MS No.: hess-2015-457

Generally a referee comment should be structured as follows: an initial paragraph or section evaluating the overall quality of the discussion paper ("general comments"), followed by a section addressing individual scientific questions/issues ("specific comments"), and by a compact listing of purely technical corrections at the very end ("technical corrections": typing errors, etc.).

GENERAL COMMENTS

This manuscript (MS) presents an interesting and important topic on GIS-based landslides susceptibility mapping. However, the MS has some flaws that need to be taken care of.

(1) Geology, hydrologeology and land cover are important factors in landslide susceptibility study. As mention in the Abstract of this MS, the authors only mentioned "hydrology, geotechnical science, geomorphology, and statistics."

(2) The MS has never mentioned the types of landslide (or failure mechanisms), e.g. translational or rotational landslide that they were modeling. It is important to identify the landslide type first and then select the proper physical model.

(3) The MS keeps referring to "shallow landslide". What is the definition of "shallow landslides"? What is the failure mechanism of a "shallow landslide"?

(4) There are so many grammar errors and typos, which distract me from reading the MS. I list examples of these errors and typos under "**Suggested Edits**". I don't think I found all of them. I strongly suggest that the authors should have someone editing their writing carefully in order to make this MS publishable.

SPECIFIC COMMENTS

Here is a list of additional items need to be addressed:

(1) As stated in the MS

"The model M2 considers both soil properties (as degree of soil saturation and void ratio) and the soil cohesion as stabilizing factors. The model output is a map of safety factors (FS) for each pixel of the analyzed area."

However, degree of soil saturation could either be a stabilizing or destabilizing factor depends on the geomorphology, e.g. slope angle.

(2) Equation (3) – the meanings of symbols need to be explained.

(3) Appendix A and Table are redundant

SUGGESTED EDITS

Page 13219

Line 8

a fundamental tools

a fundamental tool

Line 10

During the last decades

During the last decade

Or

During the last few decades

Lines 18-19

to link instability factors (such as geology, soils, slope, curvature, and aspect) and past and present landslides.

to link instability factors (such as geology, soils, slope, curvature, and aspect) with past and present landslides.

Lines 24-25

The soil-stability component simulates ~~the safety factor of~~ the slope safety factor (FS) defined as ratio of stabilizing to destabilizing forces.

The soil-stability component simulates the slope safety factor (FS) defined as ratio of stabilizing to destabilizing forces.

Page 13220

Line 5
For these reason,

For these reasons,

Lines 20-23
The procedure is implemented in the open source, GIS based hydrological model, denoted as NewAge-JGrass (Formetta et al., 2014) that uses the Object Modeling System (OMS, David et al., 2013) modeling framework.

The procedure is implemented in the open source, a GIS based hydrological model, denoted as NewAge-JGrass (Formetta et al., 2014) that uses the Object Modeling System (OMS, David et al., 2013) modeling framework.

Lines 24-26
OMS a Java based modeling framework that promotes the idea of programming by components and provides to the model developers many facilitates such as: multithreading, implicit parallelism, models interconnection, GIS based system.

OMS is a Java based modeling framework that promotes the idea of programming by components and provides the model developers with many facilitates such as: multithreading, implicit parallelism, models interconnection, and GIS based system.

Or

OMS, a Java based modeling framework, promotes the idea of programming by components and provides the model developers with many facilitates such as: multithreading, implicit parallelism, models interconnection, and GIS based system.

Page 13221

Lines 13-15
Comparing the results obtained for different models and for deferent GOF metrics the user can select the most performing combination for is own case study.

Comparing the results obtained for different models and for deferent GOF metrics the user can select the most performing combination for one's own case study.

Or

Comparing the results obtained for different models and for deferent GOF metrics the user can select the most performing combination for his or her own case study.

Lines 19-21

Thus deferent LSA configurations can be realized depending on: the landslide susceptibility model, the calibration algorithm, and the GOFs selected by the used.

Thus deferent LSA configurations can be realized depending on: the landslide susceptibility model, the calibration algorithm, and the GOFs selected by the user.

Page 13222
Lines 24-26
the Montgomery and Dietrich (1994) model (M1), the Park et al. (2013) model (M3) and the Rosso et al. (2008) model (M3).

the Montgomery and Dietrich (1994) model (M1), the Park et al. (2013) model (M2) and the Rosso et al. (2008) model (M3).

Page 13225
Line 5
α [–] is the slope gradient

α [–] is the slope angle

Page 13224

Lines 12-13
In order to assess the models' performance we developed model that computes the most used indices for assessing the quality of a landslide susceptibility map.

In order to assess the models' performance we developed a model that computes the most used indices for assessing the quality of a landslide susceptibility map.

Or

In order to assess the models' performance we developed models that compute the most used indices for assessing the quality of a landslide susceptibility map.

Page 13225

Lines16-17

This is possible because each model is an OMS component and can be linked to the calibration algorithms as it is, without rewriting or modifying their code.

This is possible because each model is an OMS component and can be linked to the calibration algorithms as it is, without rewriting or modifying its code.

Page 13225
Lines 7-8
Secondly, we verified if each OF metric has own information content or if it provides information analogous to other metrics (and unessential).

Secondly, we verified if each OF metric has its own information content or if it provides information analogous to other metrics (and unessential).

Page 13226
Lines1-2
Slope gradients, computed from 10m resolution digital elevation model, range from 0 to 55°, while its average is about 26°.

Slope, computed from 10m resolution digital elevation model, ranges from 0 to 55°, with its average is about 26°

Page 13227
Lines 7-9
The first unit is a Lower Pliocene succession of conglomerates and sanstones passing upward into silty clays (Lanzafame and Tortorici, 1986) second unit.

The first unit is a Lower Pliocene succession of conglomerates and sanstones passing upward into the silty clays (Lanzafame and Tortorici, 1986) second unit.

Lines 11-12
as also suggested by data provided by Young and Colella, 1988.

as also suggested by data provided by Young and Colella (1988).

Lines 15-16
All the data were digitized and stored in GIS database (Conforti et al., 2014) and the results was the map of occurred landslide presented in Fig. 2d.

All the data were digitized and stored in a GIS database (Conforti et al., 2014) and the result was the map of occurred landslide presented in Fig. 2d.

Line 26
the parameter kept constant during the simulation and their value.
the parameters kept constant during the simulation and their values.

Page 13228
Lines 13-15
This suggests that the variability of the optimal parameter values for model M1 and M2 could be due to compensate the effects of important physical processes neglected by those models.

This suggests that the variability of the optimal parameter values for models M1 and M2 could be due to compensate the effects of important physical processes neglected by those models.

Lines 23-24
For the model M2 and M3 is clear that ACC, HSS, and CSI provides the less performing models results.

For the models M2 and M3 it is clear that ACC, HSS, and CSI provide the less performing models results.

Page 13229
Lines 4-5
Results presented in Fig. 3 and Table 4 shows that:

Results presented in Fig. 3 and Table 4 show that:
Or
Result presented in Fig. 3 and Table 4 shows that:

Line 26
for each model M1, M2 and M3.
for each model M1, M2 or M3.

Page 13230
Lines 1-2
The more ~~is~~ prominent ~~as~~ the less the vector are correlated;

The more prominent the less the vector are correlated;

Lines 6-7

This confirms that an optimization of AI, D2PC, SI and TSS provide quite similar model performances,

This confirms that an optimization of AI, D2PC, SI and TSS provides quite similar model performances,

Line 12
In this step we focused ~~the attention~~ on the models M2 and M3

In this step we focused on the models M2 and M3

Or
In this step we put our attention on the models M2 and M3

Page 13231

Lines 4-5
Results where presented in Figs. 5 and 6 for model M2 and M3 respectively.

Results were presented in Figs. 5 and 6 for models M2 and M3 respectively.

Lines 6-7
Each column of the figures represents one optimized index and has a number of boxplot equal to the number of model's parameters (5 for M2 and 6 for M3).

Each column of the figures represents one optimized index and has a number of boxplots equal to the number of model's parameters (5 for M2 and 6 for M3).

Lines 7-9
Each boxplot represents the range of variation of the optimized index due a certain model parameters change.

due? – can't understand

Lines 9-10
The more narrow ~~are~~ the boxplot for a given optimized index the less sensitive is the model to that parameter.

The narrower the boxplot for a given optimized index the less sensitive is the model to that parameter.

The selection of the more appropriate model for computing landslide susceptibility maps is based on what we learn forms the previous steps.

forms the previous steps – can't understand

Page 13232
Line 4
For this reason we used the combination the model M3 whit parameters obtained

For this reason we used the combination the model M3 with parameters obtained