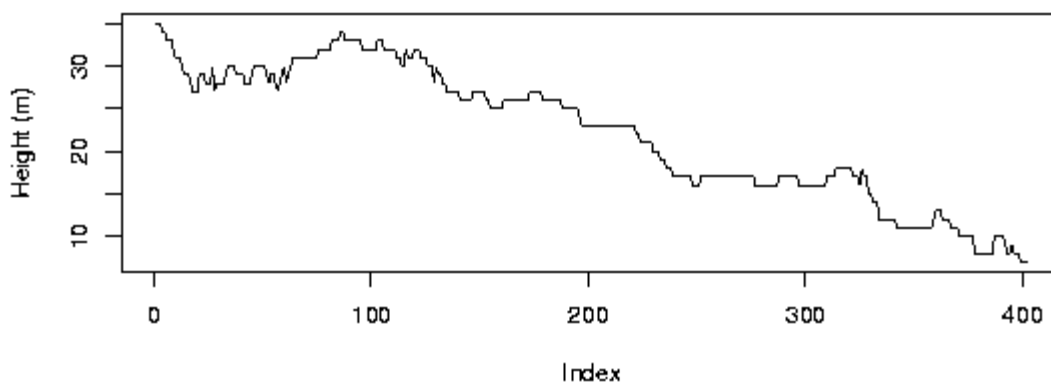


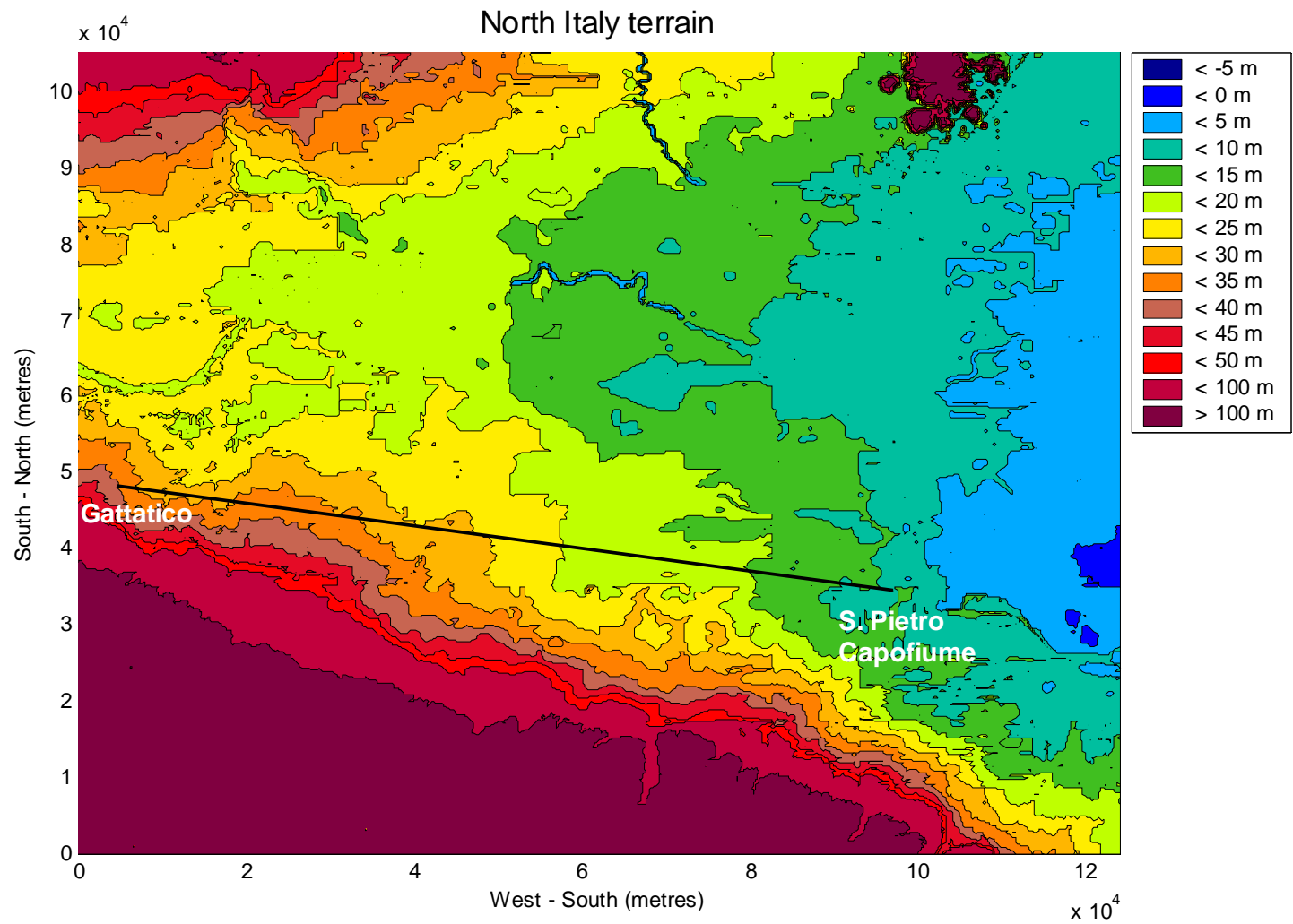
Investigation in the terrain between the two SMR polarimetric Doppler radars in North Italy

The work of Robert Watson (thesis - 1996) has shown, that for an accurate Dual Doppler wind analysis the terrain between and around the radars has to be analysed. The height of the terrain defines the lowest elevation angle on which the two Doppler radars can be operated. For a Dual Doppler analysis the boundary condition below or above the observed area should be known. Because the upper boundary condition is harder to determine than the boundary condition on the ground it is of advantage to use the ground as reference. Watson (1996) was not able to use the bottom boundary condition because the terrain between the radars he used was unsuitable (different heights of the radars and so on). The ideal area would be flat and the radars could both scan near the ground.

The colour figure on the next page shows a contour plot of the terrain between the radars. The two radars are marked and connected by a black line (the *line of sight*). The profile of the line of sight is given below (Left: Gattatico - Right: S. Pietro Capofiume). The optimum area for a Dual Doppler wind analysis lies next to the line of sight. The line of sight itself is not suitable for the Dual Doppler wind analysis. Two choices exist: The area south of the line of sight and the area north of the line. Looking at the terrain in that figure it becomes immediately clear that the terrain south of the line of sight is increasing in height and is up to 200 metres higher than the radar position. This would mean that no low elevation measurement could be taken without the influence of clutter. The area north of the line of sight, however, is very flat and varies only between 10 and 30 metres.

Height profile between the two SMR radars





Possibile triple Doppler retrieve region

