Supplementary Information for

Overwintering fires in boreal forests

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Supplementary Table 1: Key characteristics of overwintering fires reported by fire agencies of Alaska and the Northwest Territories. Start refers to the day of year the fire was discovered and estimated to have ended by the fire agency, Size refers to the burned area as estimated by the fire agency. The last column indicates if a fire was detected within the updated Alaskan Fire Emissions Database (AKFED) product. Cost data, when known, originated from the Alaska Wildland Fire Maps, 209 Incident Status Summary reports (*) or the Bureau of Land Management (**).

Year	Name	Latitude	Longitude	Start date	Size (ha)	Cost (US $)	Region	AKFED
2005	Billy Creek	63.7667	-143.9167	118	1.2	13,568	AK	No
2006	Mill Site	61.5500	-149.5167	148	< 0.1		AK	No
2007	Little Delta	64.1780	-146.9064	119	13548.1		AK	Yes
2008	Three Lakes	66.1947	-143.9394	155	14222.7	317,022 (**)	AK	Yes
2010	East Kantishna	64.6800	-149.9758	120	1.2		AK	No
2010	HOLDOVER	64.8142	-149.7264	132	0.8		AK	No
2010	Grayling	63.2672	-153.3192	136	2.8		AK	No
2010	Crescent Island	64.8847	-149.3428	139	0.6		AK	No
2010	Caribou Crossing	64.7967	-149.7358	146	0.1		AK	No
2010	Sheenjek	67.3967	-144.2292	147	10.1		AK	No
2010	Telida Holdovers	63.3133	-152.9520	148	4.1		AK	No
2010	Caribou	64.7950	-149.7311	199	0.8		AK	No
2010	Toklat	64.4617	-150.2404	136	69549.3		AK	Yes
2010	Turquoise Lake	62.3926	-153.4915	137	37213.4		AK	Yes
2010	Clear Creek Buttes	64.5111	-148.1105	130	42.5		AK	No
2010	Wood River Buttes	64.4614	-148.1372	111	20.3		AK	No
2010	Bonnefield	64.5500	-147.7167	137	4.9		AK	No
2011	Seven Mile Slough	64.6978	-147.9392	129	3.2		AK	No
2011	Bull Creek	66.3822	-148.3661	147	768.2		AK	Yes
2014	Mississippi # 2	64.0895	-145.9709	122	0.8	58,801	AK	No
2015	Jaeger Fire Number One	60.4731	-150.7541	137	< 0.1	5,901	AK	No
2015	2015-FS031	61.5017	-121.5093	169	< 0.1		NWT	No
2015	2015-SS002	60.5370	-113.8620	134	< 0.1		NWT	No

2015	2015-SS003	61.6815	-117.6803	135	< 0.1		NWT	No
2015	2015-SS004	61.3500	-116.7160	135	< 0.1		NWT	No
2015	2015-SS020	61.5107	-116.7077	171	< 0.1		NWT	No
2015	2015-SS022	61.3137	-116.4247	172	< 0.1		NWT	No
2015	2015-VQ007	65.6013	-127.6730	146	< 0.1		NWT	No
2015	2015-ZF001	62.3375	-115.7927	137	< 0.1		NWT	No
2015	2015-ZF005	62.0833	-115.4883	164	< 0.1		NWT	No
2015	2015-ZF009	63.7048	-117.6868	174	< 0.1		NWT	No
2015	2015SS-007	61.7062	-117.6727	121	1314.5		NWT	Yes
2015	2015SS-010	60.8665	-112.1812	121	42088.7		NWT	Yes
2016	Fedco	60.4947	-150.4755	144	< 0.1	1,844	AK	No
2016	Moose River	60.4695	-150.7372	145	< 0.1	6,171	AK	No
2016	Blizzard Lake	60.4817	-150.4469	147	< 0.1	817	AK	No
2016	Marble Row	60.4974	-150.4813	147	< 0.1	631	AK	No
2016	Bot Lake	60.5128	-150.5414	148	< 0.1	952	AK	No
2016	Feuding Lane	60.4946	-150.6447	149	< 0.1	1,989	AK	No
2016	13.5	60.4800	-150.4460	149	< 0.1	1,862	AK	No
2016	15.9	60.4985	-150.4945	149	0.1	4,203	AK	No
2016	Scoundrel	60.4915	-150.4722	150	< 0.1	2,066	AK	No
2016	Black Pole	60.4983	-150.4949	150	< 0.1	50	AK	No
2016	Crystal Lake	61.7656	-150.1220	151	< 0.1	2,000	AK	No
2016	Timber	60.5000	-150.5030	152	< 0.1	5,012	AK	No
2016	Power Line Trail	60.4945	-150.6428	153	0.1	1,983	AK	No
2016	Deer Creek	64.7902	-154.9838	156	8.1	0	AK	No
2016	Grass Lake	64.8331	-154.5295	158	0.4	0	AK	No
2016	Blazo Holdover 1	63.6225	-157.4547	168	0.1	0	AK	No
2016	Healy Lake Holdover #1	63.9493	-144.8410	178	0.4	13,530	AK	No
2016	Medfra/ Berry Creek/ North Folk Kuskokwim	63.2345	-154.2552	150	3211.8	2,182,937 (*)	AK	Yes
2016	Aropuk Lake	61.0414	-163.5954	154	892.4	13,576 (*)	AK	Yes
2017	Sharen	61.7953	-150.1129	176	0.2	3,925	AK	No
2017	Serenity	61.7915	-150.1233	177	< 0.1	1,790	AK	No

Supplementary Table 2: Key characteristics of large overwintering fires detected using our algorithm. Start date, size and carbon (C) emissions were estimated from the updated Alaskan Fire Emissions Database. Fire names were derived from the Alaska Wildland Fire Maps, cost estimates, when known, were derived from the 209 Incident Status Summary reports.

Year	Name	Latitude	Longitude	Start date	Size (ha)	Emissions (Mg C)	Cost (US $)	Region
2002		67.0192	-158.2748	137	25	0.0		AK
2002	2002CR-009	60.3957	-107.9503	178	8000	245.6		NWT
2003	LEFT BANK	63.1297	-154.5323	166	100	1.1		AK
2005		60.1992	-143.1705	168	100	0.6		AK
2006		65.2324	-151.8888	135	75	0.3		AK
2007	Little Delta	64.1780	-146.9064	145	11550	266.4		AK
2008	Three Lakes	66.1947	-143.9394	155	13700	496.1		AK
2010	Toklat	64.4617	-150.2404	136	36675	742.8		AK
2010	Turquoise Lake	62.3926	-153.4915	141	21550	219.2		AK
2010		63.2965	-152.9457	149	25	0.4		AK
2010		64.5051	-147.9520	139	25	0.4		AK
2011	Bull Creek	66.3822	-148.3661	151	575	6.9		AK
2012	2012ZF-032	65.5513	-116.5461	186	4125	176.3		NWT
2013	2013SS-036	61.0861	-110.1152	190	1000	32.2		NWT
2014	2014EV-001	66.1060	-133.4171	161	200	3.0		NWT
2014		61.2783	-104.8127	179	50	1.1		NWT
2015	2015SS-007	61.7062	-117.6727	145	150	2.4		NWT
2015	2015SS-015	60.5566	-111.7760	161	13000	479.4		NWT
2015	2015SS-018	60.6909	-107.6200	156	25	0.5		NWT
2015	2015SS-010	60.8665	-112.1812	150	21225	653.6		NWT
2015	2015ZF-016	64.0964	-113.9472	179	3500	134.7		NWT
2015		60.4794	-114.0535	137	425	6.9		NWT
2016	2016 Louise Creek	63.9484	-148.7969	133	75	0.3	78,056	AK
2016	Medfra/ Berry Creek	63.2345	-154.2552	150	1850	33.7	2,182,937	AK
2016	Aropuk Lake	61.0414	-163.5954	154	225	2.3	13,576	AK
2017		68.1783	-129.7832	182	25	0.4		NWT
2018		66.7198	-147.6214	177	75	0.9		AK
2018		61.3462	-110.9400	160	125	1.5		NT
2018		60.0731	-108.5609	141	125	1.7		NT