

Review of the manuscript „Assessment of avalanche hazard situation in Turkey during years 2010s“ (Kurt, 2018)

The manuscript describes the Turkish approach of mitigation work against snow avalanches. It characterizes the topographic and meteorological features of Turkey. Several examples of catastrophic snow avalanches are listed and a historical review is given with the time series of fatalities since 1890. The basics of hazard mapping in Turkey are pointed out and some protection measures are shown.

In principle the theme can be of interest for the readers of NHESS. However, the manuscript does not fulfill scientific standards. It requires a revised structure and a reformulation of major parts of the text. Additionally, the source of several photos is unknown. Therefore, I suggest to reject the manuscript for publication in this form.

The statements in the *general comments* explain this in more detail. Furthermore, the manuscript contains numerous inaccurate formulations and errors which are listed in the *specific comments and technical corrections*.

General comments

The manuscript contains several photos which illustrate the functionality of defense structures. In some cases, the sources of the photos are "anonymous". This implies that no permission for publishing can be provided. Maybe the copyrights of the images belong to other journals? Furthermore, sometimes the date of the photography is missing.

A scientific article has a pre-defined structure which is often called IMRaD-concept. IMRaD is an acronym for Introduction – Method – Results – and – Discussion. The NHESS journal does not presuppose this structure. However, it is a wise approach to prepare the manuscript in that way. Almost all articles of NHESS have this structure (excepted review articles, ...).

The objectives of the study are announced at the end of the introduction (which is the right location). It is stated that the aims are “to describe” and “to analyze” the snow avalanche situation in the Turkey. This is neither a scientific question nor a hypothesis which have to be tested or verified. One approach to improve the manuscript could be to compare methods of hazard mapping and design of defense structures in Turkey with methods used in other countries. Why are there differences between guidelines? The introduction already indicates some differences to the European topography. This idea is just a suggestion!

The manuscript contains numerous typing errors and the wording is poor. The English language would deserve an additional check.

The acknowledgments indicate that the project was funded by the University of Istanbul and the author made his dissertation in this context. Why does the author call himself as independent researcher in the affiliation section (between title and abstract)?

Specific comments and technical corrections

Line 2 and the whole manuscript: replace “avalanche” with “snow avalanche”

Line 8: “risky situation especially for mountainous areas” is imprecise. Snow avalanches constitute risks against human or infrastructure. Reformulate the sentence.

Line 9: remove “have”

Line 10: replace “... 30 people per year ...” with “... in average 30 people per year ...”

Lines 10-12: The Abstract should not include an example which was not shown in the text.

Line 14: replace “This research is focused on, known fatal avalanches ...” with “This study is focused on fatal avalanches ...”, because it impossible to investigate unknown events.

Line 14: replace “obtanied” with “obtained” and remove the extra space at the beginning of the sentence.

Line 15: replace “... provides are reliable ...” with “... provides a reliable ...”

Line 15: replace “contstitute” with “constitute”

Line 16: replace “situation” with “situations”

Line 16: remove the extra space in “... new avalanche ...”

Line 30: replace “et. al,” with “et al.,”

Line 31: remove extra space at the beginning of the sentence

Line 32: add a comma between “Schweizer et al.” and “2003”

Lines 34-35: reformulate the list, because transport facilities and infrastructures such as railways and main roads means the same; use “or” instead of “and”; “properties” is unclear.

Lines 35-36: add a comma between “Simonson et al.” and “2010”

Line 36: replace the comma with a semicolon between “2010” and “Kurt”

Line 39: remove the extra space between “million” and “according”

Line 39: replace “78,6” with 78.6”

Lines 39-40: The statement requires a citation.

Line 40: Remove the extra space at the beginning of the sentence.

Line 43: add “a.s.l.” after “1500 m”

Line 43: replace “greater” with “steeper”

Line 49: The Shuttle Radar Topography Mission is not cited adequate.

Lines 48-51: reformulate this sentence. Maybe it make sense to split the information in two sentences. Add “Fig. 2” (line 51), because the inclination map is mentioned.

Lines 52-53: This is the inclination map. However this is neither referred in the figure caption nor in the legend.

Lines 52-57 (Fig.2,3,4): use the same layout for all figures (grid lines, scale, etc.). If the author did not exclusively create the Fig. 3 for this article, the figure must be cited with permission of the owner.

Line 62: replace “Avalanche events have increased ...” with “The number of avalanche events increased ...”

Line 64: remove the extra space at the beginning of the sentence

Lines 64-65: replace "... gave impetus ..." with "stimulated ...".

Lines 65-67: reformulate the sentence. It is unclear if it was just tried or if something was actually changed.

Line 67: remove the extra space at the beginning of the sentence

Line 71: add a space before "Disaster ...".

Lines 77-80: The objectives of the study are unclear.

Line 84: replace "Topographic factors, vegetation factors and ..." with "Topographic properties, vegetation characteristics and ...".

Line 86: wrong citation, replace "Hageli" with "Haegeli"; see also in the references (line 462).

Line 86: wrong year of citation, replace "Hageli and McClung, 2003" with "Haegeli and McClung, 2007".

Line 87: add comma between "Schweizer et al." and "2003".

Line 89: replace comma with semicolon after "Sauer Moser, 2011".

Line 91: add comma between "Sullivan et al." and "2001".

Line 93: replace "Slope aspect ..." with "The slope aspect ...".

Line 94: add comma between "Cooperstein et al." and "2004".

Line 96: replace "... can be especially dangerous in the spring ..." with "... can especially be dangerous in spring ...".

Line 100: replace "collects" with "accumulates".

Line 100: add comma between "Meloy Sund et al." and "2007".

Line 105: remove the semicolon.

Line 110: remove the extra space at the beginning of the sentence.

Line 110: replace "snowpack depth" with "snow depth".

Line 111: add a comma between "McClung and Schaerer" and "2006".

Line 116: remove extra space between "such as" and "overlying".

Line 116: replace "gradient" with "gradients".

Line 120: add a comma between "Jamieson et al." and "2003".

Lines 121-122: reformulate the sentence. Suggestion: "Among other factors the vegetation affects the friction ..."

Line 122: add a comma between "Simonson et al." and "2010".

Line 124: replace "is vegetation" with "is a vegetation".

Line 125: replace "avalanche" with "avalanches".

Line 130: add a comma between "Casteller et al." and "2007".

Line 131: add a comma between "Bebi et al." and "2009".

Line 131: add a comma between "Simonson et al." and "2010".

Line 135: add a comma between "Schweizer et al." and "2003".

Line 139: add a comma between "Schweizer et al." and "2003".

Line 142: add a comma between "Schweizer et al." and "2003".

Lines 142-143: reformulate the sentence and precise the statement. Use "air temperature" instead of "temperature of the weather".

Line 148: add a comma between "Schweizer et al." and "2003".

Line 148: replace "The probability of powder snow avalanche ..." with "The probability of the formation of powder snow avalanches ...".

Line 149: replace "weather temperature" with "air temperature".

Line 149: replace "and wind" with "and high wind speed".

Line 150: replace "temperature rises in the spring" with "rising temperatures in spring".

Line 151: replace "Another example regarding temperature is ..." with "Another factor influencing the energy budget is ...".

Line 152: replace "prepare" with "create".

Line 152: replace "avalanches to initiate" with "avalanche formation".

Lines 153-155: reformulate the sentence.

Line 155: citation error: replace "Cooperstein et al., 2006" with "Cooperstein et al., 2004".

Line 163: replace "Figure 1" with "Figure 5".

Line 187: replace "databank" with "database".

Line 188: replace "... is behind schedule." with "... is behind the schedule.".

Line 192: replace "of 1992" with "in 1992".

Line 202: replace "of 1992" with "in 1992".

Line 202: replace "people were died in" with "people died in".

Line 202: replace "in both Eruh and Uludere" with "in Eruh and Uludere".

Line 202: remove two blank lines in the table.

Line 202: remove extra spaces on 25.02.1993 and 27.02.1993.

Line 202: Please add the region of the locations. The regions were already introduced in figure 1. That supports the reader, who is not from Turkey.

Lines 212-213: replace ", the day" with ", when the day".

Line 215: replace "control structure" with "defense structure".

Line 218: the date and time format changed in the manuscript (see line 212 and table 2 and the whole document).

Line 219: replace “weather temperature” with “air temperature”.

Line 220: mixed format: minus symbol, space between numbers and units.

Line 220-221: replace “Figure 5” with “Figure 7”.

Line 221: remove the extra space before “During the daytime”.

Lines 223-224: reformulate the sentence.

Lines 225-226: replace “18.01.1993” with “from 15th January 1993 to 20th January 1993”.

Lines 228-230: The figure is unclear: missing units; missing days; “07” and “14 observations of precipitation”, it sounds like “a number of observations” or is it the time of recording?

Figure 6, 7, 8: the layout is not equal and the figures are cited. However, no comment like “with permission” is given.

Line 233: add “a.s.l.” after “m”.

Line 234: remove extra space between “lives” and “between”.

Line 265: replace “start” with “release”.

Line 266: replace “limit” with “inhibit”.

Line 268: add a comma between “Margreth et al.” and “2007”.

Lines 274-275: date is missing, source/owner is not given and permission for publishing is missing.

Lines 278-280: date is missing.

Line 280: add space between “T.” and “Kurt”.

Line 280: “)” at the end of the line.

Line 282: replace “In recently” with “Recently”.

Lines 285-286: date, owner and permission are missing.

Line 291: add space between “2009)” and “Avalanche”.

Line 303: add “Example of ...”

Line 304: replace “winter resorts” with “ski resorts”.

Lines 305-307: reformulate the sentence.

Line 307: replace “defined” with “pre-defined”.

Line 308: “Gazex system” requires a citation.

Line 312-314: date, owner and permission are missing.

Line 317: replace “Figure 14” with “Figure 15”

Line 317: replace “Figure 15-16” with “Figure 16-18”

Line 320: replace “ (Figure 17-18)” with “.”

Lines 321-322: date, owner and permission are missing.

Lines 324-325: owner and permission are missing.

Lines 326-327: owner and permission are missing.

Lines 329-330: date is missing.

Line 330: replace "prevent snow-drift" with "influence the snow deposition".

Line 332: replace "Conclusion and Discussions" with "Discussion and Conclusions".

Line 334: replace "before in or around the cities" with "close to cities".

Line 336: replace "The Government has tried ... " with "The government tried ..."

Lines 336-337: add a comma before "but"

Line 337: reformulate the statement. Suggestion: "... however, it is still in progress."

Line 339: replace "AWOS" with "AWS"

Line 340: replace "three-day snow" with "new snow sum (3 days)". If the AWS measures the snow depth the term "3 day snow depth difference" have to be used, because the settlement of the snowpack is included in the measurements.

Line 341: It is not common to measure the snow density with AWS. However, it is possible using e.g snow pillows. Provide information how snow density is measured with AWS in Turkey.

Line 341: replace "temperature" with "air temperature".

Line 341: replace "wind direction, wind velocity" with "wind speed and direction"

Line 342: replace "avalanches." with "avalanche release."

Line 354: replace "is preparing the risk maps" with "is to complete the risk maps in Turkey."

Line 360: remove extra space before "Avalanche hazards"

Line 403: replace "Prof" with "Prof."

Line 404: remove extra space before "at the Department"

Line 405: remove extra space before "The practical study"

Line 406: add space between "Rize," and "Erzurum"

Lines 413-546: The references are not ordered alphabetically.

Lines 448-449: not cited in the text.

Line 462: replace "Haeli" with "Haegeli"

Line 475: replace "assesment" with "assessment"

Line 476: replace "Journal of Journal of" with "Journal of"

Lines 480-482: not cited in the text.

Line 492-495: not cited in the text.

Line 497: add space between "Seattle," and "2006"

Lines 525-527: not cited in the text.