National Wildfire Coordinating Group (NWCG)
Smoke Committee (SmoC)

HYSPLIT Trajectory Model Products in Spot Weather Forecasts

Introduction: The National Weather Service (NWS) is experimenting with providing HYSPLIT trajectories as part of a Spot Weather Forecast request. This trial product will be offered through 12/31/2012 after which its usefulness will be assessed for continued operational inclusion in Spot Weather Forecasts. This paper presents a brief overview of the HYSPLIT trajectory information; a companion paper (web site) includes more detail on explaining HYSPLIT trajectories. As part of this trial period, a cadre of regional Subject Matter Experts (SMEs) are available to support users in the appropriate application of the model and interpretation of model output (Please see page 2-3 for contact information).

How to Request HYSPLIT Modeling: Enter the phrase "hysplit to email@domain.gov" in the remarks, which automatically initiates the run and sends it to the email address provided. You can send the model results to multiple e-mail addresses – just separate each e-mail by a space.

What information is provided? The HYSPLIT trajectory model provides simulated smoke plume trajectory information by tracking a parcel of air that is carried by the mean 3-D wind field of the meteorological model (turbulence is not included). The air parcel is released from three different atmospheric heights above ground level (AGL) – 500 m (1640 ft), 1500 m (5000 ft), and 3000 m (10,000 ft) – representing estimated plume heights from which the transport will commence. The trajectory starting time is only the time as requested in the Spot Weather Forecast (typically the anticipated start of burn ignition). Trajectory model results typically extend out 36 to 42 hours after the requested time and each point along the trajectory is another hour out in time. Thus, the trajectory is similar to a time-lapse photograph of where a parcel of air could travel over the 36 to 42 hour duration, given the AGL release height. If a different time was requested or the plume rises to a different height than displayed, then the trajectory would likely yield different results. The model results are e-mailed in three formats:

1. A table showing the hour by hour raw data results, embedded into the e-mail.
2. An attached file showing graphical results in .gif format (symbols at 6-hour intervals along the trajectory).
3. An attached file with the results in .kml format for uploading into Google Earth.

For the .gif and .kml files, the trajectories are color coded by AGL trajectory release height – red = 500 m (1640 ft), blue = 1500 m (5000 ft), and green = 3000 m (10,000 ft).

Remember, HYSPLIT trajectory model output is designed to supplement the Spot Weather Forecast; with the modeling results showing downwind air parcel locations which approximate the smoke plume centerline. If additional information on smoke transport or dispersion is necessary such as potential movement of the smoke plume towards the ground and areas of concern, consider HYSPLIT Dispersion or 3-D particle model at the NOAA Air Resources Laboratory (ARL) web page http://ready.arl.noaa.gov/HYSPLIT.php or WFDSS Air Quality products http://firesmoke.us/wfdss/ .

Feedback: The NWS is looking for feedback on the utility of the product, thoughts on modifications to increase product utility, and if available, accuracy of the product and how that accuracy was assessed. Comments are welcome at: http://www.weather.gov/survey/nws-survey.php?code=NSWHT.

HYSPLIT Subject Matter Experts

A small cadre of individuals from a variety of agencies have been specially trained in the HYSPLIT trajectory feature that is experimentally available through the National Weather Service spot webpages. These individuals are available to assist fire personnel in the use of HYSPLIT Trajectories associated with the NWS spot weather forecasts or recommend other available resources as necessary.

National Weather Service

• Robyn Heffernan	Boise, ID	robyn.heffernan@noaa.gov	(208)387-5089
• Marty Whitmore	Missoula, MT	marty.whitmore@noaa.gov	(406)329-4715
• Kari Fleegel	Marquette, MI	kari.fleegel@noaa.gov	(906)475-5782
• Joe Ramey	Grand Junction, CO	joe.ramey@noaa.gov	(970)243-7007
• Valerie Meyers	Phoenix, AZ	valerie.meyers@noaa.gov	(602)275-7002
• Rob Balfour	San Diego, CA	rob.balfour@noaa.gov	(858)675-8700 x 247
• Heather Orow	Detroit, MI	heather.orow@noaa.gov	(248)625-3309 x 677

Predictive Services

• Chuck Maxwell	FWS/SWCC, Albuquerque, NM	cmaxwell@fs.fed.us	(505)842-3419
• Gina McGuire	BLM/WGBC, Reno, NV	gmcguire@blm.gov	(775)861-6650
• Marco Perea	BLM/RMCC, Lakewood, CO	mperea@blm.gov	(303)445-4303
• Bryan Henry	BLM/NRCC, Missoula, MT	rbhenry@blm.gov	(406)329-4875
• Shelby Law	BLM/EGBC, Salt Lake City, UT	slaw@blm.gov	(801)531-5320
• Basil Newmerzhycky	USFS/NOCC, Redding, CA	bnewmerzhycky@fs.fed.us	(530)226-2730
• Ed Delgado	BLM/NICC, Boise, ID	edelgado@blm.gov	(208)387-5451

National Park Service

• Mark Fitch	Boise, ID	mark_fitch@nps.gov	(208)387-5230
• Pat Brewer	Lakewood, CO	Patricia_F_Brewer@nps.gov	(303)969-2153

United States Fish and Wildlife Service

• Vince Carver	Atlanta, GA	Vince_Carver@fws.gov	(404)679-7225

United States Forest Service

• Trent Wickman	Duluth, MN	twickman@fs.fed.us	(218)626-4372
• Todd Huffman	Elkins, WV	elhuffman@fs.fed.us	(304)636-1800 x 192
• Chuck Sams	Atlanta, GA	csams@fs.fed.us	(404)347-4083
• Melanie Pitrolo	Asheville, NC	mpitrolo@fs.fed.us	(828)257-4213
• Judy Logan	Hot Springs, AR	jlogan@fs.fed.us	(501)321-5341
• Anthony Matthews	Tallahassee, FL	jmatthews@fs.fed.us	(850)523-8520
• Josh Hall	Santa Fe, NM	jdhall@fs.fed.us	(505)438-5319
• Thomas Dzomba	Missoula, MT	tdzomba@fs.fed.us	(406) 329-3672