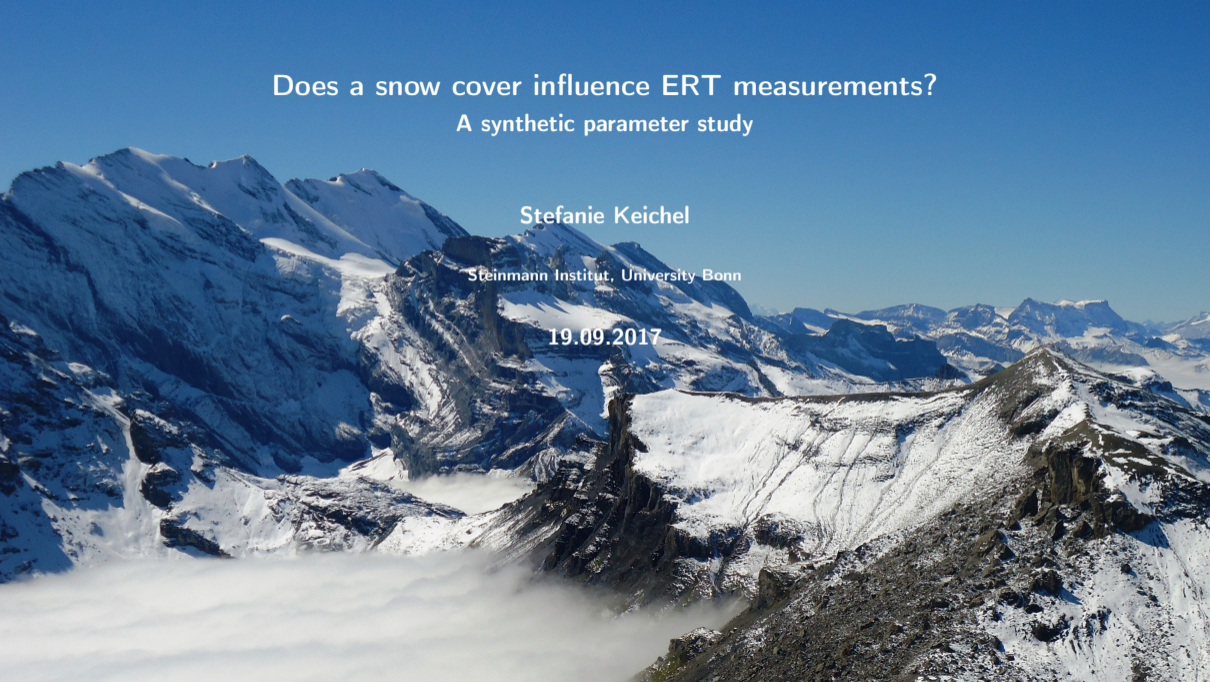# Does a snow cover influence ERT measurements?
A synthetic parameter study

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This study aims to investigate the influence, a varying snowcover has on measured geoelectrical profiles.

Figure: Measurement of frozen rock surface resistivity [Krautblatter and Hauck, 2007]

A snow cover is simulated on top of a geoelectrical profile:

$\rightarrow$ Homogeneous subsurface $\rho_{subsoil} = 3000\ \Omega m$

$\rightarrow$ Snow cover thickness $\Delta z_{snow\ cover} = 2.5\ m$

$\rightarrow$ Feature of interest $\rho_{melted\ ice} = 200\ \Omega m$

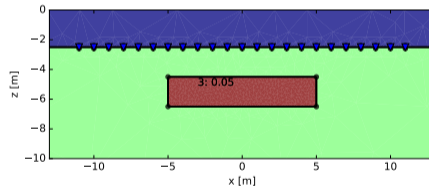$\rightarrow$ 23 electrodes in a dipole-dipole array

Figure: Representative model for the synthetic sensitivity study
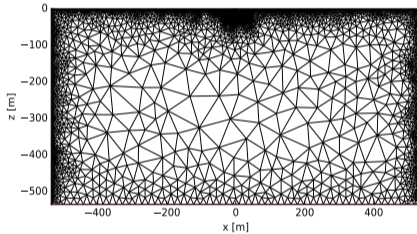
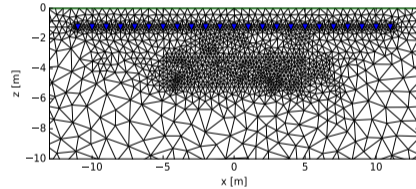UNIVERSITÄT BONN

Figure: Grid for forward modeling.

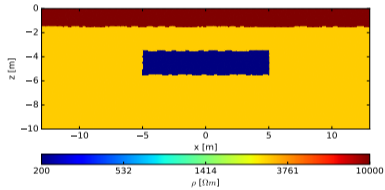Figure: Enlarged image of the grid used for forward modeling with electrodes (blue)

Figure: Underground model with an overlying snow cover and a resistivity value of $\rho_{snow\ cover} = 250000\ \Omega m$.
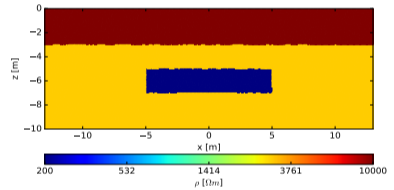

Figure: Underground model with an overlying snow cover and a resistivity value of $\rho_{snow\ cover} = 250000\ \Omega m$.
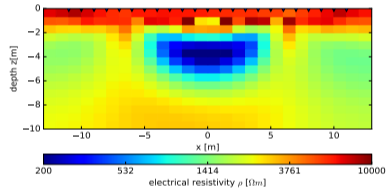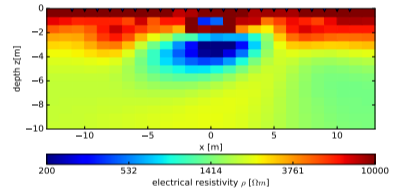
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Figure: Inversion result of the above underground model, not taking the overlying snow cover into account.

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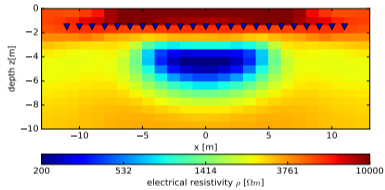
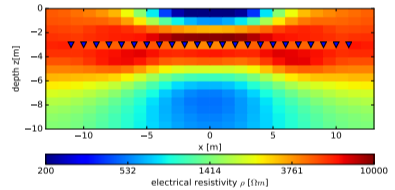Figure: Inversion result of the above underground model, taking the overlying snow cover into account.

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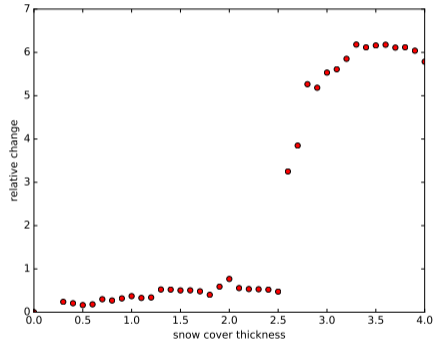
Figure: Difference in the inversion results between taking and not-taking an overlying snow cover into account.