Reviewer #1 comment	Author response
Figure 1 The figure is important to illustrate the failure modes. While capital letters are used for the reference in the figure, lower case letters are used in the caption. The reference is also clear in this way, but consistent use of the same symbols would be cleaner.	Thx! Done for all figures.
Figure 2 The figure with the present and the past photograph is important to provide a picture of the study site. However, the information on the overview map is rather sparse. At least the overview map should contain reference coordinates, a map scale and a north arrow and more information like for example a Google Satellite map.	The inset location map has been populated with lat/long, scale, and north arrow. It's not intended to be a comprehensive map, however, so we didn't make it google satellite.
Figure 3 The figure is important to illustrate the bedrock discontinuities. While capital letters are used for the reference in the figure, lower case letters are used and the stereonet is not referred in the caption. The reference is also clear in this way, but consistent use of the same and of all symbols would be cleaner.	Labels have been fixed and the stereonet has been removed because we collected more structural data that appear later in the manuscript.
Figure 4 A figure that shows an overview in a map is a pretty idea. However, this map should be cleaned up and completed. Therefore, reference coordinates should be added, the DEM should be either mapped in a more accessible color scale with a legend or removed since it is actually a result and all locations of the field survey should be added.	These suggestions have been implemented.
Figure 5 The figure is important to illustrate the mapping of talus deposits. While capital letters are used for the reference in the figure, lower case letters are used in the caption. The reference is also clear in this way, but consistent use of the same symbols would be cleaner.	These suggestions have been implemented.
Figure 6 The figure that shows the talus deposits identified in the study is useful. Reference coordinates on a map are important for later geo referencing. Therefore some reference coordinates should be also added in this map.	This figure has been updated and revised as suggested.
Figure 7 A figure with a map for the measurements and a stereonet for the distribution of the discontinuties is crucial. But it requires several small improvements and could be extended by the outcrops. The map should have coordinate references, the color scales should be accessible, the symbols to relate the elements in the caption should be consistent and the area of the outcrops could be shown too.	New joint data has been generated and a new figure has been created that addresses these comments.

Figure 8 The figure with a map of the susceptibility is a key results. But it requires several small improvements. The map should have coordinate references, the color scales should be accessible and the symbols to relate the elements in the caption should be consistent.	The figure has been revised to show toppling only because the planar sliding analysis shows negligible susceptibility. The colors have been altered
Figure 9 A figure with close up maps that show the talus deposits and the susceptibility can be useful. But it less relevant and would also need some small improvements. Therefore it could be either removed or implemented into a extended figure 8 with the same improvements.	This figure has been removed because we added polygons of talus deposits to figure 8.
Figure 10 A figure with a map of the rockfall runout is a key results. But it requires several small improvements. The map should have coordinate references, the color scales should be accessible and the symbols to relate the elements in the caption should be consistent.	This figure has been revised substantially and now includes these elements but also focuses on the two end-member scenarios for rockfall runout. We also added rockfall-railroad passage information and a location figure as well as a slope map. It's a whole new thing!
Figure 11 The figure with the kinetic energy at the railroad track is useful to assess the hazard. But it requires some small improvements and could be extended with the number of passages. The symbols to relate the elements in the caption should be consistent and a secondary x axis on the bottom with the number of passages would allow to plot them as a function of the relative location too.	Great input. This plot has been revised to include passage information for the two end-member scenarios as well as slope morphology information described in the text. The passage data is included.
Figure 12 The figure about the high planar sliding failure susceptibility can be a useful detail. However, it appears as an isolated detail in the structure of the discussion. Therefore it would be better to move this in the results and to combine it with a similar illustration for the block toppling failure susceptibility.	This figure has been removed.
Figure 13 The figure with the propagation susceptibility and the location of a recorded event provides an interesting detail. However, it appears as an isolated statement in the structure in the discussion and the added value seems rather low. Therefore, this figure could be also removed whereas in general, a more systematic assessment of how well the susceptibility map match the recorded events would be desirable.	This figure has also been removed.
Line 17 Implicitly it is clear from the title that „AK" stands for Alaska. Foreign readers have to guess this abbreviation. It could be written „Alaska" or „US-AK" according to the ISO standard instead.	done

Line 20 The statement „>300“ is not wrong and one can guess that it indicates the order of magnitude. But it could be more precise since the exact number is known. Therefore it is better to write „337“.	Done. We added points, so new total is n=405 joint measurements.
Line 23 The statement „nearly 200000“ is not wrong and one can guess that it indicates the order of magnitude. But it could be more precise since the exact number is known. Therefore it is better to write „197800“.	Done.
Line 24 The term „hazard“ has different definitions in literature. A key point of a hazard is, that it reflects a potential and is therefore related to a probability. In this context it would be more appropriate to use the term „susceptibility“ or to substitute the term „highlighting“ by the term „indicating“.	Done.
Line 30 The main issues of rockfall is described in a concise manner. But the term „rockfall“ is not used and therefore only implicitly defined. An explicit definition would provide more clarity.	Done. Added parenthetical “rockfall” after the description.
Line 34 Implicitly it is clear from the title that „CA stands for California. Foreign readers have to guess this abbreviation. It could be written „California“ or „US-CA“ according to the ISO standard instead.	Done.
Line 78 This is a concise description of the rockfall process. But the stop of the rock fragment due to energy dissipation is only implied and the sliding mode is not mentioned. A more explicit formulation that sufficient energy dissipation occurs until the rock fragment stops as well as to explicitly mention bouncing, rolling and sliding would be more complete.	Done.
Line 85 This last statement about the runout models applied without accurate quantification of the source areas is crucial. Here it is hidden in a complex sentence that also mixes the term „hazard" and the term „risk“. To start with a new sentence after the citation of „Stock and Collins, 2014“ that highlights this gap would be very useful.	Done...useful clarification.
Line 90 The statement about the relation between the spatial pattern of glacial erosion and the bedrock discontinuities is important for the argumentation. The use of the term “fabric” and the term „tendency" with the link “or” makes the statement less concise. To be more concise, one could use the term „align“ instead of the term „follow“ and then only the term „fabric“ since it is later used too.	Done.
Line 93 It is interesting to mention the presumed connection between small but frequent and large but	Done.

less frequent events. However, this sentence is cumbersome and it is not clear what the term „cumulative impact“ means. The sentence should be simplified and it should be clarified, which property of the events is actually compared.	
Line 101 It is intuitively clear that the term „western“ does not have a geographic but a cultural meaning. Still it maybe confused. Therefore it would be appropriate to write it with a capital letter as it is later in the paper.	Done...changed to “colonial settlers” and deleted “western”
Line 115 It is intuitively clear that the term „panhandle“ does not have a culinary but a geographic meaning. Still it may confuse a reader that is not familiar with this region. Therefore it would be appropriate to follow the convention and write it with a capital letter.	Done.
Line 122 The summary of the identified joint sets in other studies is relevant. But this sentence is kind of cumbersome. In this formulation it needs a comma after the term „Skagway“ and it could make sense to part into two sentences after „Fig. 3c“.	Done.
Line 127 It is implied by the figure that the information about the joints originates from field survey. But if not, this statement would need a citation of a source. Therefore it should be explicitly mentioned or even moved to the results.	Clarified that this sentence refers to Callan and Wayland, 1965....not our work.
Line 152 The standard information about the climate are useful. But this sentence is cumbersome and lacks of a citation of the source. Therefore it should be parted into at least two sentences and a citation should be added.	Done. Reference added.
Line 158 The value about the mean annual precipitation is informative. But it lacks a reference of the measurement period a citation of a source. Both should be added to support this information.	Done. Reference added.
Line 161 The information about the forest are useful since it is later considered in the runout scenarios. But the description is inaccurate and does not meet botanical standards. Either the scientific names of the tree species should be used or they should be summarized as coniferous wood.	Done. Reference and scientific names added.
Line 169 The findings of the study mentioned here are important for the later discussion of the results. But this sentence tires to merge to much information and becomes cumbersome. One could start a new sentence after the term „valley“ and substitute „that“ after the term „Skagway“ by „and“.	Sentence clarified and shortened.

Line 174 Intuitively it is clear how the relation between the relative activity and the vegetation cover is meant. However, the term „is based“ seems logically difficult in this context. It is the estimate of the relative activity that can be based on the vegetation cover and this statement should probably also be backed up with a citation.	Changed wording for clarity. Reference added.
Line 215 The existing lidar from 2014 is an important data source. But it is not clear if it is only available as a DEM or also as point cloud. This should be clarified, furthermore the area of its extent should be mentioned and a space after „DGGS Staff, 2013“ should be inserted.	Fixed. We used a DEM for this study and the reference provides info on the data.
Line 226 A combination of both DEMs is reasonable for the later analysis. But the term „seamless“ does not fit with the separated area in the referenced figure. This should be made consistent, either in the sentence or in the figure.	We changed to wording to “continuous” and the figure now shows the lidar as a continuous coverage.
Line 229 It is important to differentiate if a talus deposition is forested or not. But the term „exposed“ can be misleading in this context. It would be better to use the term „unforested“ as it is later and a comma should be added after the term „both“.	Good clarification. Changed to unforested.
Line 256 The record of the discontinuities in a field survey is a robust approach. But it is crucial to provide additional meta information about the locations. At least the number of locations should be mentioned and they could be shown in a map as points.	Good point. We collected additional field data and revised the figure showing the locations with improved clarity.
Line 262 This sentence that summarize the kinematic analysis applied in this study is useful. But the discontinuity data are not explicitly mentioned. Even though one can guess that they play a crucial role, it should be mentioned additional to the mention of the DEM.	We added text on discontinuity data.
Line 267 Since pixel size, joint spacing and block diameter are all in the same order of magnitude of some few meter, this approach seems valid. But these scales are relevant and large differences may be problematic. Therefore it would be important to explicitly mention these scales and their consistency in this study.	We explicitly mention this consistency of scales in sections below. We clarified those sentences to make this more clear.
Line 272 The validation of the susceptibility derived from the kinematic analysis is crucial. In contrast, the description of the validation is too vague. Even if it is just based on manual approaches and expert opinion, this should be done systematically and mentioned accordingly.	The term validation is perhaps too strict for our approach. We added the manual approach language and visual assessment to clarify as well as refer to the consistent aspect of talus deposits and topple-prone slopes.

Line 287 It is a good argument to exclude the wedge failure mode from the kinematic analysis since it is not observed or reported. Nevertheless, an evaluation of this mode could be interesting, even if two discontinuities have to be taken into account. At the very least, the more complex evaluation with two discontinuities in each case should be cited as a further argument for not including this module in the study.	We clarified this decision as suggested by this comment. Good suggestion!
Line 290 The orientation and the angle of the dip for the discontinuity and the rock slope are key parameter. How the symbols are assigned to the discontinuity and the surface must be guessed. This should be clarified for example by writing „discontinuity (A)“ and „rock slope (f)“.	Text added.
Line 325 It is correct, that RAMMS:Rockfall accounts for the energy balance. This only one aspect that does not highlight its sophisticated mechanics. It should be mentioned, that RAMMS:Rockfall accounts for the internal, gravitational and contact forces of a rigid body that can translate and rotate.	Good clarification...text added.
Line 334 A minimum size of the polygons that serve as rockfall source areas makes sense for the reasons mentioned. But the area of 25 m2 does not align with the point density of 0.02 1/m2. According to this point density, the area should be 50 m2 to guarantee at least one point per polygon.	Good catch! We entered the incorrect point density, which should be 0.04/m^2. The text has been changed accordingly.
Line 337 The statement „nearly 5000“ is not wrong and one can guess that it indicates the order of magnitude. But it could be more precise since the exact number is known. Therefore it is better to write „4945“.	Done.
Line 341 The forested area is important for the definition of the scenarios for the runout modeling. Here it lacks a description how the forested area is mapped. It should be added if this was done with a manual approach or based on some existing maps for the vegetation cover.	We added a clarifying sentence.
Line 348 To consider scenarios with and without forest is an added value to the study. However, one can only guess that without forest, the ground cover category is also fine talus. Therefore the ground cover category for this case must be explicitly mentioned.	We clarified that unforested is fine-grained talus. Good catch!
Line 352 The estimate of the block size from points clouds and orthoimagery is a valid approach. However, here it lacks a more detailed description that would be required for a reproduction. Therefore,	We added clarifying text and cited a relevant study.

the method must be either described in more detail or cited in case that it is based on a reference.	
Line 359 It is widely observed, that larger blocks tend to travel further. Nevertheless, this statement may be cited and is not relevant in the methods. Supported with a citation it could be moved in the discussion.	We cited a classic reference on this topic.
Line 363 Both, the term „clast“ and the term „block“ can be used for the rock fragments. But it can be confusing when both terms are used without a clear reason. Therefore, in general only one term should be consequently used.	Text has been changed to block throughout.
Line 366 The statement „nearly 50000“ is not wrong and one can guess that it indicates the order of magnitude. But it could be more precise since the exact number is known. Therefore it is better to write „49450“.	Done. Good catch!
Line 368 It is useful to constraint the area of the runout modeling. Even more useful would be some quantitative measures. Therefore one could add the total area of the perimeter as well as the area of the considered rockfall sources.	We added a new figure and analysis to show passages and positions along the ridgeline. See text and figure.
Line 370 A quantification of the likelihood of rockfall runout is important and often conducted by counting rockfall passages. However, as an absolute measure it can not be compared with other sites and with the rockfall initiation susceptibility. One could divide this absolute measure by the total number of simulations to get a relative measure that can be considered as rockfall propagation susceptibility.	Good idea! We added rockfall passages as well as the fraction of rockfalls to generate estimates of rockfall propagation susceptibility.
Line 375 For a hazard at the railroad track it can be interesting to assess the kinetic energy. But this requires the rock density as an additional parameter, which is nowhere mentioned. Even though the rock density can be guessed from the mentioned lithology, it would be more proper to make the assumption transparent.	We added the density in the methods and also changed analysis and no longer report kinetic energy.
Line 379 The reference period is crucial for the rockfall inventory. But this sentence contradicts the methods and does not fit in the results. It should be written in the methods, that only newspaper records after 2017 are considered and maybe reasoned why not 2005 like the records of the GeoEvent database.	We removed the newspaper inventory and instead opted to focus on the AK DOT geoevent database, which is much more powerful.
Line 392 The temporal pattern of rockfall activity can be indeed interesting. However, this statement about the temporal pattern is only qualitative. Therefore it would be desirable to have some numbers and maybe a graphic.	Our new analysis quantifies the timing of rockfall activity and potential environmental forcings. Values and graphics are now included in a new figure!

Line 412 The argumentation with the slope steepness is important to highlight the differences in the morphology of the locations. However, it would be useful to provide more quantitative information about the steepness. Since the slope angles are know from the DEM, one could provide the ranges of slope angles to quantify the steepness of the morphologic features.	Done. Added relevant gentle slope angles.
Line 437 The identification of clusters and grouping into sets is crucial for the characterization of the discontinuities. The fact that this was done and how it was done belongs in the methods and not in the results. Therefore this content should be moved and supplemented by more details about the approach that was used.	The methods refers to joint mapping and contouring and we added a sentence to the methods that sets this up. We retained the text here in order to provide context for readers.
Line 459 The argumentation with the slope steepness is important to highlight the differences in the susceptibility due to the rock slope orientation. However, it would be useful to provide more quantitative information about the steepness. Since the slope angles are know from the DEM, one could provide the ranges of slope angles to quantify the steepness of the mentioned rock slopes.	Done. We added relevant slope angles to this section.
Line 469 The combination of the talus slope maps and the susceptibility zones is crucial to define the source zones for the runout modeling. Nevertheless, this belongs to the methods and not to the results and should be described in detail. Even in case that this is done by manual approaches and expert opinion, it should be mentioned already in the methods.	This section reports these observation of 5% toppling corresponding with talus deposits rather than sets up the runout modeling, so that sense it meets the definition of results and seems best situated here. In the methods section, we report that this visual assessment is our methodology. We added sentences for clarity.
Line 488 It is helpful to have an introduction sentence that connects the results to the corresponding methods. But this sentence has some need for improvement. There should be a comma after the term „initiation“, the term „used“ could be substituted with the term „applied“ and it instead of „nearly 50000“ it would be better two write „49450“.	Done. Good suggestions!
Line 490 That the total number of passages allow identify zones with high rockfall susceptibility is a crucial point. However, this sentence is kind of cumbersome. At least a comma should be added after the term „pixel“.	We clarified the wording.
Line 492 It can be useful to argue with the number of passages to highlight zones with high and low susceptibility. But this should be done more systematic because like this one have to remember	Good point. We retain this language but add text that refers to our new analyses and figures showing the spatial pattern of

the setup of the model to interpret statements like „~10 specific chutes or paths of likely rockfall runout“. The definition of a relative propagation probability would be the basis to solve this issue.	passage. The language about propagation susceptibility is useful, thanks!
Line 520 It is correct, that the forest cover and the clast size influences the rockfall runout. But several terms in this sentence could be misleading. Instead of term „dense forest“ one should use the term „forest cover“, instead of the term „determining“ one should use the term „influencing“ and instead of the term „risk“ one should use the term „hazard“	Done. All of these are good suggestions.
Line 532 One can conclude from the rockfall inventory, that rainfall initiation thresholds are likely not successful. But such a statement must be better founded on data and contextualized in literature. The statement should be at least constraint to the study site, it should be reasoned better by the underlying mechanisms and a quantitative analysis of the rockfall inventory should be conducted,	Our new analysis demonstrates that rainfall is less useful than thawing temperatures for predicting rockfall activity.
Line 551 The greater relevance of the block toppling failure over the planar sliding failure is an important finding of this study. It is already assumed in the methods and shown on the maps in the results, but not yet with hard numbers. Therefore it would be desirable to use quantitative measures like for example the average susceptibility and the susceptible area for a more sound argumentation.	This is a key suggestion and we've focused on toppling given the field observations and lack of planar failure susceptibility. We have generated a distribution of toppling and planar failure susceptible values to clarify and these demonstrate the dominant of toppling over planar sliding quite convincingly.
Line 563 The consistency of the susceptibility maps with the field observations is a crucial finding of this study. However, this statement does already appear in the results but lacks a systematic foundation. In general in should be founded with a more systematic analysis and here in the discussion it should be contextualized with other studies.	We have added a new figure that conveys the correspondence of toppling susceptibility with mapped talus deposits and our approach follows Loye 2009, which we cite in this section.
Line 566 It is correct, that the vegetation can one possible factor that can contribute to crack widening. But in this formulation it appears like a finding and that the vegetation is the most prominent factor. Therefore it should be written more as an assumption, contextualized with other studies and the other processes should be explicitly mentioned.	This is a good point. We added "can" and then added a key reference by Pawlik as well as a frost weathering paper by Rempel.
Line 570 The numbers of the mentioned erosion rate seem plausibel and are an interesting geomorphological information. But here it is not clear how these numbers are derived. Either there must be a yet hidden method that should be added or some literature that should be cited.	Good point! We added a key reference by Moore 2009 that shows how this is done.

Line 574 The patchy pattern of rockfall susceptibility along the ridge is an important finding of this study. But this sentence seems more like a final sentence of the previous paragraph, even though the runout discussed in this paragraph also shows a patchy pattern. Based on this relation, one could formulate both, a closing final sentence for the previous paragraph and an adapted opening sentences for this paragraph.	We've modified the last sentence of the previous paragraph to make the transition more straightforward.
Line 592 It is correct that the assessment of the risk would be a further step based on this susceptibility assessment. But a statement like this would fit better in the end of the discussion and must be more concise. Therefore it should be moved to the next paragraph and it is important to mention, that the risk does not only need the estimate of the damage but also of a temporal component of occurrence while the susceptibility does only have a spatial component of occurrence.	We've shifted this sentence to the end of the following paragraph. Good point.
Line 603 The rockfall runout likely to be connected to the morphology of bedrock slopes and the orientation of joint sets based on the presented findings. However, this sentence should be more concise with the terms and the logic. The study assess the susceptibility but not the hazard and it is important to mention that the runout susceptibility is one hand dependent from the initiation susceptibility but also from the slope morphology during the runout.	We clarified the two different processes considered here: initiation and runout. Helpful comment!
Line 605 It is reasonable to assume that the orientation and extent of glacial erosion is not independent of the joints. But the reasoning seems incomplete and lacks a contextualization with the literature. One could also assume a relation between the orientation of the joints and the ridges due to the tectonic situation and anyway both assumptions should be compared with other studies.	We've added relevant example from the literature to demonstrate this point.
Line 609 Indeed the study provides key constraints for identifying areas at risk. But in this context, this is a rather specific value for this study site while the mentioning of more general value of this study is missing. Therefore, one could mention the added value from the combination of the kinematic analysis with runout modeling, which could be groundbreaking in general since the susceptibility of the source area is often neglected.	This is a useful comment and we've added text accordingly.
Line 617 The evidence of the structural control in all sub sites of the study site is an important statement.	That's a helpful word choice...we've made the change. Thanks!

But this sentence is kind of cumbersome considering the logic of its statement. Either one should use the term „evident“ instead of the term „reflected“ or to extent it to „reflected by the findings“.	
Paragraph 2 This paragraph is important and has a clear opening sentence. However, it lacks a clear final sentence as well as the closing sign. In conclusion, one could refer to the advantages and disadvantages of the methods mentioned and also define the term “susceptibility” as a relative likelihood of triggering rockfall at a particular location.	Done.We added a sentence pulling these ideas together.
Paragraph 5 This paragraph is crucial and has a clear opening sentence. However, it lacks a clear final sentence that summarize this important basis for the paper. It could be concluded, that this observed relation between the orientation of the valley and the discontinuities supports the application of a kinematic analysis over an extensive area to estimate rockfall susceptibility.	Done. Good suggestion.
Paragraph 6 This paragraph is interesting and closes the introduction section. Nevertheless, it anticipates content instead of completing the introduction. The details about the study site could be moved into the study site section so that the content could summarize the key points of combining kinematic analysis with runout modeling and compare with empirical evidence in a case study.	This is useful comment but perhaps reflects a stylistic difference in introductions. We have made some modifications to the existing paragraph to emphasize the scientific approach but opted to maintain much of the current content.
Paragraph 9 Both, the information about the climate and about the forest is useful to characterize the study site. Here they are mixed in one paragraph. Even though they are related, it would be more clear to separate this into two paragraphs.	This is perhaps a personal preference and we’ve opted to maintain the current paragraph given that climate and vegetation are intimately linked.
Paragraph 12 An overview for the methods can be useful if many parts are nested. Here is no more information than in the titles of the sub-sections and it also contains parts about the motivation of the study. Therefore, this paragraph respectively sub-section could be either removed or more informative like for example with an illustration of the workflow.	We’ve deleted the sentence that lists the section headings but kept the section itself for the context it provides.
Paragraph 13 The rockfall inventory provides important empirical data about the susceptibility. But the paragraph respectively the sub-section lacks of relevant meta data. It needs the area considered in addition to the time span, an estimate of the accuracy for localization and a systematic indication of the type and attributes of the inventory data.	We’ve revised the inventory analysis and changed the text accordingly. The newspaper inventory is no longer included and we instead focus on the DOT database.

Paragraph 15 It is legitimate to use manual approaches and expert opinion for mapping the talus deposits. However, there is no systematic scheme mentioned for generating the polygons, which makes it difficult to reproduce this important data. A systematic scheme would define a scale for spatial units in which the information from the various basic data would then be evaluated according to defined criteria for the separation of talus deposits.	We've added text in order to address this comment.
Paragraph 16 The data about the discontinuities are the key for the kinematic analysis. But it is not explicitly described, which parameter are effectively measured. One can guess that these parameter are the orientation and the angle of the dip and maybe the distance, but this should be clarified and supplemented with a measurement error.	Good comment! Added specific data collected to the text.
Paragraph 21 This paragraph contains interesting information about the sources of discontinuity data for kinematic analyses. But it is unfavorably positioned in this sub-section and interrupts the flow. These information should be better moved to the beginning of this sub-section.	Done.
Paragraph 22 The susceptibility for the two failure modes derived from the kinematic analysis is a solid and pretty approach. Nevertheless, the question arises about a combined susceptibility that accounts for both failure modes. Because it cannot be ruled out that a discontinuity for a particular rock slope is susceptible to both failure modes, a probabilistic union could be used for the calculation.	This is a good point. We add text to mention this possibility in the text.
Paragraph 29 The rockfall inventory provide important data about the rockfall activity in the study site. But a more systematic and quantitative assessment would be desirable. By clearly defining the reference period and the reference area, one could estimate the rockfall activity as events per time and area which could be compared with other studies.	We have revised the inventory section to account for rate of activity as suggested. Good idea.
Paragraph 30 The analysis of the pattern of rockfall events to identify trigger conditions would be indeed interesting. But this should be conducted in a more systematic and quantitative manner. Either some statistical approaches should be used or this side topic should be excluded from the study.	We've revised the analysis of rockfall timing with a new plot to address this comment.
Paragraph 32 It is useful to provide quantitative data about the talus deposits identified in the study. But the data provided in that paragraph are not systematic and therefore not complete. For all of the five	We've revisited the calculations to include the talus coverage values across each of the five slopes.

locations showed in the figure, at least the number and the area of the talus deposits should be provided.	
Paragraph 36 The additional assessment of the kinetic energy at the railroad track can be interesting for a hazard analysis. Nevertheless, this is on the edge of the scope of the susceptibility analysis that could be more detailed instead. One could considered to remove this part about the kinetic energy but to focus on a more quantitative analysis of the susceptibility that provides data about the area of the runout zone and the relative propagation susceptibility.	Great input! We have redone the runout analysis and removed the kinetic energy plots as suggested and added profiles of propagation and slope morphology relevant to rockfall propagation.
Paragraph 41 Indeed the rockfall pattern along the railroad are an important finding to be discussed. Here it seems more like a repetition of the results instead of a discussion. It would be important to discuss the reasons for this pattern and, in particular, the influence of slope morphology on runout.	We've revisited this paragraph to emphasize the reasons and not the results. Good comment.
Paragraph 43 A summary of the findings can be indeed useful. But this would be better placed in the beginning of the discussion while the conclusions are missing. The main conclusion could be, that the combination of the kinematic analysis and the runout modeling matches well to the data of the field survey and provide the basis for a sophisticated approach in rockfall hazard assessment.	Done. Good comment.
Section 1 The introduction fulfills its purpose to introduce into the topic and creating a territory and a niche. However, there is potential for improvement with regard to occupying the niche. Instead of the summary in the end, one could highlight the potential of the proposed approach and state a research question about its predictive power for the observed pattern in this case study.	As discussed above, we've revised the end of the intro to focus on the research approach and research question.
Section 2 The section about the study site is important and useful since the paper strongly focus on Skagway. But it is a rather long section and only structured by kind of stand-alone paragraphs. Similar to the methods, sub-sections could also be introduced to structure the content more clearly.	We've added subsections as suggested.
Section 3 The methods provide a well structured overview about the conducted work and the applied tools. However, certain aspects could be improved and one aspect could be added. While the rockfall inventory and the geomorphic mapping could be more quantitative also regarding a comparison with the modeling, to couple the initiation susceptibility	We've updated the inventory and revised the mapping description.

with the runout susceptibility would add a great value.	
Section 4 The results provide a well structured presentation of the findings from this study. Nevertheless, it would be desirable to have more quantitative facts and less interpretation in this section. This improvement could be valuable in general but in particular in the assessment of the rockfall inventory and the comparison of the geomorphic mapping with the modeling approaches.	Our new rockfall inventory analysis addresses these comments nicely. The comparison of the mapping with the modeling is not addressed quantitatively following previous studies.
Section 5 The discussion links back again to aspects from the introduction. But its structure should be improved and some crucial aspects are missing. The structure should be more straight forward in linking methods and results with the introduction while a critical appraisal like for example of how to deal with less consistent discontinuity orientations but also the development potential like for example to link susceptibility with hazard should be added.	We've attempted to revisit the key questions raised in the introduction and added some text about linking susceptibility with hazard via the new runout analyses that depend on the geologic and glacial factors.
Section 6 The conclusions provide a concise summary about the findings of the study. However, it should be also concluded, what these findings mean. One could highlight, that the proposed approach to estimate the susceptibility match well to the field observation and in combination with a magnitude-frequency relationship it could be also used for hazard assessment with a simple but robust approach to incorporate the rockfall sources.	Great suggestion.
Table 1 An overview of the rockfall inventory is indeed useful. But a table that only contains the smaller part from the newspaper records is less helpful. One could make a graphical overview that captures the location and the time of the events.	This table has been deleted.

Reviewer #2 comments	Author response
The manuscript is well organised and, except for missing information about local places in maps, also very well presented work focused on the rockfall hazard of a small area around a turistically important town in Alaska. The used methods are standard with widely used approach and software used for rockfall hazard assessment. Nevertheless, authors failed to provide enough evidence about how representative the structural data obtained from the limited part of the study area is for the rest of it. The literature review is missing some important previous work on this topic e.g., from Europe. The results combine geomorphological mapping with the rockfall hazard assessment in a meaningful interpretation, but have a nature of small scale local study, which contribution to the research topic on a global scale is limited. Considering this and a lack of methodological innovation, the impact of this study for a global audience seems questionable. Please consider the detailed comments in the attached file.	Many thanks for the very helpful and constructive comments. We've addressed them in the following way: 1. we visited the study area in June 2025 and gathered joint orientation data at 12 new locations that span the study area. in doing so, we're able to show the remarkable consistency of the primary joint orientations which support the approach we've taken here for the kinematic analysis. 2. the comment about a local study is well put and we agree that revisiting the primary research questions is necessary. To do this, we've rewritten the last introduction paragraph to focus on the conceptual approach and model novelty. We've also performed an additional analysis of the topography that uses roughness of the topography to assess runout. This analysis shows where and why rockfall propagation is diminished due to topographic controls on dissipation of energy during runout. 3. In addition, we've added a climate analysis of the AKDOT database to test controls as well as more rigorously correlated the correspondence of toppling susceptible zones with downslope talus deposits. Taken together, these revisions and new methods should alleviate the concerns about the lack of generality of our results. 4. More generally, we've retooled several figures and section of the text to address these and other major concerns by the reviewers. We hope the product is a more worthy contribution.
Line 40: please refer to works from Alps regarding this topic	good comment and we've generated literature from the European Alps relevant to this study.
Line 64: Please, refer to some older literature which is related to this topic: e.g., Meentemeyer, R.K., Moody, A., 2000. Automated mapping of conformity between	great suggestions and we will add these refs.

topographic and geological surfaces. Computers and Geosciences 26, 815–829. Günther, A., 2003. SLOPEMAP: programs for automated mapping of geometrical and kinematical properties of hard rock hill slopes. Computers and Geosciences 29, 865–875.	
Line 80: This is not well illustrative by the provided references, please add some more, when dealing with forest, there are also models accounting for boulders encountering trees	we will add references regarding the role of trees, including some recent experiments conducted in the Alps.
Line 84: Also here, more references would be better	yes, more references about application will be included.
Figure 1 and line 135: Is this an area of fresh rockfall activity? Inside the circled area it seems to me as exposed sliding planes of rock slide. Can you please comment on that?	Perhaps, but we will annotate the fresh areas. And talus slopes. yes, good eyesite! that's an area of rockfall activity that we revisited during our recent fieldwork.
Line 133: Capital letter? Make the north arrow larger.	Done.
Line 149: should be capital?	The letters have been changed throughout the text/captions to lower case.
Line 149: What was modified? The photographs or the chart of joints, please clarify.	The stereonet was deleted in favor of a schematic modified with a new tree from Wyllie and Mah 2004.
Line 167: Please, make sure you show on a map all sites you discuss or name in the text (e.g., harbour, railroad, ..).	yes, we've got a new study area map that will lay out the key areas in town.
Line 188: Please, indicate on a map or figure for location	This has been included in our rockfall runout maps.
Line 195-196: Please, show on a map.	the roads are clearly shown on our maps, particularly the Dyea Road.
Line 207: could you explain, why did you choose this date which seems to be related to human response to rockfall events rather to any natural event possibly affecting the rockfall initiation?	Good comment. this was an arbitrary timeline and we've decided to jettison this collection of newspaper events and instead focus on the AKDOT database.
Line 379: please explain why.	as discussed above, we've decided to dispatch the newspaper inventory and focus on the DOT database.
Line 393: see general comment above	we will quantify this more directly and add plots accordingly.
Line 410: Should be capital letter, please change in the entire manuscript.	yes, this has been fixed throughout.

Line 419: They are not clear from the Fig. 6.	we will delineate these ridgelines on the figures and our new passage maps/plots help to make this point.
Line 421, Figure 6; I suggest to use only single color for the talus deposits, their location is clear from the map. Crest line may be drawn in the Dyea peninsula as the topography is not clear from the map.	good point, we've changed all talus deposits to yellow.
Line 449: In Fig. 1 you have AB Ridge, please use single term.	We've reworked this figure completely and the caption.
Line 461: Please, draw them into the images as they are not obvious from the provided DEM.	Our new geomorphic map in Figure 6 shows the scarp and talus locations more clearly.
Line 473: I am not able to see any areas susceptible to planar sliding in this image.	correct, the amount of planar sliding is negligible. And our revised figure shows this clearly.
Line 539: please show its location on the map	This study is not in our study area but very close by, we will list distance and direction to demonstrate the proximity.
Line 576: Please show on the map	Yes, we've added to our rockfall runout location map.