

Supplementary Materials

Article

Comparing Sentinel-2 and Landsat 8 for Burn Severity Mapping in Western North America

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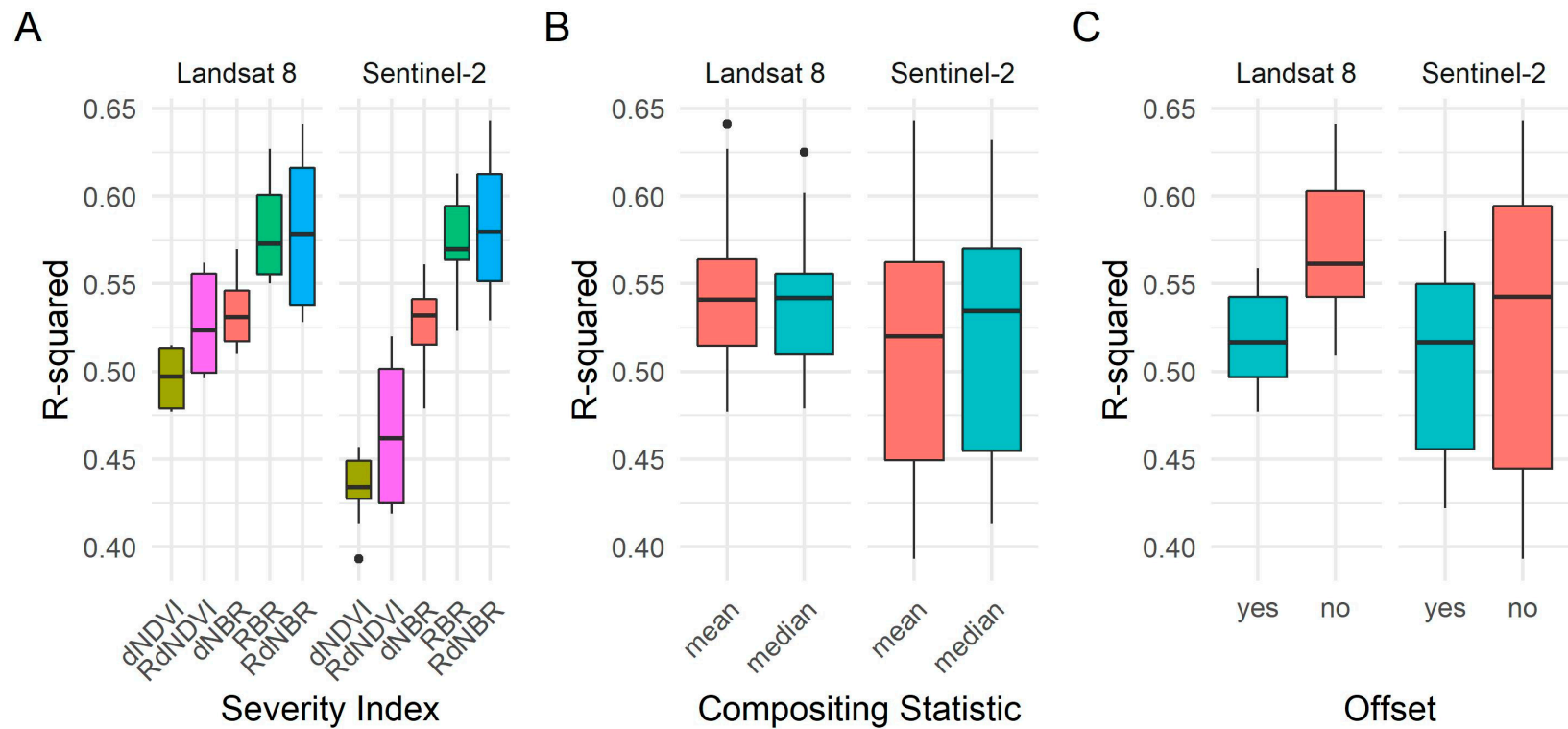


Figure S1. NLS model fits (R^2) for Landsat 8 and Sentinel-2 derived burn severity indices to field-based Composite Burn Index scores using the image compositing approach. $N = 40$ models for Landsat and for Sentinel (5 indices \times 2 compositing statistics \times 2 calculation or not of an offset \times 2 composite imagery seasons). The 5 indices compared are 1) dNDVI (differenced Normalized Vegetation Index); 2) RdNDVI (Relativized difference Normalized Vegetation Index); 3) dNBR (differenced Normalized Burn Ratio); 4) RBR (Relativized Burn Ratio); and 5) RdNBR (Relativized differenced Normalized Burn Ratio) (A). The compositing statistics are the method used to calculate the pixel value from the pre- and post-fire imagery stacks in Google Earth Engine (B). The offset calculates the mean index value from a 180-m band outside the fire perimeter for the pre- and post-fire image composites and uses the difference between the two as a correction value for all pixels inside the burn perimeter (C).

Table S1. Paired-scene approach scene acquisition dates.

Map ID	MTBS Fire_ID*	Fire Name	Ignition Date	Pre-Fire Image Acquisition Date		Post-Fire Image Acquisition Date	
				Landsat 8*	Sentinel-2	Landsat 8*	Sentinel-2
1	WA4782412342420160726	Hayes Two	7/26/2016	7/29/2014	6/30/2016	8/22/2017	8/4/2017
2	WA4695112137420170812	Norse Peak	8/12/2017	9/13/2016	8/16/2016	9/3/2018	9/5/2018
3	WA4691112095020160910	Rock Creek	9/10/2016	7/2/2015	8/16/2016	6/21/2017	8/11/2017
4	WA4737712101920170812	Jolly Mountain	8/12/2017	7/23/2017	8/11/2017	7/26/2018	8/1/2018
5	OR4400312257520170811	Jones	8/11/2017	7/27/2016	7/27/2016	7/17/2018	7/17/2018
6	OR4400912217020170804	Rebel	8/4/2017	7/23/2017	7/22/2017	7/26/2018	7/27/2018
7	OR4425712174320170811	Milli 0843 CS	8/11/2017	7/23/2017	7/22/2017	7/26/2018	7/27/2018
8	OR4440811838320160731	Rail	7/31/2016	6/20/2016	6/21/2016	7/9/2017	7/9/2017
9	ID4395011576220160718	Pioneer	7/18/2016	8/23/2015	9/22/2015	7/11/2017	7/23/2017
10	ABC002	Kenow	9/3/2017	7/24/2016	7/21/2016	7/21/2018	7/18/2018
11	MT4667411426820170715	Lolo Peak	7/15/2017	7/24/2016	8/17/2016	7/30/2018	8/12/2018
12	MT4713911378020170715	Liberty	7/15/2017	7/24/2016	8/17/2016	7/14/2018	7/13/2018
13	MT4726811348520170724	Rice Ridge	7/24/2017	7/24/2016	8/17/2016	7/30/2018	8/2/2018
14	MT4599511358020170714	Meyers	7/14/2017	8/2/2016	7/3/2017	7/23/2018	7/23/2018
15	WY4474311097820160809	Maple	8/9/2016	8/2/2015	8/4/2016	7/22/2017	8/4/2017
16	WY4402111078620160725	Berry	7/25/2016	7/19/2016	7/15/2016	7/22/2017	8/26/2017
17	SD4377610344820171211	Legion Lake	12/11/2017	6/1/2017	6/1/2017	6/4/2018	6/3/2018
18	UT3987211174320180824	Bald Mountain	8/24/2018	6/7/2018	8/6/2018	6/26/2019	8/16/2019
19	UT_Mammoth	Mammoth	7/23/2019	8/18/2015	8/6/2018	7/14/2020	7/1/2020
20	UT3935811121620180607	Trail Mountain	6/7/2018	8/16/2017	6/27/2017	7/21/2019	7/22/2019
21	UT3828311251320190618	Skull Flat	6/18/2019	8/10/2018	6/27/2018	7/30/2020	7/11/2020
22	UT3829911250120191002	Skull Flat 2	10/2/2019	8/13/2019	6/27/2018	7/14/2020	7/11/2020
23	UT3771811283720170617	Brianhead	6/17/2017	9/19/2015	9/19/2015	9/11/2018	9/10/2018
24	UT3758811232020190726	Little Bear	7/26/2019	8/10/2018	7/17/2019	8/15/2020	7/1/2020
25	UT_Chippean	Chippean	8/6/2019	6/28/2019	6/24/2019	6/30/2020	6/28/2020
26	AZ3626611202520160629	Fuller	6/29/2016	7/10/2015	6/12/2016	7/15/2017	6/27/2017

*All Landsat 8 dates were selected based on those used by MTBS except for Mammoth (19) and Chippean (25) which were smaller than the 1000 ac size threshold MTBS uses to select fires for mapping burn severity in the western US, and Kenow (10), which occurred in Canada and was not mapped by the MTBS program.