

1 **Author Response to the second report of the Reviewer #1.**

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3 *The comments by Reviewer #1 are in black. The author's responses are in blue. The changes*  
4 *suggested to the revised manuscript are in green.*

5 *Anonymous Referee #1. The second report*

6 *Referee comment on "Retrogressive thaw slump theory and terminology" by Nina Nesterova*  
7 *et al., EGUsphere [preprint], <https://doi.org/10.5194/egusphere-2023-2914>, 2024.*

8 Nesterova et al. have made numerous revisions to the initial submission. I laud the  
9 improvements to the clarity and completeness. I particularly appreciate the clearer distinction  
10 between definition and observation, and the more comprehensive scrutiny of the terminology.

11 *We would like to thank the reviewer for taking the time to review our manuscript a second*  
12 *time. The attention to detail in the review has helped us enhance the clarity and readability of*  
13 *the text!*

14 Two minor comments:

15 - Cryogenesis. I do not think the following sentence constitute a definition even in the loosest  
16 meaning of definition. By "... defining cryogenesis as a set of thermophysical,  
17 physicochemical, and physicommechanical processes occurring in freezing, frozen, and thawing  
18 deposits [,]" the authors do not identify what set is being referred to. Consider adopting  
19 descriptive language instead: "In the Russian literature, the term cryogenic is employed to  
20 refer to thermophysical, physicochemical, and physicommechanical processes occurring in  
21 freezing, frozen, and thawing deposits." Consider a similar approach for other vague  
22 definitions.

23 *We agree that the definition of cryogenesis from the Glossary may appear unclear since this*  
24 *term is not that common in the English-language literature. We have elaborated in the text*  
25 *that the term is mostly used in Russian-language literature and omitted in English:*

26 **“3.2.2. Cryogenic earthflow**

27 In Russian literature, the word *cryogenic* is usually used to describe the periglacial nature of  
28 the processes. It refers to thermophysical, physicochemical, and physicommechanical processes  
29 occurring in freezing, frozen, and thawing deposits (van Everdingen, 2005). This term is  
30 usually omitted in the literature in English (Poppe and Brown, 1976).”

31 *For the remaining definitions, we either provided a direct citation or rephrased the definitions*  
32 *from the literature. For instance, the International Permafrost Association Multi-Language*  
33 *Glossary of Permafrost and Related Ground-Ice Terms (van Everdingen, 2005) was*  
34 *frequently cited with direct quotes for definitions of terms such as *retrogressive thaw slump**  
35 *and *active layer detachment slide*. The definition of *thermodenudation* by Panov (1936) is*  
36 *also quoted, as it is a direct translation from the original source. We aimed to present the*  
37 *definitions as clearly as possible while preserving the original meaning from the literature.*

38 - Thermokarst. Is French representative of the North American literature? The focus on water  
39 seems unusual, whereas for instance Kokelj and Jorgenson (Advances in Thermokarst

40 Research) or Farquharson et al. (Spatial distribution of thermokarst terrain in Arctic Alaska)  
41 emphasize ground ice.

42 We agree that the definition of thermokarst by French (2018) presented in our manuscript  
43 may not accurately reflect the current usage of the term in the context of RTS formation.  
44 Therefore, we have replaced it with the definition provided by Kokelj and Jorgenson (2013):

45 **“3.3.1. Thermokarst**

46 The term thermokarst was first suggested by Ermolaev (1932) to describe the surface  
47 subsidence due to the melting of ground ice as a similarity to the karst process by dissolution.  
48 However, in the context of RTS formation processes the term thermokarst is mostly referred  
49 to in the North American literature as a set of processes that lead to the occurrence of specific  
50 landforms due to the thawing of ice-rich permafrost or melting of massive ground ice (Kokelj  
51 and Jorgenson, 2013).”

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