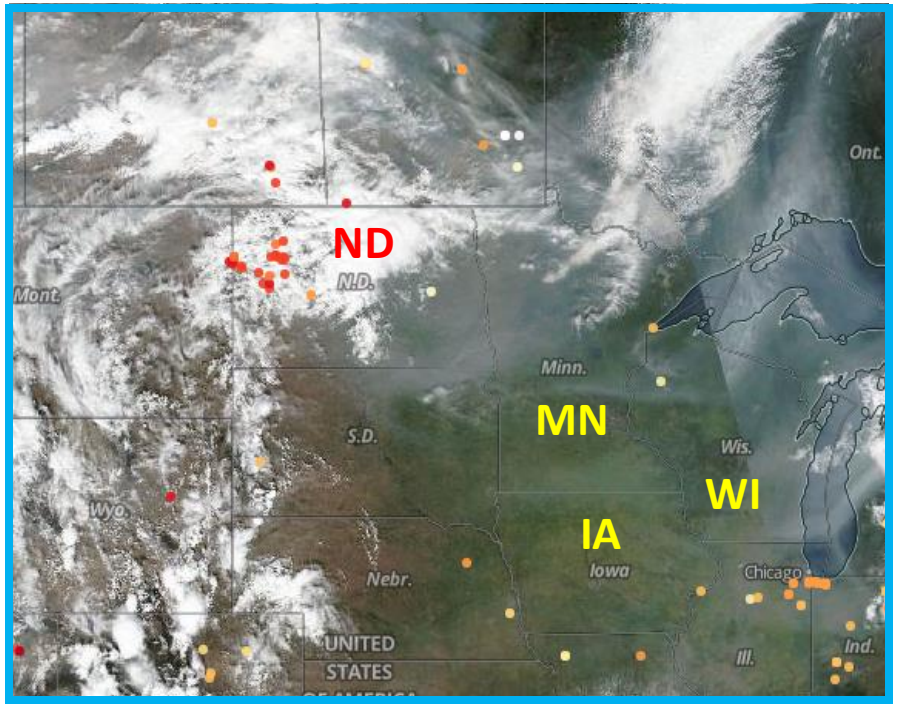

## AirNow $PM_{2.5}$ AQI



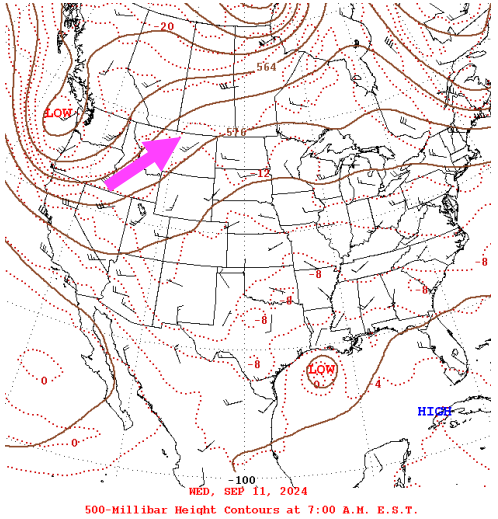

FILDA2 MCE http://esmc.uiowa.edu:3838/fires_detection/



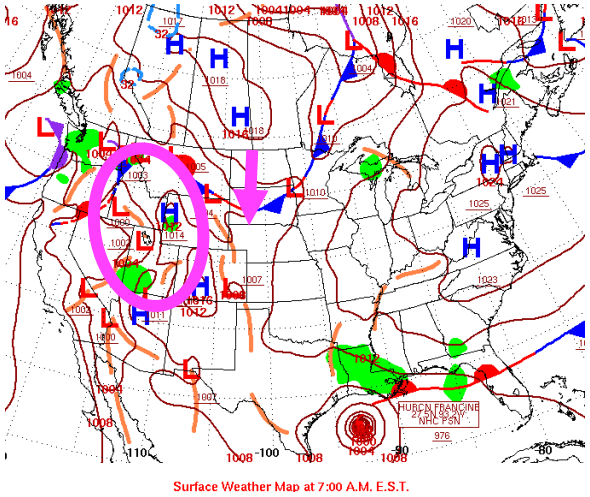



# Air Quality Reflection: Wednesday Sept 11, 2024

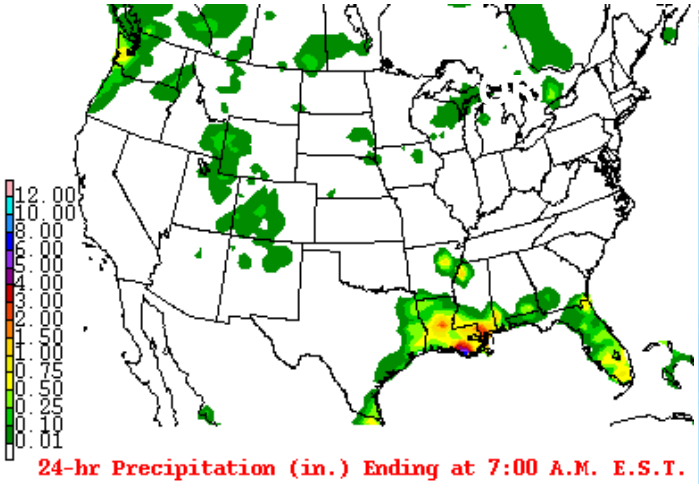
## 500 mb Contours



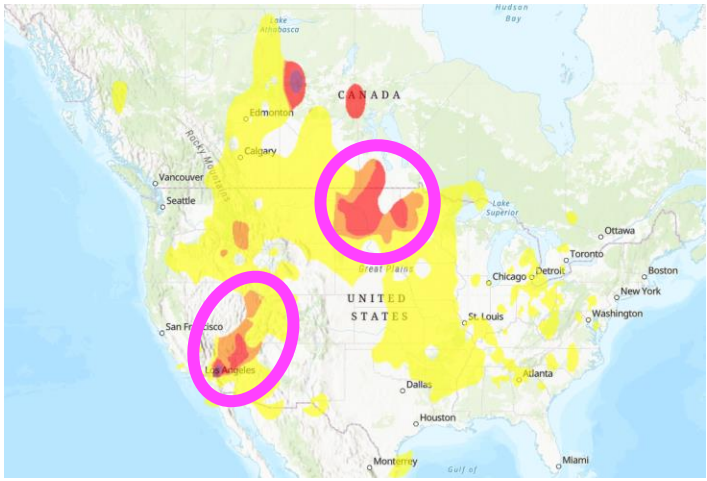

## Surface Weather



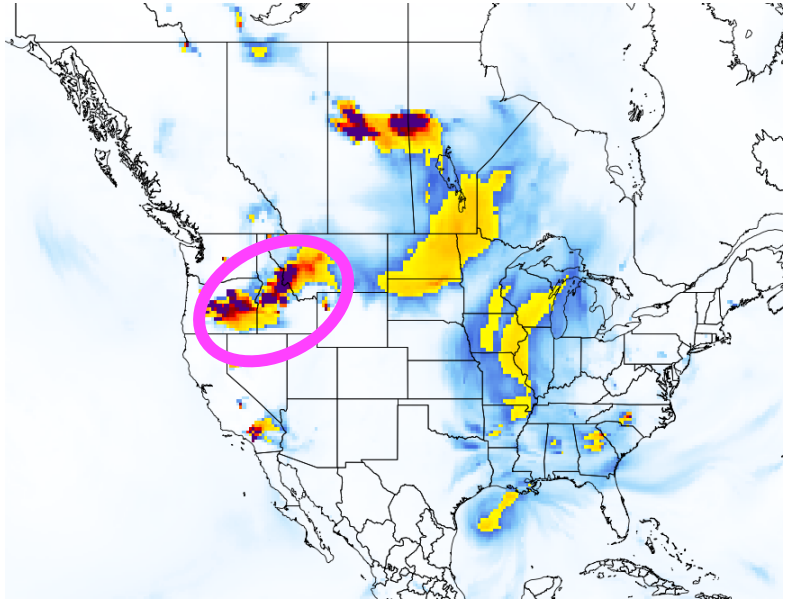

## Precipitation



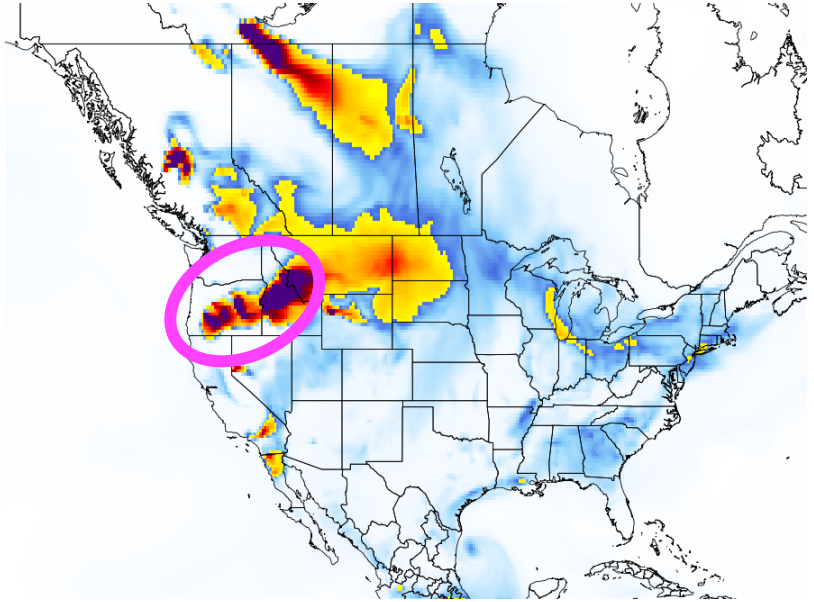

## AirNow $PM_{2.5}$ AQI



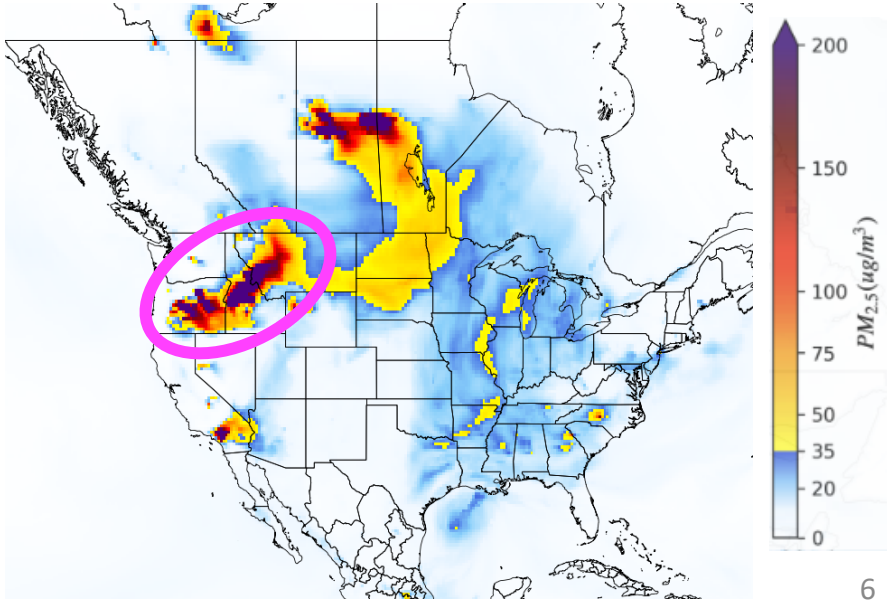

## GEOS-FP



## GEOS-CF

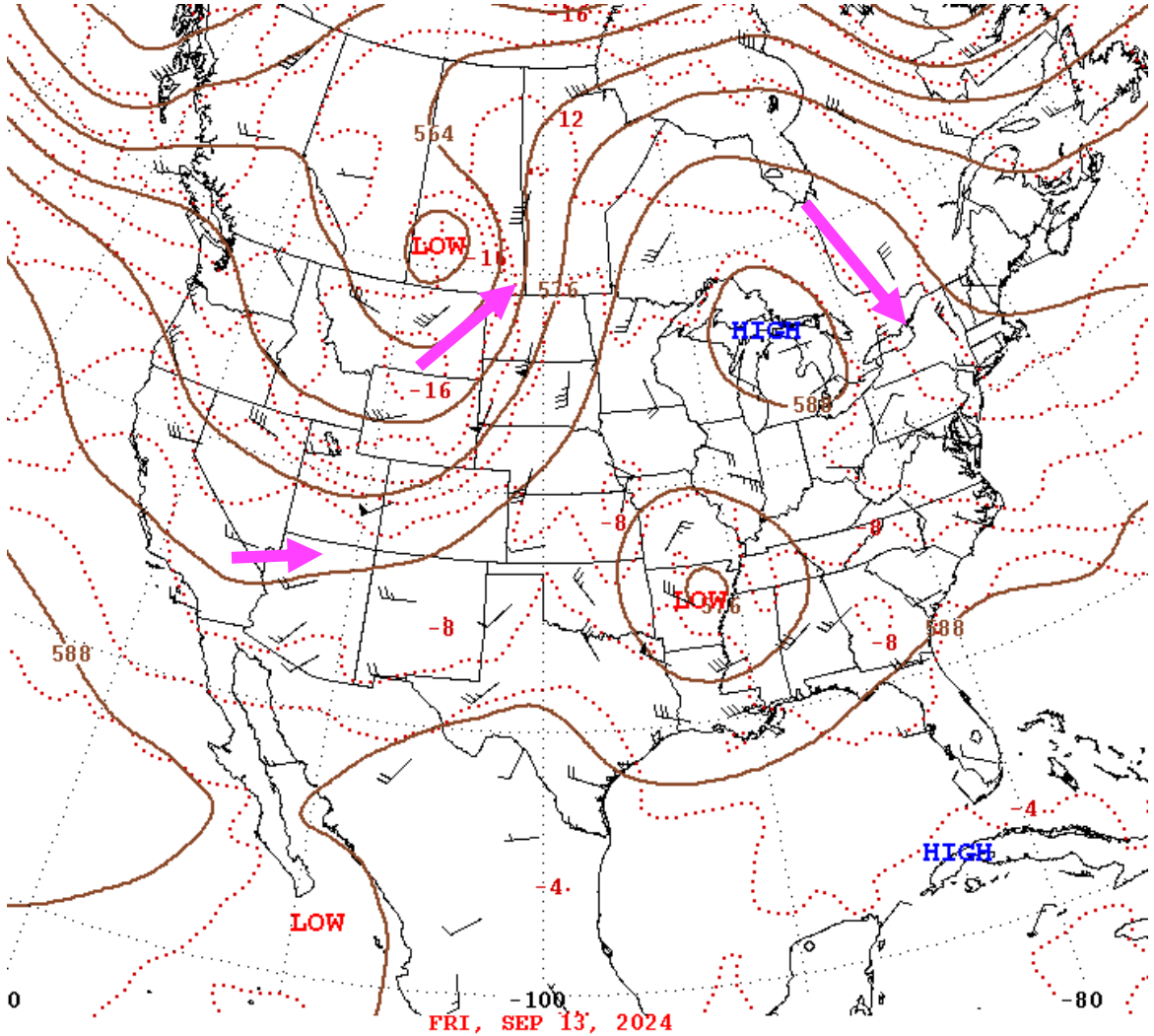


## Ensemble

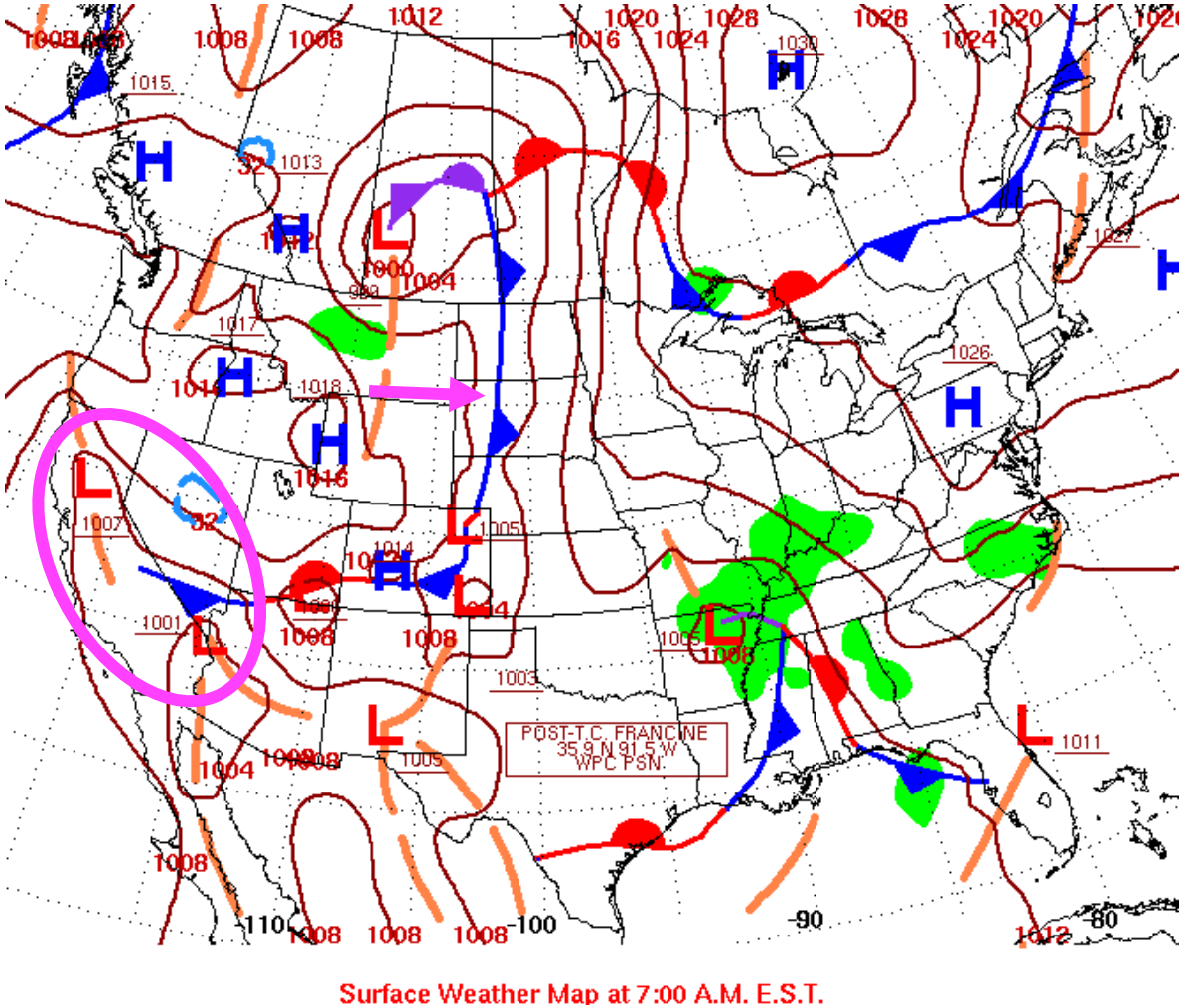


# Air Quality Reflection: Friday Sept 13, 2024

## 500 mb Contours

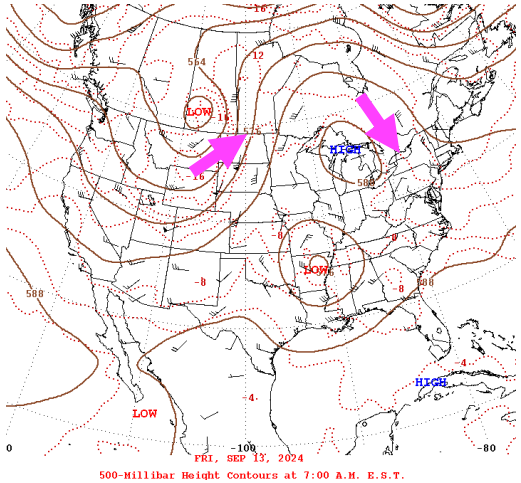



## Surface Weather



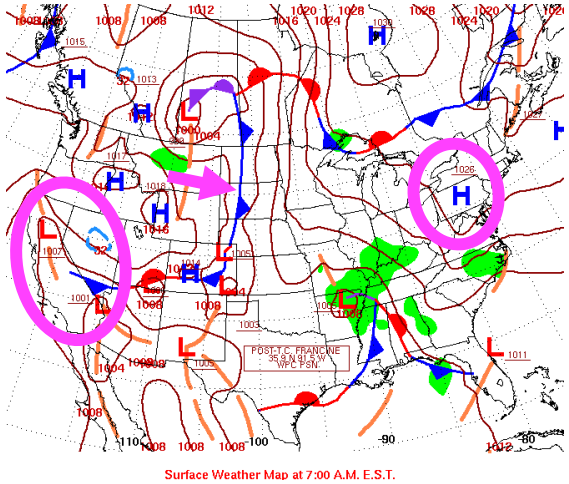
# Air Quality Reflection: Friday Sept 13, 2024

## 500 mb Contours



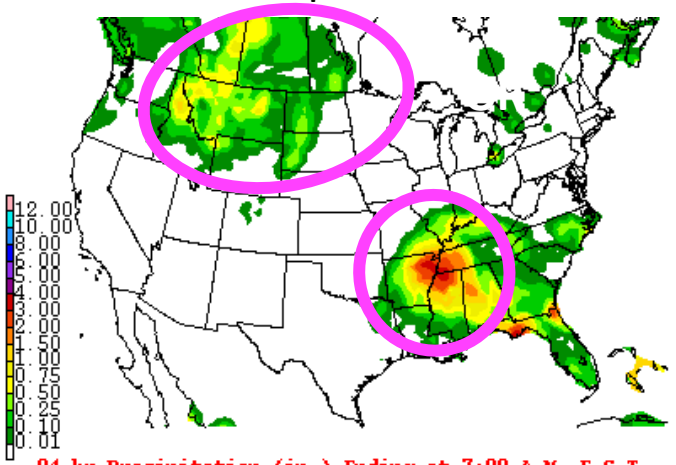

500-Millibar Height Contours at 7:00 A.M. E.S.T.

## Surface Weather



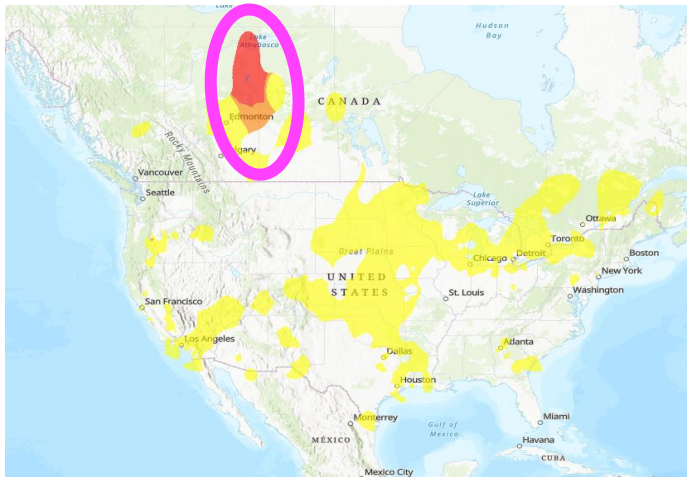
Surface Weather Map at 7:00 A.M. E.S.T.

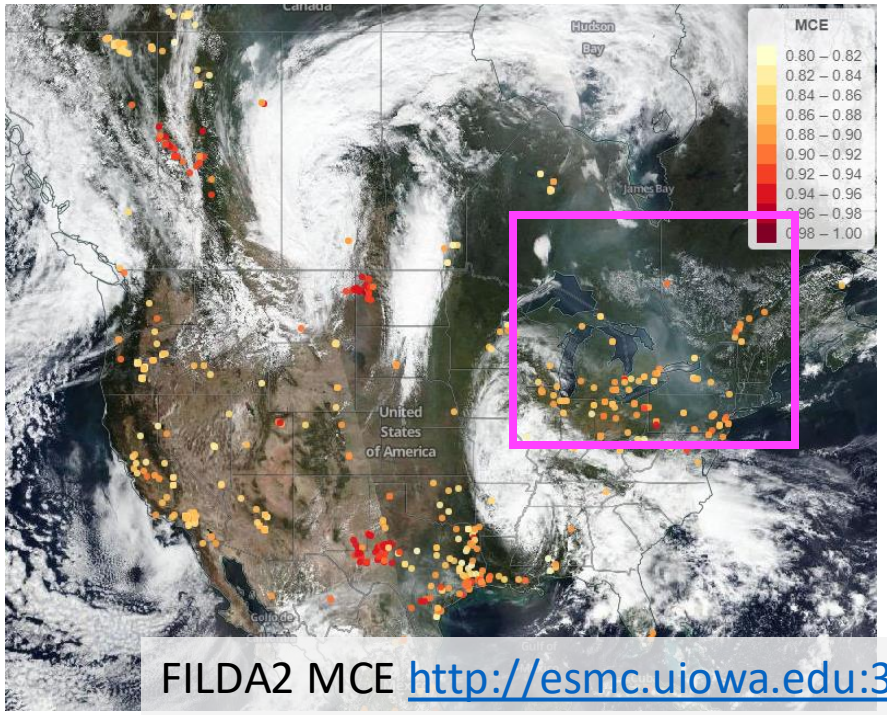
## Precipitation

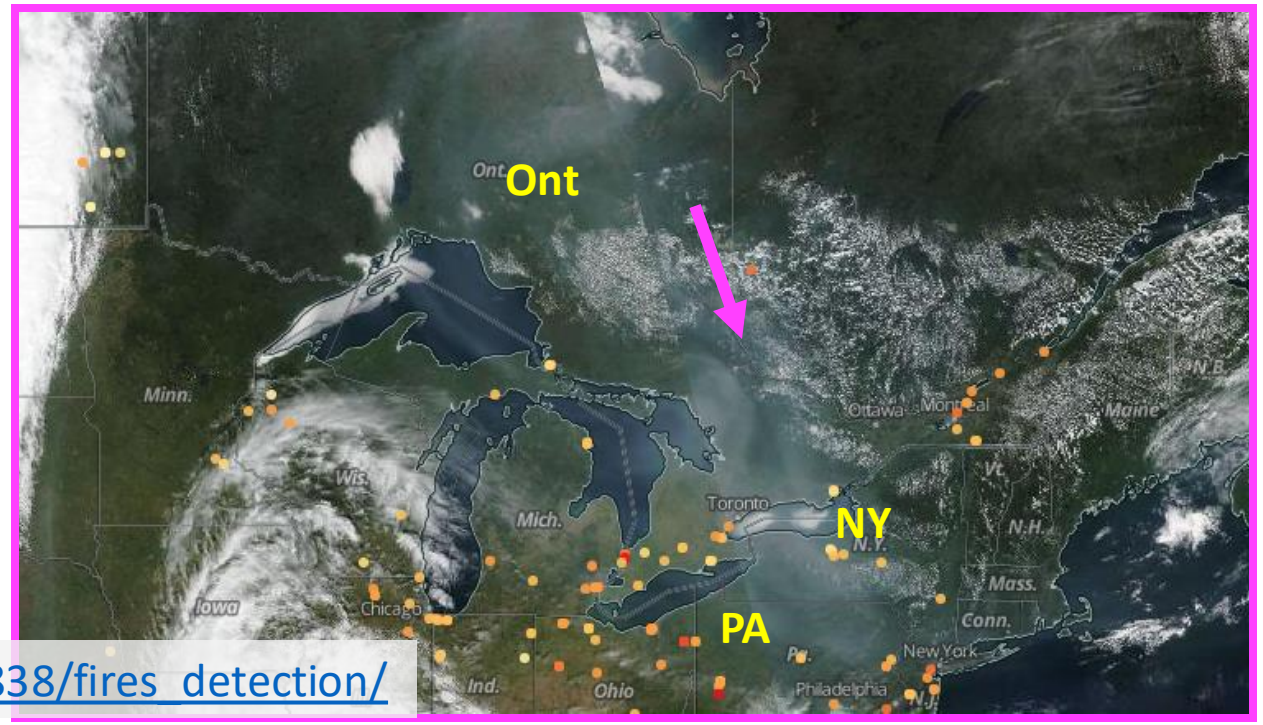



24-hr Precipitation (in.) Ending at 7:00 A.M. E.S.T.

## AirNow $PM_{2.5}$ AQI



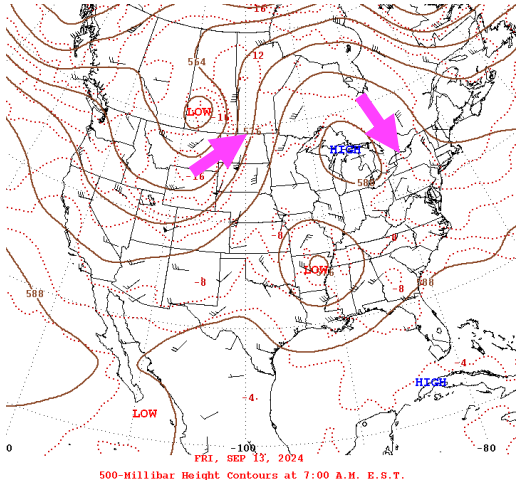



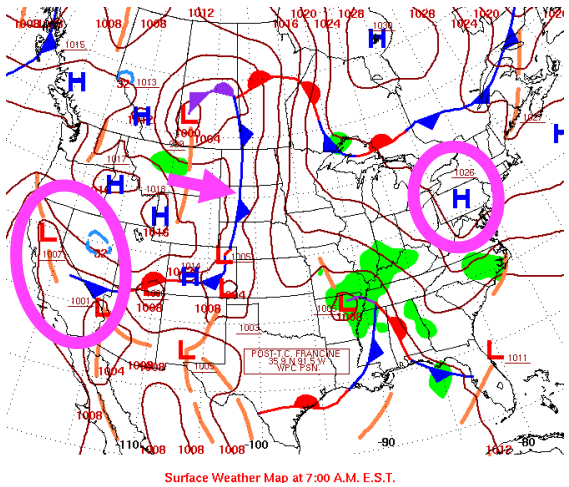

FILDA2 MCE http://esmc.uiowa.edu:3838/fires_detection/

# Air Quality Reflection: Friday Sept 13, 2024

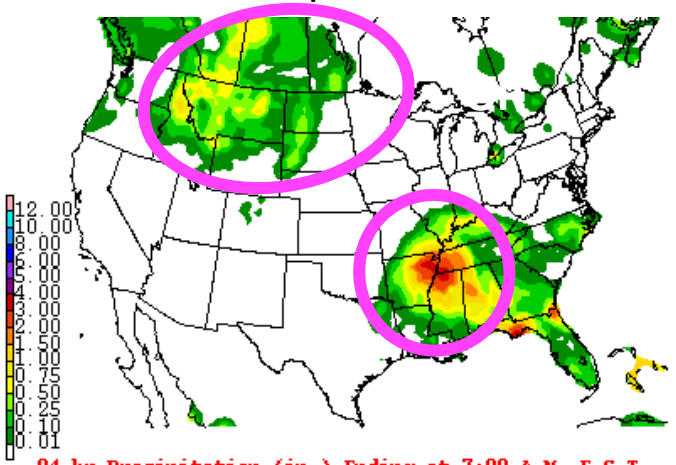
## 500 mb Contours



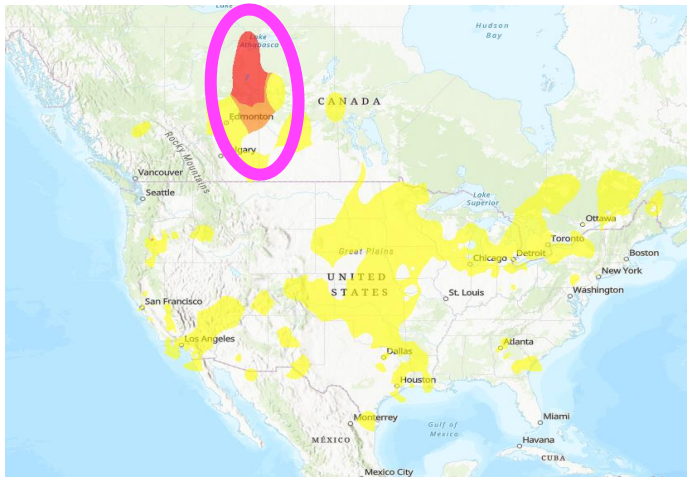

## Surface Weather



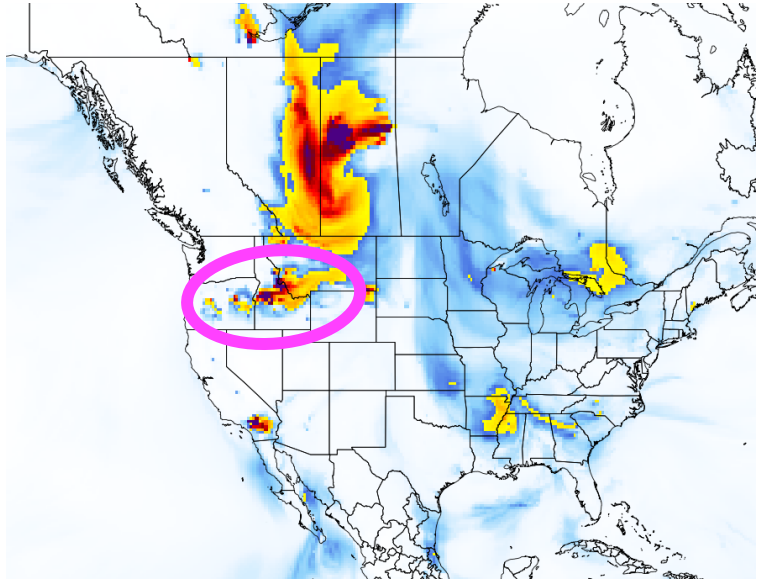

## Precipitation



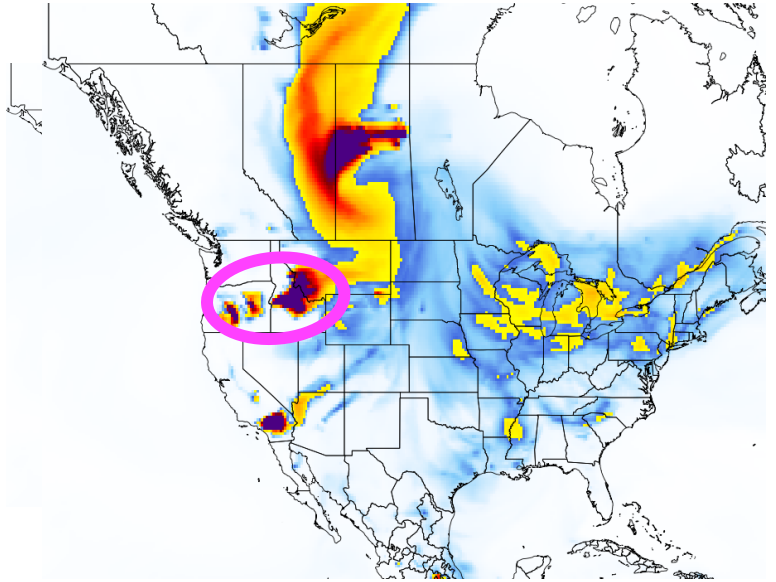

## AirNow $PM_{2.5}$ AQI



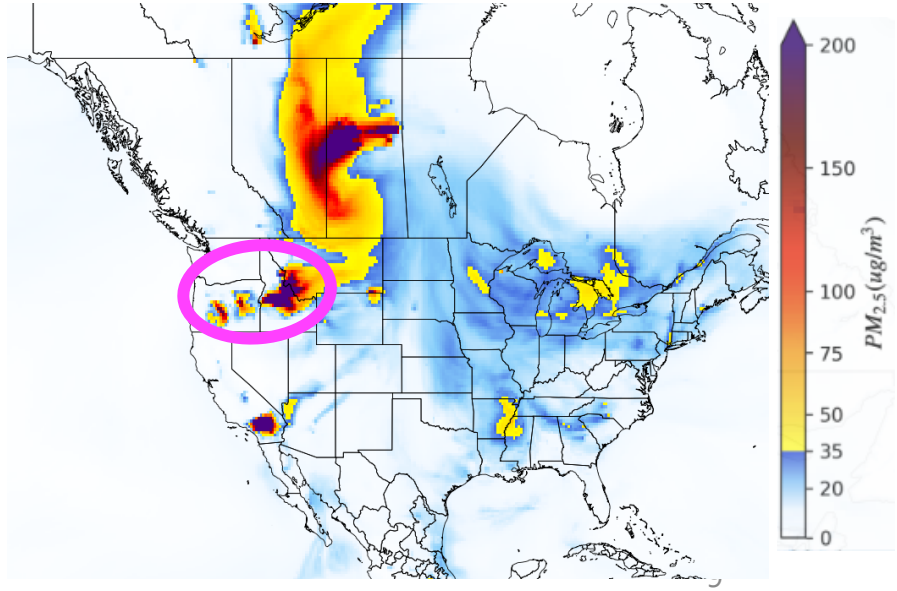

## GEOS-FP



## GEOS-CF

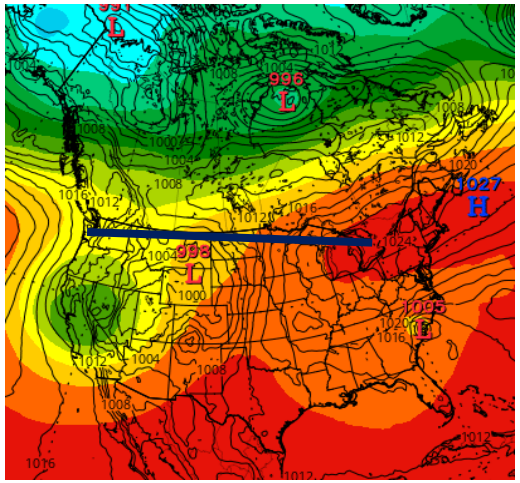


## Ensemble

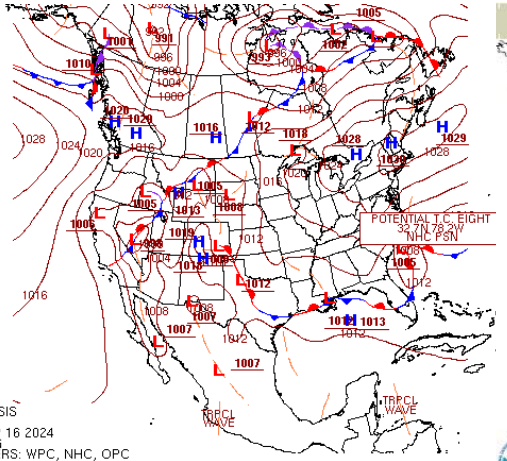


# Current Status: September 16, 2024

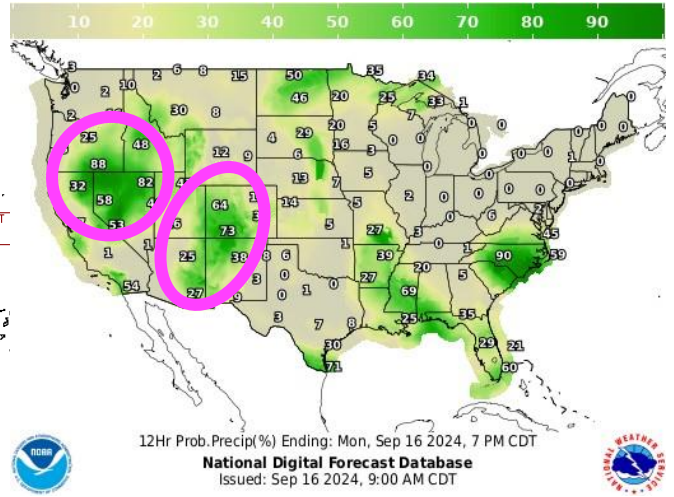
500 mb Contours



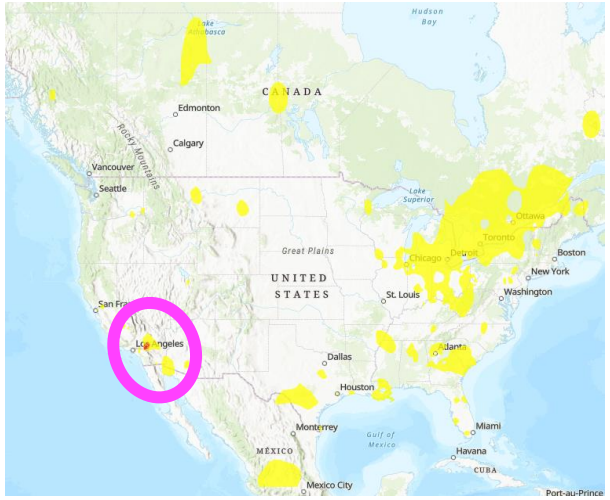
Surface Analysis

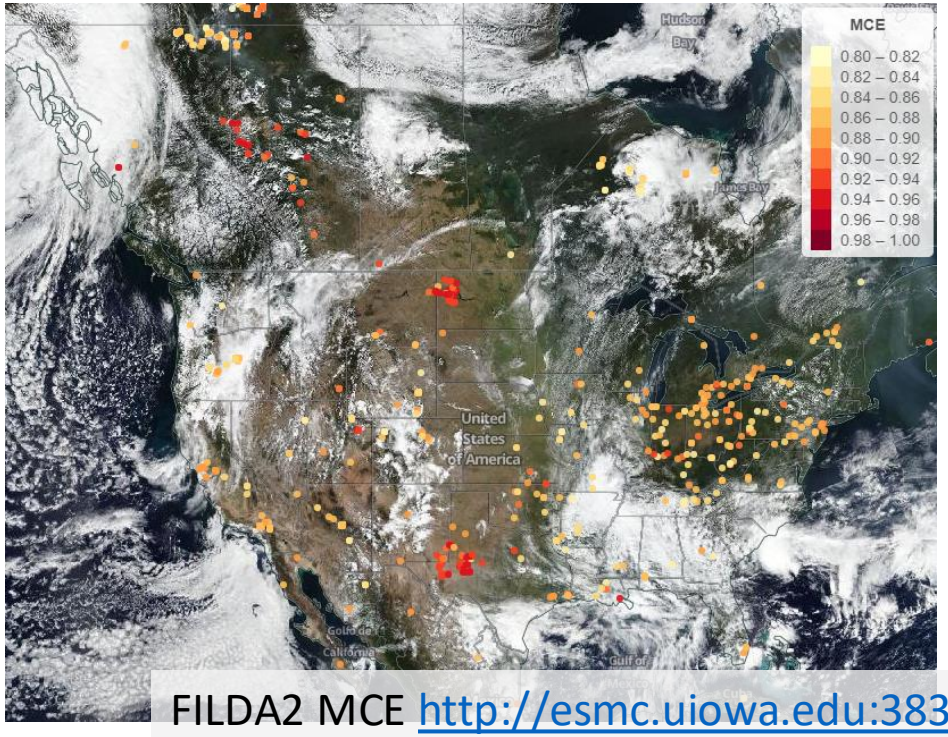



Precip. Prob.



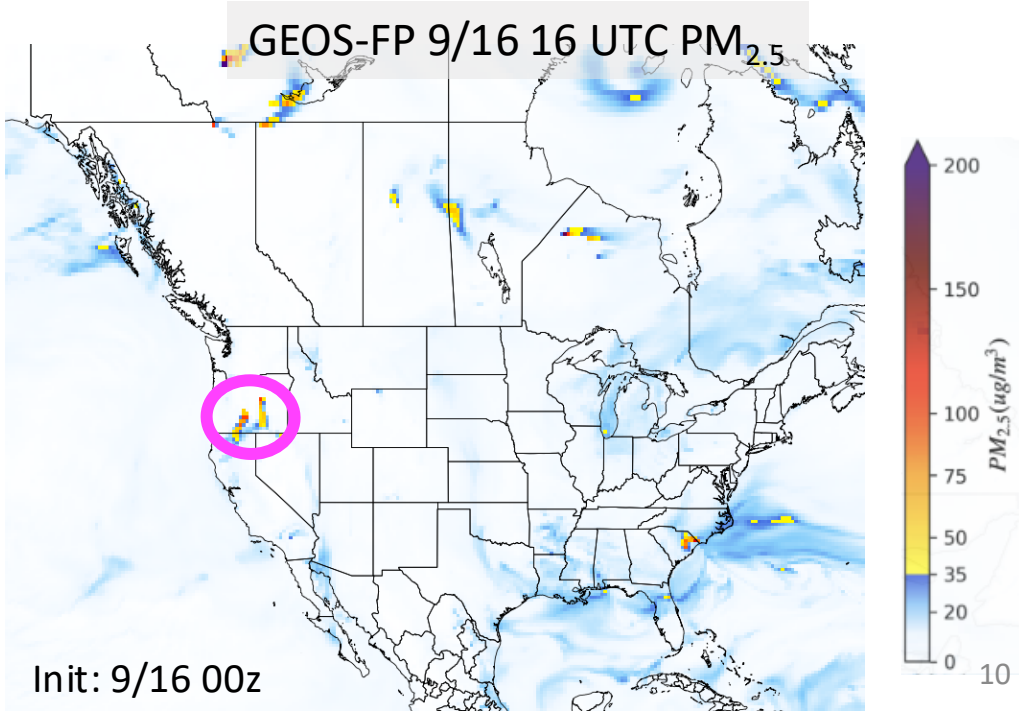

AirNow $PM_{2.5}$ AQI




Sun 9/15

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



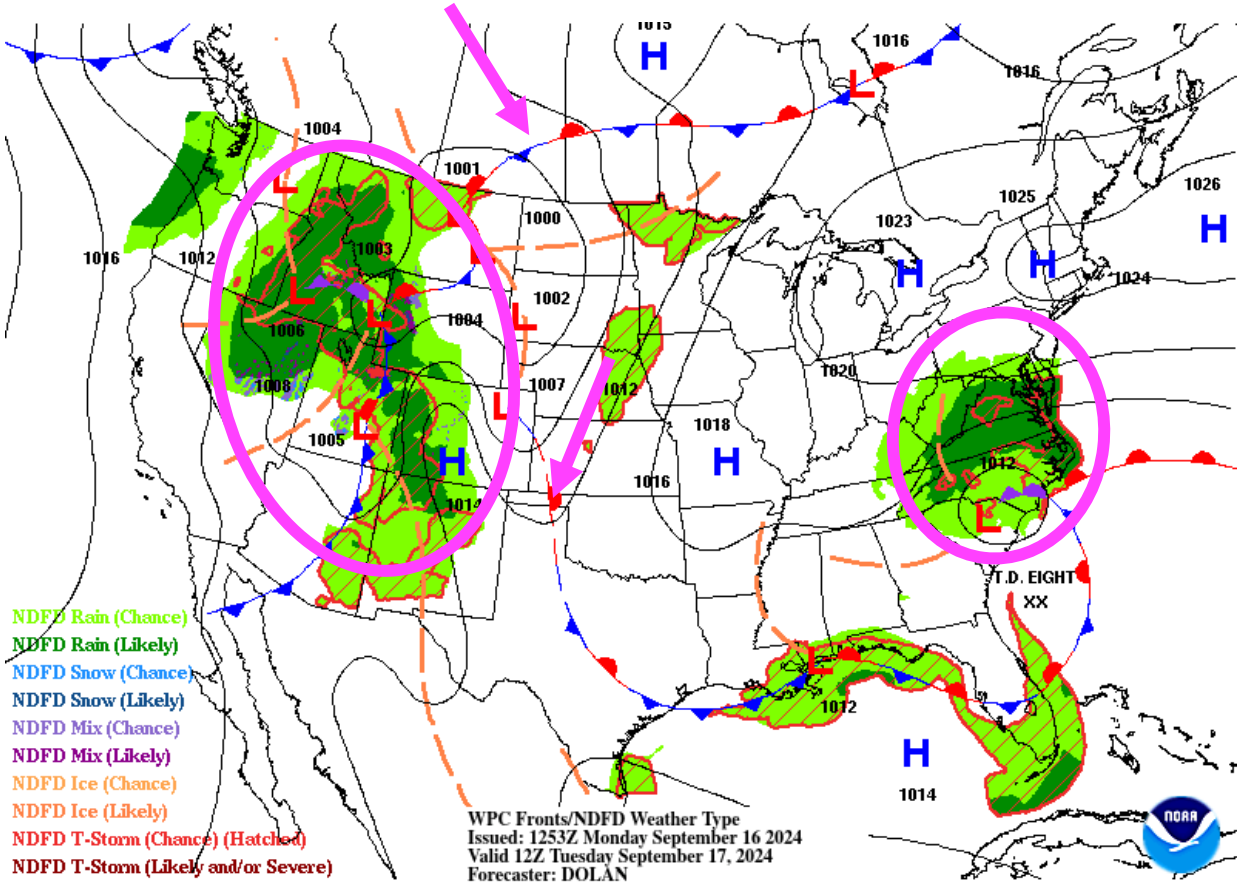

Init: 9/16 00z

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

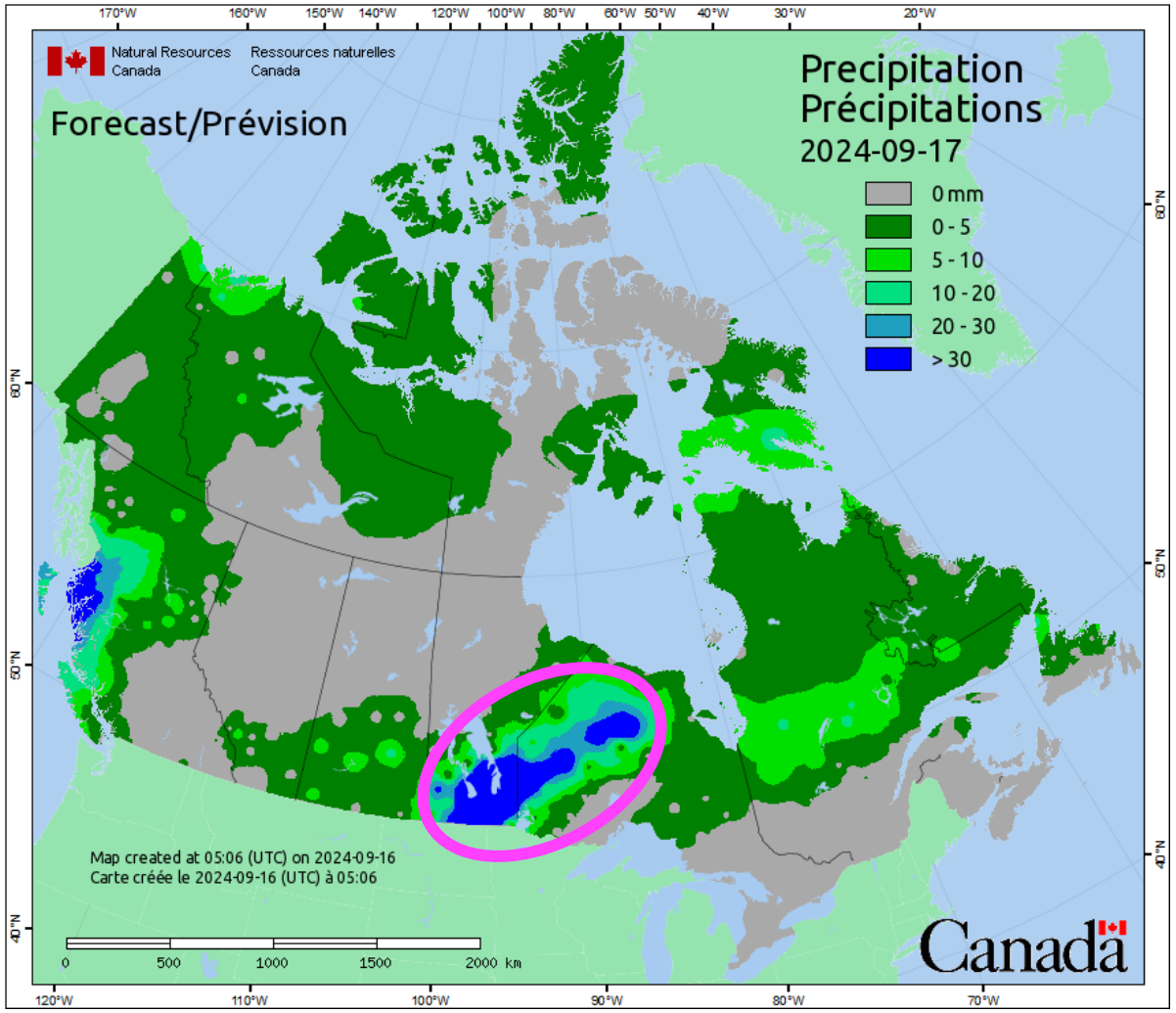
# Outlook: Short Range (1–3 days)

## Surface Forecast (Tuesday 9/17)

### US NWS Forecast

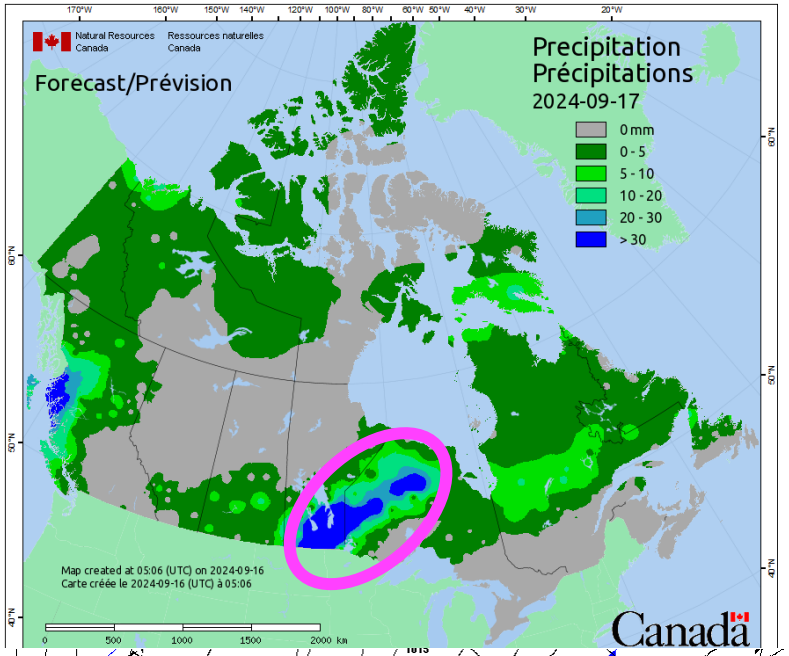


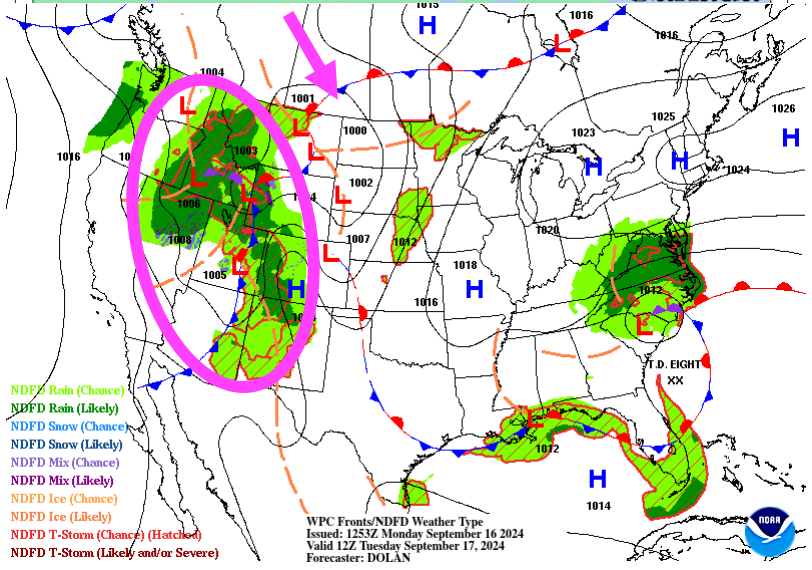

### Environment Canada Forecast



# Outlook: Short Range (1–3 days)

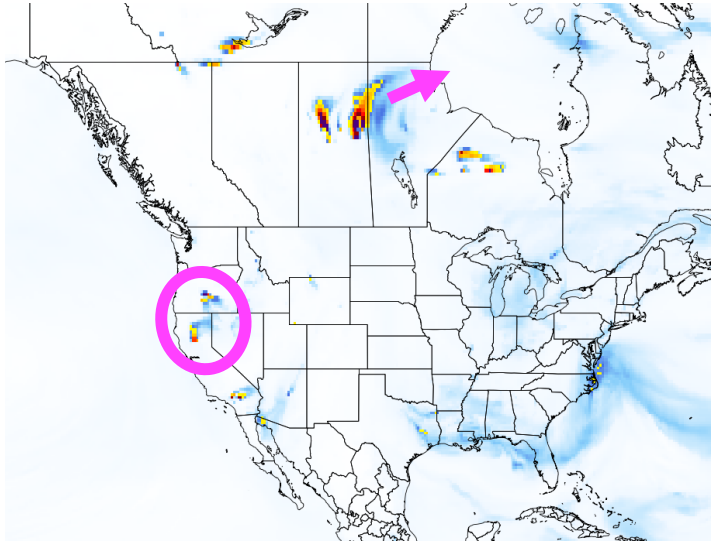
## Surface Forecast



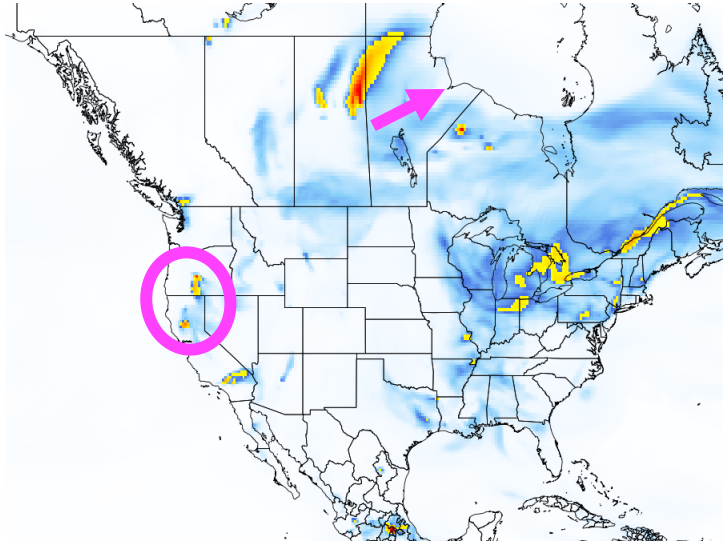




## (Tuesday 9/17) Model Means $PM_{2.5}$

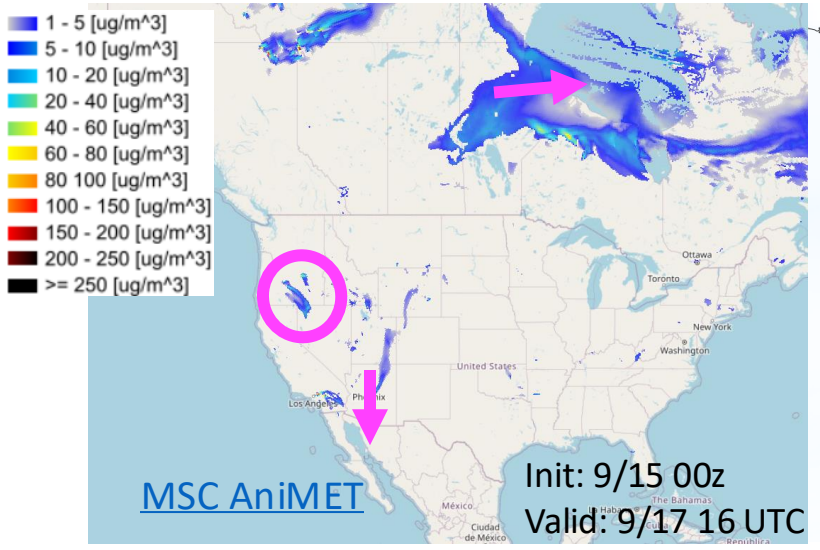
### GEOS-FP



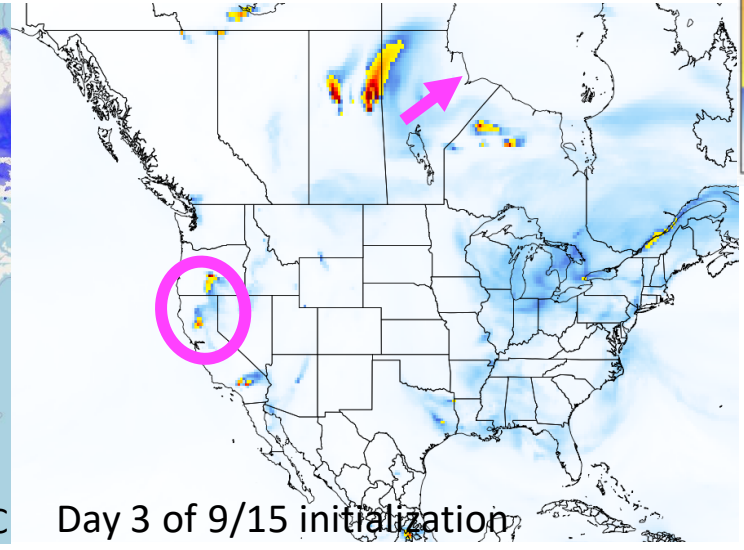
### GEOS-CF

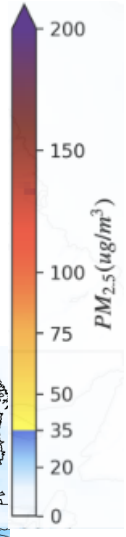


### Canada MSC AniMET




### Ensemble

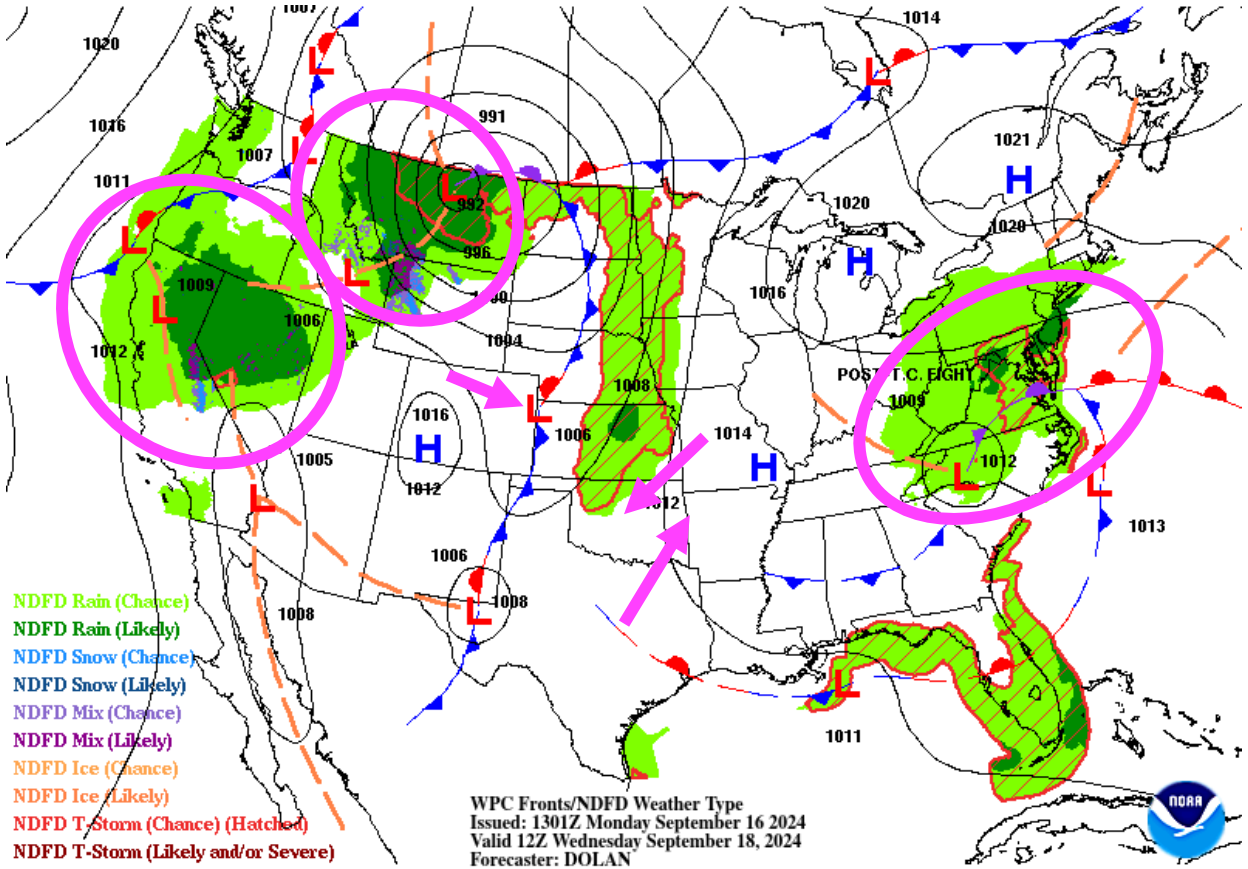


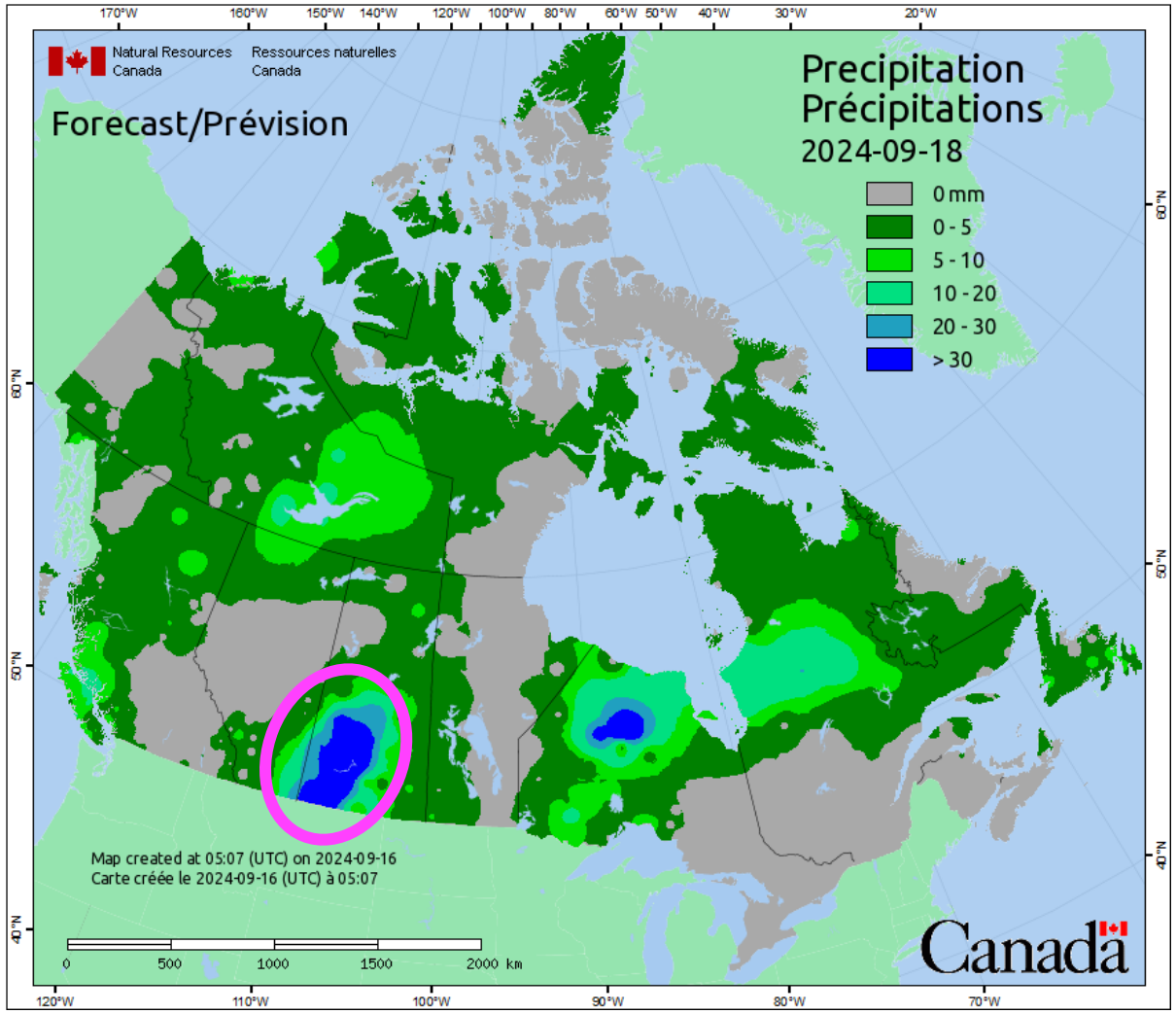
# Outlook: Short Range (1–3 days)

## Surface Forecast (Wednesday 9/18)

### US NWS Forecast

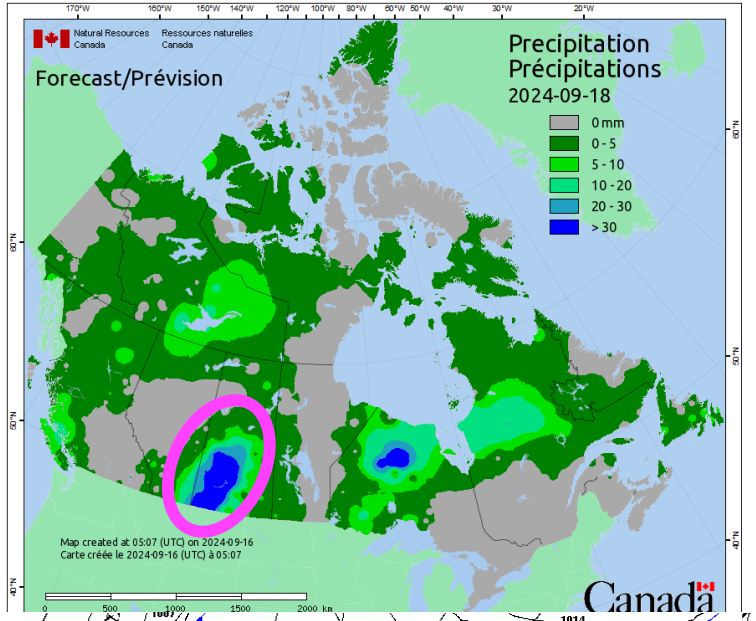


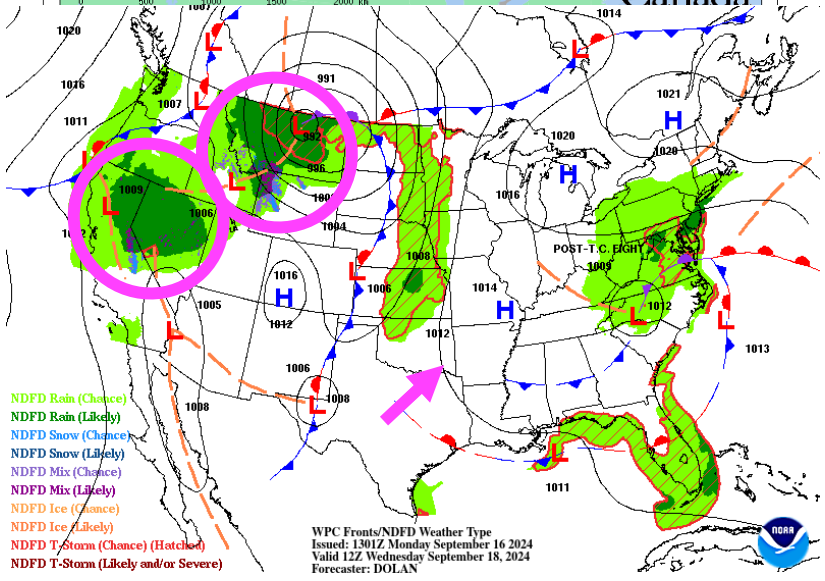

### Environment Canada Forecast

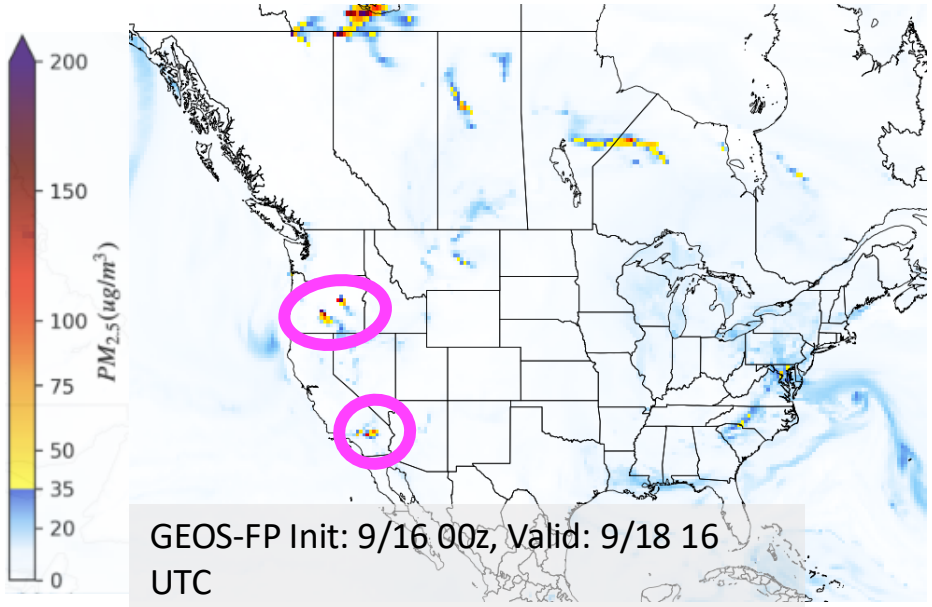


# Outlook: Short Range (1–3 days)

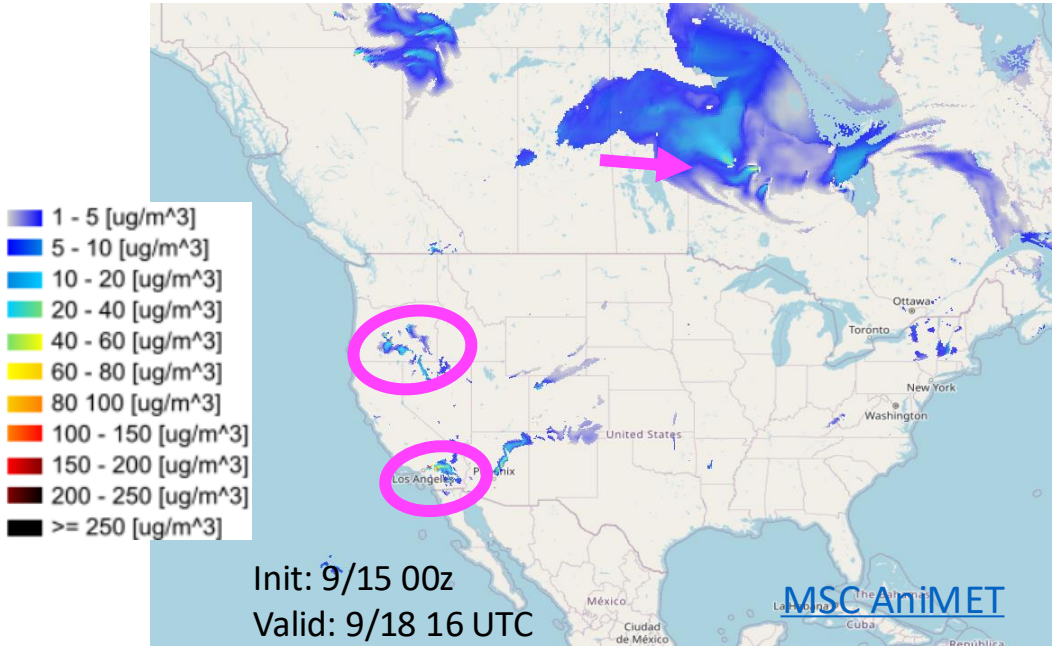
## Surface Forecast (Wednesday 9/18)



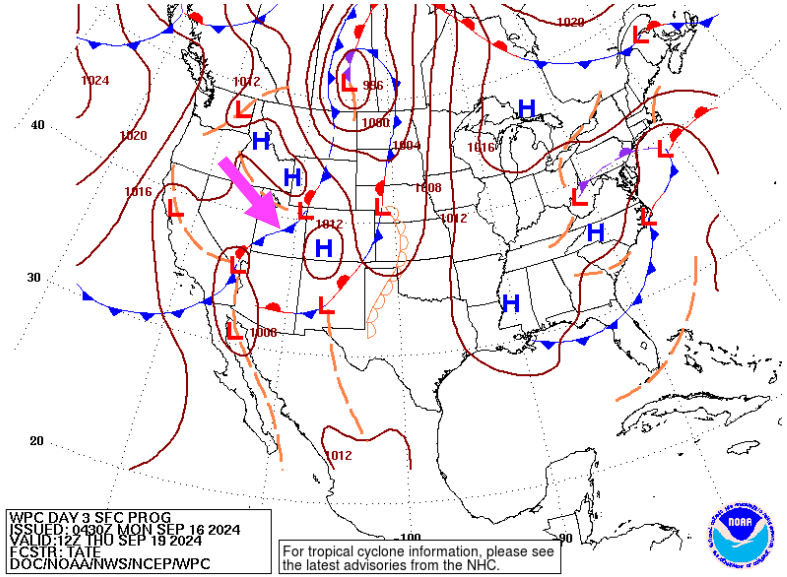
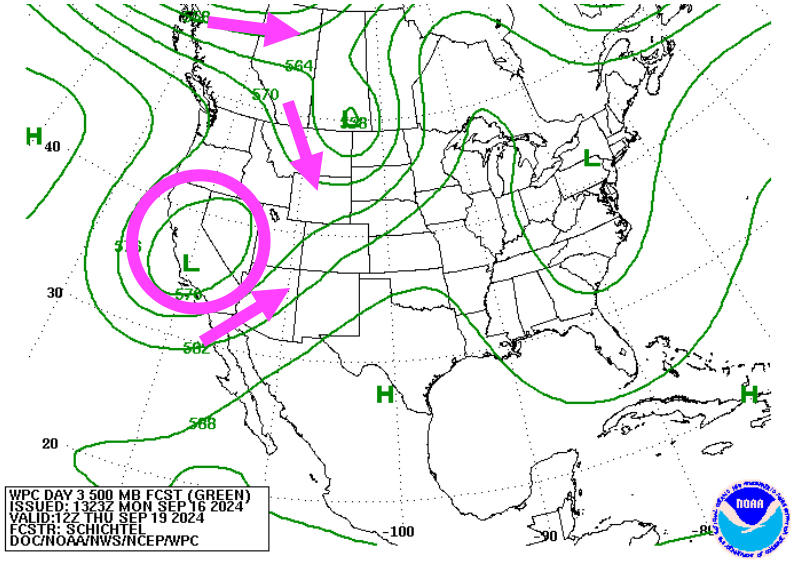
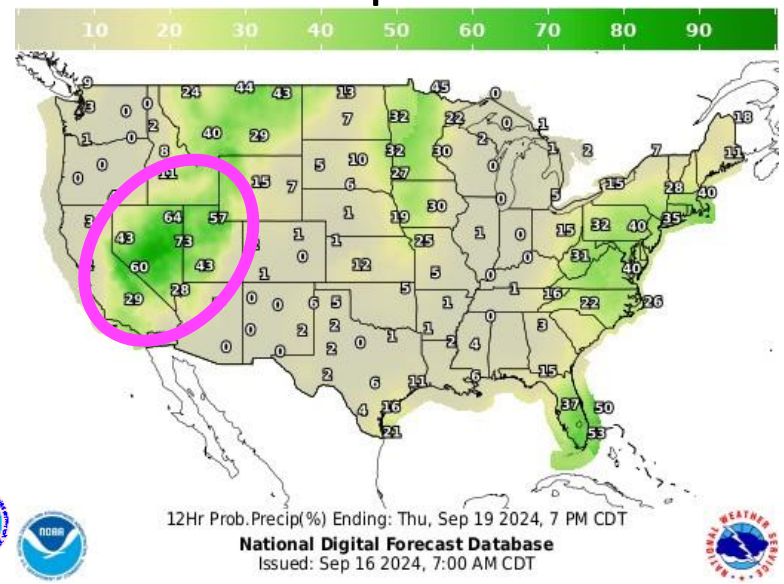
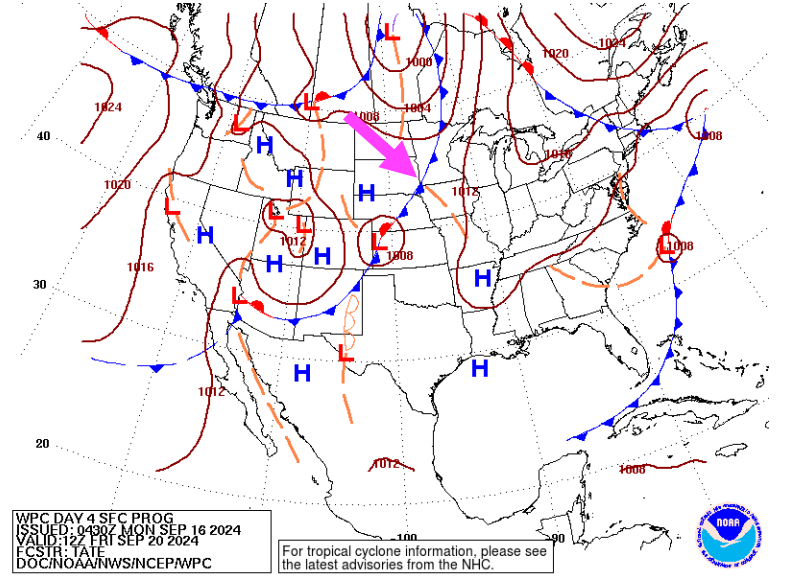
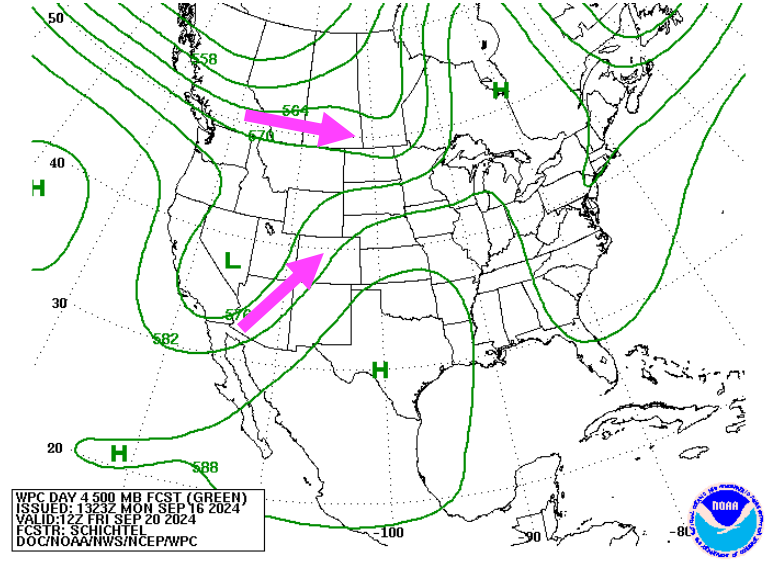
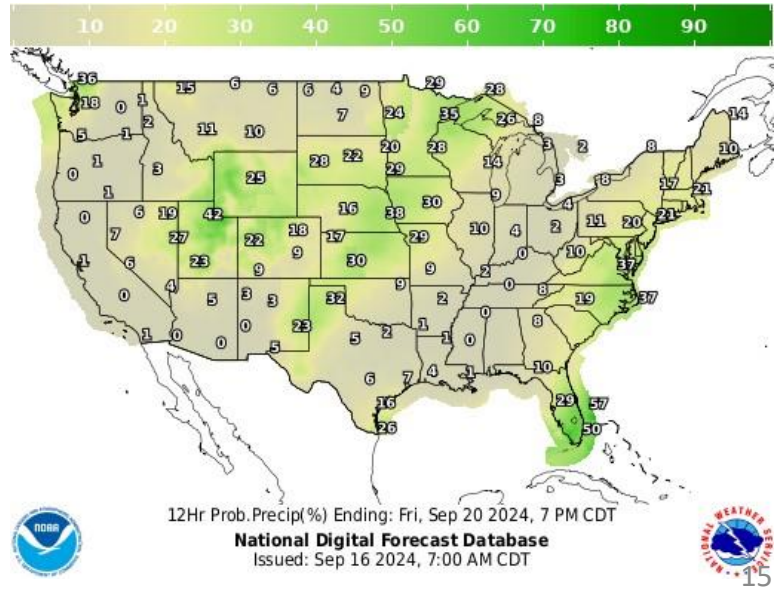

GEOS-FP Init: 9/16 00z, Valid: 9/18 16 UTC




Init: 9/15 00z
Valid: 9/18 16 UTC

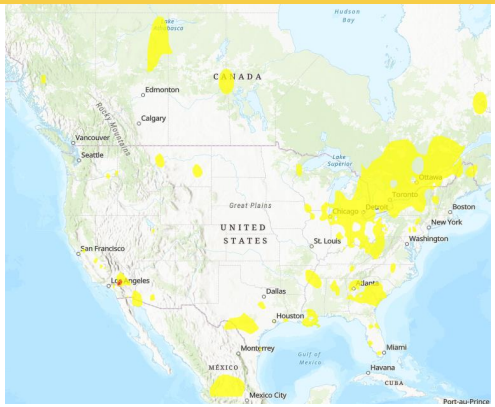
MSC AniMET

# Outlook: Medium Range

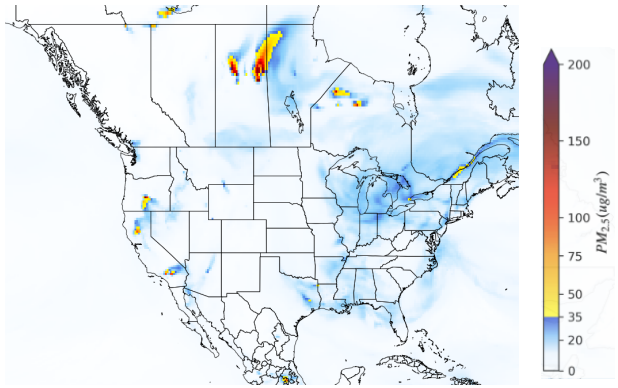
| | 500 mb Contours | Sea Level | Precip Prob. |
|---|---|---|---|
| Thurs 9/19 |  |  |  |
| Friday 9/20 |  |  |  |

# Summary

**Monday :** So. CA fires continue to impact the local $PM_{2.5}$ AQI. Aged smoke aloft over northeastern US can be contributing to regional moderate $PM_{2.5}$ AQI.




**T → W :** CA and OR wildfire smoke are predicted to impact local $PM_{2.5}$ AQI and surface low pressure systems would promote smoke transport aloft. Northern Canadian wildfire smoke are not likely to impact the US AQI, but keep an eye on aged smoke transport later in the week.




**Th → F:** Should OR and CA fires continue, or grow, 500 mb winds would support any smoke aloft to be transported easterly/northeasterly respectively. Also if any southern Sask. or Alb. wildfires develop smoke could be transported into northern US.