1. Introduction & Rationale

Firn gives insight into past and present climate conditions. Due to changes in density with depth, geophysics can be used to recover the firn profile. Seismic surveys are a popular technique. They are able to recover both physical and mechanical properties of firn and are not limited spatially.

Current Seismic inversion techniques (Herglotz Wiechert) are limited by the assumption of simple physics. Full Waveform Inversion (FWI) can mitigate these limitations and improve our understanding of firn. The ability of FWI to recover firn was tested on data acquired from Hardangerjøkulen Ice Cap.

2. Hardangerjøkulen, Norway

An Ice Cap situated on the western flank of the Hardangervidda mountain plateau. Chosen as the site for seismic acquisition due to easy accessibility from the UK and areas of known firn coverage.

FWI gives insight into past and present climate conditions. Due to changes in density with depth, geophysics can be used to recover the firn profile. Seismic surveys are a popular technique. They are able to recover both physical and mechanical properties of firn and are not limited spatially.

Full Waveform Inversion (FWI) can mitigate these limitations and improve our understanding of firn. The ability of FWI to recover firn was tested on data acquired from Hardangerjøkulen Ice Cap.