Nat. Hazards Earth Syst. Sci. Discuss.,
https://doi.org/10.5194/nhess-2020-168-AC2, 2020
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Natural Hazards and Earth System Sciences
Open Access
Discussions

Interactive comment on "A Systematic Exploration of Satellite Radar Coherence Methods for Rapid Landslide Detection" *by* Katy Burrows et al.

Katy Burrows et al.

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Received and published: 23 September 2020

We thank the reviewer for their helpful comments. Our response is attached to this review as a supplement to preserve the formatting.

Please also note the supplement to this comment:
https://nhess.copernicus.org/preprints/nhess-2020-168/nhess-2020-168-AC2-supplement.pdf

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., https://doi.org/10.5194/nhess-2020-168, 2020.

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Discussion paper

	Event	Hokkaido				Nepal			Lombok			Lombok 2	
	Satellite	S-1		A-2		S-1		A-2	S-1		A-2	S-1	
	Track number	068a	046d	116a	018d	085a	019d	157a	156a	032d	129a	156a	032d
1 post-event image	ARIA	0.103	0.099	0.179	0.296	0.005	0.002	0.045	0.002	0.001	0.009	0.002	0.004
	Bx-S	0.120	0.116	0.103	0.084	0.008	0.009	-	0.002	0.001	0.009	0.010	0.004
	Waiting time (days)	8	0	1	1	8	4	7	3	0	13	1	4
2 post-event images	PECI	0.271	0.273	0.143	0.195	0.009	0.005	0.022	0.015	0.003	0.018	0.005	0.005
	ΔC_sum	0.180	0.191	0.179	0.257	0.006	0.002	0.057	0.003	0.002	0.016	0.004	0.005
	ΔC_max	0.206	0.211	0.143	0.295	0.007	0.002	0.051	0.014	0.002	0.014	0.004	0.005
	Waiting time (days)	20	12	15	15	20	16	91	9	6	153	7	10
	Landslide fraction	0.106	0.116	0.111	0.104	0.004	0.001	0.006	0.001	0.001	0.002	0.002	0.003

Fig. 1. Precision-recall AUC values equivalent to the ROC AUC values presented in Figure 2 of the main manuscript.

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	Hokkaido				Nepal			Lombok-1		Lombok-2		
1%	S068a	S046d	A116a	A018d	S085a	S019d	A157a	S156a	S032d	A129a	S156a	S032d
ARIA	0.50	0.54	0.65	0.87	0.59	0.70	0.79	0.58	0.47	0.74	0.57	0.39
Bx-S	0.57	0.56	0.45	0.41	0.61	0.69	-	0.54	0.53	0.66	0.69	0.61
PECI	0.67	0.66	0.64	0.76	0.64	0.66	0.75	0.51	0.52	0.75	0.62	0.58
DC_sum	0.63	0.63	0.66	0.85	0.64	0.70	0.83	0.59	0.48	0.75	0.63	0.47
DC_max	0.64	0.64	0.60	0.85	0.61	0.71	0.81	0.60	0.48	0.76	0.65	0.49
10%												
ARIA	0.51	0.55	0.67	0.88	0.59	0.69	0.80	0.62	0.50	0.82	0.52	0.41
Bx-S	0.58	0.57	0.49	0.43	0.64	0.72	-	0.61	0.57	0.76	0.71	0.63
PECI	0.72	0.71	0.65	0.77	0.65	0.67	0.79	0.55	0.58	0.87	0.64	0.60
DC_sum	0.67	0.67	0.68	0.86	0.65	0.71	0.86	0.64	0.53	0.86	0.61	0.49
DC_max	0.68	0.69	0.62	0.87	0.61	0.70	0.84	0.65	0.52	0.86	0.63	0.51
25%												
ARIA	0.52	0.57	0.70	0.89	0.59	0.69	0.81	0.64	0.56	0.88	0.49	0.45
Bx-S	0.59	0.58	0.52	0.44	0.66	0.74	-	0.64	0.55	0.84	0.67	0.60
PECI	0.79	0.78	0.66	0.80	0.66	0.68	0.81	0.64	0.69	0.93	0.68	0.68
DC_sum	0.73	0.73	0.70	0.88	0.66	0.71	0.88	0.71	0.62	0.92	0.63	0.57
DC_max	0.74	0.75	0.64	0.89	0.62	0.71	0.85	0.72	0.62	0.92	0.65	0.59
50%												
ARIA	0.57	0.64	0.79	0.91	0.59	0.69	0.84	-	-	-	-	-
Bx-S	0.63	0.63	0.64	0.49	0.70	0.80	-	-	-	-	-	-
PECI	0.98	0.96	0.68	0.88	0.67	0.69	0.88	-	-	-	-	-
DC_sum	0.91	0.90	0.77	0.93	0.68	0.73	0.94	-	-	-	-	-
DC_max	0.92	0.92	0.71	0.95	0.63	0.73	0.90	-	-	-	-	-

Threshold used in generating binary landslide

	Fraction of total landslide area included in analysis			
	Hokkaido	Nepal	Lombok-1	Lombok-2
1%	100	99	96	97
10%	94	74	45	47
25%	73	39	14	15
50%	30	15	2	3

Fig. 2. ROC AUC values at a 200 x 220 m resolution with varying threshold between 'landslide' and 'non-landslide' pixels. (inset) the percentage of the total landslide area that is classed as 'landslide'.

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