

The aim of the project is to determine the pressure conditions causing the occurrence of extreme air temperature values in Central Europe. The atmospheric circulation during the occurrence of heat waves, frost waves and severe frosts in spring and autumn will be analysed in detail.

Achievement of this objective will be possible thanks to the analysis of sea level pressure, heights of 13 isobaric levels as well as air temperature at these levels. On the basis of the obtained data, there will be maps drawn up for the mean sea level pressure, height of 500 hPa isobaric surface and temperature on 850 hPa isobaric surface. On the other hand, a detailed analysis of the pressure conditions will be conducted as the result of distinguishing types of circulation through grouping the days with regard to sea level pressure by means of the minimum variance method; thus the Ward's method (1969). What is more, in order to investigate the conditions in the upper layers of the troposphere there will be cross-sections produced alongside the selected meridians and parallels. First, the averaged sections for heat waves, frost waves and severe frosts in spring and autumns will be made and then similar sections will be made for the distinguished types of circulation. Furthermore, the aforementioned analyses will be also conducted for the selected, extreme incidents of the analyses phenomena in the discussed multiannual period.

The result of the project will be a detailed determination of the pressure conditions causing the occurrence of extreme weather phenomena, that is, heat waves, frost waves and severe frosts in spring and autumn, which can be useful to predict these phenomena more precisely. Early identification of conditions conducive to the occurrence of threatening weather phenomena will enable one to effectively warn the society and take actions to minimize the effects of the phenomena.