



# National Weather Service Decision Support for Non-Meteorological Incidents

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## 1. INTRODUCTION

The National Weather Service (NWS) has a long history of providing weather support to land management agencies during large wildfires. Over the years, the national fire weather program has outlined policy and guidelines for fire weather services, and the Incident Meteorologist (IMET) program has provided direct weather support for incident management teams at countless fires. The IMET program is a successful example of “decision support” provided by the NWS.

Many non-meteorological incidents such as hazardous materials events, search and rescue, and terrorist incidents have a weather support component. Some of these events have an immediate well-defined weather component, while with others the weather support needs evolve more subtly with time.

Can incident management support concepts for wildfires be expanded to other non-meteorological incidents?

## 2. PLAN DEVELOPMENT

During fall and winter 2011-12, WFO Phoenix provided support for a variety of urban fires, hazmat incidents, and search and rescue:



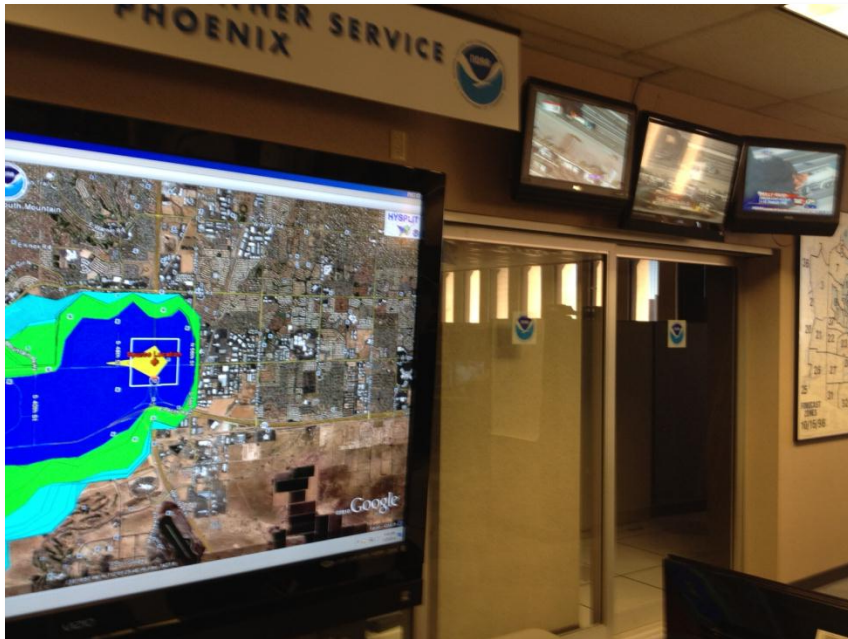
Electrical transformer fire in northeast Phoenix. Photo courtesy Arizona Department of Environmental Quality.



Search and rescue following aircraft crash in the Superstition Mountains, northeast of Phoenix. Photo courtesy Arizona Republic.



Tanker truck collision on Interstate 10 in south Phoenix. Photo: telegraph.co.uk



NWS Phoenix situation monitors during I-10 tanker incident. Photo: NWS.

The support provided was successful, but the approaches used depended largely on the experience and skills of the forecasters who happened to be on duty. Following these events, the WFO Phoenix IMET developed a plan for supporting future incidents.

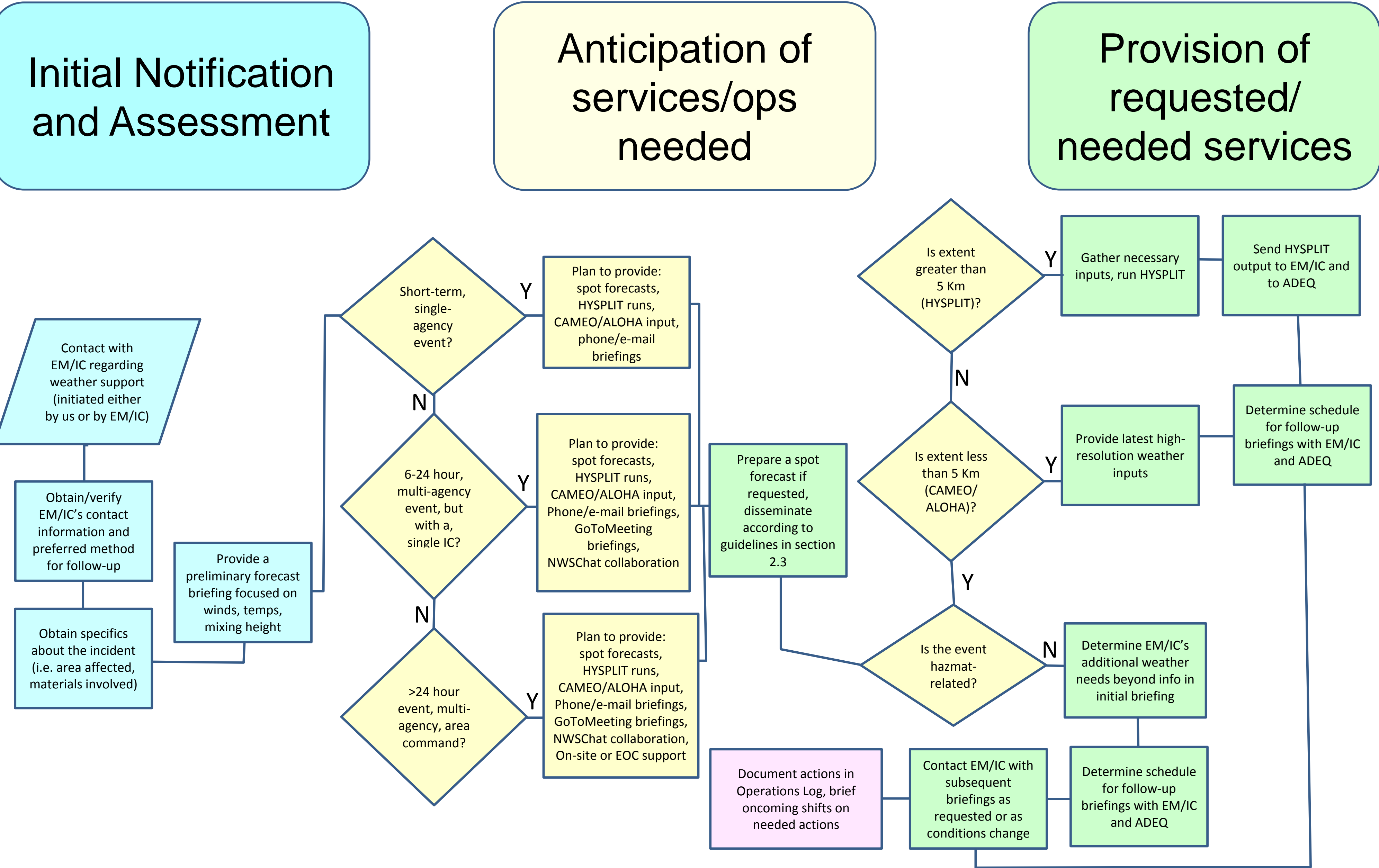
## 3. THE WFO PHOENIX SUPPORT PLAN

Non-meteorological incidents have a wide range of temporal and spatial scales. The plan is designed to guide our response to a level appropriate for the incident.

A central feature is the decision flow chart to assist staff members in anticipating the needs of first responders based on the responders’ input regarding the incident’s scope and impacts.

Anticipation of necessary services and operations is key in evaluating the staffing needs, decision support tools, and support schedule for the incident.

Maintaining situational awareness is critical, and includes monitoring social media streams and commercial media broadcasts.



## 4. STAFF TRAINING REQUIREMENTS

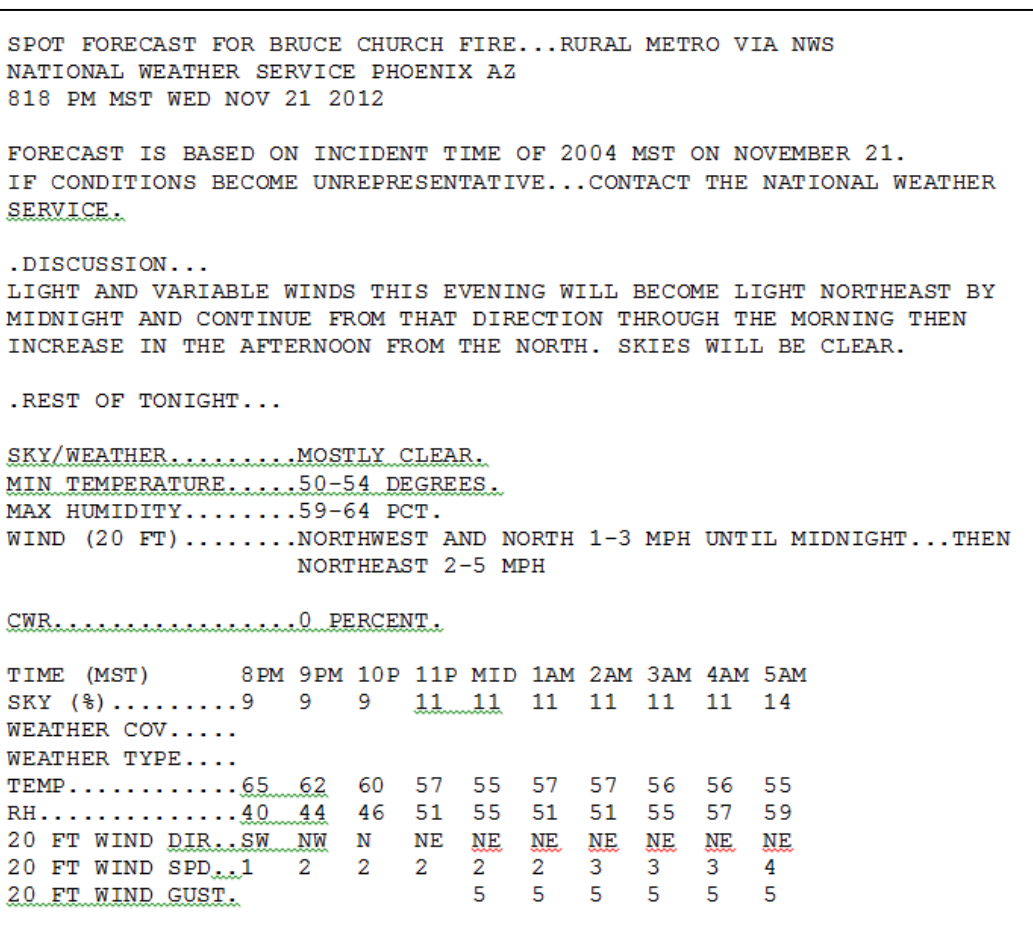
Staff members completed the following training:

“Introduction to the Incident Command System” (DHS/FEMA)	Once training was completed, the office regularly participated in disaster exercises of all themes, including hazmat, radiological releases, and improvised nuclear devices.
“National Incident Management System” (DHS/FEMA)	
CAMEO/ALOHA Applications	
HYSPLIT (plume modeling and dispersion program) Methodology	
HYSPLIT Support for Emergency Managers	
Spot Forecast Procedures	

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## 5. KEY SUPPORT SERVICES

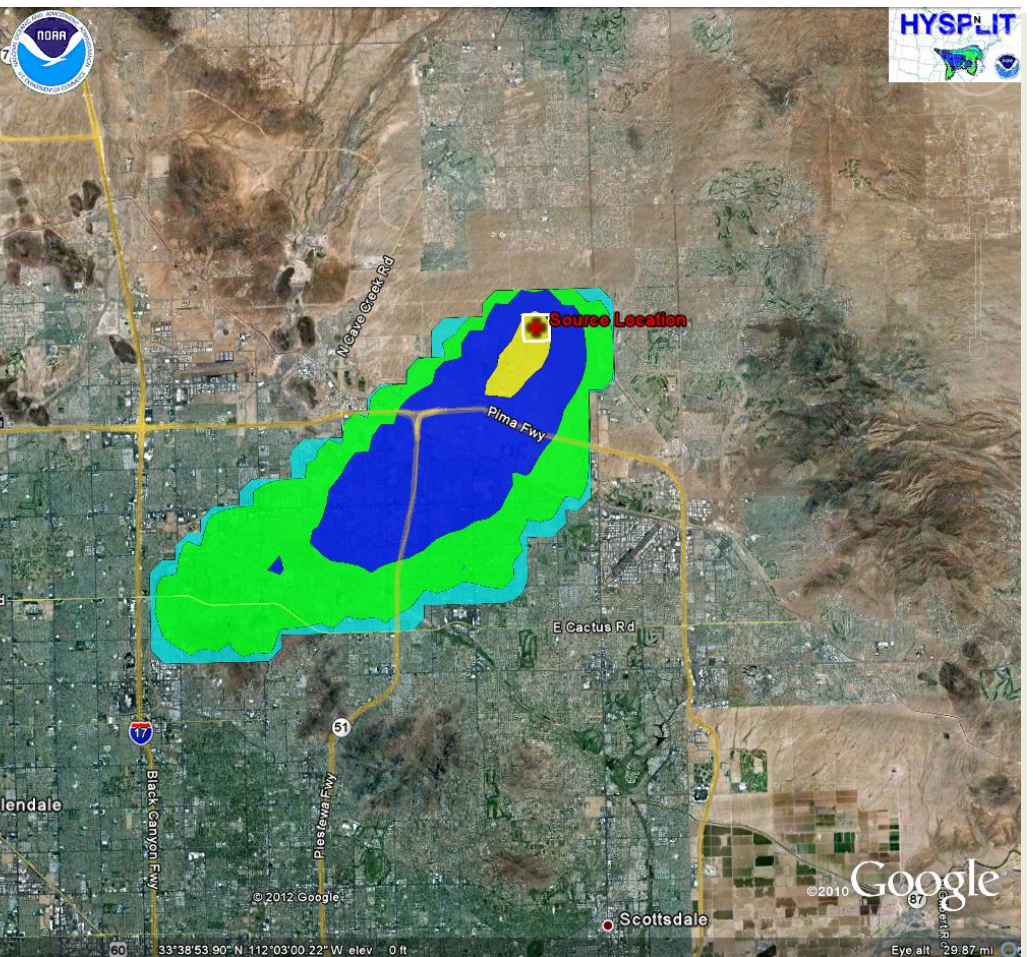
Depending on the magnitude of the incident, support may range from a simple phone briefing, to a Spot Forecast, to a HYSPLIT plume model run, to onsite support at the EOC or Incident Command site.



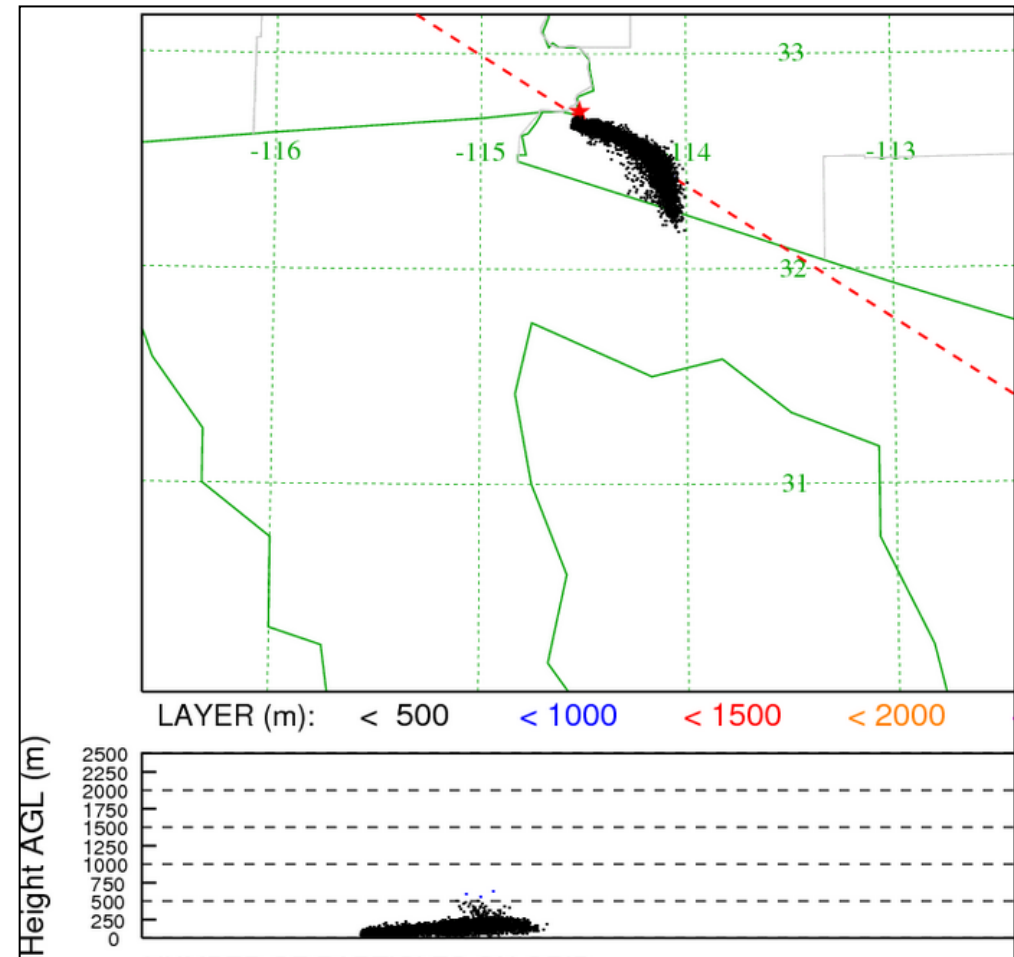
Spot forecast. Note the narrative discussion and forecast elements, followed by the hourly tabular forecast output.



Telephone briefings with first responders and EOCs are crucial throughout the incident.



HYSPLIT dispersion output in Google Earth format.



HYSPLIT dispersion output and vertical cross section of plume.

## 6. CONCLUSIONS

The plan has proven successful in providing support guidance to NWS staff during incidents.

Emergency operations centers and first responders have successfully utilized disseminated forecasts and HYSPLIT output on situational displays.

Continued training is important for maintaining forecaster proficiency.

We continue to investigate and refine methods to maximize our situational awareness.

We anticipate continued evolution of the program as our experience base grows and as we receive feedback.