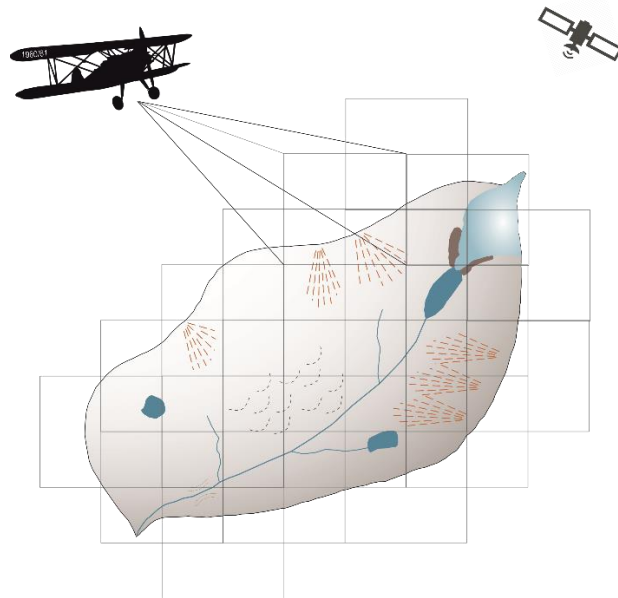


## CaLIA - Małe zlewnie arktyczne w warunkach po Malej Epoce Lodowej - wypełnienie luki wiedzy z początku lat 60-tych dla małych zlewni na Ziemi Wedela Jarlsberga.

Climate change is affecting the entire globe, but the rate of climate change is almost 4 times faster in the Arctic, a phenomenon called Arctic Amplification. Since the end of the Little Ice Age, which ended in Spitsbergen at the beginning of the 20th century, there has been glacial recession. Changes in glacier extent are particularly evident in the western part of Svalbard, of which Spitsbergen is the largest island, due to the presence of the warm West Spitsbergen Current. Particularly sensitive to the climate change are small catchments where the effects of these environmental transformations are reflected in complete or significant disappearance of glaciers. Hence, areas located in high latitudes can serve as a sort of model for climate change in high mountain areas often inhabited by humans. Polar regions are demanding in terms of the organisation of field research, which is why the development of both sensors and remote-sensing methods makes it possible to track these changes in a broader spatial aspect. Long measurement series since the 1970s also make it possible to track shifts in spatio-temporal perspective. In addition to the use of satellite data, for Svalbard, it is possible to use oblique aerial photographs that have documented the state of the landscape immediately after the Little Ice Age as well as in the 1960s. Within the CaLIA project, we would like to focus on reconstructing of the landscape and thus the extent of the glaciers as well as changes in their thickness before the satellite era.

Furthermore, the project plans to use spy satellite scenes. In comparison, for the same time frame, to the concurrently operating Landsat satellites, whose resolution was initially 60 m, data from the Key Hole - 9 Hexagon satellite provide high-resolution data (even several metres). As part of the CaLIA project, we would like to see how the results of analyses carried out for glacier extent differ between these two sources.



The aim of the CaLIA project is to answer the question of how the landscape of southern Spitsbergen (Wedel Jarlsberg Land) has changed between the end of the Little Ice Age and the beginning of the satellite missions (1970s). For this purpose, we plan to use the aerial flight data from the early 1960s. On this basis, we plan to produce an orthophotomap and a numerical terrain model to reconstruct the landscape and to indicate changes in glacier thickness between 1396 - 1960 - 1990. A second goal is to estimate the error resulting from working with low-resolution satellite data and to determine the extent of the glaciers for part of the Wedel Jarlsberg Land in the late 1970s and early 1980s, i.e. at the beginning of their intensive recession.