

## **Abstract**

The objective of this thesis is to characterize the Labská rokle creek icefall in terms of its morphology and types of ice structures. It describes the icefall's development during the winter season and analyses the impact of meteorological factors. The data about the icefall's volume were collected via sequential photographing and 3D scanner measuring during the winter seasons 2014/15 and 2015/16. The collected data were compared with the data from temperature sensors situated below the icefall and in its close proximity and with the data from the meteorological station in Labská bouda hut. The given icefall showed a very fast growth in the first phase of its development. This phase was followed by a typically stable phase of small fluctuations and subtle reactions to surrounding stimuli. In the third phase, a rapid decline in volume occurred as a result of either episodic events, such as when a larger piece of ice came loose, or progressive thawing. Regarding the factors, it was confirmed that temperature had the biggest impact on the volume of the icefall. A very high correlation was also found to be between the icefall's volume and the height of snow. A bigger snow height apparently puts off the stable phase and allows a greater accumulation of ice. The impact of global radiation and sunlight was very noticeable in the decrement stage and was presumably amplified by the granite wall which accumulated the heat. The assumption that loosely hanging ice would be the least stable structure has proven correct. Contrarily, the lying ice persisted the longest. Besides confirming that the height of snow has a major impact on the development of an icefall, this study also corroborates the results of previous studies about the development of icefalls.

**Key words:** Icefall, ice cascade, frozen waterfall, microclimatic factors, changes of an icefall's volume, the Labský důl valley, the Labská rokle ravine, the Krkonoše mountains