

## **Abstract:**

This bachelor thesis is focused on the comparison of the two main glacial periods of the Phanerozoic, the Late Paleozoic Ice Age and the Cenozoic Ice Age including Pleistocene. The main goal of the thesis is to compare the factors of glaciation and their controlling mechanisms on short and long-term scales, and the basic features of the Earth's circulation. Last but not least, the evaluation of unresolved questions and consideration of the possibility of using data from the Cenozoic, which point to a very complex behaviour of the climate system components.

In both periods compared, the main climate driver appears to be the atmospheric greenhouse gas content. Another common feature is the declining trend in temperature, manifested initially by a less significant and ephemeral glaciation during the Upper Devonian, Eocene and Oligocene. The transition to the coldest phases with the lowest average temperature and the largest ice volume is characteristic. Based on CO<sub>2</sub> content, amplitude of glacioeustatic oscillations or Milankovitch cycles, a sequence of several glaciation events in the Serpukhovian to Sakmarian interval can be considered as an analogue of the Pleistocene. The difference from the Pleistocene glaciation is presence of a large number of glaciation centres in the Gondwana area.

Some similarity is noted in the short-term astronomically driven influences. In both periods, the presence of the 100 kyr cycle is noted, although the study of short-term influences is affected by lower dating resolution. A closer understanding of Milankovitch cycles is problematic for now in terms of relatively poor, insufficient and fragmentary data.

**Key words:** climate, Paleozoic, glaciation, orbital cycles, Milankovitch, cyclothem, glacial cycles, Quaternary, Pleistocene