

## **DESCRIPTION FOR THE GENERAL PUBLIC**

The effect of climate change is directly and indirectly associated with the significant costs that Poland shall also bear arising from climate change, adapting the law to the standards of environmental protection in the European Union. Conducting the polar research, in particular focusing on glaciers, which are very sensitive indicators of climate change, enables Poland to have direct knowledge about the pace of changes, as well as allowing Poland to take decisions in this field, based not only on publications and opinions prepared by other countries. The Institute of Biochemistry and Biophysics of the Polish Academy of Sciences (IBB PAS), as a guardian of the Polish Antarctic Station, which is located on the King George Island in West Antarctica, not only provides the necessary knowledge to decision-makers in Poland, but due to the real threat to buildings of the Polish Antarctic Station, resulting from sea level rise, as well as coastal erosion in Admiralty Bay. Therefore, the IBB PAS is directly interested in doing research in the field, which allows evaluation of the rate of climate change in this region. One of the most modern research methods of investigating the natural environment is using satellite images. Their availability, especially at high spatial and spectral resolution, allows more complex and advanced environmental analysis to be performed. This is important not only in the areas of middle latitudes, but especially in the inaccessible polar regions, where the in-situ measurements are expensive and very often depend on extreme weather conditions. Bad weather conditions in the area of the South Shetland Islands, due to the Antarctic Circumpolar Current, make this region difficult to conduct the field observations. For this reason, the development of algorithms that allow information to be obtained about environmental parameters on the basis of satellite images is very important. Most of the glaciers located in the South Shetland Islands flow into the sea. In many of them they formed the gate of glacier, which is one of the basic elements of drainage of water ice. The spread of suspended materials in the waters of the bay has the form of plumes and the concentration of the surface as well as in the vertical profile are dependent on the distance from the outflow. Determination of the intensity of sediment transport supplied from the glaciers is related to the intensity of the outflow of freshwater and time response of glaciers to increase in temperature. Therefore, indirectly this project may give information on the impact of climate change on the dynamics of glaciers. In addition, the development of methods based solely on an analysis of satellite images can significantly contribute to lowering the costs of research in the polar regions and greater independence in conducting this type of study. This project in a comprehensive way, both mathematical, oceanographic and remote sensing meets the expectations of scientists, decision makers as well as ordinary citizens, who will have immediate access to the results achieved by making them available on a dedicated web site.