

Supplementary material for

Small fires, frequent clouds, rugged terrain and no training data: a methodology to reconstruct fire history in complex landscapes

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Fig. S1. Effect of time series standardisation over a difference Normalized Burn Ratio (dNBR) image of the year 2006 (section). A big fire can be observed in the upper right corner of the images. (1a) standardised dNBR; (2a) dNBR; (1b) binary standardised dNBR with the threshold set at 3 s.d. from the mean; (2b) binary dNBR with the threshold set to match the detected fire shape of quadrant 1b. This figure shows how standardisation produces less noisy images, allowing for a better definition of the threshold separating burned from unburned pixels. In the image 2b, several noisy pixels can be seen at the bottom and left sides of the image.

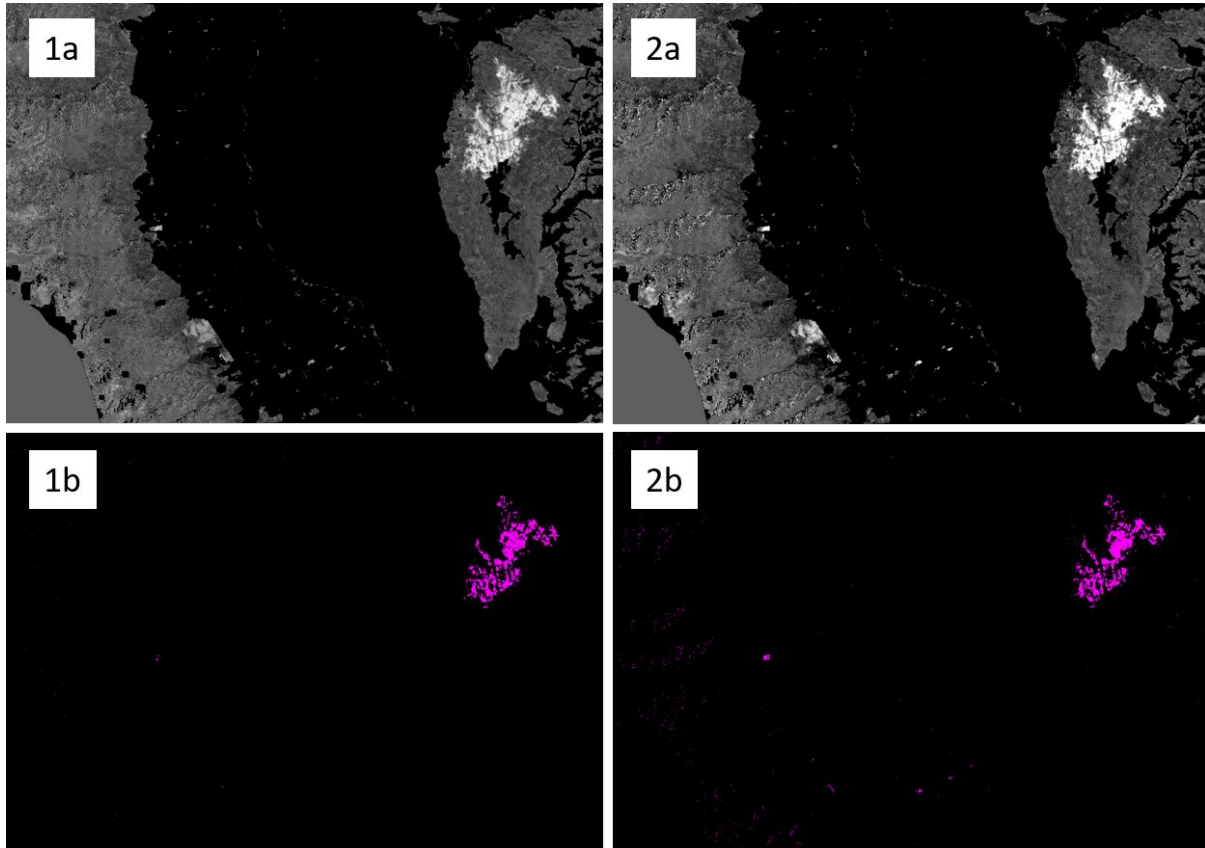


Fig. S2. Producer’s Accuracy (PA) and User’s Accuracy (UA) of the detection of fire events at different burned/unburned threshold cuts. Blue lines represent accuracy when setting thresholds after image differencing in Phase 2 (PA ID and UA ID). Orange lines represent accuracy when setting thresholds (grouping classes) after Random Forests classification in Phase 3 (PA RF and UA RF). RF classification allows a significant accuracy improvement over a simple image difference thresholding, especially in terms of User’s Accuracy (reduction of commission error).

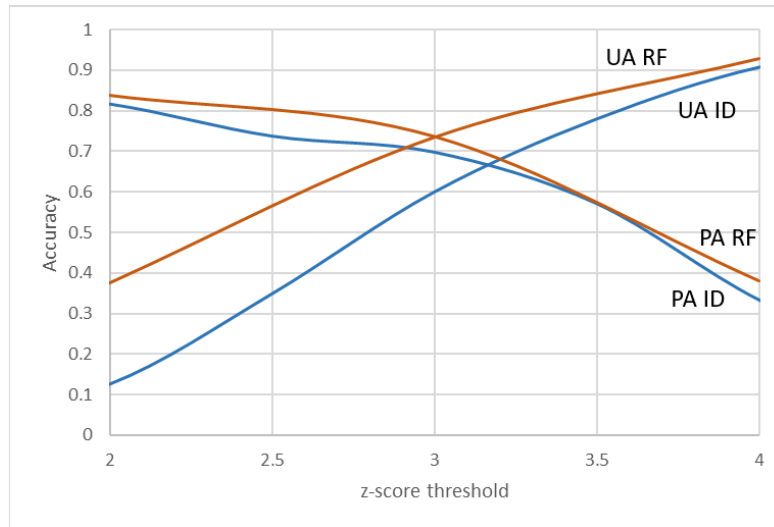


Table S1. Spatiotemporal Spearman correlation between MCD14ML Active Fire hotspots and the present study’s resulting dataset (centroids). The correlation is based on a 10 × 10-km validation grid drawn within the study region

	d.f. (n-2)	Rho	P value
2001	428	0.21	<0.001
2002	428	0.16	0.001
2003	428	0.48	<0.001
2004	428	0.33	<0.001
2005	428	0.27	<0.001
2006	428	0.38	<0.001
2007	428	0.54	<0.001
2008	428	0.12	0.011
2009	428	0.30	<0.001
2010	428	0.66	<0.001
2014	428	0.43	<0.001
2015	428	0.48	<0.001
2016	428	0.24	<0.001
2017	428	0.33	<0.001
2018	428	0.15	0.002
Total	428	0.39	<0.001

Fig. S3. Example of fast vegetation recovery after burn. Dates are in Year_DayOfYear format. The first and last Landsat false-colour composites are the reference scenes used in the time series, while the second and third scenes have been added for analysis. The fire occurred and vegetation recovered between the two reference dates, leaving almost no spectrally detectable trace.

