Universität Potsdam

REMOTE SENSING OF THE ENVIRONMENT

WINTERSEMESTER 2024-2025

LAB 4

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Question 1

In Figure 1 and Figure 2 you can see the two images that should be created in Question 1. The data file is from 29 November 2024 in the Potsdam and Berlin area (a large part of Brandenburg was cut out in the subset). Both maps were first calibrated and then one of the images was processed with Ellipsoid Correction and the other with Range-Doppler Terrain Correction.

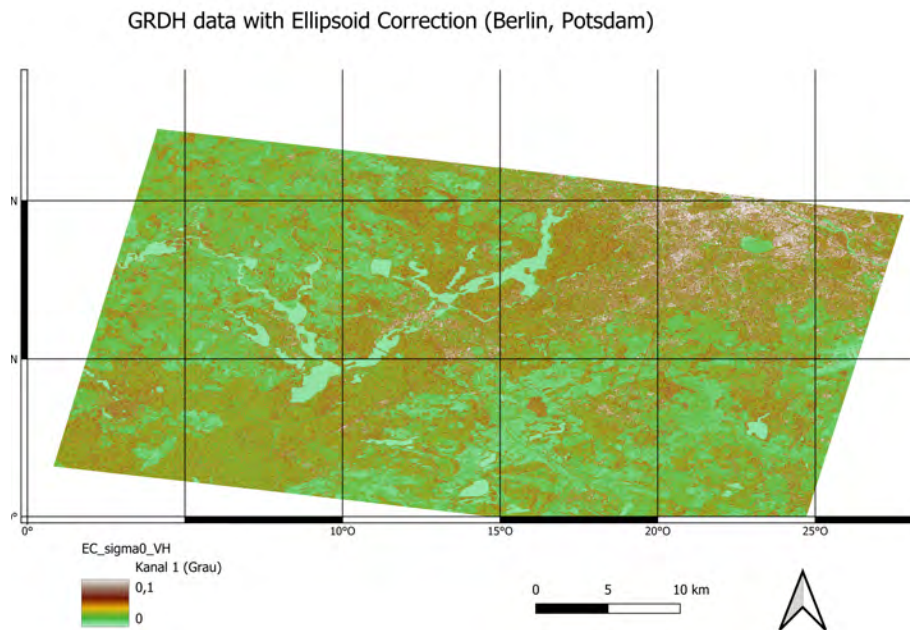The difference between the images is not big and difficult to recognise with the naked eye.

GRDH data with Ellipsoid Correction (Berlin, Potsdam)

Figure 1

Question 2

In Figure 3 you can see the merged map from the three watermasks. In comparison, the watermask from the GRDH data set is the most incorrect. Here, parts of the airport are classified as water and no rivers can be recognised, only lakes. The other two NDWI maps are both very accurate and correct and differ only minimally. My impression is that the Landsat-8 dataset has delivered the better result here, because the Spree, for example, is very well represented here.

Question 3

Figure 4 and Figure 5 are the two RGB maps with red = VV, green = VH and blue is either DPMI or DPDI.

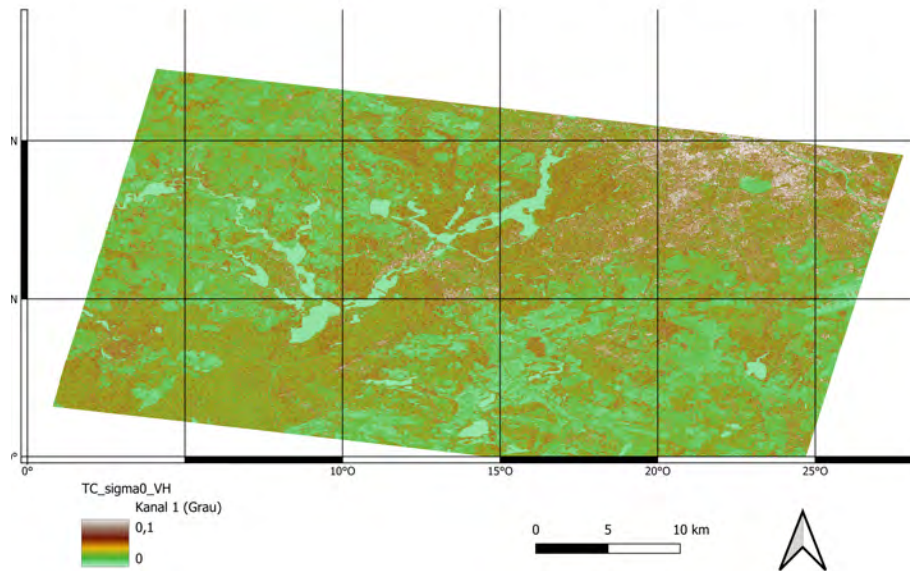GRDH data with Range-Doppler terrain Correction (Berlin, Potsdam)

Figure 2

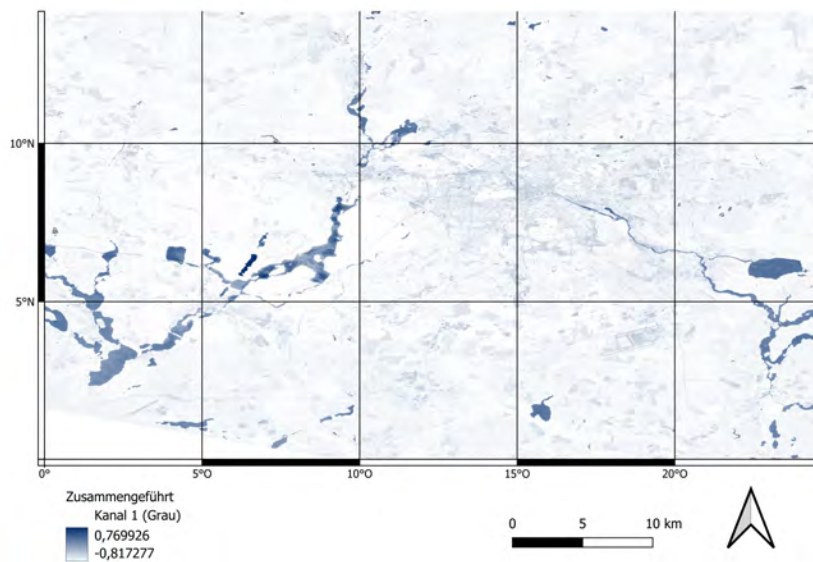Merged Water Masks of Landsat-8, Sentinel-2 & GRDH-data
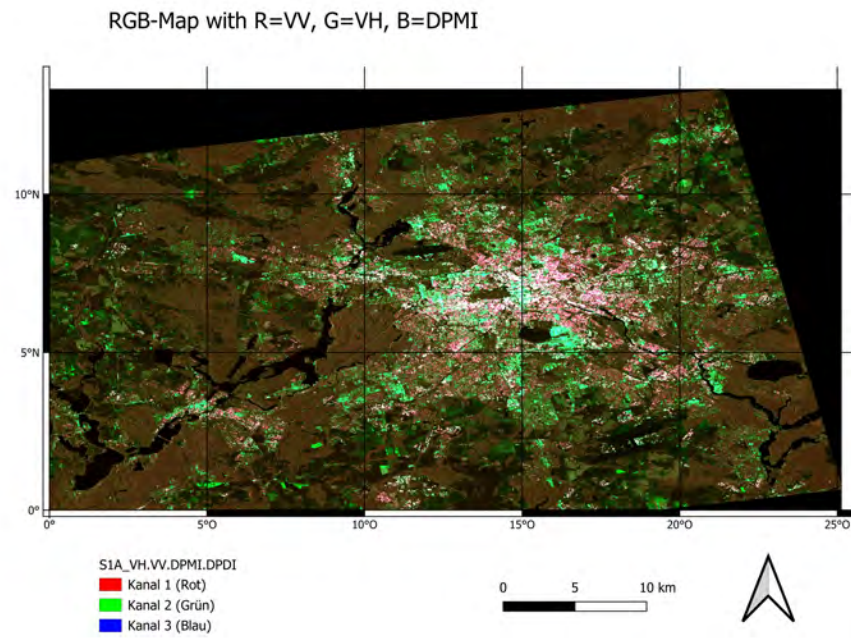
Figure 3

RGB-Map with R=VV, G=VH, B=DPMI

Figure 4

RGB-Map with R=VV, G=VH, B=DPDI

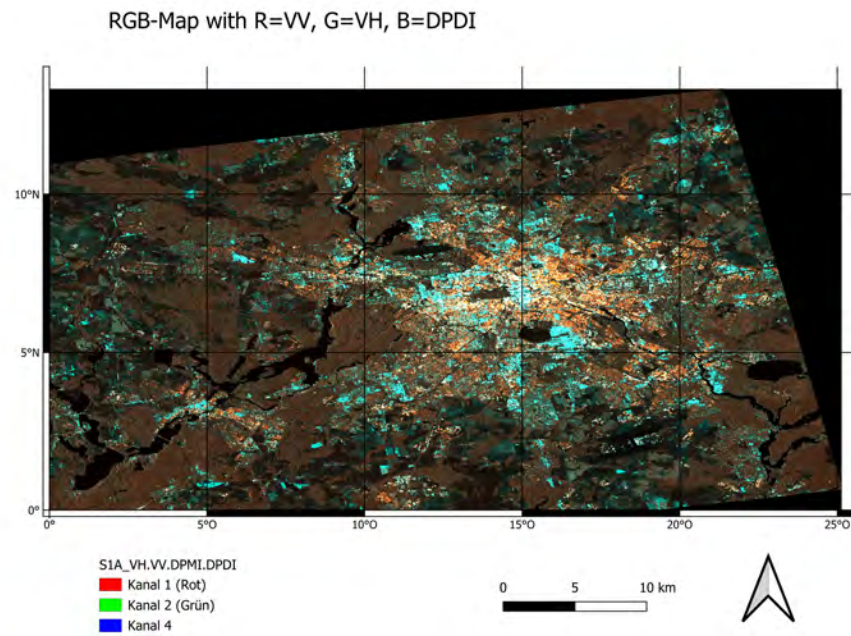Figure 5

Question 4

The band combination $red = VV, green = VH$ and $blue = DPDI$ is most useful for discriminating between forest and agricultural fields because one is green and the other blue (as you can see in Figure 6).

Figure 6: Screenshot of RGB-Map with R=VV, G=VH and B=DPDI

Question 5

In Figure 7, Figure 8 and Figure 9 you can see the three RGB maps with R=VV, B=VH, and G = VV/VH (DPRI), VV*VH (DPMI) or VV-VH (DPDI). These three figures are not particularly meaningful and they are very similar. The Figure 7 shows the most contrasts, so it best represents the selected region (North Sea coast, Lower Saxony, Germany). The S1A file is from the 2024-12-09T05:42:01.136855Z. The Unsupervised Classification worked well.
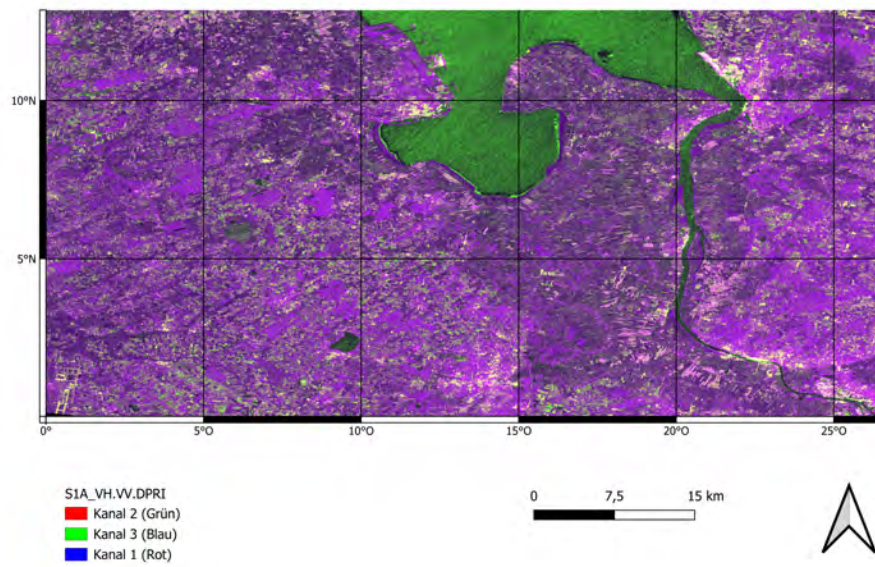
RGB-Map with R=VV, B=VH, G=DPRI

S1A_VH.VV.DPRI
Kanal 2 (Grün)
Kanal 3 (Blau)
Kanal 1 (Rot)

0   7,5   15 km

Figure 7

RGB-Map with R=VV, B=VH, G=DPMI
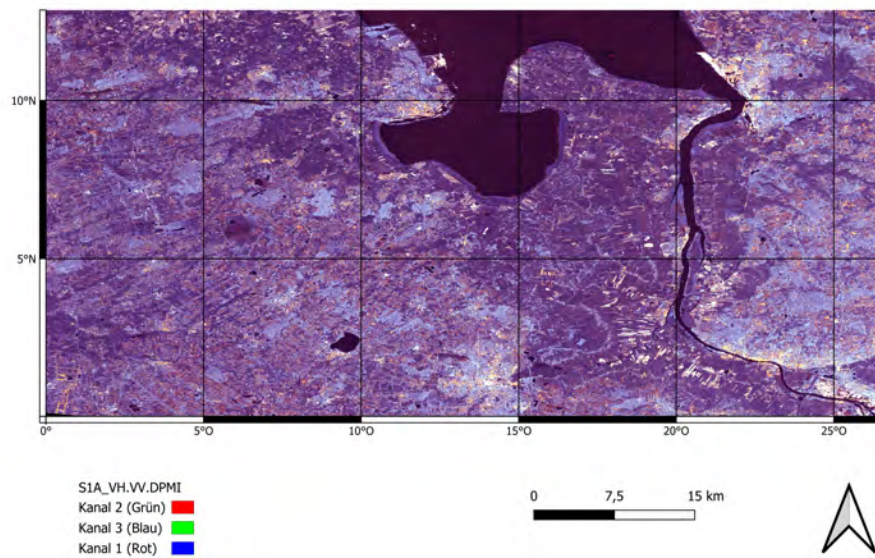

S1A_VH.VV.DPMI
Kanal 2 (Grün)
Kanal 3 (Blau)
Kanal 1 (Rot)

0   7,5   15 km

Figure 8

RGB-Map with R=VV, B=VH, G=DPDI

S1A_VH.VV.DPDI
Kanal 2 (Grün)
Kanal 3 (Blau)
Kanal 1 (Rot)

Figure 9

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