











There are fire behav	several terms used to describe differer ior:	nt forms of		
Term	Flames / Direction	Spread		
Smoldering	No	Low		
Creeping	Small	Low		
Running	Well-defined head	High		
Backing	Moving against wind, downhill, away from head	Low		
Torching	Surface fire igniting occasional crowns or shrubs	n/a		
Spotting	Firebrands and embers are carried by convection and ignite outside the fire perimeter	n/a		
Crowning	Trees and crowns ignite and travels independent of surface fire	High		
Blowup	lowup Sudden increase in fire intensity or rate of spread			































## REM 244: Extreme Fire Behavior

Definition: Extreme fire behavior are cases where direct attack is not possible and fires behave erratically, sometimes dangerously.

Fuel Moisture Warning Signs: • RH dropping below 25% • Large downed logs below 20% moisture content



The Zaca fire burned more than  $\frac{1}{4}$  million acres and was the  $2^{nd}$  largest wildland fire in California's history. The Zaca fire was the  $1^{st}$  major incident to use WFDSS successfully.





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Terrain Warning Signs:

• Steep slopes can allow fires to rapidly spread uphill

• Box canyons and chutes can act like a chimney causing rapid rates of

spread • Fires on one side of a narrow canyons can causes fuels to pre-heat

the other side >> increased ignition chance via spot fire.



Sources: Firefighters Handbook of Wildland Firefighting, TEIE (2005): Jenkins. Utah State University

## REM 244: Extreme Fire Behavior Definition: Extreme fire behavior are cases where direct attack is not possible and fires behave erratically, sometimes dangerously. Wind Warning Signs: • Look for swaying branches in trees • Look to the clouds! Lenticular clouds indicate strong winds at high elevations

 Look for signs of thunderstorms and other signs of atmospheric instability

Know weather forecast – look out for

approach of cold fronts

Foehn ("fane") winds like the Santa Ana
Understand the Beaufort Scale



Sources: Firefighters Handbook of Wildland Firefighting, TEIE (2005): Jenkins, Utah State University

REM 244: Extreme Fire Behavior										
	В									
Beaufort rumber	Wind Speed (mph)	Seaman's term		Effects on Land						
0	Under 1	Calm	ц÷.	Calm: smoke rises vertically.						
1	1-3	Light Air	T	Smoke drift indicates wind direction; varies do not move.						
2	4-7	Light Breeze	-	Wind felt on face: leaves ruitle: vanes begin to move.						
3	8-12	Gentie Breeze	-	Leaves, small twigs in constant motion; Eight flags extended.						
4	13-18	Moderate Breeze	V	Dust, leaves and loose paper raised up: small branches move.						
5	19-24	Fresh Breeze	VY.Y	Small trees begin to sway.						
6	25-31	Strong Breeze	Y	Large branches of trees in motion: whistling heard in wires.						
7	32-38	Moderate Gale	-	Whole trees in motion; resistance felt in mailting against the wind.						
8	39-46	Fresh Gale	14	Twigs and small branches broken off trees.						
9	47-54	Strong Gale		Slight structural damage occurs; slate blown from roofs.						
10	55-63	Whole Gale		Seldom experienced on land; trees broken; structural damage occurs.						
11	64-72	Storm	1025	Hery rarely experienced on land; usually with widespread damage.						
12	73 or higher	Hurricane		Violence and destruction.						





Sources: Firefighters Handbook of Wildland Firefighting, TEIE (2005); Jenkins, Utah State University





Independent Crown Fire: spread is not dependent on the surface fire. Get out of its way!



Sources: Firefighters Handbook of Wildland Firefighting, TEIE (2005); Jenkins, Utah State University

















