

Since the beginning of mankind, man was interested when vegetation enters a phase of the beginning of the growing season and when running out of time to grow plants and yielding occurs. This interest was to ensure the board itself and the whole community living in the area. The length of the growing season was closely associated with plants that can be grown in a given area in order to obtain the food. Plants for which the period between the beginning and end of the various phases is too short, may have fruits with reduced nutritional elements, or even appear in the fruits substances that are harmful to the human body. At the time when people began to cultivate plants the main question was where and what crops can be grown. Through multiannual observations of people they have learned to grow plants which were the best suitable for this purpose in terms of natural places - eg. on soils with a high content of organic compounds that are resource nutrients for growing plants.

Climatic changes on Earth can be observed in different ways. One of the most common ways of recording observations of climate change are weather forecasts over long time series. One of the most important for human life effects of climate change is its impact on the development of vegetation. The most important issue is that, due to the production of food. Shortening of the growing season has a negative impact on the yield of the nutrition plants. But not only the nutrition plants are affected. All herbivores depend on proper development of plants. The appearance of even relatively small changes to the length of the growing season can have a significant impact on the lives of many ecosystems. Earlier appearance of vegetation in a region may increase the number of individuals and thus increase the population in the long term. The increase in the number of individuals of a species may have significant reflected in the changes taking place in the whole ecosystem. Disorder, even minor ones, in the processes related to the functioning of the ecosystem can cause dysregulation of natural processes operating in the same ecosystem. Such changes in the local system can be large, but in the longer term and spatial may spread in an uncontrolled manner.

The aim of this project is to determine the effect of the natural elements at the beginning, the end, and duration of the growing season of different plant communities. To this end, research will be conducted over a period of growing plant communities such as forest communities (3 types), meadow communities (3 types) and crop fields (3 types). In order to monitor development phases of vegetation will be used the most advanced research techniques - hyperspectral imaging, which combined with studies of soils and spectroradiometer measurements allow the determination of the characteristic spectral response of different developmental phases of vegetation. Additionally, the use of modern measuring devices - hexacopter makes sure that the study will be carried out spatially at certain times of the day.