

THE OPINION OF THE ADVISOR OF FINAL QUALIFYING WORK

Title of the final qualifying work Interpretation of geomorphometric characteristics of the daytime glacier surface based on remote sensing data

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Educational program Cartography and Geoinformatics

Level Bachelor

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Training requirements*	Corresponds	Mainly corresponds	Not corresponds
to be able to formulate and set tasks (problems) of the FQW correctly, to analyze and diagnose the genesis of the problems, to define relevance	+		
to be able to set priorities and methods for solving tasks (problems)	+		
to be able to use, process and analyze modern scientific, statistical, analytical information	+		
to be able to provide modern methods of analysis and interpretation of the information, to assess capabilities of the particular methods in task (problem) solving	+		
to be able to plan the time of work rationally, to determine the correct sequence and volume of operations and decisions in the performance of the task	+		
to be able to evaluate the results of computations objectively	+		
to be able to analyze the results of data interpretation	+		
to know and apply methods of the system analysis	+		
to be able to carry out interdisciplinary research	+		
to be able to make independent informed and reliable conclusions from the work done	+		
to be able to use domain-specific scientific literature	+		
to be able to apply modern graphic, cartographic, computer and multimedia technologies in research	+		
to be able to use cartographic methods and GISs	+		

*Correspondance/non-correspondance to the training requirements have to be marked with plus sign in the table

Advantages of the work

The work studies the problem of measuring the vertical displacement of glaciers using SAR interferometry (InSAR) technique and Sentinel-1 images. The Tavan Bogd Range, Potanin and Alexandra glaciers in the Mongolian mountains are selected as study area. The main advantage of this work is describe all the steps of the InSAR processing of Sentinel-1 data, compare the InSAR output with those obtained by some other remote sensing technique (e.g. multispectral Sentinel-2 data used to compute the Normalized Difference Snow Index (NDSI) and analyse the results at the light of the geomorphological characteristics of glaciers. In particular, Sentinel-1 images acquired over the study area from 2015 till 2018 are processed to estimate the vertical displacement of glaciers occurred during the time window covered by the Sentinel-1 data.

Noted shortcomings of the work

The thesis is well structured. The clarity of text and the construction of English sentences should be enhanced. No significant shortcomings were noted concerning the implementation of remote sensing technique and processing of data. The InSAR processing has been implemented correctly and all processing steps and results reported.

Conclusion

The output of this work consists of a survey of remote sensing techniques and geomorphological methods to study glaciers. A further output is the InSAR processing of Sentinel-1 data acquired over Mongolian mountains (Tavan Bogd Range, Potanin and Alexandra glaciers) in 2015, 2016, 2017 and 2018, the estimated of NDSI index using Sentinel-2 images and the analysis of results.

Advisor

A handwritten signature in blue ink that reads "Giovanni Nico". The signature is written in a cursive style with a large initial 'G' and 'N'.

Giovanni Nico
30 May 2023