# Smoke Impacts Summary – Northern CA Fires, August 18, 2012


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***The statements below are those of the authors and do not represent official USFS announcements, views, or policy. They are meant as a research discussion of models and forecast data only.***

**Past and Current Conditions:**
Yesterday's BlueSky model runs predicted smoke effects in Medford, Klamath Falls, and Lakeview, OR. Once again monitoring data showed no $PM_{2.5}$ above background levels in Medford, but both Klamath Falls and Lakeview recorded moderate to high levels of $PM_{2.5}$. Concentrations are trending up in Lakeview this morning, but trending down in Klamath Falls Model output this morning (Figure 1) continues to predict high smoke concentrations near to all the large northern CA fires. The monitors near the Chips fire provide a different picture this morning, with relatively low (compared to previous days) $PM_{2.5}$ concentrations at EBAM11 in the Feather River drainage (less than 70 $\mu g/m^3$) and similar concentrations to the NE of the fire, at EBAM5 and EBAM6.

Clouds are covering several of the fires in this morning's visible satellite picture (Figure 2) but smoke from the Fort Complex is visible to the south of the fire, which is consistent with the BlueSky output.

**Model Output:**
BlueSky shows smoke being carried to NE of the major northern CA fires again this afternoon (Figure 3). Once again there are predicted moderate to high concentrations near Medford from the Fort Complex, but we will discount this because monitoring data has not supported this prediction for the past two days. Klamath Falls is predicted to stay outside the smoke plume, but Lakeview is expected to experience moderate to high smoke concentrations today. The highest surface smoke concentrations this afternoon are predicted to be well downwind to the NE of the Reading fire. Areas SW of all the fires are not forecast to have any smoke effects.

With continued low mixing heights and wind speeds overnight, high $PM_{2.5}$ concentrations are predicted to remain fairly close to the fires again in the morning. The models are keeping Klamath Falls in the clear tomorrow morning (Figure 4), but are predicting moderate to high smoke effects in and around Lakeview, OR. BlueSky cannot explicitly predict drainage flows because of the model resolution, but it is again suggesting there will smoke effects from the Chips fire in the Feather River drainage. Mixing heights and ventilation rates are predicted to be good for smoke dispersion during the day (high mixing heights) in the mid-to-late afternoon

hours, but poor overnight into the early morning hours (low mixing heights and wind speeds).

Figures 5 – 8 show forecast 24-hour forward trajectories every 6 hours for the next 24 hours for the Chips fire, and Barry Point and Fort complexes (ignore the "glitch" in the Google Maps trajectory in Fig. 5). Trajectories for the other fires can be roughly interpolated to give an idea of upper-level smoke transport for those fires. Release heights are 500, 1000, and 1500 meters above ground level (AGL). Trajectories for the next 24 shows predicted smoke aloft will be carried to NNE, shifting more to the NE later this evening and over night. The exception is the highest (1500m) trajectories, which are forecast to continue in a more northerly direction. The predicted trajectories would carry smoke toward Idaho, so it's possible smoke from the Northern CA fires could be adding to smoke from the Idaho fires. The profile views show that smoke aloft is not predicted to be carried down to ground level.


Figure 1. Predicted smoke effects from the northern CA fires at 6AM PDT, August 18. Greens indicate low concentrations, yellow and orange are moderate concentrations, and red and purple are high concentrations.

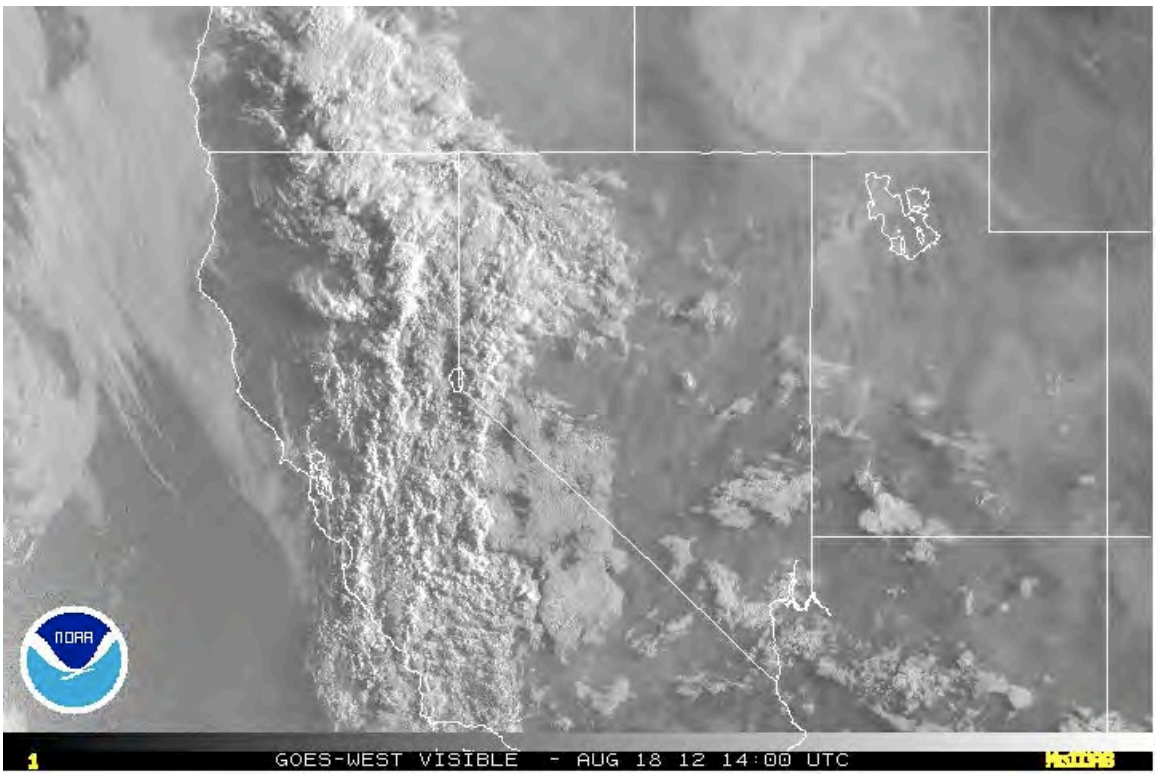



Figure 2. Visible satellite picture for 7:00AM PDT, August 18.

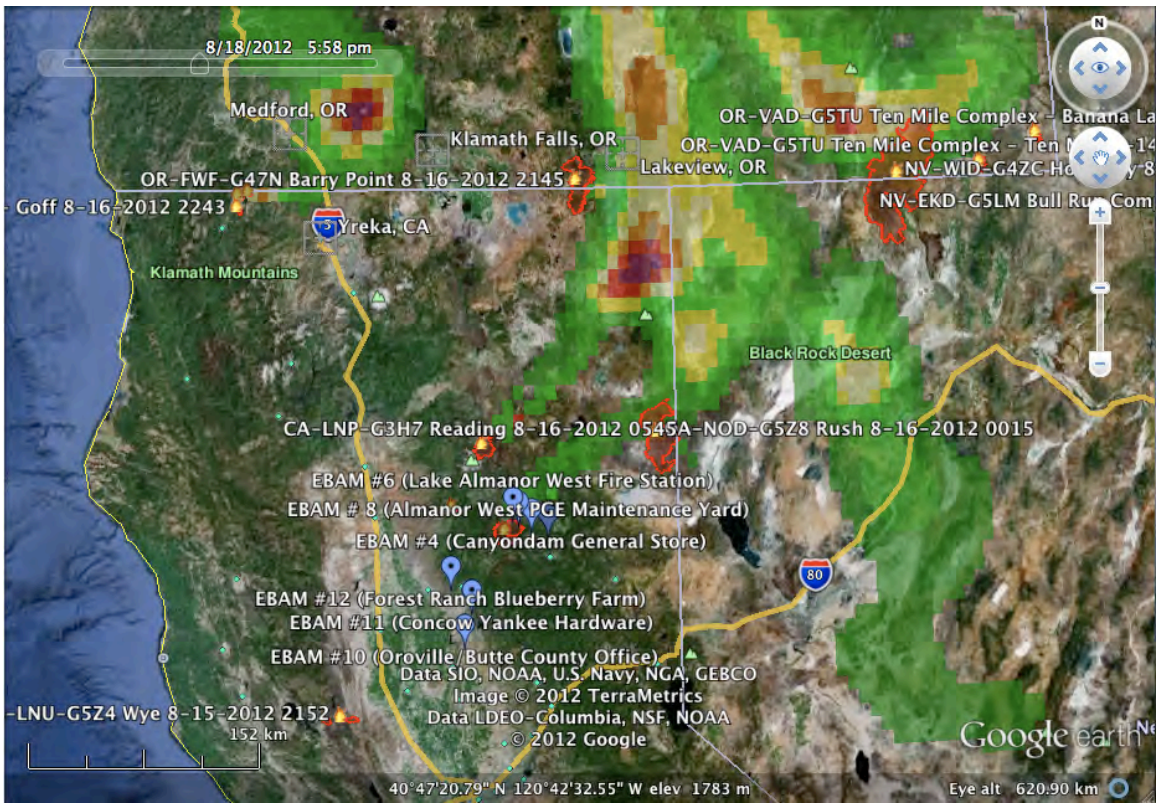



Figure 3. Predicted smoke effects from northern CA fires at 6PM PDT, August 18. Greens indicate low concentrations, yellow and orange are moderate concentrations, and red and purple are high concentrations.

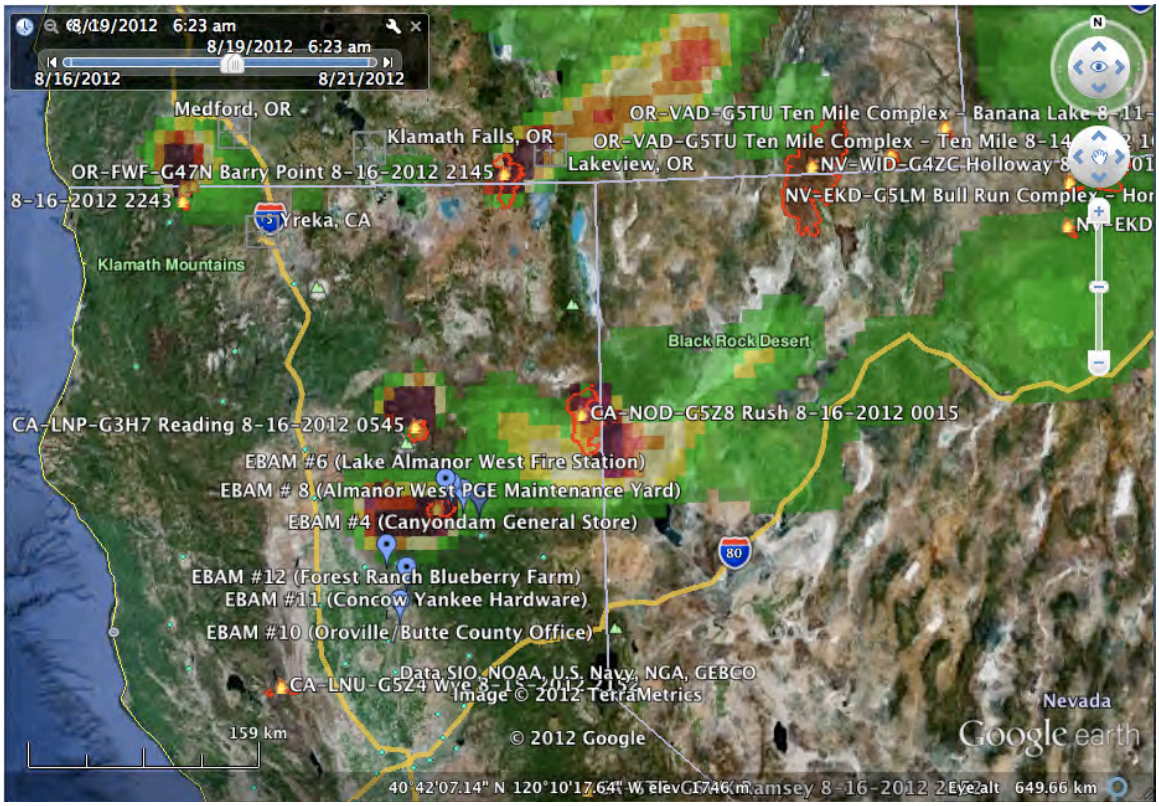
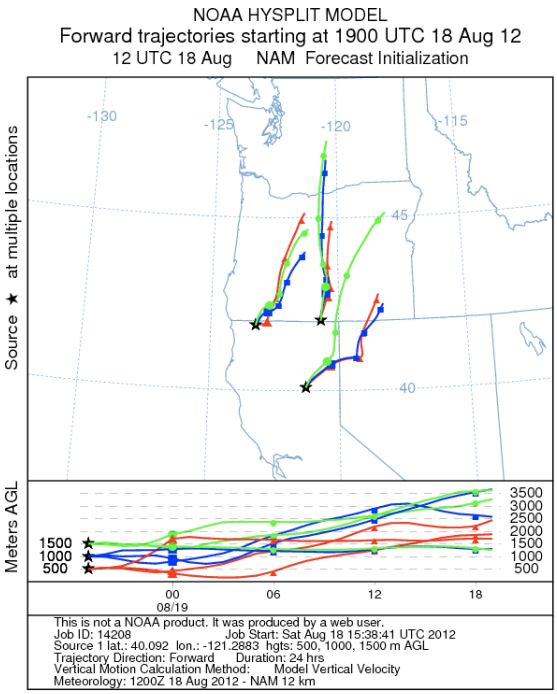



Figure 4. Predicted smoke effects from northern CA fires at 6AM PDT, August 19. Greens indicate low concentrations, yellow and orange are moderate concentrations, and red and purple are high concentrations.



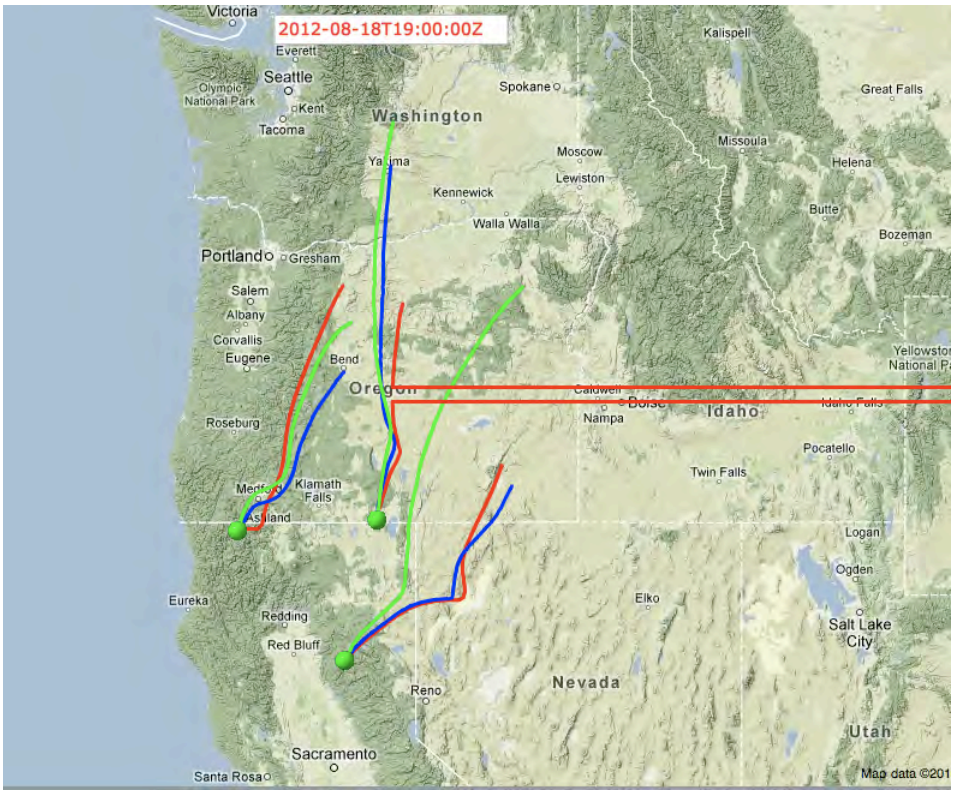
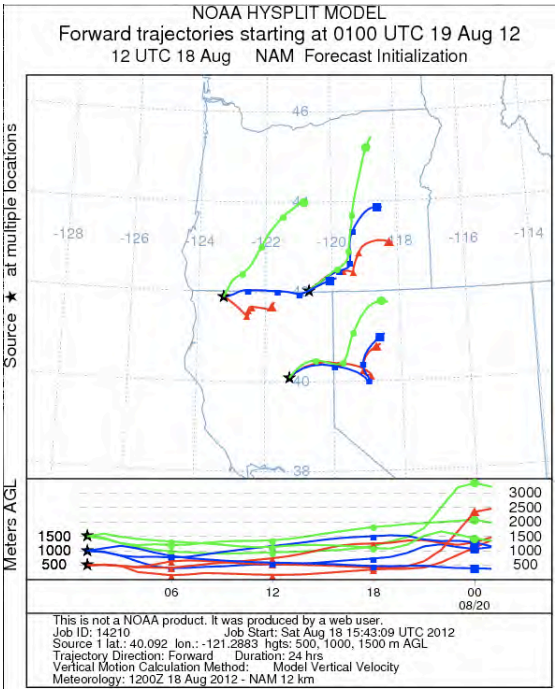




Figure 5. 24-hour forward trajectories for the Chips, Barry Point, and Fort fires, starting at 12:00 PM PDT, Aug 18, with release heights of 500 (red) 1000 (blue) and 1500 (green) meters AGL.



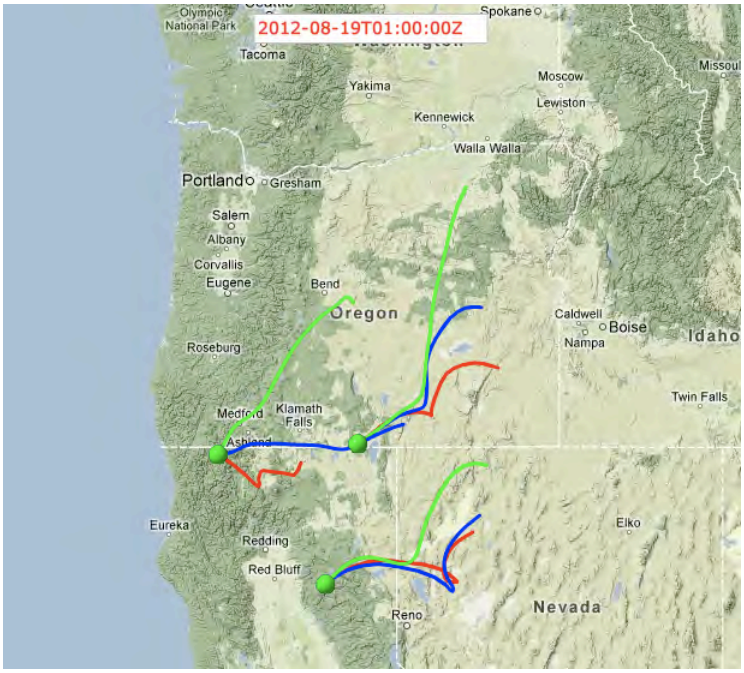
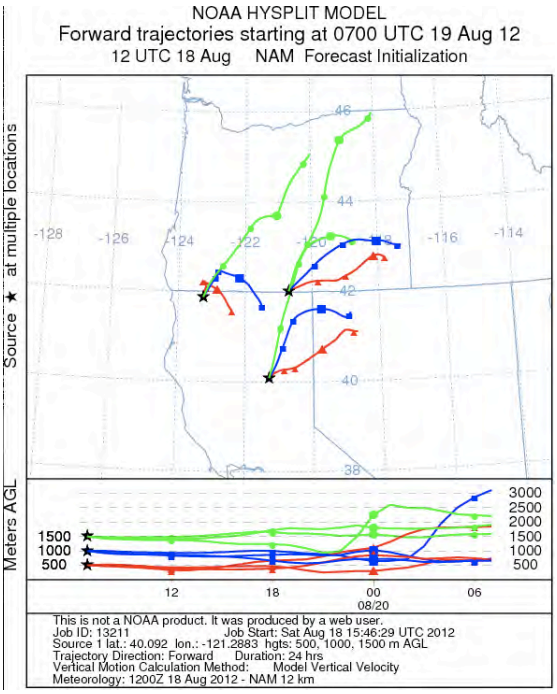




Figure 6. 24-hour forward trajectories for the Chips, Barry Point, and Fort fires, starting at 6:00 PM PDT, Aug 18, with release heights of 500 (red) 1000 (blue) and 1500 (green) meters AGL.



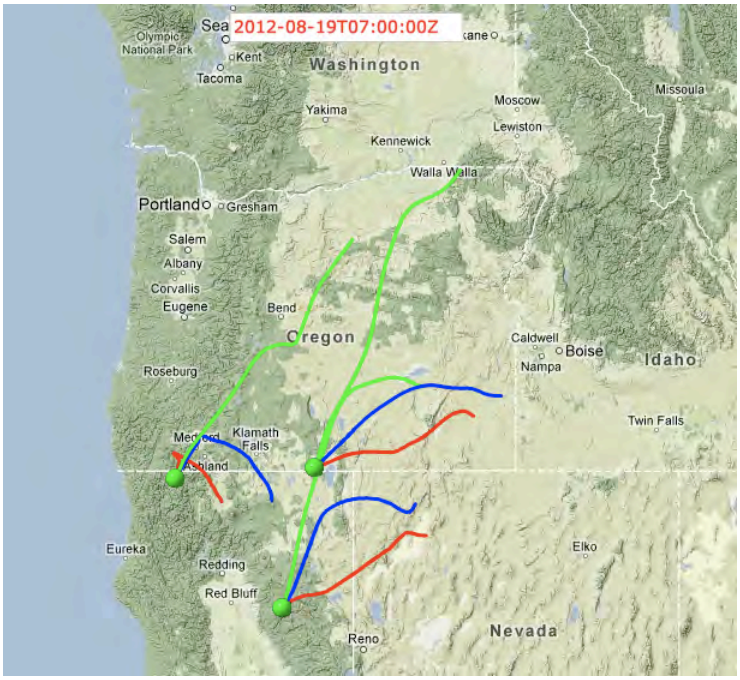




Figure 7. 24-hour forward trajectories for the Chips, Barry Point, and Fort fires, starting at 12:00 AM PDT, Aug 19, with release heights of 500 (red) 1000 (blue) and 1500 (green) meters AGL.

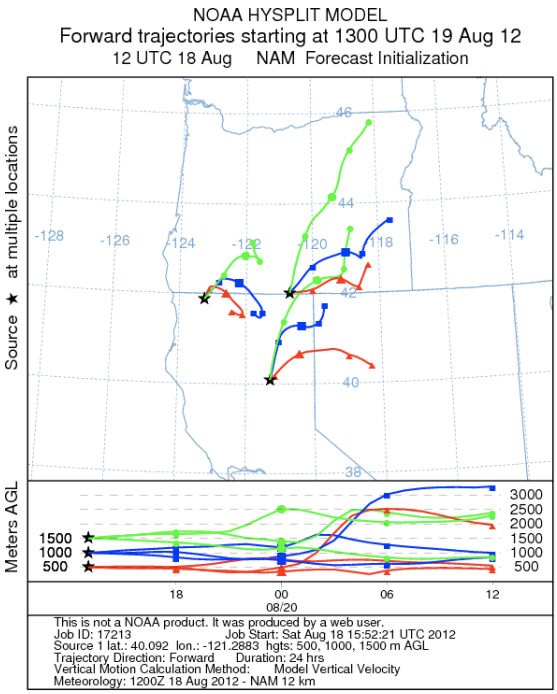




Figure 8. 24-hour forward trajectories for the Chips, Barry Point, and Fort fires, starting at 6:00 AM PDT, Aug 19, with release heights of 500 (red) 1000 (blue) and 1500 (green) meters AGL.