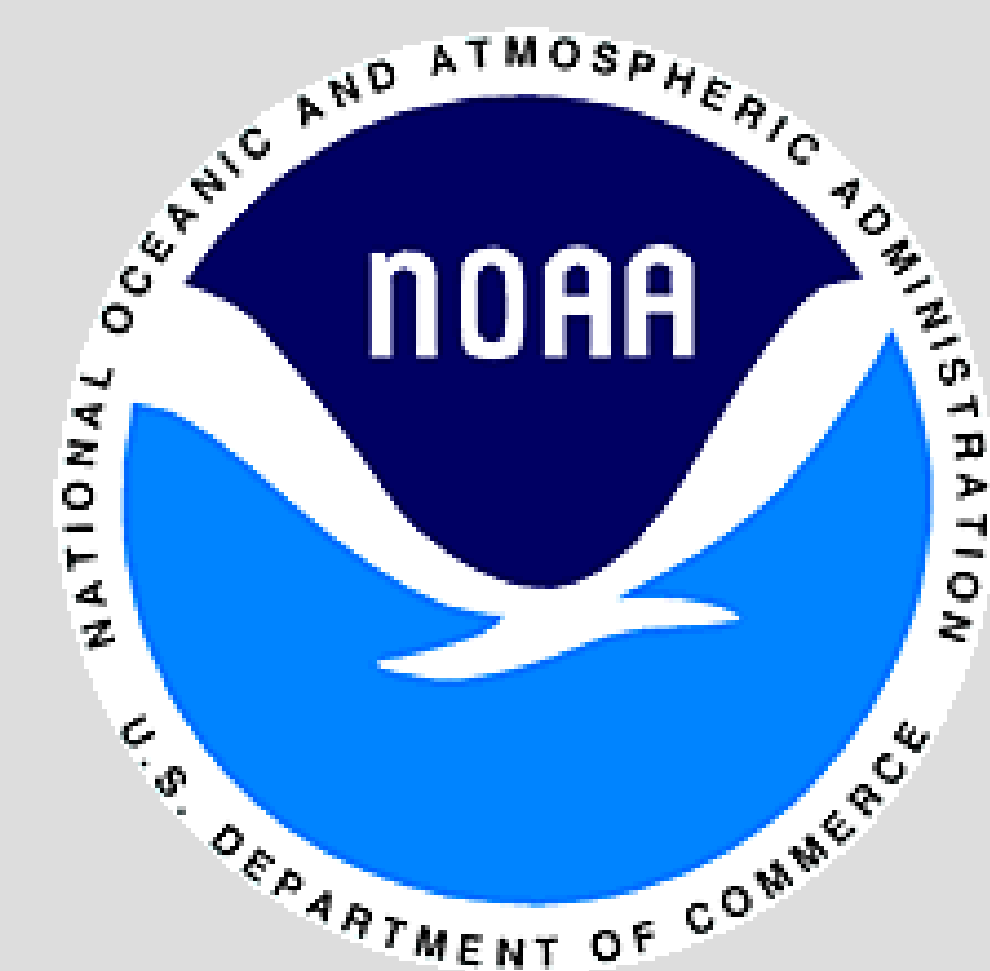




Decision Support Services by the NWS Corpus Christi Forecast Office During the 2008–2009 South Texas Drought and Wildfire Seasons



Jason Runyen

NOAA - National Weather Service Forecast Office, Corpus Christi, TX

Introduction

The demand for Decision Support Services by National Weather Service partners has been growing in recent years. The NWS's future is focused on improving interpretive services provided by weather forecasters to decision makers. These interpretive services are most important during high impact events such as the 2008-2009 drought in South Texas, the worst in over 50 years. Periods of drought-stressed fuels and critical fire weather patterns resulted in devastating wildfires that destroyed homes and threatened entire towns. The drought impacted a wide partner base across South Texas, each having different decision support requirements from the NWS.

Decision Support Methods

Outreach



An aggressive fire weather outreach campaign began in 2006 in the form of a publication guide (right) and numerous presentations and workshops to Prescribed Burn Associations, State & Federal Fire Partners, Emergency Managers, Media Partners and Forecasts (top)

Guide to South Texas Fire Weather

Importance of Weather to Fire Behavior

Success in prescribed burns is directly related to how well you understand and are able to predict fire behavior. The safety of all personnel also depends on fire behavior knowledge.

Topography, fuels and weather are the elements that most affect fire behavior. All three interact to influence each other.

Weather is the most variable of these elements in both space and time. Therefore it is critical that you have an understanding of what the weather will do before you ignite a prescribed fire. This guide will also introduce you to the products and services the National Weather Service provides to the fire community.

Finally, this guide will introduce you to the products and services the National Weather Service provides to the fire community.

Effects of Wind on Fire Behavior

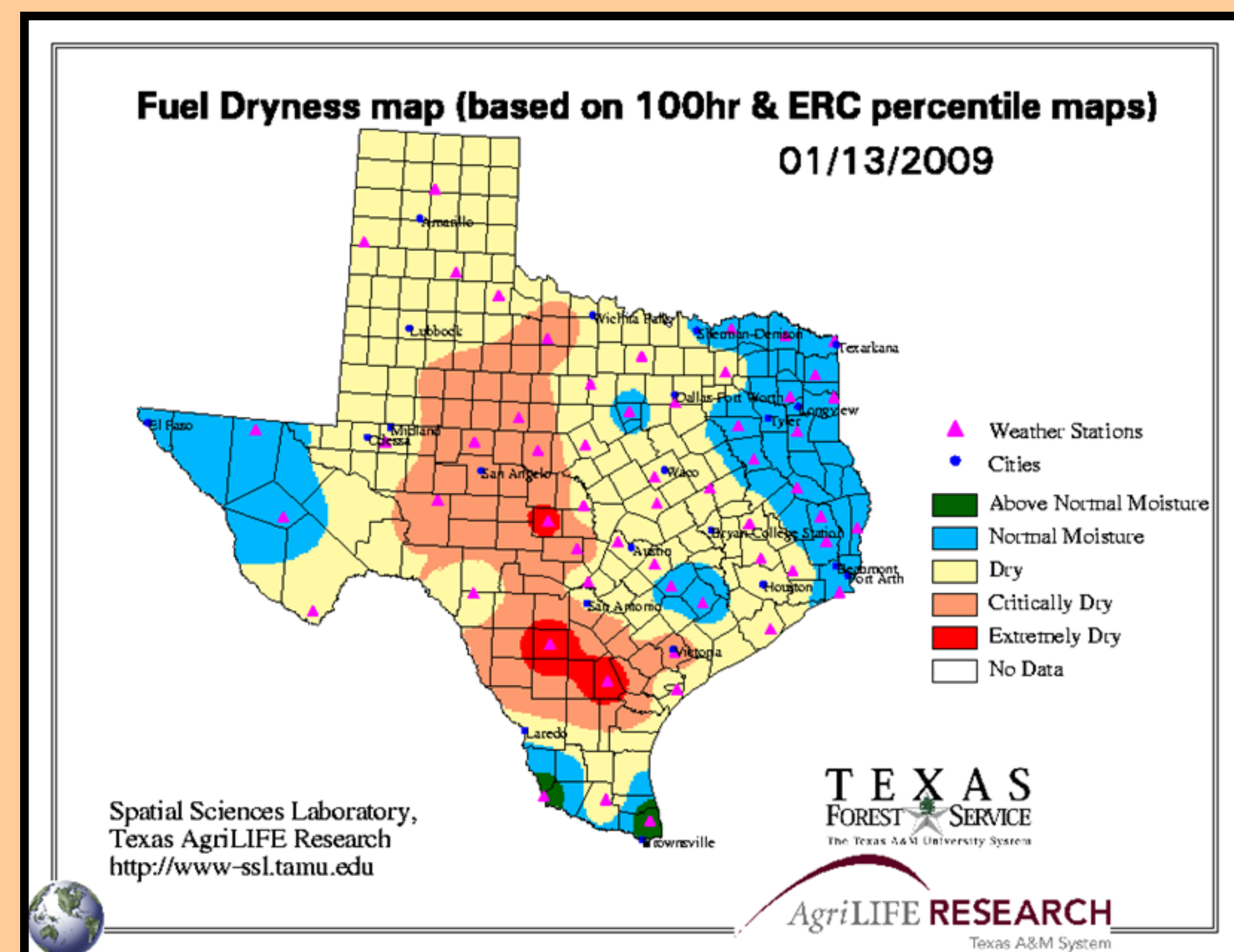
Predicting wind speed and direction is a must to best fire weather as a prescribed burn. Wind can have several effects on wildfire fire behavior:

- Carries away smoke/embers and can fan flames the drying of wildland fuels.
- Assist combustion by increasing the supply of oxygen.
- Increases fire spread by creating heat and forcing embers to new fuels.

Results from the amount of fuel consumed by affecting the residence time of the flaming fuel of the fire. The stronger the wind, the shorter the residence time and the less fuel is consumed.

Influences the amount of fuel consumed by affecting the residence time of the flaming fuel of the fire. The stronger the wind, the shorter the residence time and the less fuel is consumed.

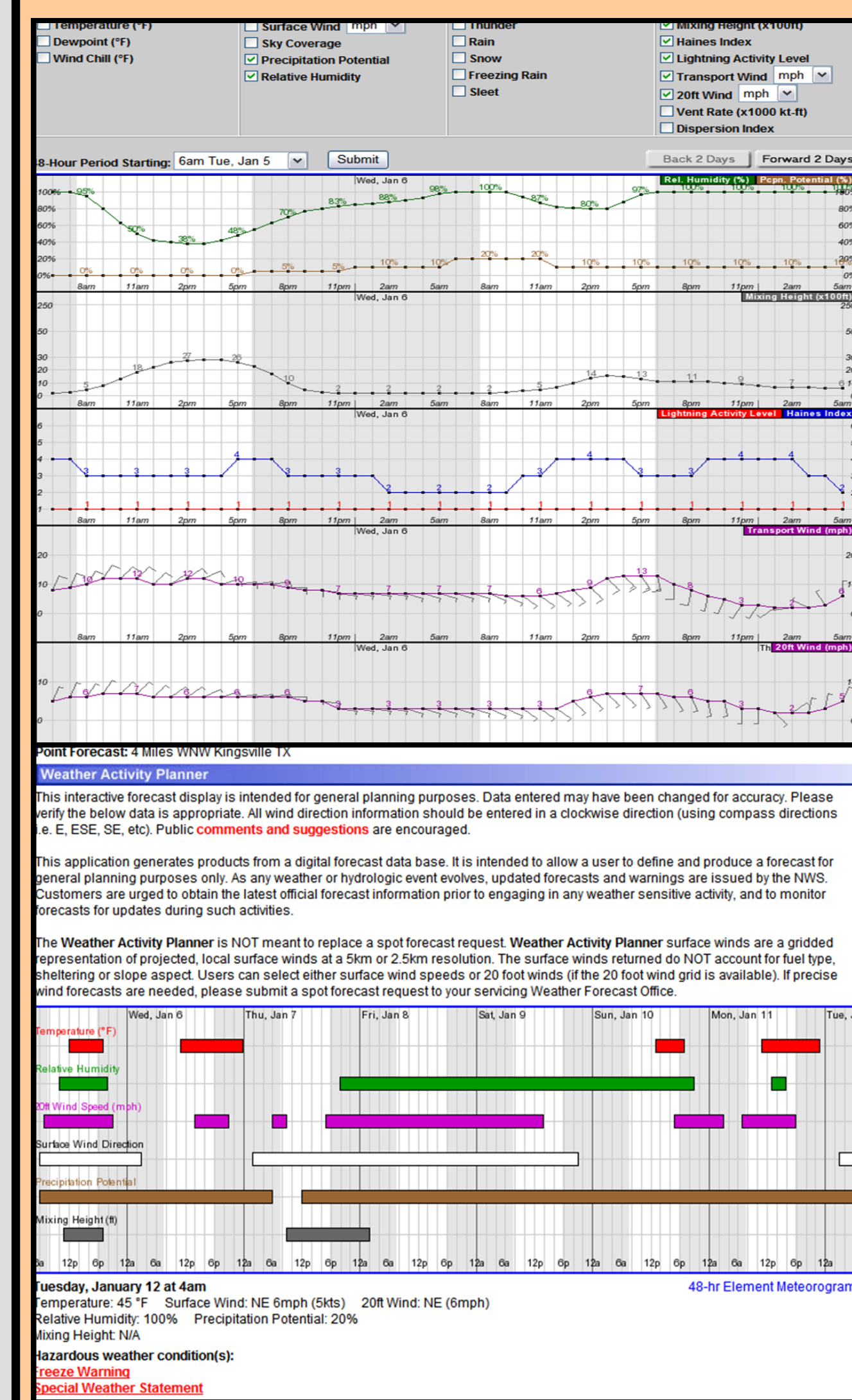
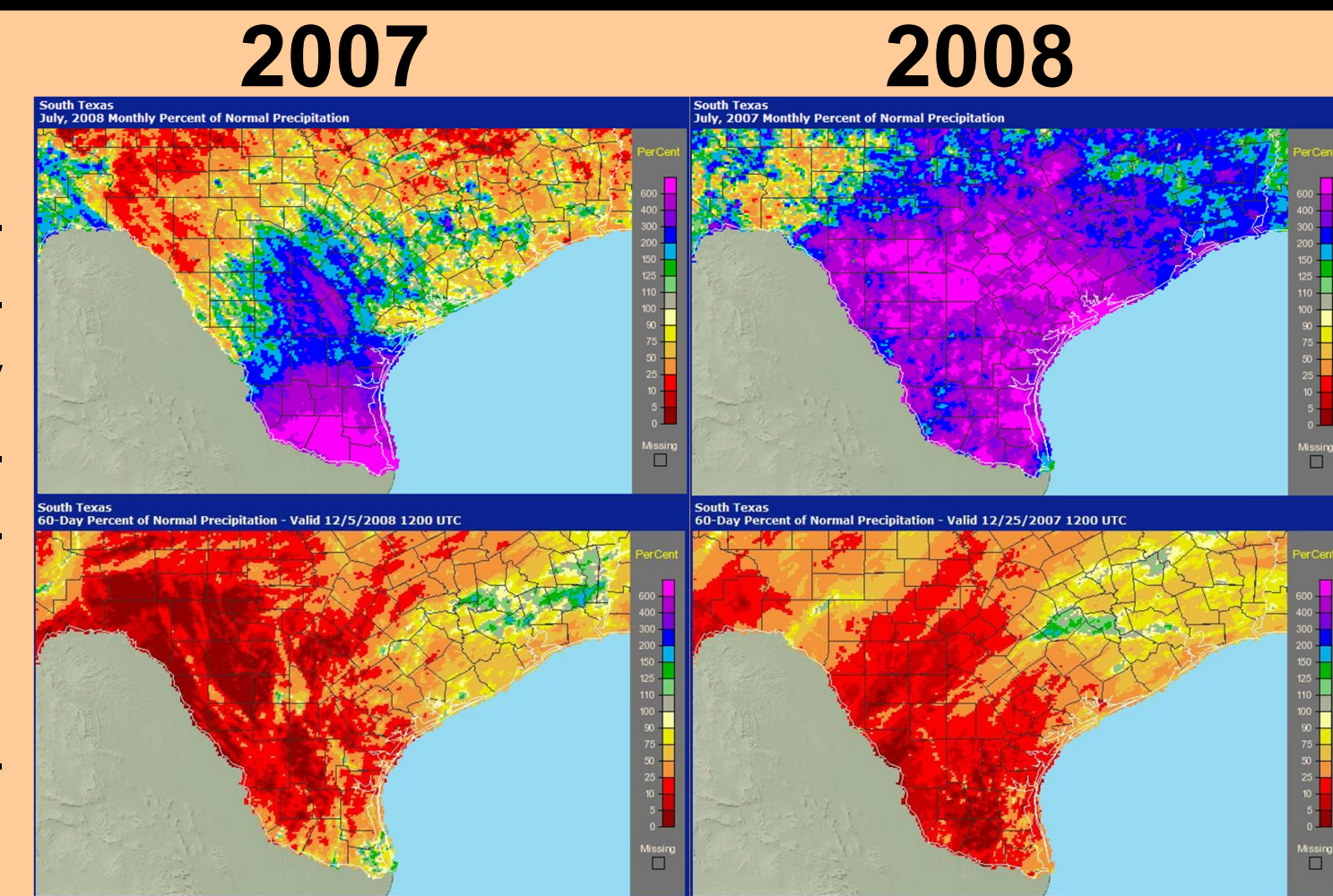
Improved Warning Criteria



An improved fuel component (Fuel Dryness, left) was added to Red Flag Watch & Warning criteria. The goal of this new fuel criteria is to warn only on high impact fire days and alleviate recent partner and public de-sensitivity to Red Flag Warnings from over-warning.

Pattern Recognition

Wet summers, leading to increased fine fuel loading, followed by dry falls and early frosts, leading to cured fuels, preceded the 2008, 2009 and current 2011 fire seasons. (Right: July and Fall % of normal rainfall preceding 2008 and 2009 seasons)



Web Decision Making Tools

Point and Click Hourly Forecasts and the Activity Planner (left) allow fire partners to conduct prescribed burns more effectively and safely. A Fire Weather Webpage (bottom) was developed to serve as a one-stop shop for fire weather information. The South Texas Drought webpage is allowing ranchers and farmers to make better planning and mitigation decisions.

Email, Multimedia & Instant Messaging Briefings

Email and multimedia briefings (bottom, right) allow high end users to conduct resource planning days in advance of a fire event. Graphiccasts (bottom, left) convey simplified messages with call to actions to the general public. Instant messaging is utilized by partners to coordinate on high impact fire days.

South Texas Fire Weather Outlook

Today	Thu (14/2)	Fri (15/2)	Sat (16/2)	Sun (17/2)	Mon (18/2)	Tue (19/2)
Cloudy	Partly Cloudy	Partly Cloudy	Partly Cloudy	Partly Cloudy	Partly Cloudy	Partly Cloudy
5-15% RH	15-40% RH	10-20% RH	5-20% RH	5-20% RH	5-20% RH	5-20% RH
WSP: 20-30 mph	10-20 mph	10-20 mph	10-20 mph	10-20 mph	10-20 mph	10-20 mph

2008-2009 Drought & Fires

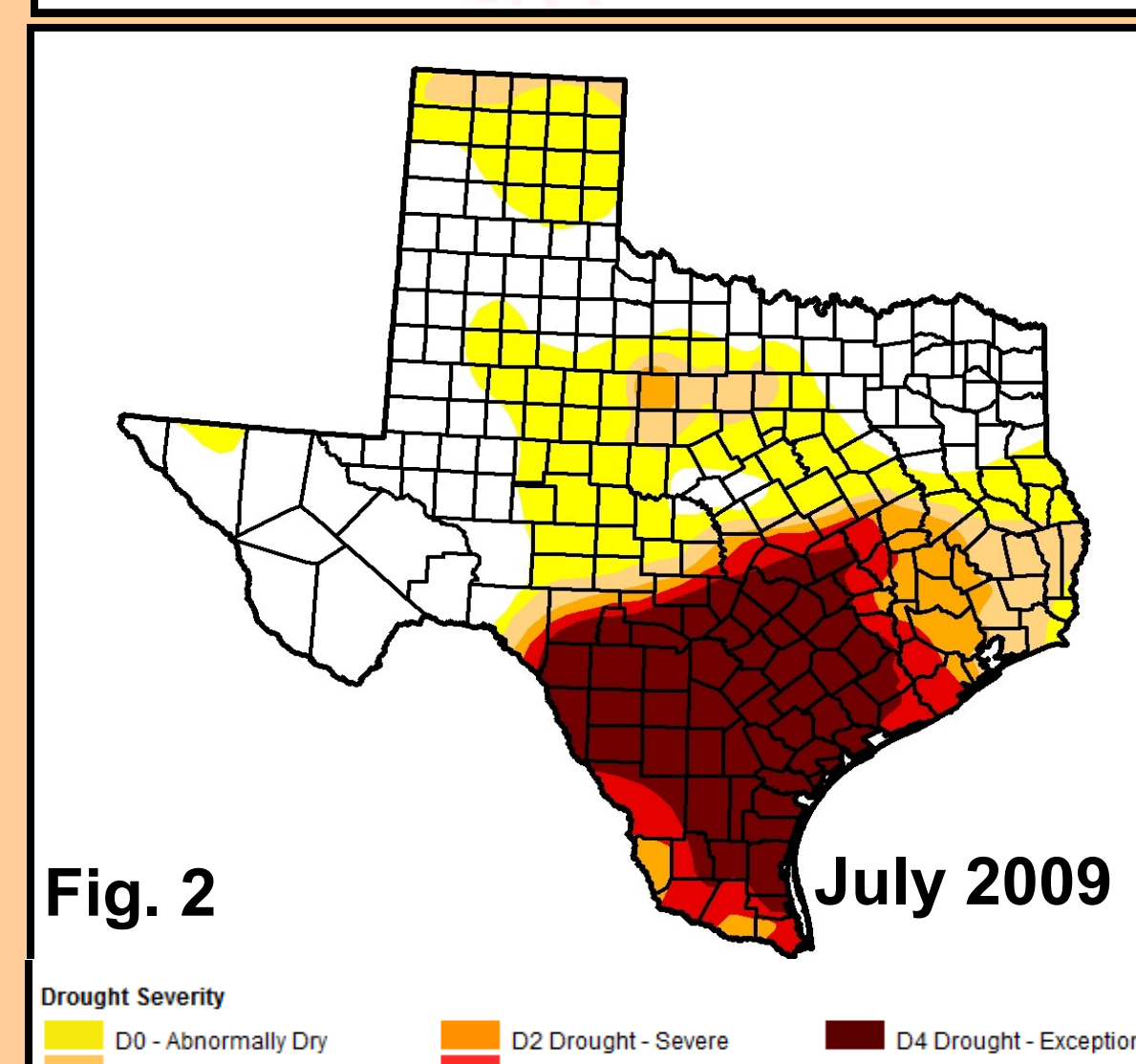
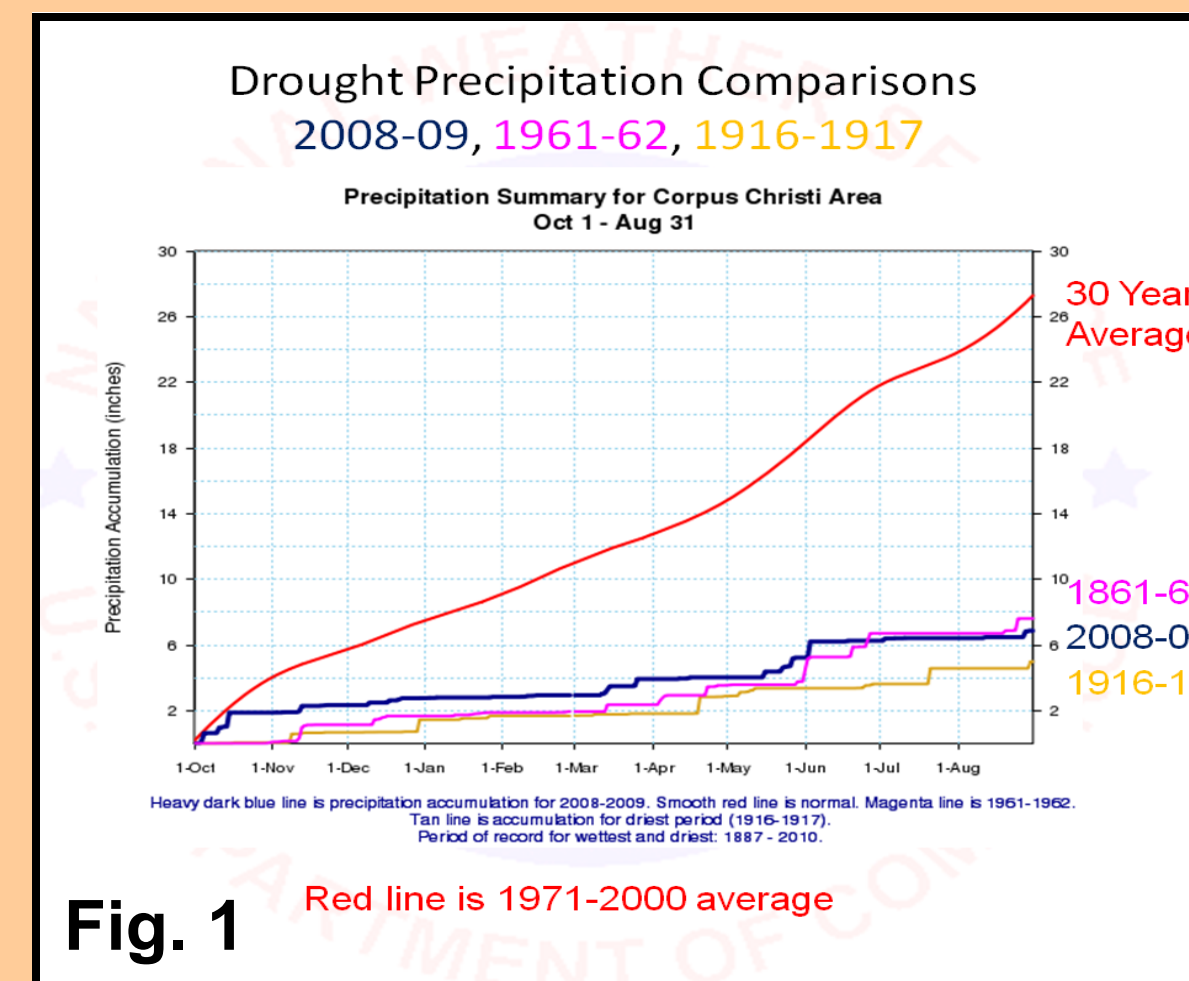
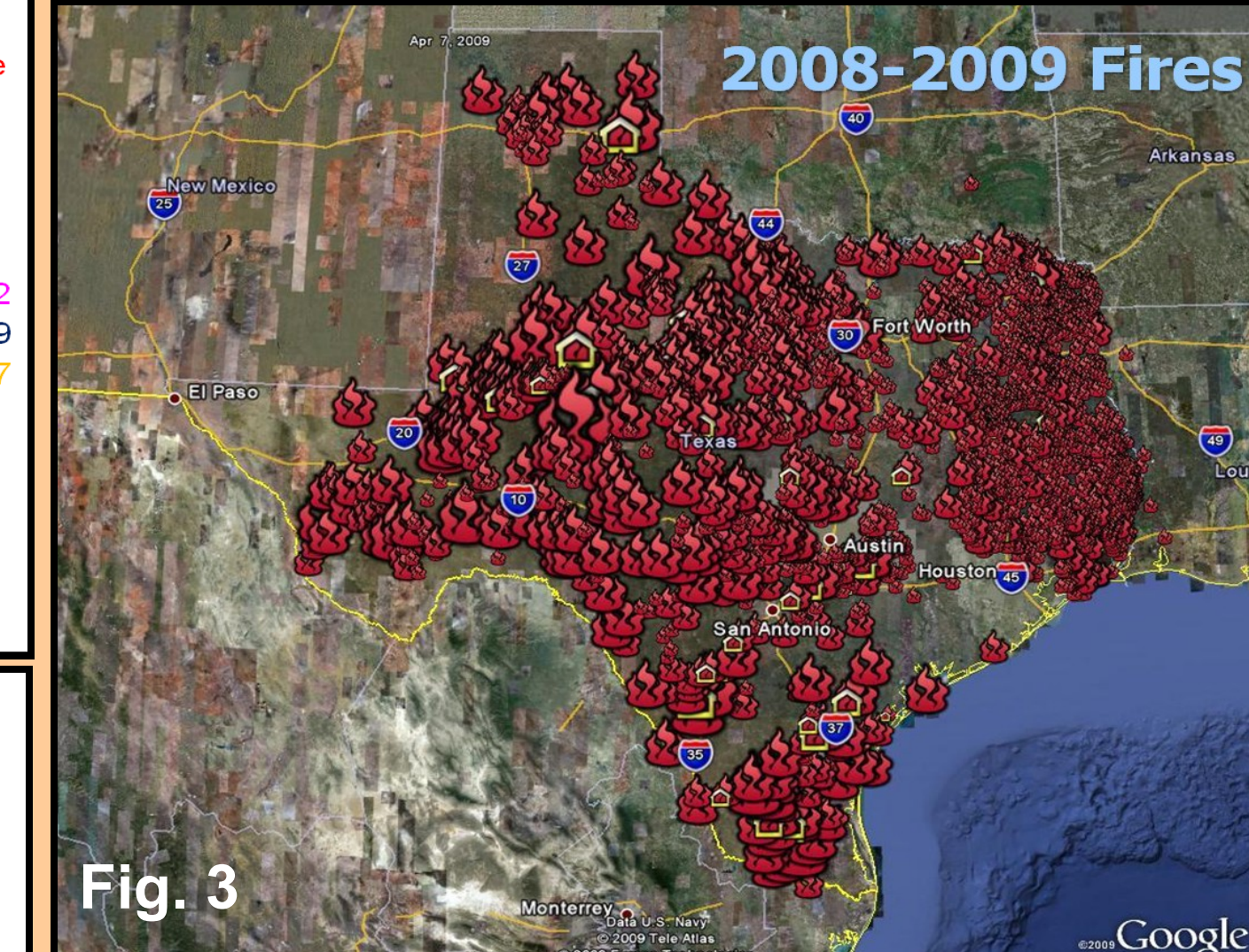


Fig. 1 - Comparisons of three driest Oct-Sep periods on record in South Texas. Fig. 2 - U.S. Drought Monitor at peak of Drought conditions in 2009. Fig. 3 - Fires responded to by Texas Forest Service in 2008-09. Fig. 4 - Acres burned by fires in 2008-09 (half of total 2008 acres were in South Texas)



2008 Year-To-Date Totals

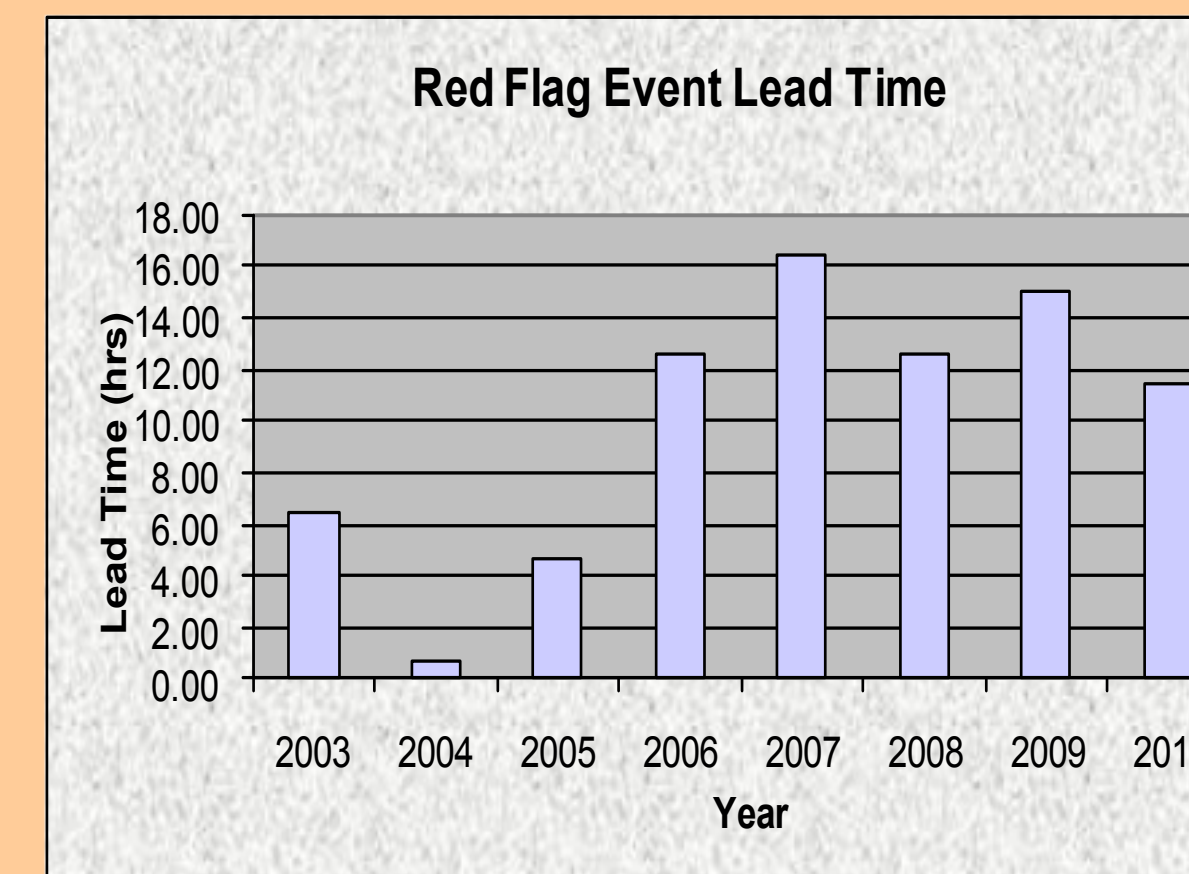
Agency	Fires	Acres	Structures Lost	Structures Saved
State	1,524	1,003,356	284	7,841
Federal	231	14,868	0	0
Fire Departments	14,440	523,048	786	11,345
Totals	16,195	1,541,272	1,080	19,186

2009 Year-To-Date Totals

Agency	Fires	Acres	Structures Lost	Structures Saved
State	1,355	361,651	617	8,667
Federal	284	42,746	0	0
Fire Departments	14,691	338,450	652	10,207
Totals	16,132	742,846	1,269	18,864

Fig. 4

Fire Results



Red Flag lead time (left) improved from 2004-2007. Decision Support initiatives and improved partnerships led to a number of "firsts" by the Texas Forest Service during the 2008 fire season (bottom). These firsts allowed fire officials to move resources across the state and respond faster and more effectively to fires in 2009, contributing to a reduction in large fire occurrences across South Texas.

2008 - A Season of Firsts in South Texas

Based partially upon NWS DSS Outlooks:

- Aircraft were staged in South Texas for Initial Attack for the first time
- Multiple staging areas were utilized in South Texas for the first time.
- County Wildfire Taskforces were utilized for the first time for mutual aid in multi-agency response.
- An area dispatch (FTS) was used for the first time in South Texas to coordinate fire response.

Drought Mitigation



NWS Drought Information Statements and the South Texas Drought Webpage have improved ranching and farming mitigation in the form of:

- Livestock Stocking Rates
- Arranging for Additional Feed
- Decisions on whether to plant
- Rainfall Insurance
- Ranch Road Repairs
- Grazing Paddock Improvements
- Pond Renovation & Construction
- Buying & Selling Land
- Financial Planning

Partner Feedback

"The hourly weather graph feature is EXCEPTIONALLY useful for planning, and conducting control burns. I have really come to rely on it. Thank You for the work to update it regularly, and also thanks for the backup service when I call in to the forecaster desk during a burn day. It is the production of offices like yours, that can help people restore faith in government." - Rancher - Duval County

"During the 2008 wildfire season, the South Texas/Valley Regions experienced one of the worst fire seasons in memory. Half of the total acres burned across the entire state were burned in South Texas alone. The NWS participation in post event after action reviews helped bring much needed education to our fire personnel regarding the correlation between the weather and what was going on at the ground level during fire operations. This information has led to substantial improvements for the upcoming season." - Danielle Hale - Regional Liaison Officer - Governor's Division of Emergency Management

"I received a hourly point forecast for a 500 acre burn in northern Refugio County today. We knew the wind would be clocking around to the north and conducted operations accordingly. I could have set my watch to the timing of the change, the wind speed and RH. Awesome job and such good predictions allow me to make good decisions in the field. The technology is making it easier..." - Ray Guse - The Nature Conservancy

Conclusions & Future



Recent services provided by the National Weather Service in Corpus Christi have proven to be a successful starting point in this new age and demand of decision based support services. Based upon current demand from partners, the National Weather Service in Corpus Christi is seeking to complete improvements to these services in the coming year. This includes a Decision Support Mobile Web Page for smart phone users and improvements to GIS based fire weather drought products.

Contact Info

Jason Runyen
Jason.Runyen@noaa.gov
361-289-0959