

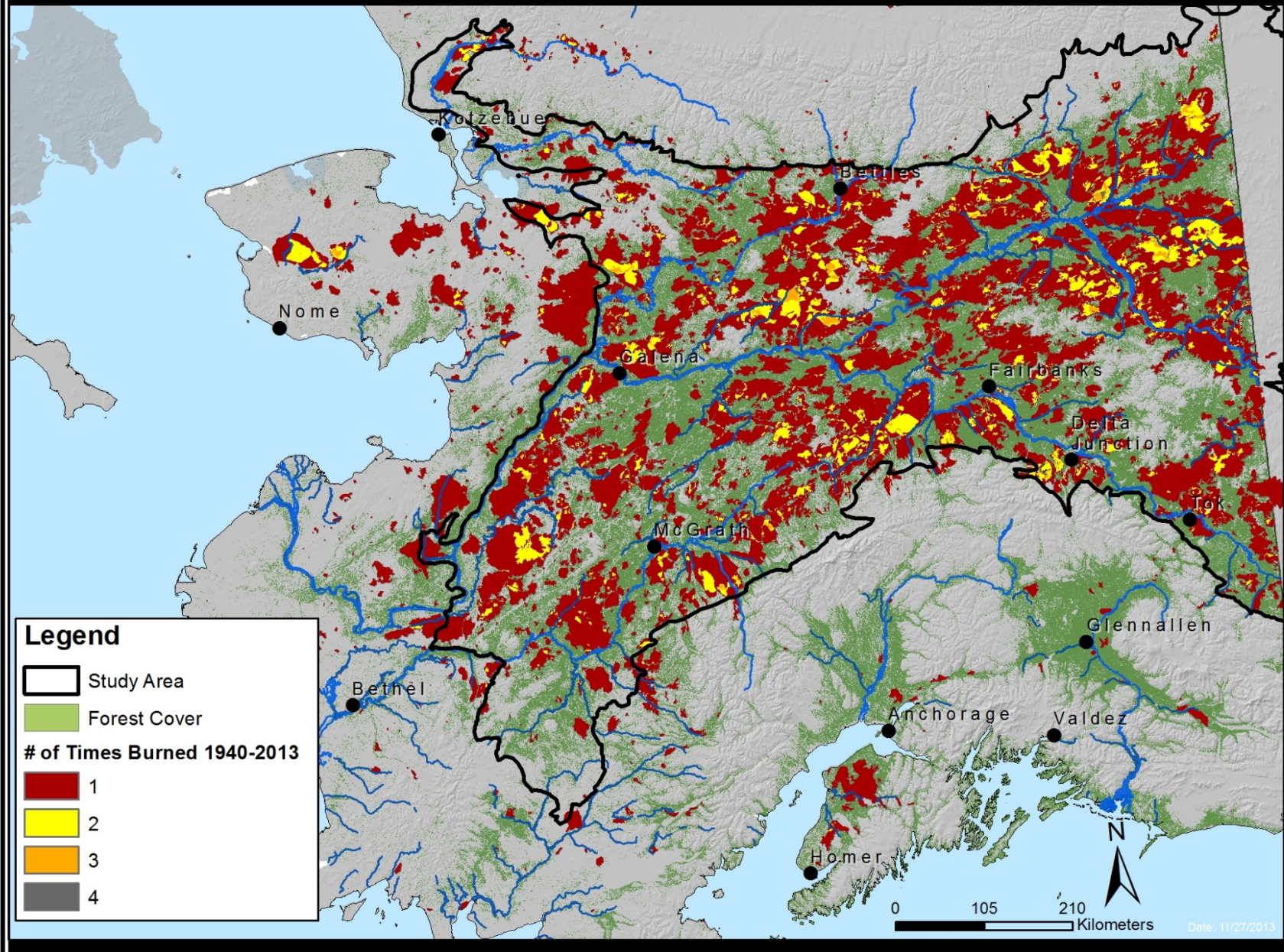


New Fires and Old Fires – Fuel Barriers or Not?

Jennifer Barnes and Robert Ziel
AFSC - Spring FMO Meeting April
2014

2013 Mississippi fire burning in the
1998 Carla Lake Fire, AK IMT

Alaska Fire History and Repeat Fires 1940-2013





Foraker Pond 2009 and
1986 fire, NPS photo



2007 Woodchopper 2 Fire burns into
1950 and 1967 fires, NPS photo



2013 Mississippi fire burning in the
1998 Carla Lake Fire



2013 McKinley River East stops at
1986 fire, NPS Photo/Y. Matsui



2009 Foraker Pond and
1986 fire, NPS photo



2007 Woodchopper 2 Fire burning in a
1967 fire, NPS photo



2013 Mississippi fire burning in the
1998 Carla Lake Fire



Fuels in the 1986 fire that didn't burn

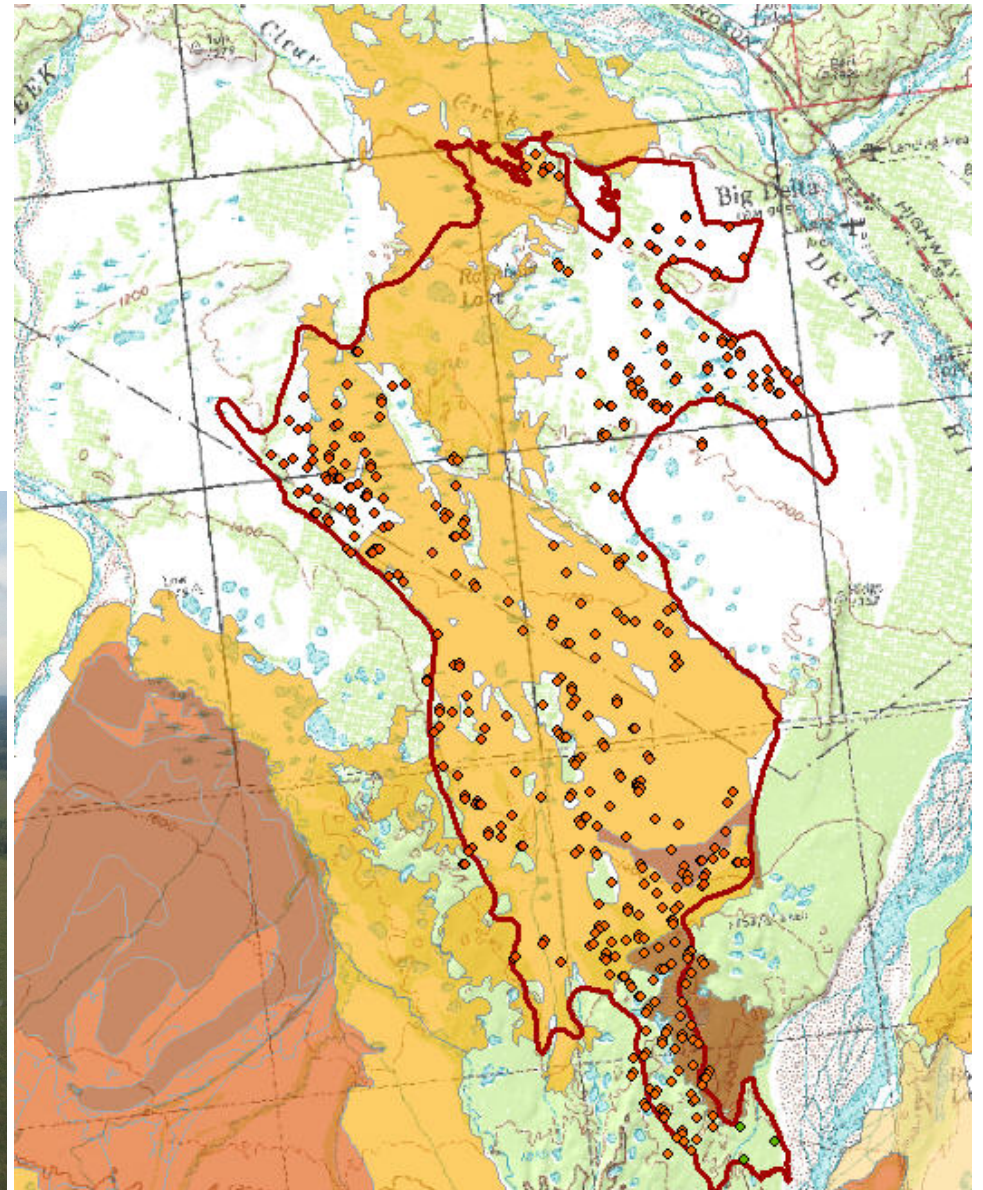
Factors that may influence fires burning or slowing in recent fires...

- **Season** – drier in the late season? Early season dead grasses?
- **Fuels** – vegetation types in old fires?
- **Burn severity of first fire** – Low severity burns again? High severity has more grasses?
- **Topography** –slope, aspect, position?
- **Time since fire** – older fires or more recent fires?
- **Weather** – controls all? Winds, prcp, temps??
- Random or factors line up...

Weather

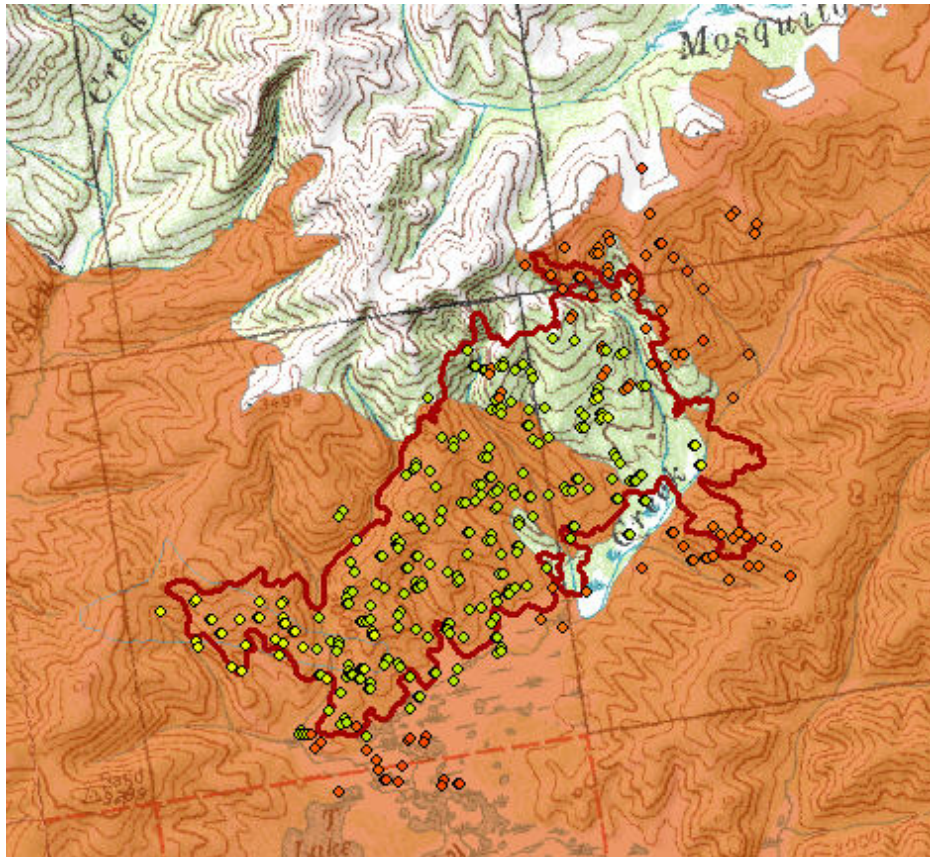


Mississippi fire 2013, burning in Carla Lake
1998 burn area, FBAN photo AK Type 1
Team

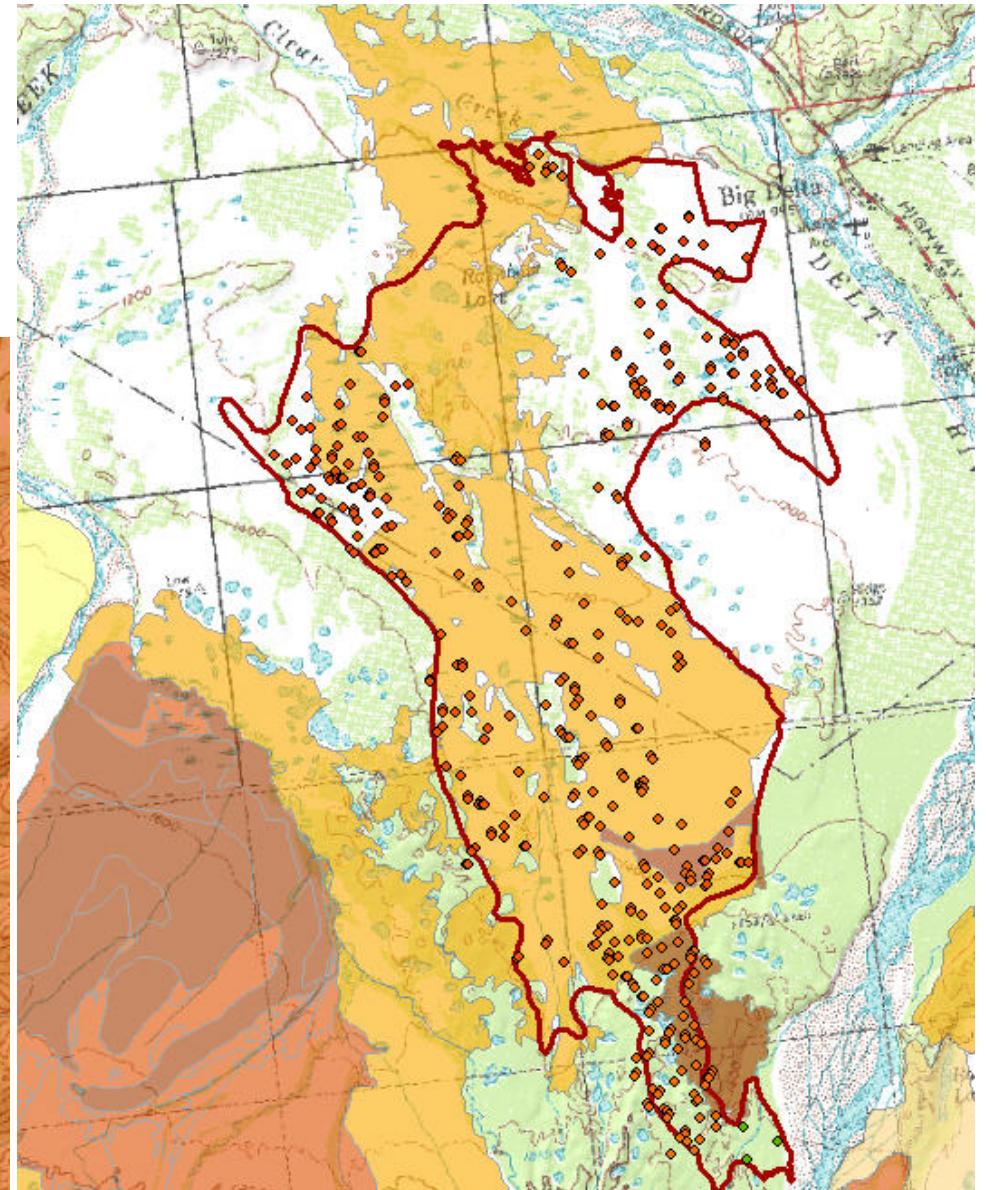


The Mississippi fire started ~ May 30th and barely moved for two months, **hot & windy weather** spreads the fire in early August.

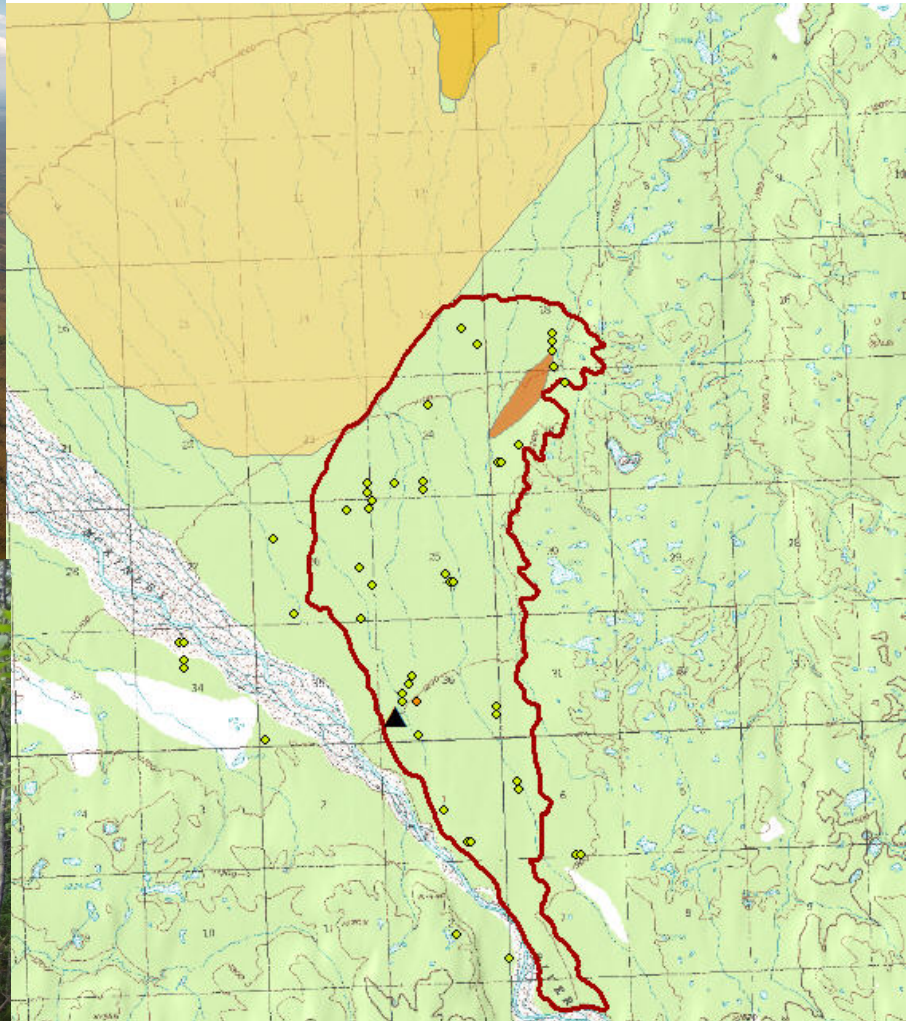
Seasonality of fire



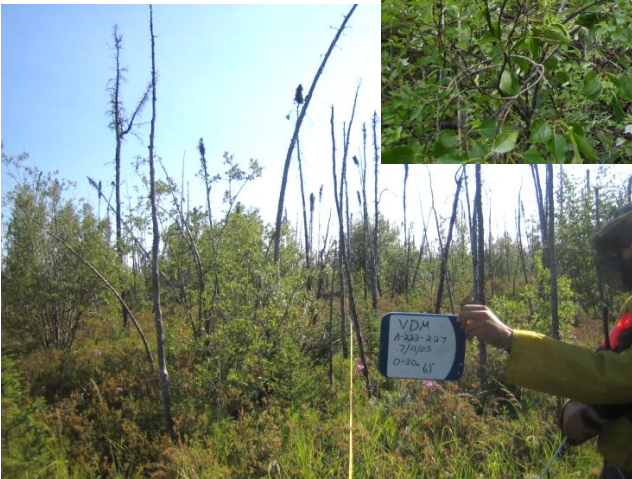
Billy Cr Fire 2013 and Billy Cr 2005.
MODIS points colored by date,
green-yellow are earlier season



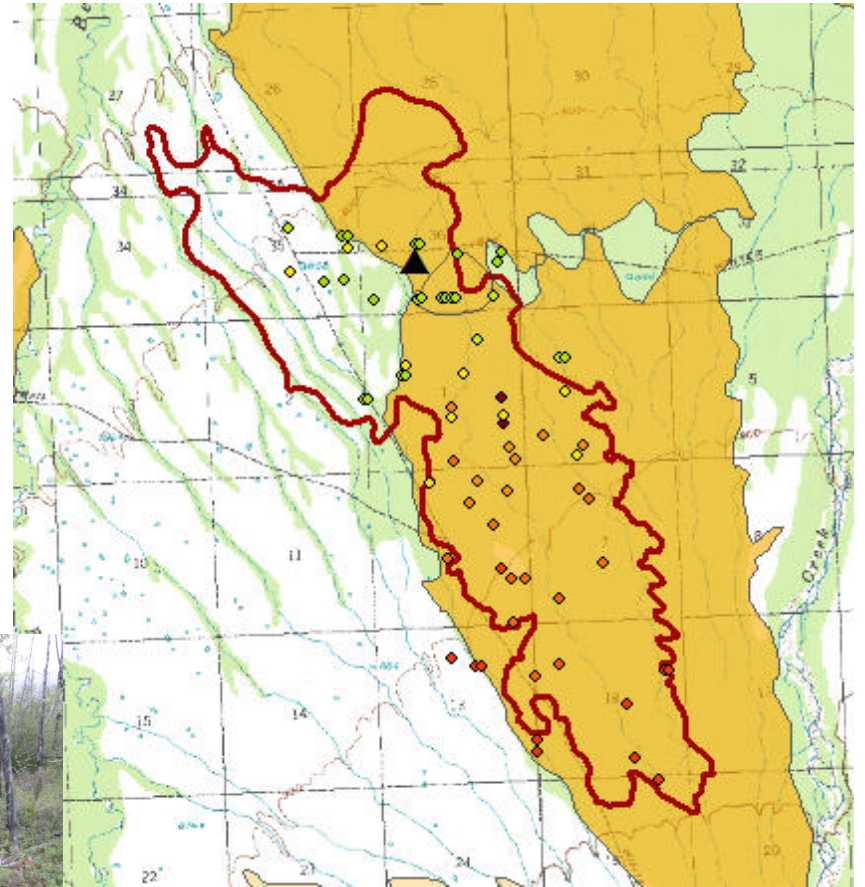
68% of the 2013 Mississippi fire was in the 1998
Carla Lake fire. *Most fire growth occurred late in
the season (August).* MODIS points colored by
date, **reds are later season.**



**Stopped by
Fuel Types?**



McKinley River East 2013 burns to the 1986 fire and holds, burns through small 2007 fire. MODIS points colored by date, green and yellow are earlier season.



Bear Cr 2013 fire burns through 1991 and 1993 Fires.

Flammable early successional fuel types?

Types of vegetation that have burned twice...



**Black Spruce-Tussock
15 yrs post-fire**

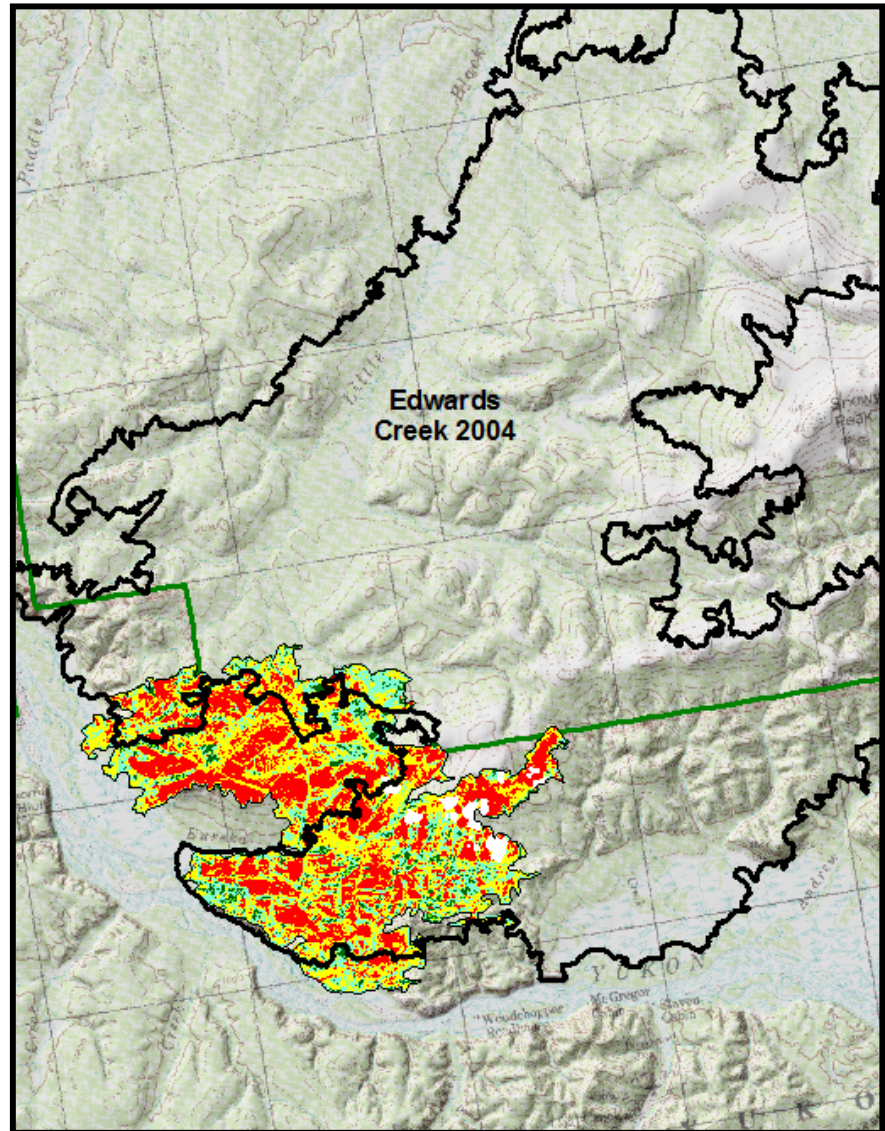
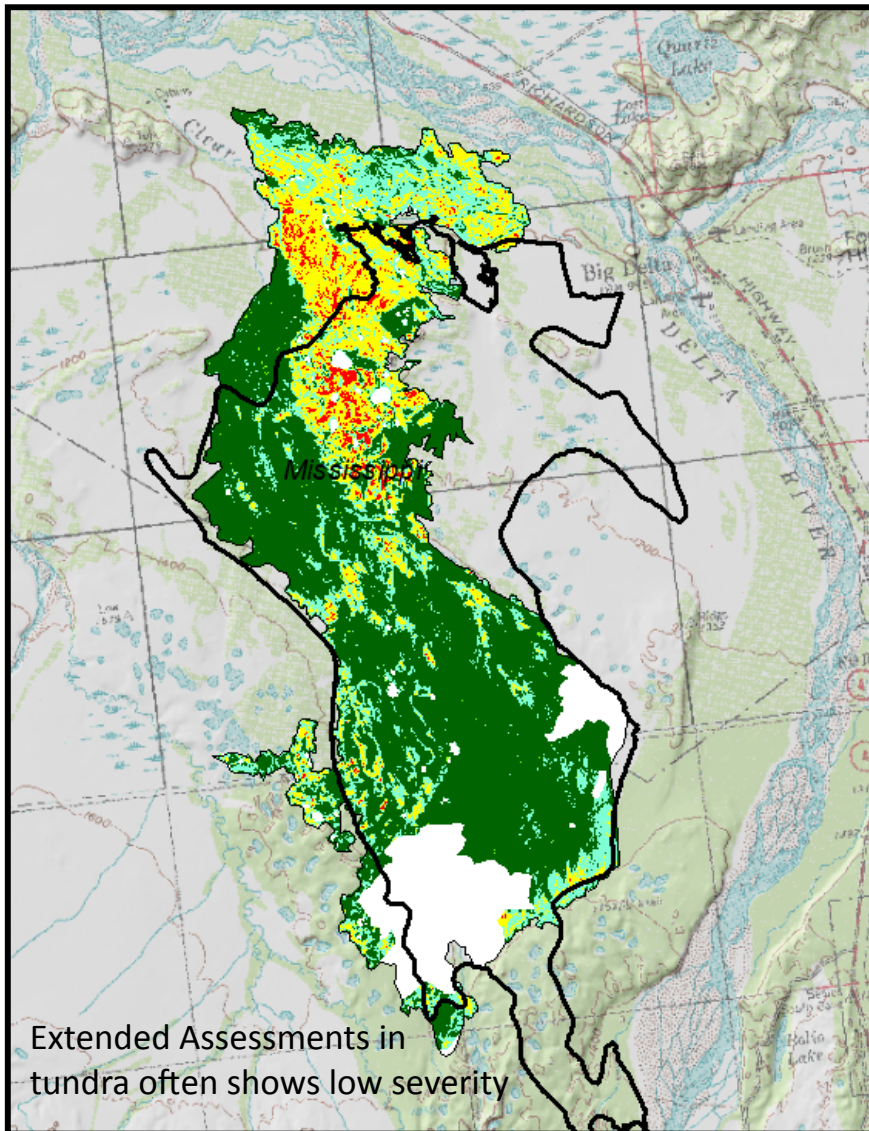


**Black Spruce-Feathermoss
15 yrs post-fire**

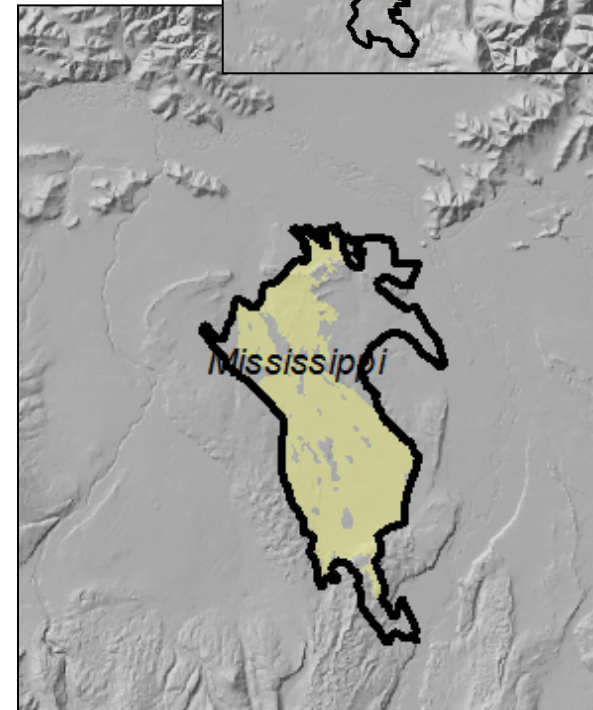
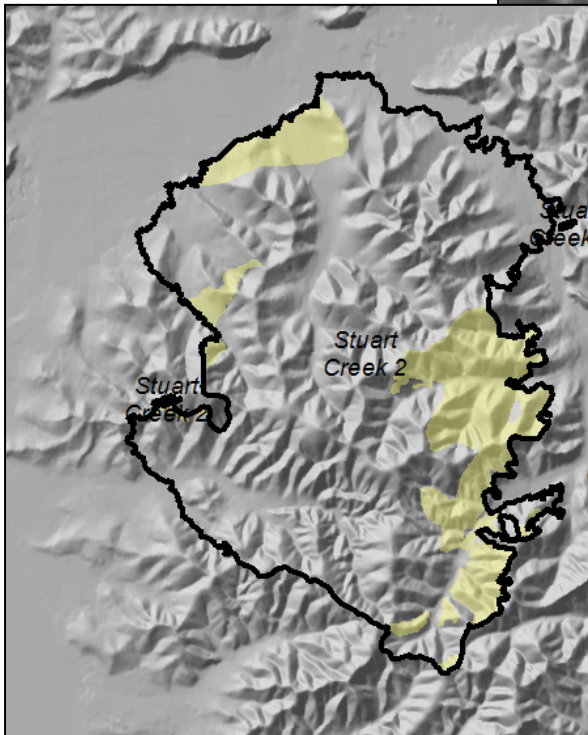
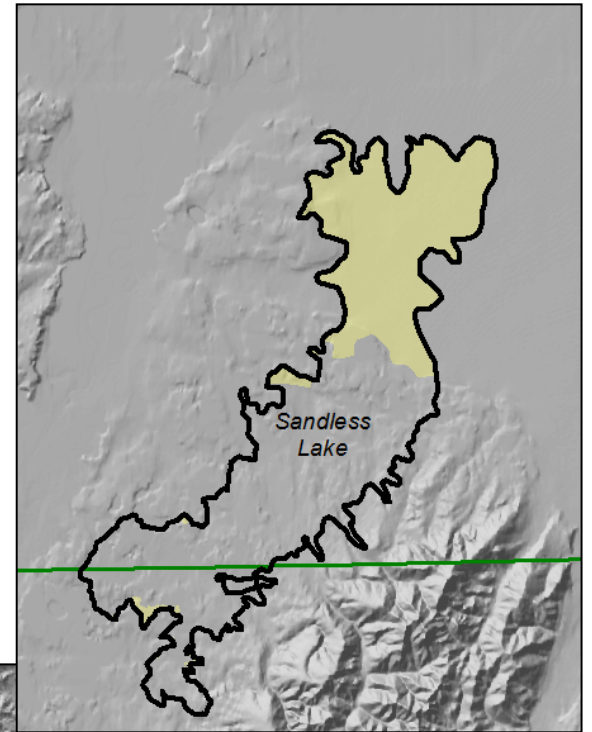
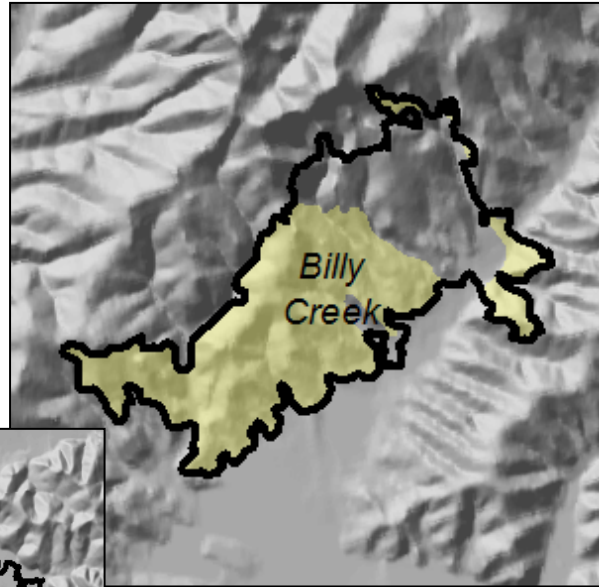


**Spruce-Deciduous
19 yrs post-fire**

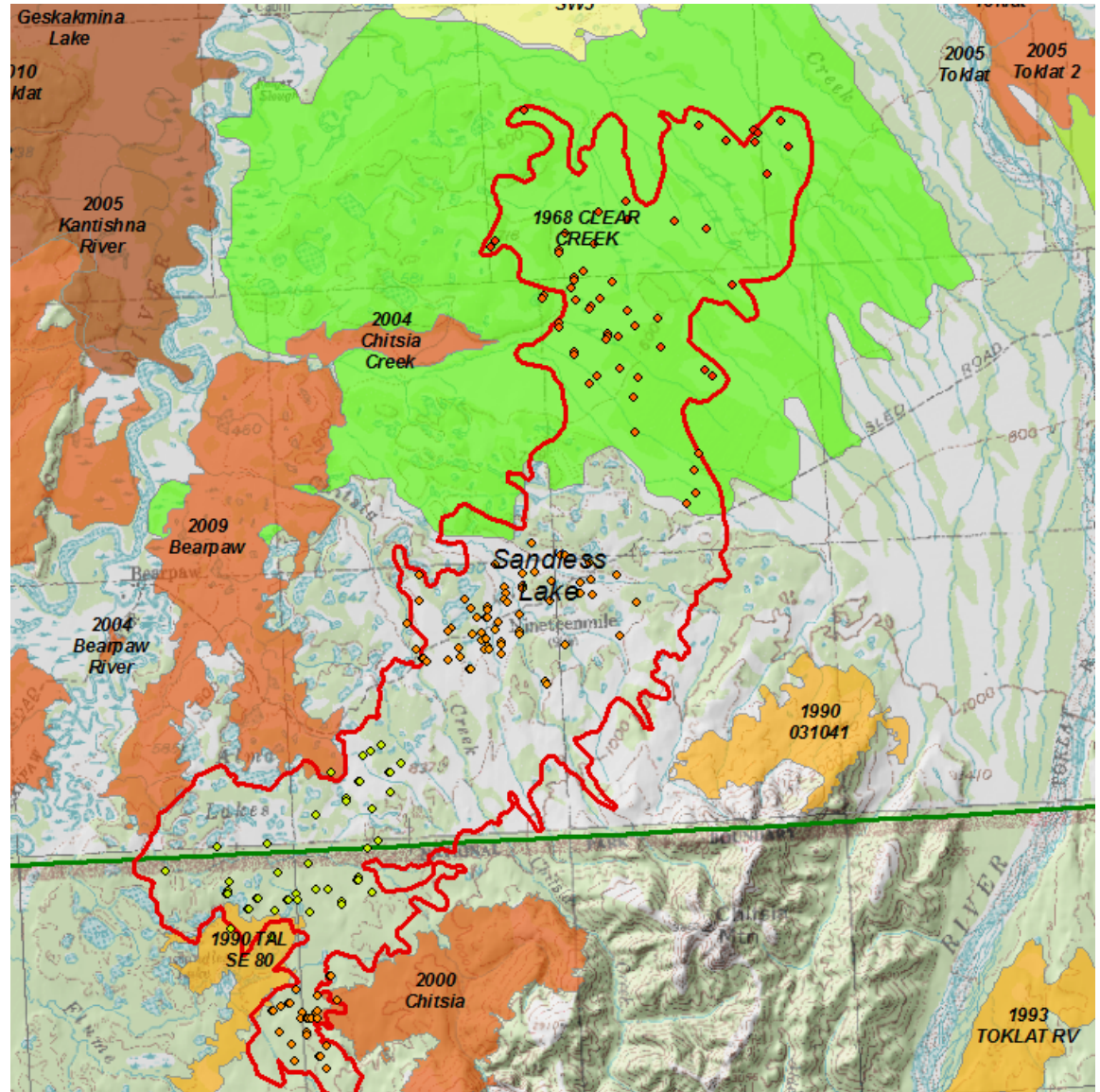
Burn Severity of First Fire?



Topographic effects?



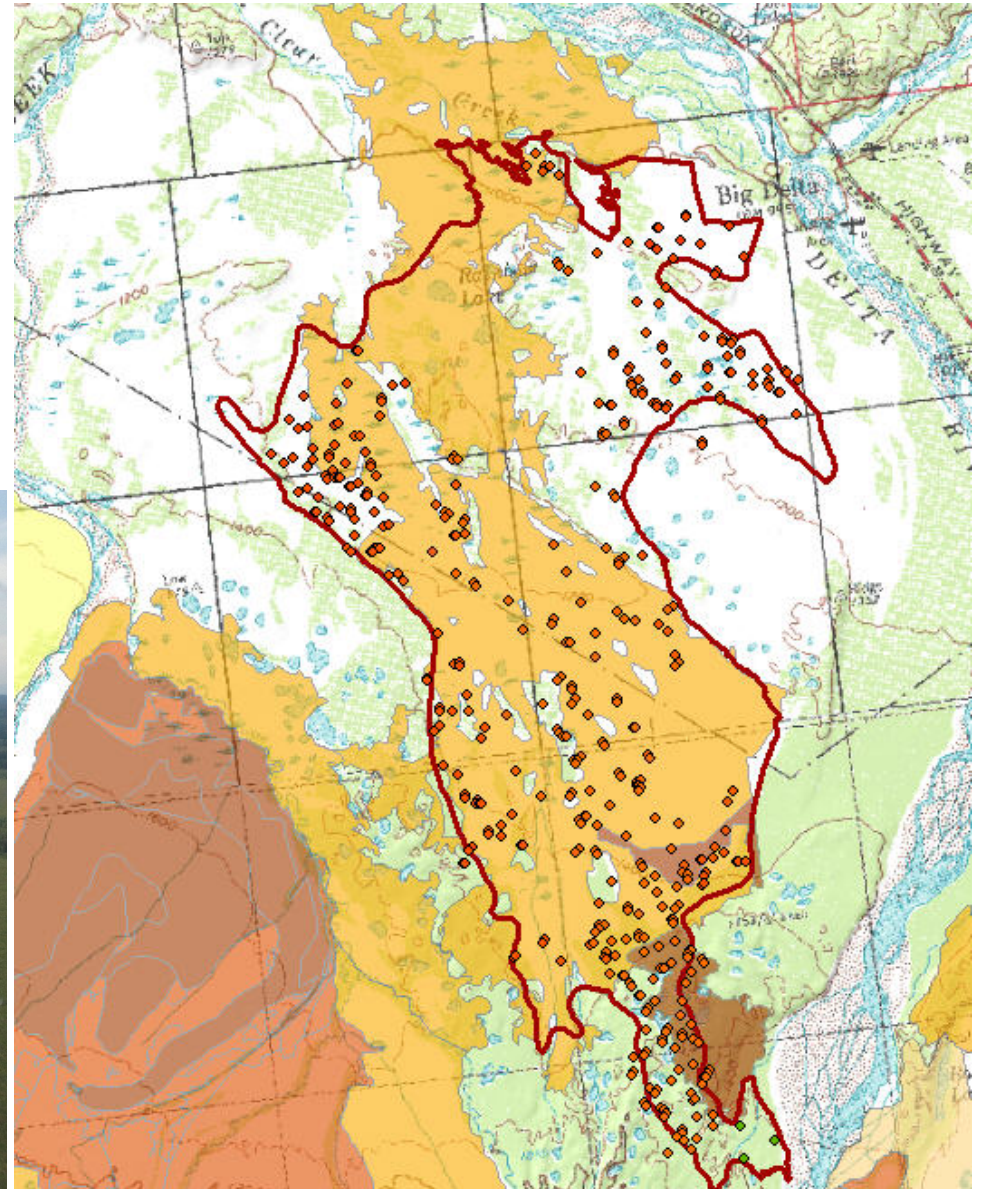
Time Since Last Fire?



Weather



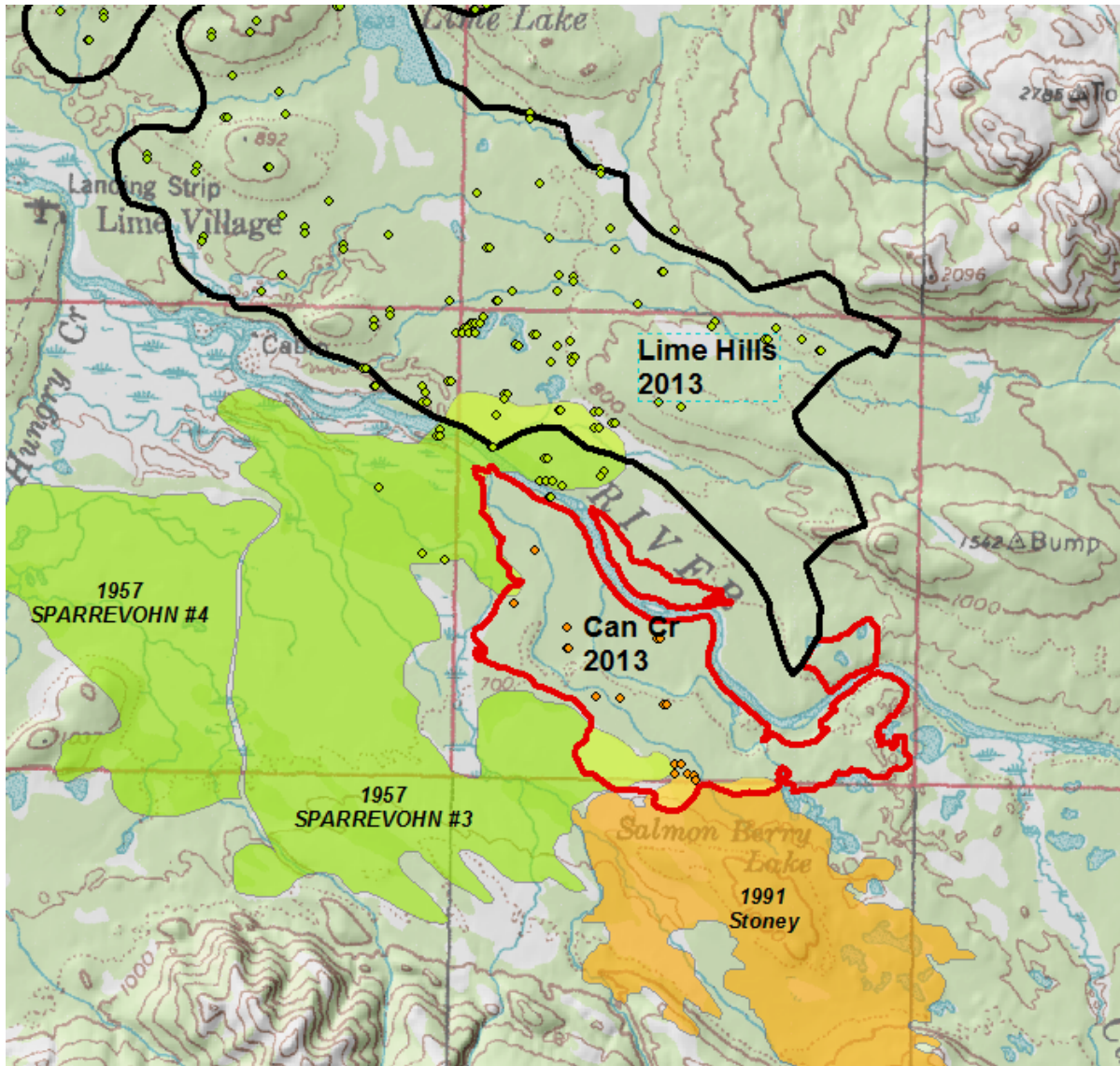
Mississippi fire 2013, burning in Carla Lake
1998 burn area, FBAN photo AK Type 1
Team



The Mississippi fire started ~ May 30th and barely moved for two months, **hot & windy weather** spreads the fire in early August.

Weather Holding Fires Back?

- Lime Hills burned in June during extreme heat during greenup
- Can Creek burned at end of July after wet period

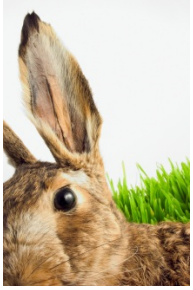


What Role For Past and Current Weather?

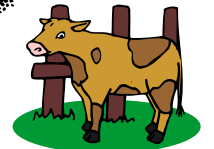
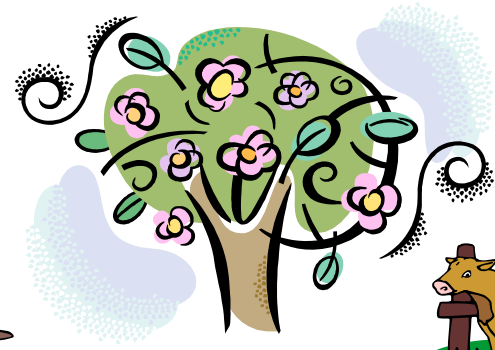
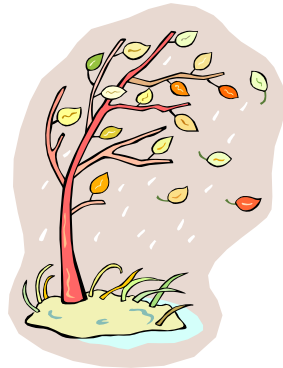
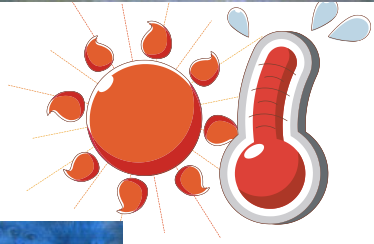
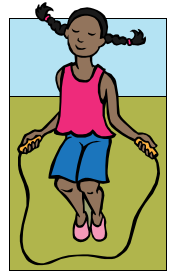
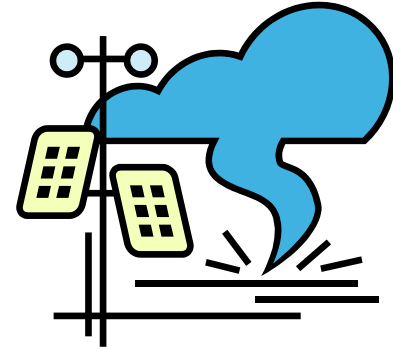
Lime Hills in June, Can Creek at end of July

Date	Hr	ATF	RHP	WSM	PREC	FFMC	DMC	DC	ISI	BUI	FWI
06-07	14	67	26	2	0	85.6	17.7	59.6	2.7	20.3	4.4
06-08	14	72	30	4	0.01	90.3	22	67	6.2	24.2	10.6
06-09	14	69	30	6	0	91.1	26	74.1	8.1	27.7	14.1
06-10	14	70	37	6	0	91.1	29.7	81.3	8.2	31	15
06-11	14	72	33	2	0	91.2	33.8	88.7	6	34.6	12.4
06-12	14	80	19	2	0	94.1	39.7	96.9	9	39.7	18.4
06-13	14	77	25	6	0	94.2	44.8	104.8	12.6	44.8	24.8
06-14	14	80	24	2	0	94.2	50.4	113	9.2	50.3	21
06-15	14	84	18	4	0	95.2	56.9	121.6	12.3	56.8	27.3
06-16	14	86	17	4	0	95.7	63.7	130.4	13.1	63.5	30.2
06-17	14	91	19	5	0	95.7	70.9	139.8	14.3	70.7	33.8
06-18	14	90	25	4	0	95.7	77.5	149	13.2	77.2	33.4
06-19	14	73	29	7	0	94	81.9	156.5	13.2	81.7	34.4
06-20	14	73	29	4	0	93.5	86.4	164	9.7	86.1	28.8
06-21	14	57	51	2	0	90	88.3	169.9	5	88.1	18.2
06-22	14	64	28	3	0	90.9	91.9	176.5	6.2	91.6	21.7
06-23	14	66	30	7	0	91	95.6	183.3	8.7	95.3	27.9
06-24	14	68	47	4	0	89.9	98.5	190.3	5.8	98.3	21.5
06-25	14	74	41	3	0	89.9	102.3	197.9	5.4	102.1	20.8
06-26	14	82	43	4	0	90	106.7	206.3	5.9	106.4	22.6
06-27	14	59	99	3	0.12	46.6	77.5	208.3	0.1	80.3	0.3
06-28	14	68	68	2	0	66.1	79.3	215.3	0.6	82.6	2.6
06-29	14	71	60	2	0	78.6	81.7	222.6	1.2	85.2	5.2
06-30	14	69	23	5	0	89.9	86.1	229.7	6.3	88.9	21.6
07-01	14	59	41	6	0.12	73	67.5	231.7	1.1	78.1	4.7
07-02	14	53	64	1	0	77.8	68.5	237.5	1	79.6	4.2
07-03	14	59	59	4	0.2	56.8	45.9	233.5	0.5	61.6	0.9
07-04	14	53	90	1	0.17	31.3	32.2	231.3	0	47.8	0
07-05	14	64	40	2	0.26	49.5	21	223.6	0.2	34	0.2
07-06	14	59	48	6	0	73.2	23	230.1	1.1	36.8	2.5

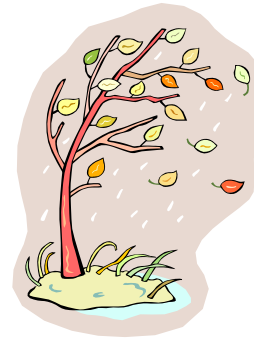
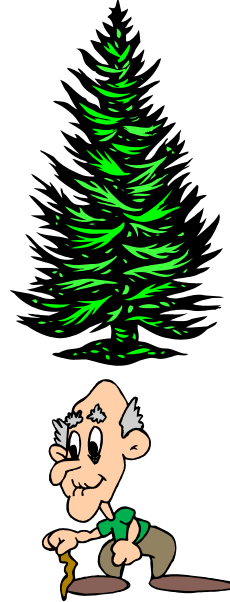
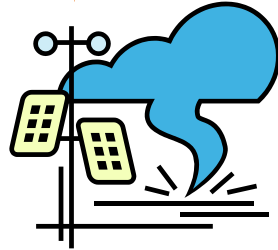
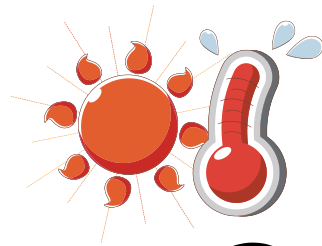
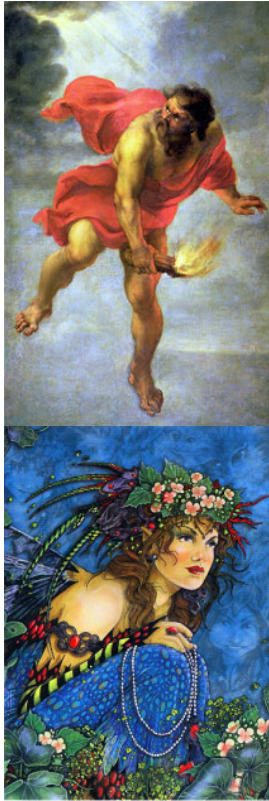
Date	Hr	ATF	RHP	WSM	PREC	FFMC	DMC	DC	ISI	BUI	FWI
07-17	14	59	100	2	0.45	17.9	14.9	252	0	26	0
07-18	14	62	100	2	0.12	10.1	10.9	254.1	0	19.6	0
07-19	14	65	74	8	0.12	40.8	8.8	256.4	0.1	16.1	0.1
07-20	14	61	59	8	0.14	56.2	7.2	256.8	0.6	13.4	0.4
07-21	14	68	53	5	0	77.2	9.5	264.1	1.3	17.4	1.4
07-22	14	75	36	3	0	87.7	13.2	272.1	3.9	23.6	7
07-23	14	70	57	5	0	87.8	15.5	279.6	4.7	27.2	8.9
07-24	14	75	52	5	0	87.8	18.3	287.6	4.7	31.6	9.7
07-25	14	75	50	4	0	88	21.2	295.6	4.4	36	10
07-26	14	80	37	4	0	90.4	25.4	304.1	6.3	42	14.4
07-27	14	84	29	3	0	92.5	30.4	313	7.8	48.9	18.4
07-28	14	86	38	4	0	92.6	34.9	322.1	8.6	54.9	20.9
07-29	14	81	44	4	0	91.5	38.6	330.7	7.3	59.8	19.5
07-30	14	83	40	3	0	91.5	42.8	339.5	6.8	65	19.3
07-31	14	85	28	6	0	93	47.9	348.5	10.7	71.3	27.8
08-01	14	74	35	3	0	92.5	51.2	355.7	7.8	75.3	22.9
08-02	14	73	34	3	0	92.4	54.5	362.8	7.6	79.2	23.3
08-03	14	65	36	0	0	91.8	57	369.1	5.6	82.3	18.9
08-04	14	64	60	4	0.05	81	58.6	375.4	1.8	84.3	7.6
08-05	14	65	46	2	0.03	83.6	60.7	381.7	2	86.9	8.8
08-06	14	65	41	8	0	87.6	63.1	388	5.8	89.7	20.4
08-07	14	71	34	9	0	90.1	66.2	394.9	9	93.3	28.5
08-08	14	60	35	4	0	90.2	68.4	400.7	6.1	95.9	21.9
08-09	14	62	53	7	0.18	66.6	47.7	393.4	1	73.3	3.9
08-10	14	63	54	2	0	78.4	49.5	399.5	1.1	75.6	4.7
08-11	14	59	75	1	0.01	80	50.3	405.2	1.2	76.8	5.1
08-12	14	64	60	2	0.02	83.1	51.9	411.4	1.9	78.9	7.9
08-13	14	67	52	4	0	85.9	53.9	417.9	3.3	81.5	12.6
08-14	14	67	55	4	0.02	86.2	55.8	424.4	3.5	84	13.4
08-15	14	64	62	4	0	86.3	57.3	430.6	3.5	86	13.6



RANDOM?



Or Factors Line Up



JFSP Research Proposal Submitted

How do biophysical factors, fire weather, and climate change affect fire behavior in previously burned areas of Alaskan boreal forests?

J. Cronan, J. Barnes, D. Verbyla and R. Ziel

What can we learn from your
observations?