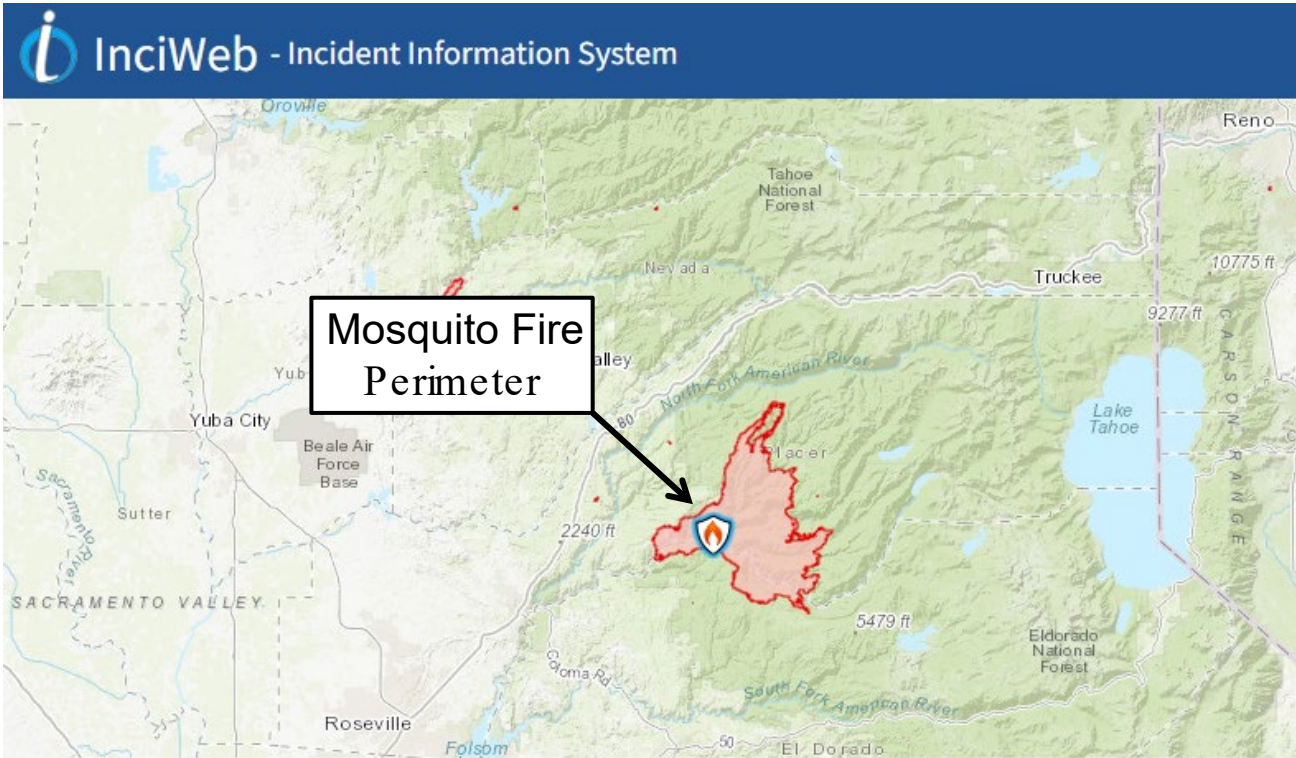


CW3E AR Outlook: 16 September 2022

Early-Season Atmospheric River to Bring Precipitation to Northern California

- An early-season atmospheric river (AR) associated with a cutoff low is forecast to bring precipitation to Northern California and potentially help firefighting efforts at the Mosquito Fire, which has burned nearly 70,000 acres
- Forecast models show the potential for an AR 1 (based on the Ralph et al. 2019 AR Scale) in the foothills of Northern CA near the location of the Mosquito Fire, but there is still uncertainty in the magnitude and duration of AR conditions
- GFS and ECMWF ensemble forecasts are showing mean areal precipitation (MAP) over the North Fork American watershed around 1 inch over the next 10 days with considerable spread among individual ensemble members

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<https://www.trpa.gov/mosquito-fire-information/>



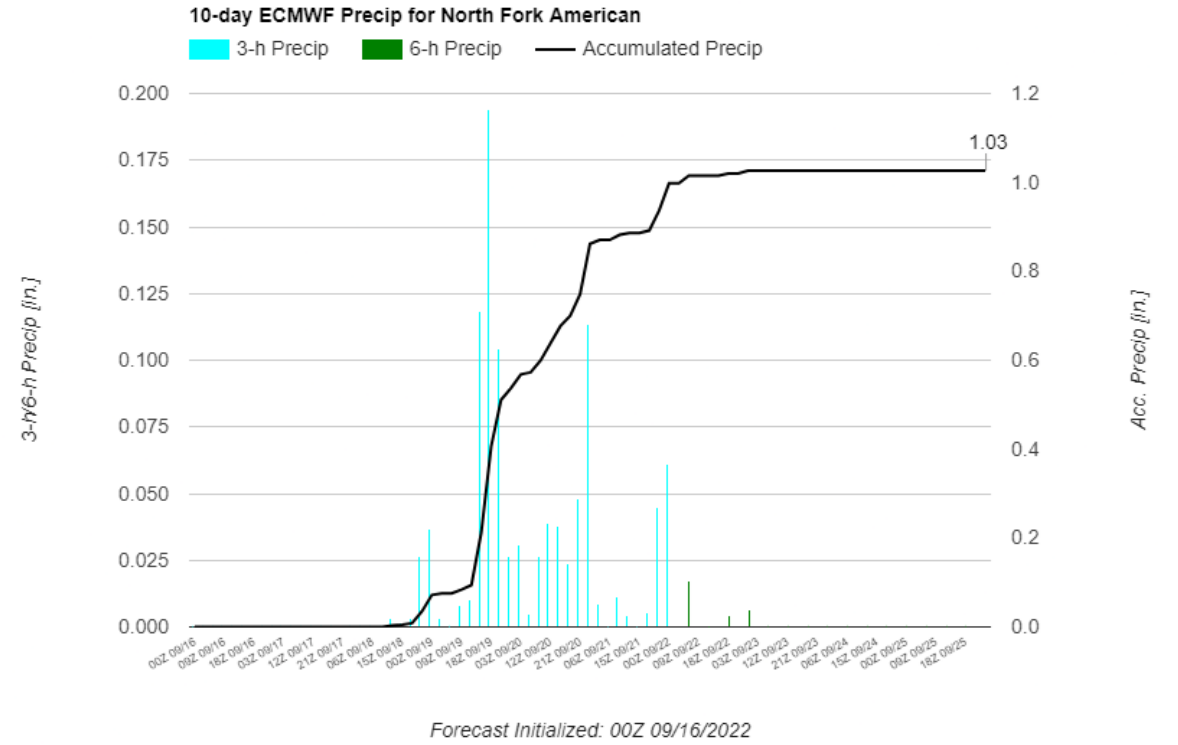
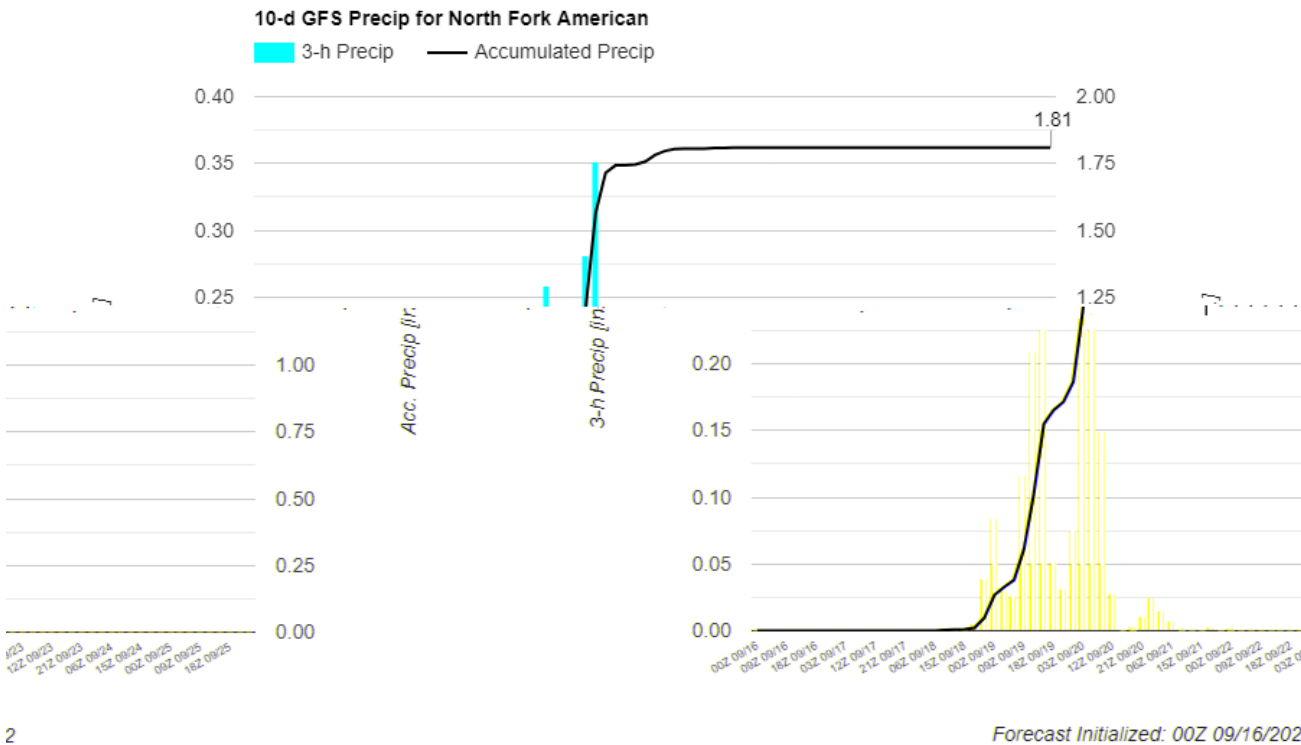
<https://www.yahoo.com/lifestyle/satellite-imagery-captures-smoke-mosquito-152501984.html>

CW3E AR Outlook: 16 September 2022

Deterministic Watershed Precipitation: North Fork American 10-day Precipitation Forecasts

GFS

ECMWF

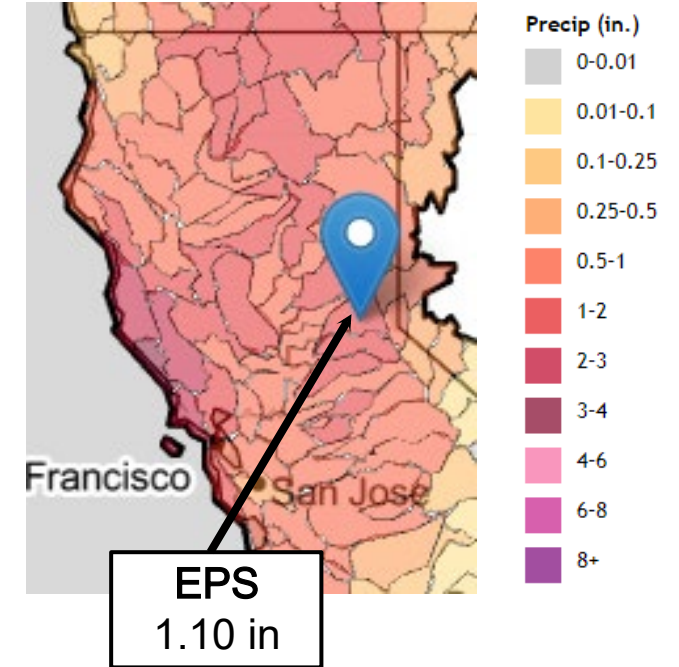
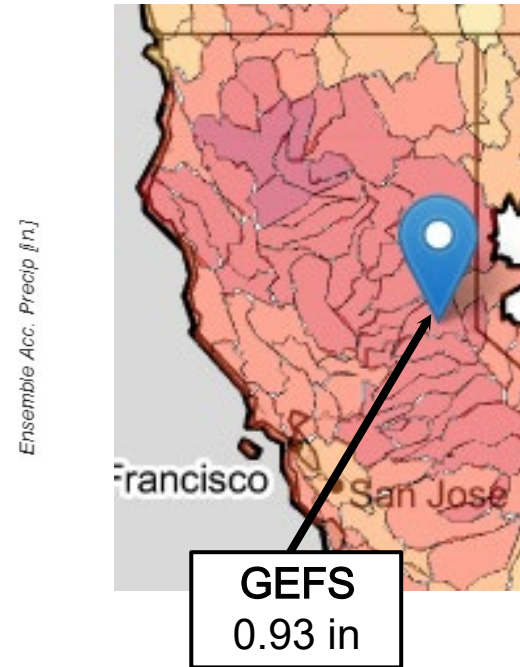
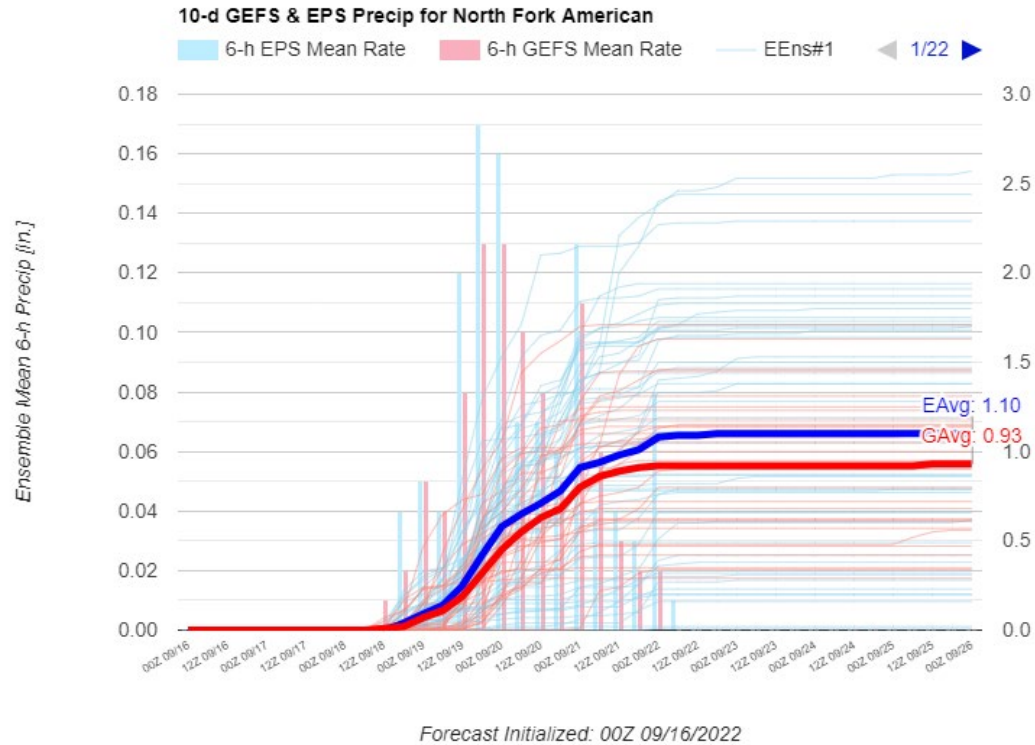


- There are differences in timing and intensity of forecast precipitation between the GFS and ECMWF deterministic models for the North Fork American watershed
- The GFS (ECMWF) is showing a total of 1.81 (1.03) inches of MAP over the North Fork American watershed
- Precipitation from the GFS is concentrated between 18Z Sept 18 and 06Z Sept 21 where the ECMWF begins at the same time but is spread out over a longer period ending 00Z Sept 22

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Ensemble Watershed Precipitation: North Fork American 10-day Precipitation Forecasts

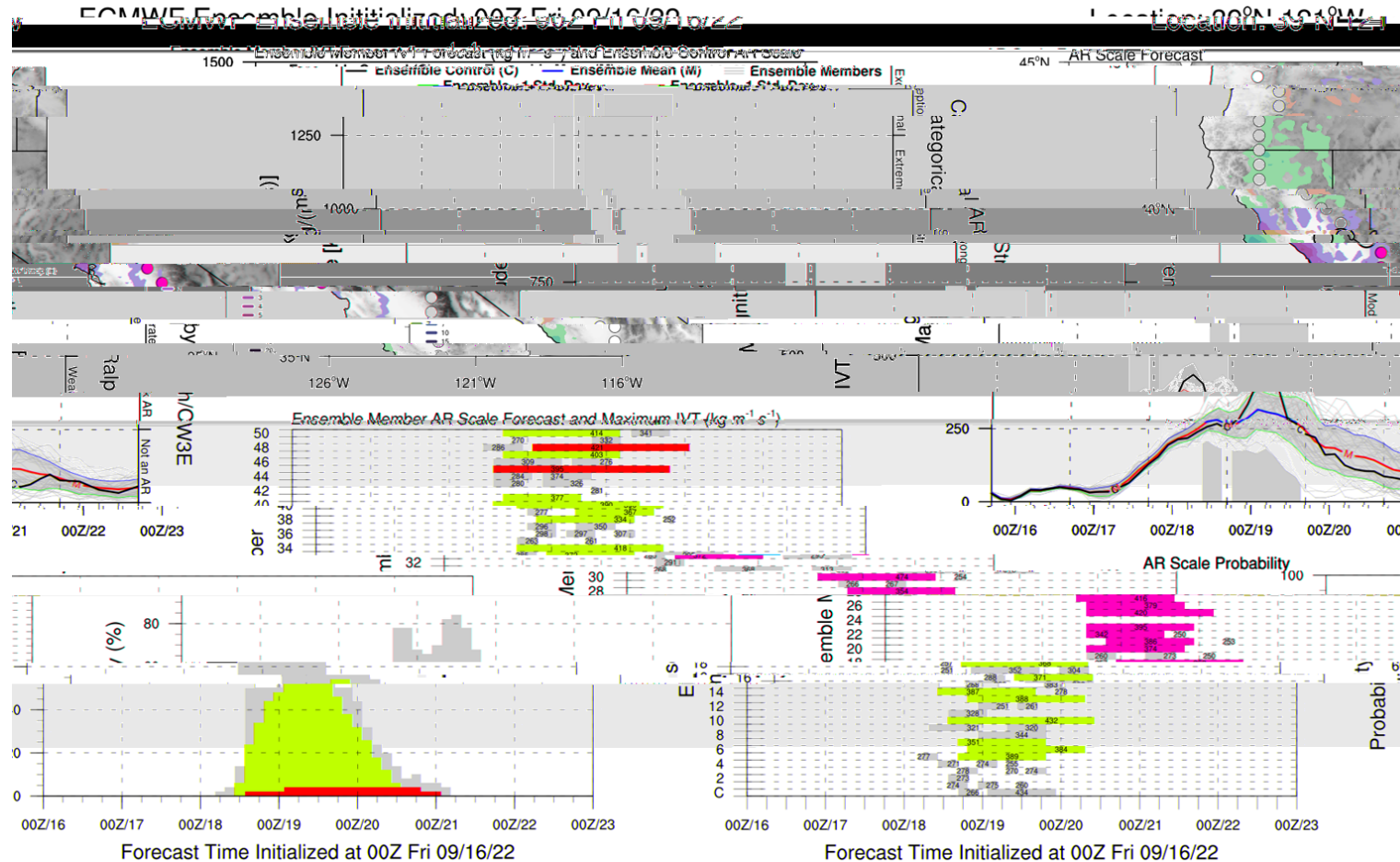
NCEP GEFS and ECMWF EPS



- There is considerably more spread in forecast watershed precipitation in the ECMWF EPS for the North Fork American watershed than in the NCEP GEFS, although timing is more consistent.
- The NCEP GEFS (ECMWF EPS) is showing average total watershed MAP of 0.93 (1.10) inches
- Watershed MAP from the NCEP GEFS (ECMWF EPS) ranges between 0.2 inches and 1.7 inches (0 inches and 2.6 inches)

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ECMWF AR Scale and IVT Forecast



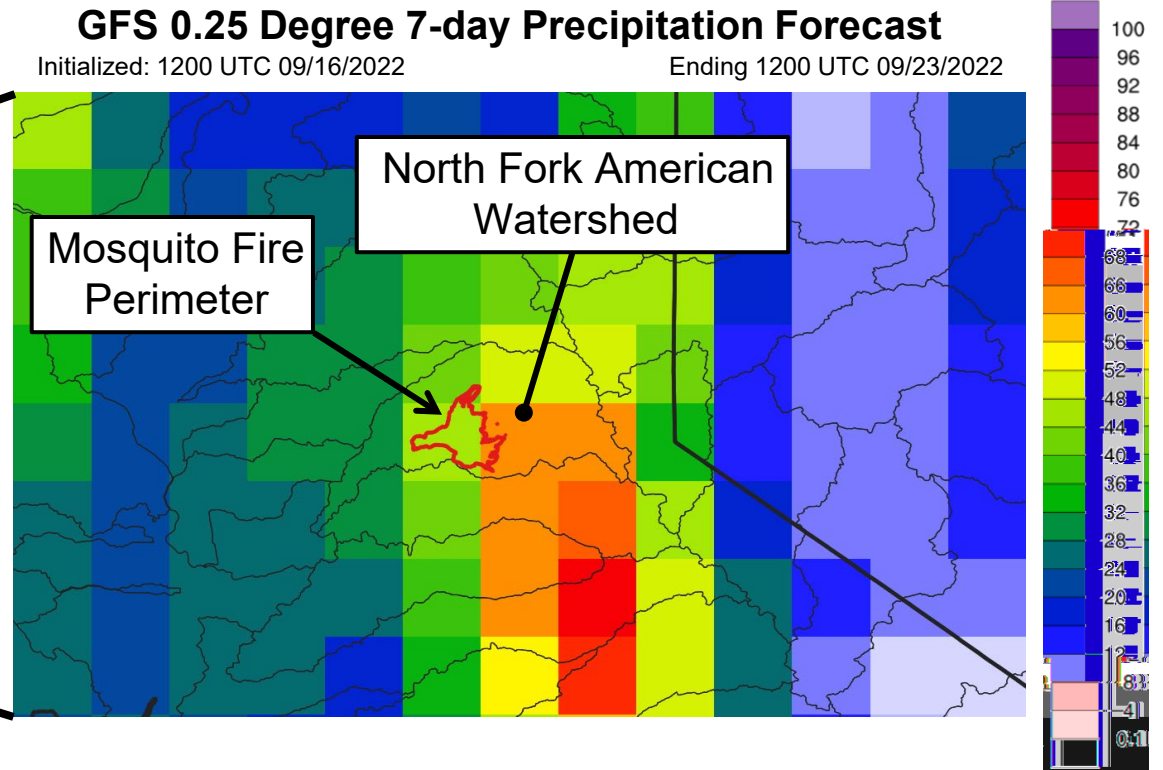
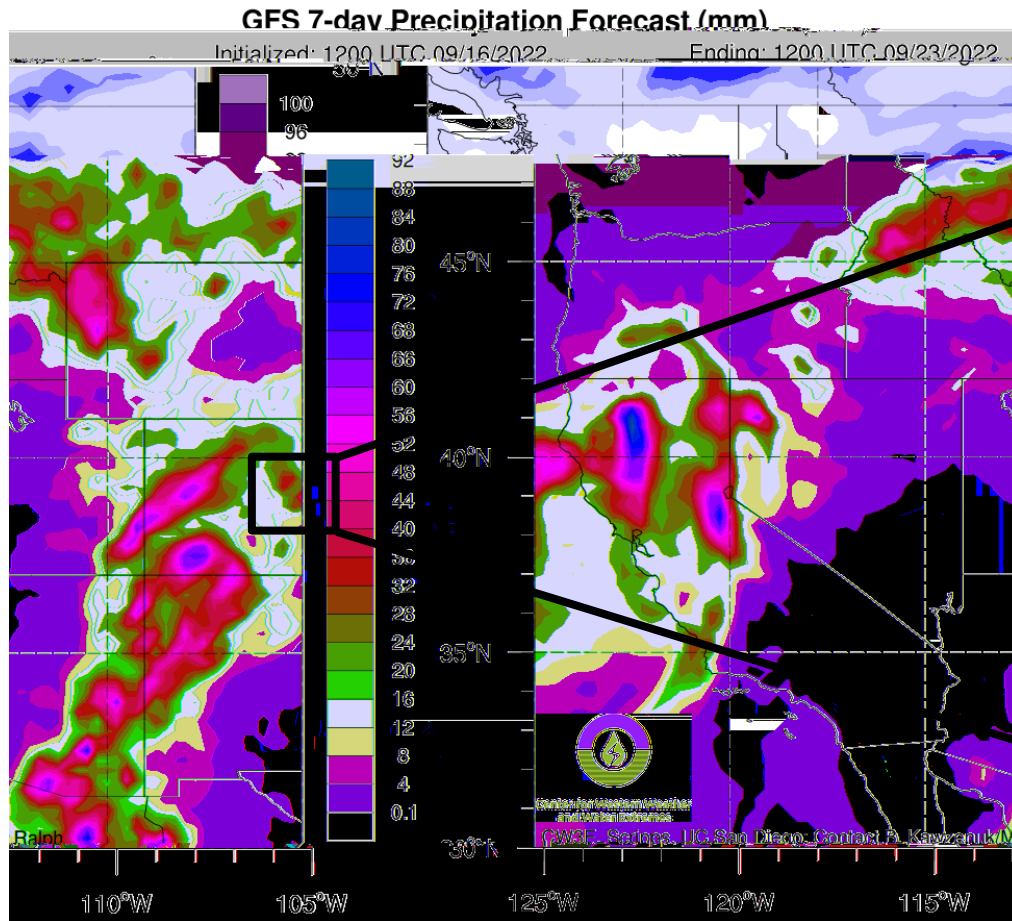
• The 00Z ECMWF EPS control run is forecasting weak AR conditions (IVT > 250 kg m⁻¹ s⁻¹) at 39°N, 121°W (near the location of the Mosquito Fire). However, the duration is less than 24 hours so it does not meet the criteria on the AR scale

• There is still considerable uncertainty in the timing of the maximum IVT, as well as the duration of AR conditions

• 2 (4%) ensemble members are predicting AR 2 conditions with 25 (49%) predicting AR 1 conditions

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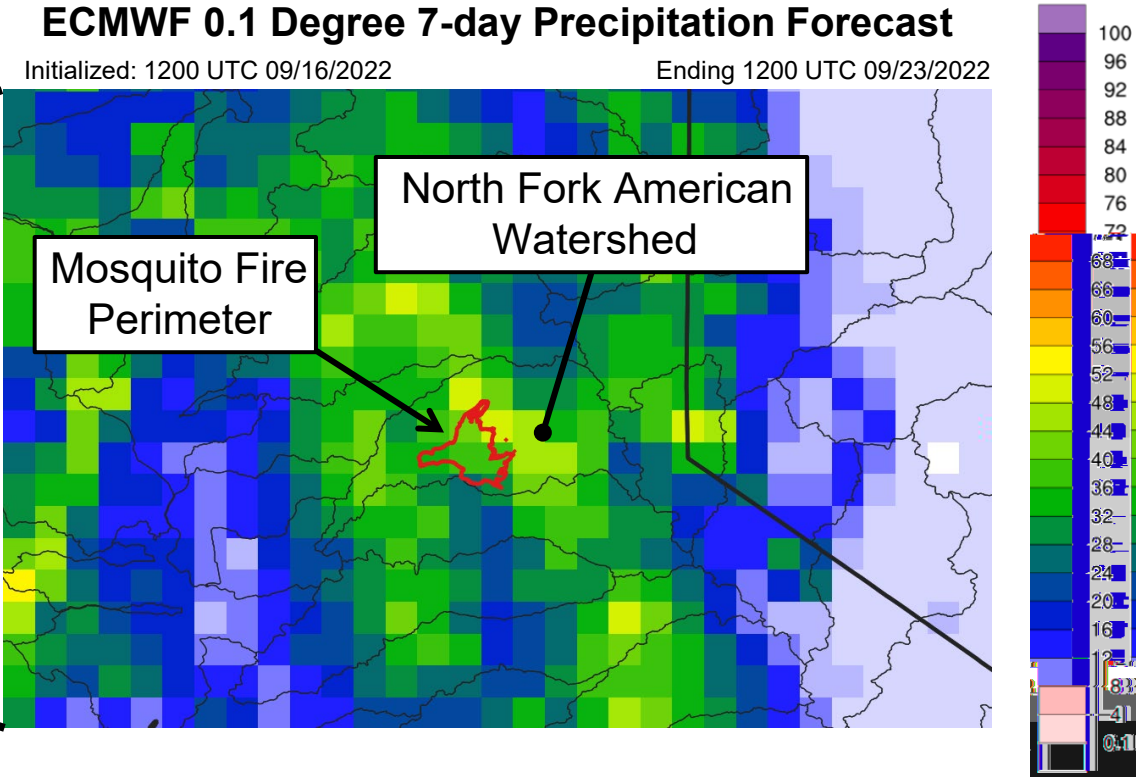
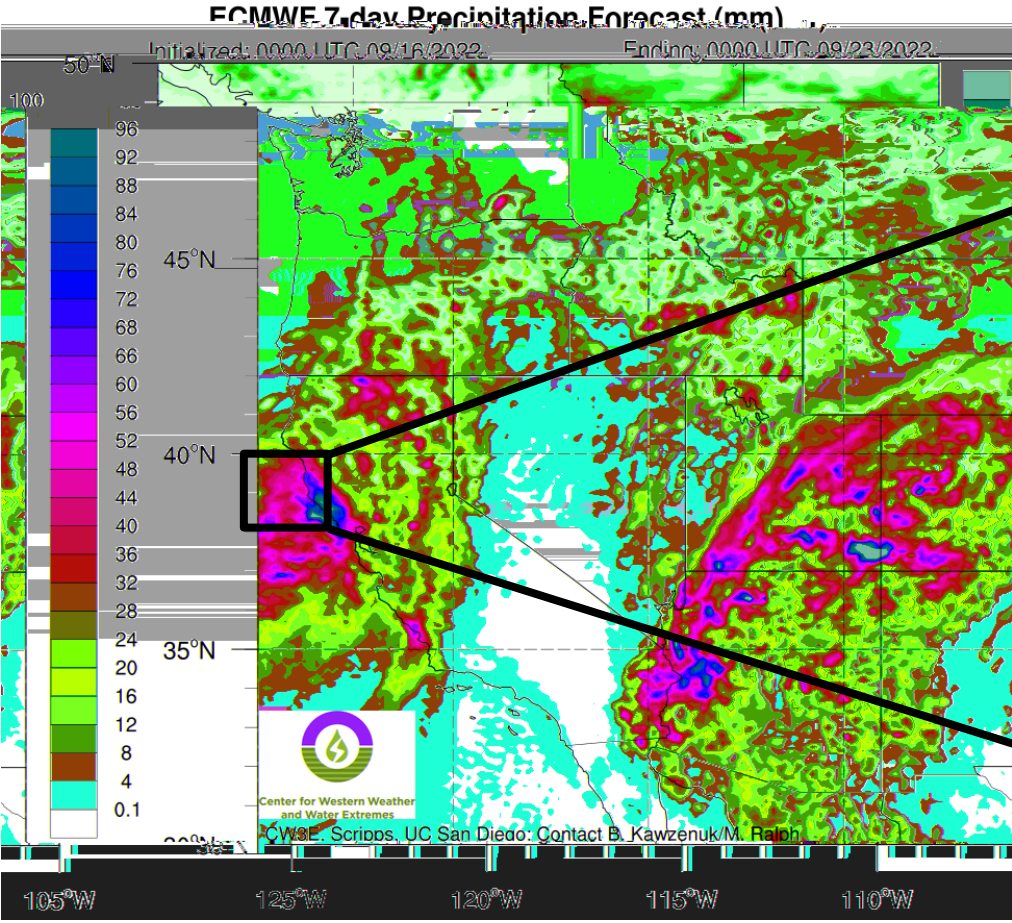
Model QPF: GFS



- The GFS model is forecasting a maximum of 70mm (2.75 inches) of precipitation in the Sierra Nevada Mountains Southwest of Lake Tahoe over the next 7 days with 40-60mm (1.5-2.4 inches) of precipitation in the vicinity of the Mosquito Fire

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Model QPF: ECMWF



- The ECMWF model is forecasting 20-50mm (0.8-2 inches) of precipitation in the vicinity of the Mosquito Fire