How Available Burn Days Differ Using the Lavdas Dispersion Index Instead of Category Day

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Current Approach

• Determine the burn category



Current Approach

• Determine maximum fuel consumption

Burn Category	16	2	2	2	2	3	3	3	3	4	4	4	4	5	5	5	5
Burn Type	Under	0000	Under	0000	Under	0000	Under	0000	Under	0000	Under	0000	Under	0000	Under	0000	Under
	story	open	story	open	story	open	story	open	story	open	story	Open	story	у Орен	story	open	story
Night time		Poor to	Poor to	Good	Good	Poor to	Poor to	Good	Good	Poor to	Poor to	Good	Good	Poor to	Poor to	Good	Good
Dispersion	Any	Poor	Poor	to Fair	to Fair	Poor	Poor	to Fair	to Epir	Poor	Poor	to Fair	to Fair	Poor	Poor	to Fair	to Fair
Time of	Dav	Dav	Dav	Day or	Day or	Dav	Dav	Day or	Day or	Dav	Dav	Day or	Day or	Dav	Dav	Day or	Davior
Time of	Day	Day	Day	Day Or	Dayor	Day	Day	Day of	Day Or	Day	Day	Day of	Day or	Day	Day	Day or	Dayor
Burn	Only	Only	Only	Night	Night	only	Only	Night	Night	Only	Only	Night	Night	Only	Only	Night	Night
Distance to																	
SSA (mi.)																	
0<½	0	0	0	0	0	0	0	0	0	0	0	0	1030	0	0	0	1350
½<5	50	360	720	720	1080	450	900	900	1350	720	1440	1440	2160	900	1800	1800	2700
5<10	100	720	1440	1440	2160	900	1800	1800	2700	1400	2880	2880	4320	1800	3600	3600	5400
10<20	150	1080	2160	2160	3024	1350	2700	2700	4150	2160	4320	4320	6480	2700	5400	5400	8100
20<30	150	1200	2400	2400	3600	1600	3200	3200	4800	2500	5000	5000	7500	3000	6000	6000	9000
30+	200	1440	2880	2880	4320	1800	3600	3600	5400	2880	5760	5760	8640	3600	7200	7200	10800



Lavdas Atmospheric Dispersion Index All NWS forecasts have an estimate for ADI or Dispersion classifieds as "early"





Approach

- Corey Davis (NC State Univ. Climate Office) wrote a script to extract NWS fire weather forecast (archived) data.
- Files produced for each of the seven forecast areas. Years: 2009-2014.
- For each day, there was files for the morning, afternoon, and any updated forecasts. Total GSP = 7266 files.
- If available, up to 63 forecasted variables.



Approach

- Bill Jackson (USFS) wrote a program to process each of NWS fire weather forecast (archived) data.
- One Excel file produced for each of the seven forecast areas containing "Todays" results.
- The file contains the date, season, transport wind speed, mixing height, ventilation index, ADI value, and ADI category.



Air Resource Management

Results





• For each NWS forecast area is a histogram of the annual, spring, summer, fall and winter results. Frequency for the entire 6 year period. Air Resource Management



- Burn Category 1 days had the largest range in ADI categories.
- Most frequent is Fair a day that may have atmospheric stagnations if low wind speed.

Categories

	Lavdas Atmospheric						
Burn	Dispersion Index	Description of Atmospheric					
Category	Category	Dispersion Index Category					
	Very Poor, Poor,	Do not burn if the Atmospheric					
1	Generally Poor, or	Dispersion Index is the sole					
	Fair with ADI <=30	criteria					
		A day that may have atmospheric					
2		stagnations if low wind speed.					
	Fair and ADI >30	Any residual smoke likely to					
		result in problems if surface wind					
		speed is < 3 mph.					
2	Conorolly Cood	Typically has good afternoon					
5	Generally Good	dispersion of smoke					
Л	Good	Typically has good burning					
4	9000	weather conditions					
E	Vory Good	May indirectly indicate hazardous					
5	very Good	burning conditions					

Air Resource Management



GSP Results (Spring)

 During the 6 years, there may have been 1848 days in the spring (March – May) when more acres could have been treated.

	Lavda	as Atmosp						
Burn	Very Poor, Poor, Generally Poor, or	Fair and	Generally		Very	Total	Possibly Missed	Over
Category	Fair with ADI <=30	ADI >30	Good	Good	Good	Days	Opportunity	Estimate
1	448	332	72	121		973	525	
2		64	489	32	61	646	582	
3			374	436	121	931	557	
4			28	1721	182	1931	182	28
5				132	2091	2223		132
					Total	6704	1846	160



What Next?

- Write a report on the findings.
- Make data available for download and additional analysis.
- Dialogue among cooperators if Lavdas Atmospheric Dispersion Index should replace the Burn Day.
- If yes, then estimate the tons of fuel consumption for downwind distances to smoke sensitive areas and time of day.
- Evaluate before adopting into smoke management program. Air Resource Management



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North Carolina Prescribed Fire Council



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 Resources
 Supporters

 The mission of the North Carolina Prescribed Fire Council is to foster cooperation among all parties in North Carolina with an interest or stake in prescribed fire.
 North Carolina with Carolina

PURPOSE AND CHARGE

The North Carolina Prescribed Fire Council brings together natural resource professionals, public and private land managers, and others who support the use of prescribed fire into an organization to:

- · Promote public education about the benefits of prescribed fire.
- Advocate for the ability to use prescribed fire as a land management tool now and in the future.
- Increase expertise in prescribed fire by sharing technical and biological information.
- · Promote safety, training, and research in the art and science of prescribed fire.
- Review prescribed fire practices, regulations, and policies and suggest improvements.
- Promote best management practices that minimize smoke and air quality impacts from prescribed fires.



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