

Interactive comment on “Identification of high risk zones for geological origin hazards using PALSAR-2 remote sensing data: Kelantan river basin, Peninsular Malaysia” by A. Beiranvand Pour and M. Hashim

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We really appreciate your very useful and constructive comments.

General comments:

The mentioned conference manuscript has been published in early August (after the date of NHESS interactive discussion (4 July 2016)), which derived from primary results of our research around 8 month ago. I did not attend and register to ISPRS congress 2016 (23rd International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences Congress, ISPRS 2016, Prague, Czech Republic, 12 July

2016 through 19 July 2016 (Code 122461), because I was chairman in IGARSS 2016, Beijing, China. I assumed that the ISPRS congress 2016 never published my very primary results of the similar research. However, NHESS Editor has applied similarity index before accepting for NHESS interactive discussion, so if there was any high similarity index, based on their policy the manuscript could not be accepted for interactive discussion. Accordingly, based on your comment we will re-formulate and reformat the text of manuscript after receiving editor permission for revision. We will add new data derived from Landsat-8 and several GIS layers using AHP approach were produced recently for balancing between our visual interpretation and statistical sector of the manuscript (please check attached file). Landslide susceptibility map were produced for the study area. Manuscript will be reconstructed, edited and redundancy will be removed. References based on your provided literatures will be updated. Landslide will be added to the revised title for more clarity for readership.

Specific comments: we will apply all your constructive comments to revised manuscript after finishing interactive discussion and permission form editor for revision. Please check follows to see we apply your comments to reconstruct a new manuscript.

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., doi:10.5194/nhess-2016-191, 2016.



In this investigation for applying AHP approach, 10 factors such as slope, aspect, soil, lithology, NDVI, land cover, distance to drainage, precipitation, distance to fault, and distance to road were extracted from Landsat-8 images, PALSAR data and fieldwork as shown in Figure

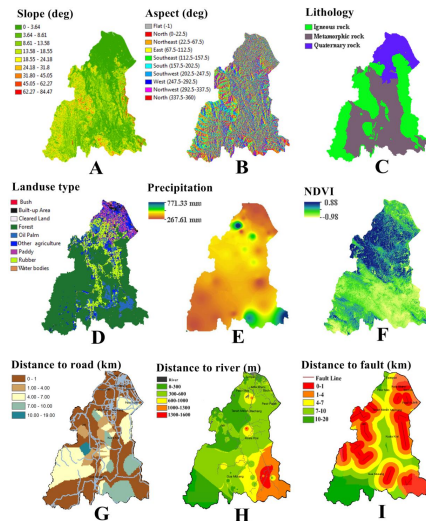


Figure List of extracted factors from from Landsat-8, PALSAR, and fieldwork. A: Slope (degree), B: Aspect (degree), C: Lithology types, D:Landuse type, E:Precipitation (mm), F: NDVI, G: Distance to main road, H: Distance to main river (m), and I: Distance to fault line (km).

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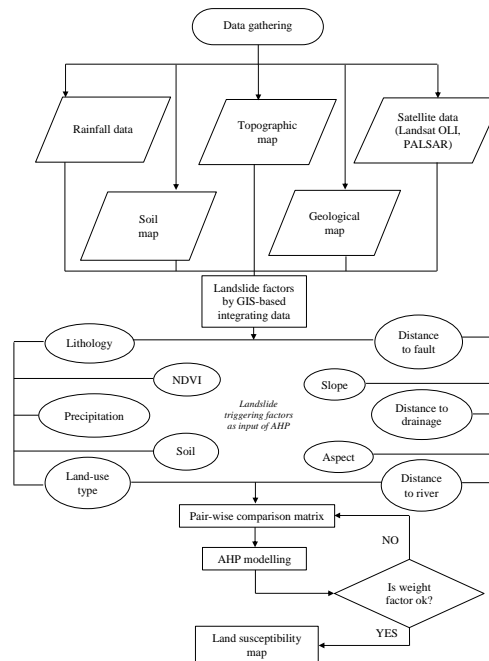


Figure ... Methodology flowchart to produce landslide susceptibility map using AHP approach.

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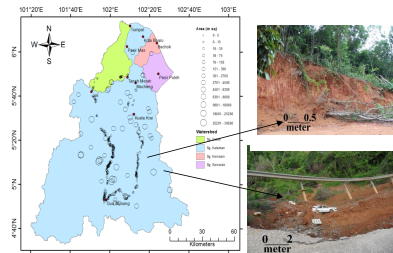


Figure ... Distribution of various sizes of landslides identified through satellite-based detection and field observations after the flood episode in Kelantan 2014.

Fig. 3.

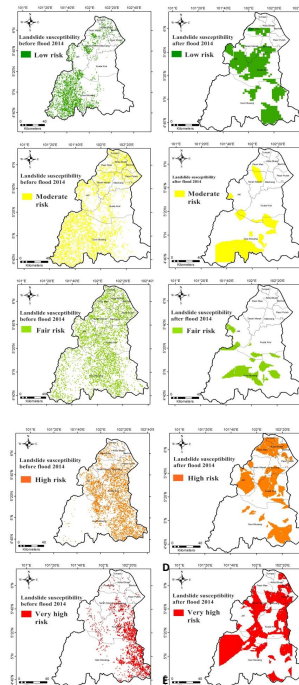


Figure Spatial distribution of landslide susceptibility map of each class before and after flood episode in Kelantan 2014 where class A: low risk, B: moderate risk, C: fair risk, D: high risk and E: very high risk.

Fig. 4.

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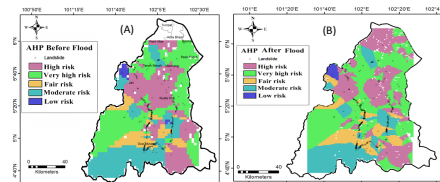


Figure LSM before (A) and after (B) 2014 flooding episode in Kelantan state.

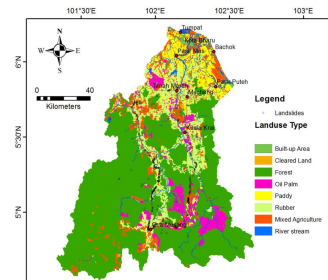


Figure ... Landslides occurrences at different land use type in Kelantan state.

Table ... Pair-wise comparison matrix for each input of AHP.

Factor	Slope	Aspect	Soil	Lithology	NDVI	Land Cover	Precipitation	Dist to Road	Dist to River	Dist to Fault
Slope	0.032	0.031	0.029	0.018	0.030	0.034	0.023	0.090	0.014	0.014
Aspect	0.032	0.031	0.036	0.070	0.030	0.021	0.015	0.050	0.014	0.014
Soil	0.161	0.123	0.145	0.175	0.075	0.206	0.226	0.150	0.170	0.211
Lithology	0.065	0.015	0.029	0.035	0.050	0.026	0.015	0.090	0.019	0.021
NDVI	0.161	0.154	0.291	0.105	0.150	0.206	0.090	0.100	0.226	0.211
Land Cover	0.097	0.154	0.073	0.140	0.075	0.103	0.135	0.100	0.170	0.169
Precipitation	0.065	0.092	0.029	0.105	0.075	0.034	0.045	0.060	0.019	0.021
Dist to Road	0.161	0.185	0.291	0.175	0.499	0.309	0.226	0.300	0.283	0.211
Dist to River	0.129	0.123	0.048	0.105	0.037	0.034	0.135	0.060	0.057	0.085
Dist to Fault	0.097	0.092	0.029	0.070	0.030	0.026	0.090	0.090	0.028	0.042
SUM	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

Table ... Factor weights for each input of AHP.

Factors	Weight
F1 : Precipitation	0.141
F2 : Slope	0.123
F3 : Soil	0.121
F4 : Aspect	0.102
F5 : Lithology	0.097
F6 : Land Cover	0.086
F7 : Distance to Road	0.084
F8 : Distance to Drainage	0.081
F9 : NDVI	0.073
F10 : Distance to Fault	0.062

Fig. 6.

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