Additional information about ice core data from Rhone 2017 field campaign:

The ice core was taken in the ablation zone of the Rhone Glacier in Central Swiss Alps. The expected bedrock depth was 115-119 m from two nearby hotwater drill holes. The ice core was retrieved using a thermal drill bit, i.e. that no mechanical stress was applied to the at least -0.5°C warm temperate ice. Furthermore, this procedure allowed an oriented retrieval of the ice. The site pointing towards east was marked using a soldering iron causing small gaps in the ice segments at both ends. Due to several technical issues the drilling was stopped at 45 m and continued in a new borehole approximately 80 cm down-glacier. The second hole was drilled down to 45 m with a hotwater drilling system before continuing a successful ice coring at 50 m. At 80 m the procedure was stopped again due to larger grains of gravel found in the ice. A total of 112 ice core segments with a mean diameter of 70 mm and a mean length of 700 mm were retrieved and stored at -25°C after transporting down the glacier.

For the ice core analysis seven different depth have been selected for the fabric analysis: top and bottom depth, two measurements at 45 and 50 m when switching to the new borehole and three depths in between on a regular grid. The selected ice cores were measured (weight, length, diameter) and each segment was cut into five pieces (10 mm – 2x100 mm – 10 mm and a residual one, ref. Fig. 1) using a band saw. The two 100 mm cylinders were further cut using a “T”-shape (see Fig. 2 below) to get two towards each other orthogonally oriented planes. The northern cap of each cylinder was cut off allowing a fabric analysis in an east-west oriented plane with an average size of 60x100 mm. The residual piece of ice was cut in north-south direction twice obtaining a 10 mm thick piece of ice with a 60x100 mm large north-south oriented plane for measurements in the respective direction. From the two cylinders for the horizontal direction always the bottom plane was polished for measurements to obtain a consistent workflow reducing mistakes and allowing measurements with an orientation equal for all horizontal samples.

Due to the oriented retrieval and the cutting procedure six measurements could be obtained on each ice core segment, two horizontal measurements with images where east points to the right, west to the left. For the vertical segments the filenames include the correct orientation from left to right. Usually south and east are left and north and west are on the right edge of the images in fabric analysis but opposite in LASM images of course.

![Fig. 1: scheme of an ice segment](image1)

![Fig. 2: “T”-cut scheme](image2)