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**Dataset name:** **iCUPE Dataset (DS) from Deliverable 3.2.2:**

# Datasets of novel optical remote sensing products on snow, vegetation and gas flaring mapping in selected sites: Fractional snow cover area in selected sites of Svalbard islands (Norway)

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**Place and date:** **Sesto Fiorentino, Italy, 16 Mar 2020**

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The produced dataset (in netCDF v4 format) contains the estimation of the Factional Snow Cover (FSC) in different sites located in Svalbard islands. We considered areas that complete the already available datasets and we focused the attention to the Ny-Alesund area (Svalbard - Norway) (78.917° N, 11.933° E) where different facilities are available for supporting the use of terrestrial photography. One asset is the Zeppelin observatory, located on a panoramic spot where cameras are operating since 2000, and one is the Climate Change Tower (CCT) where we deployed a camera in 2018 (Figure 1). While the Zeppelin camera, operated by the Norwegian Polar Institute, offers a long time-series coupled with a pan-tilt-zoom device (4 different views daily), the CCT device was installed in order to cover the hidden side of the coastal plain not visible from the observatory. Furthermore, the CCT camera provided highly spatial and time resolved (hourly) images that were also below the cloud layer.
The dataset includes 930 daily estimations in a 10 km$^2$ area from 2017 to 2019 with a 20 x 20 m spatial resolution. We considered only grid elements with more than 1 image pixel included and for this reason we processed four different views.

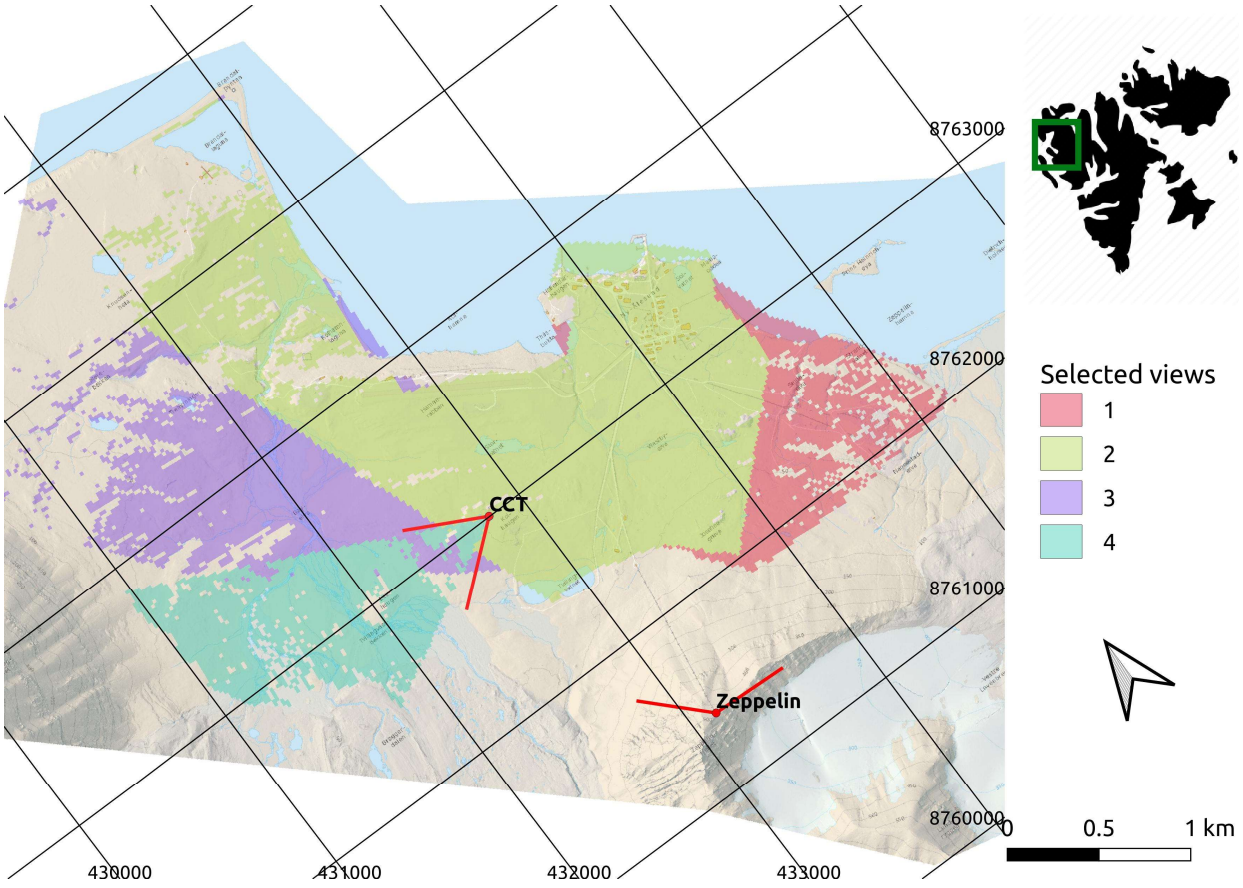


Figure 1. Location map of the different selected cameras and panoramic views in the Ny-Alesund area, Svalbard.

We defined the perspective field for each view in order to identify the relation between each image element and its orthorectified area on the ground surface. Images were analysed in terms of cloud cover and illumination in order to filter darkness, especially during the Arctic winter, and foggy or bad weather conditions. The FSC values range from 0 to 100, as a percentage value, but codes 200 and 300 indicates cloudy and low-illumination conditions, respectively. We considered an UTM-WGS84 coordinate system (EPSG:32633) and an UTC time convention.