# Developing a visual moraine classification scheme to support investigations into the Holocene glacier chronology of the Southern Alps, New Zealand

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The Southern Alps of New Zealand have provided one of only a few suitable study sites for investigating Holocene glacier chronologies in the mid-latitudinal Southern Hemisphere. Although a considerable number of studies have been conducted during the past few decades, these generally focus on a very limited number of glacier forelands. Additionally, those glaciers studied have often been selected because of their accessibility rather than their representativeness for the whole region. A common drawback of many regional studies is the lack of attention to glacial geomorphology and the mode of moraine formation with the dating of such landforms in chronological context. With the Southern Alps characterized by very dynamic geomorphological process-systems and a high seismic activity, this seems unfortunate as it causes a relatively high potential "geomorphological uncertainty" with any published glacier chronology and its subsequent palaeoclimatological interpretation.

Future investigations into the Holocene glacier chronology in the Southern Alps need to address those existing shortcomings and, consequently, should achieve a representative spatial distribution of study sites in order to overcome the current strong data bias towards few, albeit relatively well-studied glacier forelands. The specific regional geomorphological environment of the Southern Alps requires, furthermore, a thorough assessment of any moraine selected for the subsequent dating in consideration of its "reliability" if it is considered as evidence of specific former glacier variations. With more than 3000 potential glacier forelands in the entire mountain range, careful selection of future targets for successful chronological field work is essential.

We present the preliminary results of an ongoing, time-efficient study to apply different remote sensing sources (aerial photography, Google Earth, satellite images) to evaluate the potential of certain glacier forelands for detailed ground investigation on basis of a specifically developed visual classification scheme for specific regional moraine types. Our classification also takes the recently controversial discussion on the influence of major mass movement events (like rock avalanches) on glacier behavior into account by highlighting those moraines that may be influences/created by such events and require special attention. When completed, this study eventually may be a useful tool for an improved selection of future study sites by including such purpose-oriented geomorphological criteria.