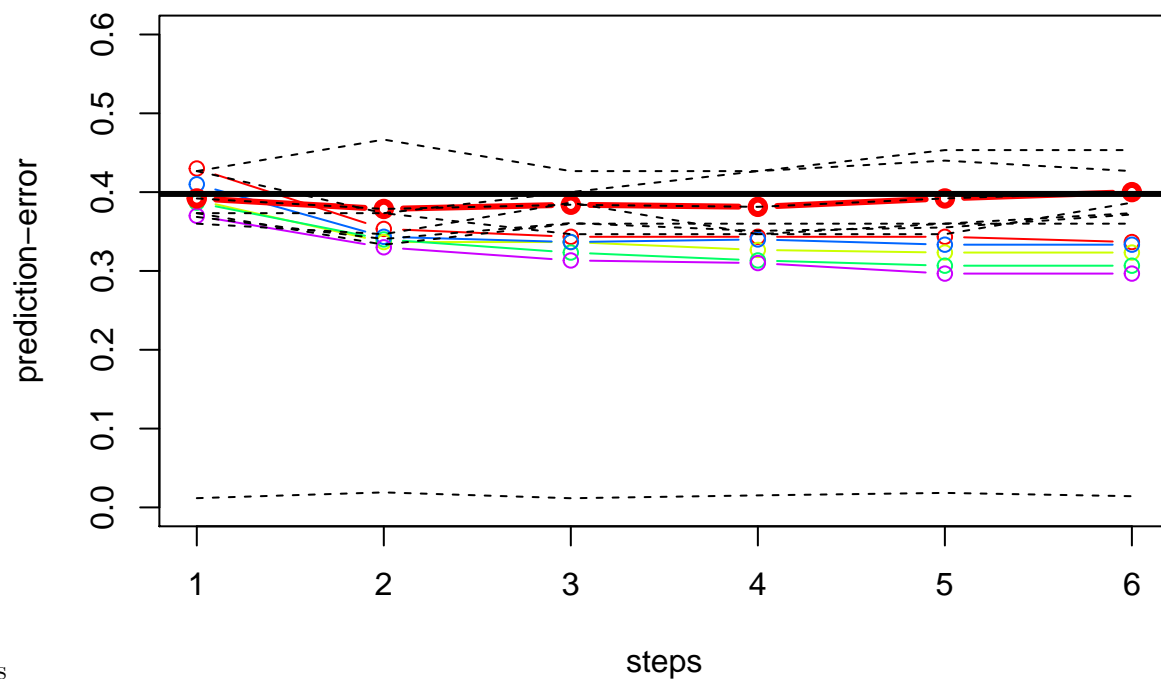


Evaluating all those forests to improve the geologic map

fabian gruber

October 19, 2017



Roughness

```
## [1] "Prediction error at end is: 0.392"
## [2] "Prediction error at end is: 0.3786666666666667"
## [3] "Prediction error at end is: 0.384"
## [4] "Prediction error at end is: 0.3813333333333333"
## [5] "Prediction error at end is: 0.392"
## [6] "Prediction error at end is: 0.4"
##
## k 1
## 1 SGU_gk
## 2 vectorruggedness_hr_ws57
## 3 geom_hr_L50m_fl1_rplipsimpson_UE_hr_60cells_hr
## 4 TRI_hr_ws42
## 5 TRI_hr_ws31
## 6 geom_hr_L50m_fl10_rplipatchdensity_UE_hr_60cells_hr
##
## k 2
## 1 SGU_gk
## 2 vectorruggedness_hr_ws47
## 3 vectorstrength_hr_ws7_hr
## 4 geom_hr_L50m_fl10_rplipmps_UE_hr_40cells_hr
## 5 terraintexture_hr_ws21_t1
## 6 geom_hr_L3_fl1_rplipshannon_UE_hr_40cells_hr
##
## k 3
## 1 SGU_gk
## 2 TRI_hr_ws18
```

```

## 3 geom_hr_L50m_fl10_rplipatchdensity_UE_hr_20cells_hr
## 4          terraintexture_hr_ws49_t1
## 5          vectorruggedness_hr_ws29
## 6          vectorstrength_hr_ws33_hr
##              k 4
## 1          SGU_gk
## 2          TRI_hr_ws15
## 3    geom_hr_L50m_fl10_rplipshape_UE_hr_60cells_hr
## 4 geom_hr_L3_fl1_rplipedgedensity_UE_hr_20cells_hr
## 5          terraintexture_hr_ws33_tp5
## 6    geom_hr_L3_fl1_rplipdominance_UE_hr_10cells_hr
##              k 5
## 1          SGU_gk
## 2          vectorruggedness_hr_ws51
## 3          TRI_hr_ws32
## 4    geom_hr_L3_fl10_rplipshape_UE_hr_20cells_hr
## 5 geom_hr_L3_fl10_rpliprichness_UE_hr_20cells_hr
## 6          terraintexture_hr_ws5_tp5

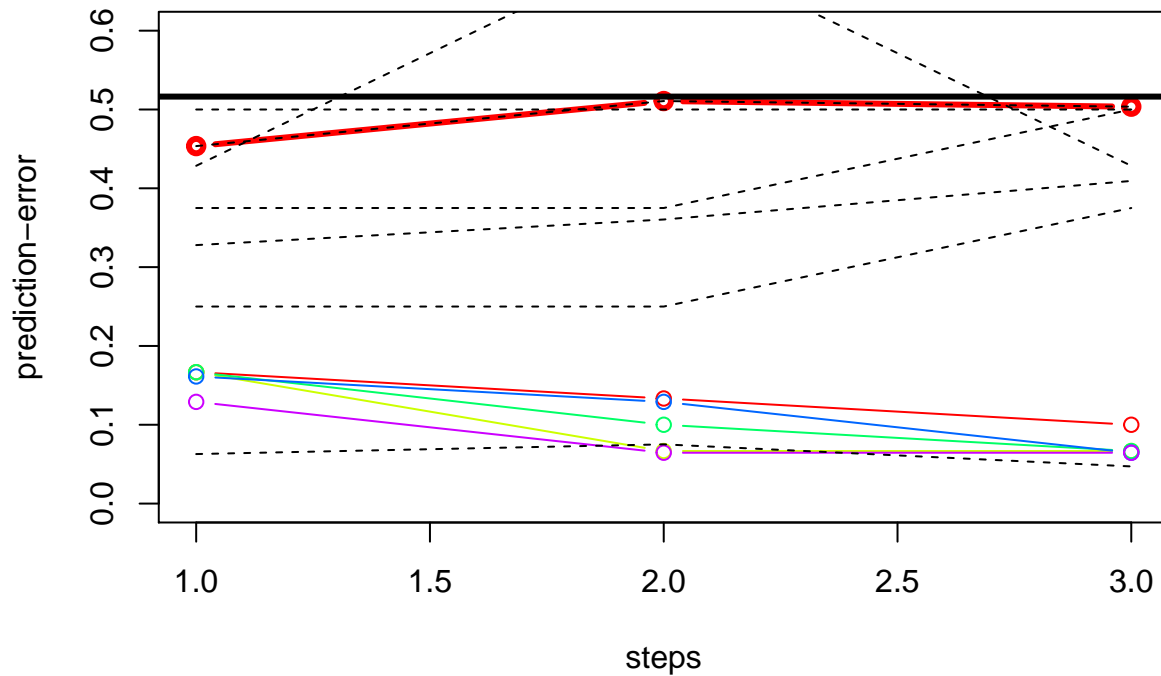
```



```

##    allchosen Freq
## 11    SGU_gk    5
Allpreds SBintern

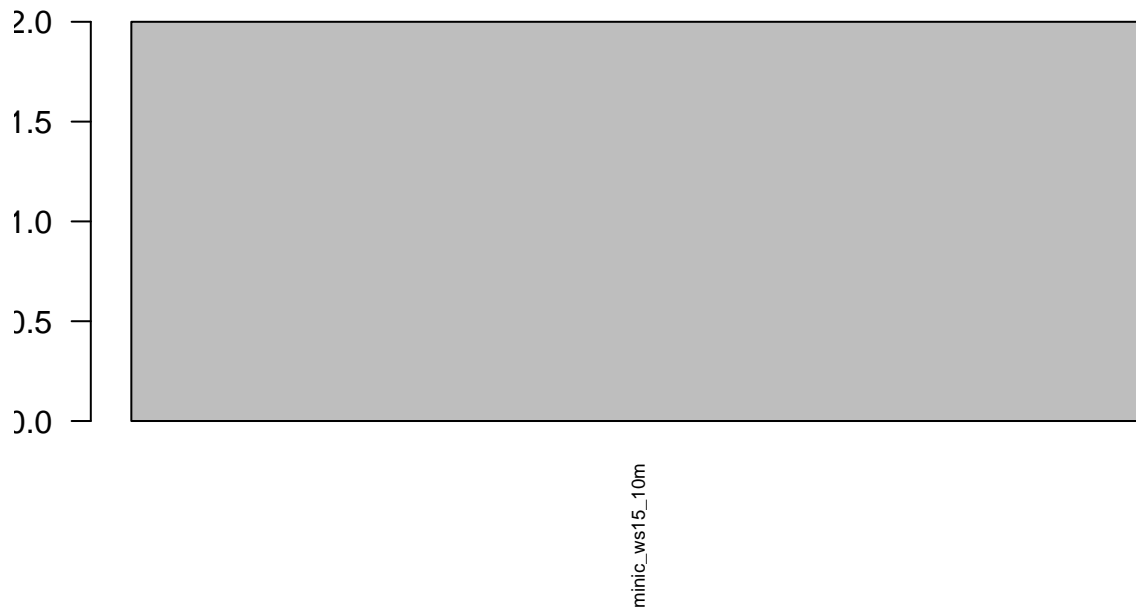
```



```

## [1] "Prediction error at end is: 0.453571428571429"
## [2] "Prediction error at end is: 0.510714285714286"
## [3] "Prediction error at end is: 0.503571428571429"
##                                     k 1
## 1                                terraintexture_hr_ws41_tp5
## 2 geom_hr_L50m_fl1_rplipdominance_UE_hr_20cells_hr
## 3    geom_hr_L3_fl1_rpliprichness_UE_hr_5cells_hr
##                                     k 2                                     k 3
## 1          Channel_Network_Base_Level_hr          TRI_hr_ws42
## 2 geom_hr_L50m_fl10_rplipmps_UE_hr_20cells_hr profc_DTM_50m_avg_ws7_50m
## 3          longc_ws11_10m    vectorruggedness_hr_ws33
##                                     k 4
## 1          maxic_ws5_hr_hr
## 2          minic_ws15_10m
## 3 geom_hr_L50m_fl10_rplipedgedensity_UE_hr_5cells_hr
##                                     k 5
## 1          minic_ws15_10m
## 2 geom_hr_L50m_fl10_rplipshannon_UE_hr_20cells_hr
## 3          vectorruggedness_hr_ws43

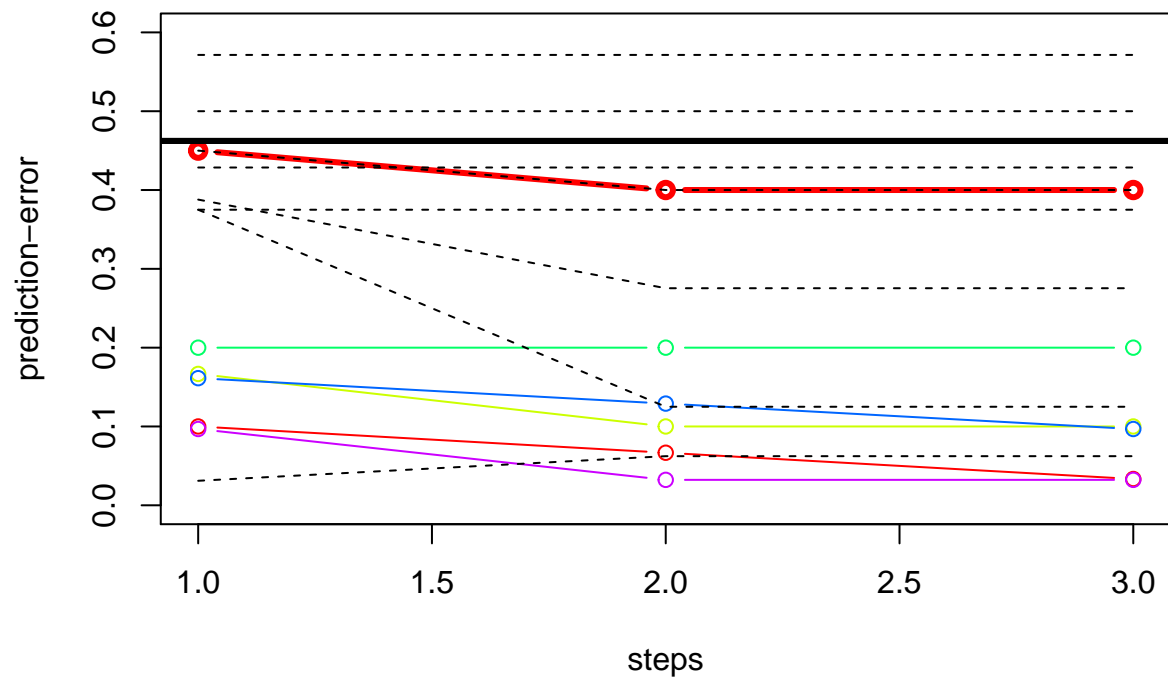
```



```
##          allchosen Freq
## 9 minic_ws15_10m      2
```

```
roughness SBintern
```

```
evaluateforwardCV_anyerror(mypath=paste(proj2path,"data2017/temprdata/ranfor_SBintern_SGU_kartiert_roug
```



```
## [1] "Prediction error at end is: 0.45" "Prediction error at end is: 0.4"
```

```
## [3] "Prediction error at end is: 0.4"
```

```
##                                     k 1
```

```
## 1                                terraintexture_hr_ws41_tp5
```

```
## 2      geom_hr_L50m_fl10_rplipsimpson_UE_hr_60cells_hr
```

```
## 3 geom_hr_L50m_fl1_rplipatchdensity_UE_hr_5cells_hr
```

```
##                                     k 2
```

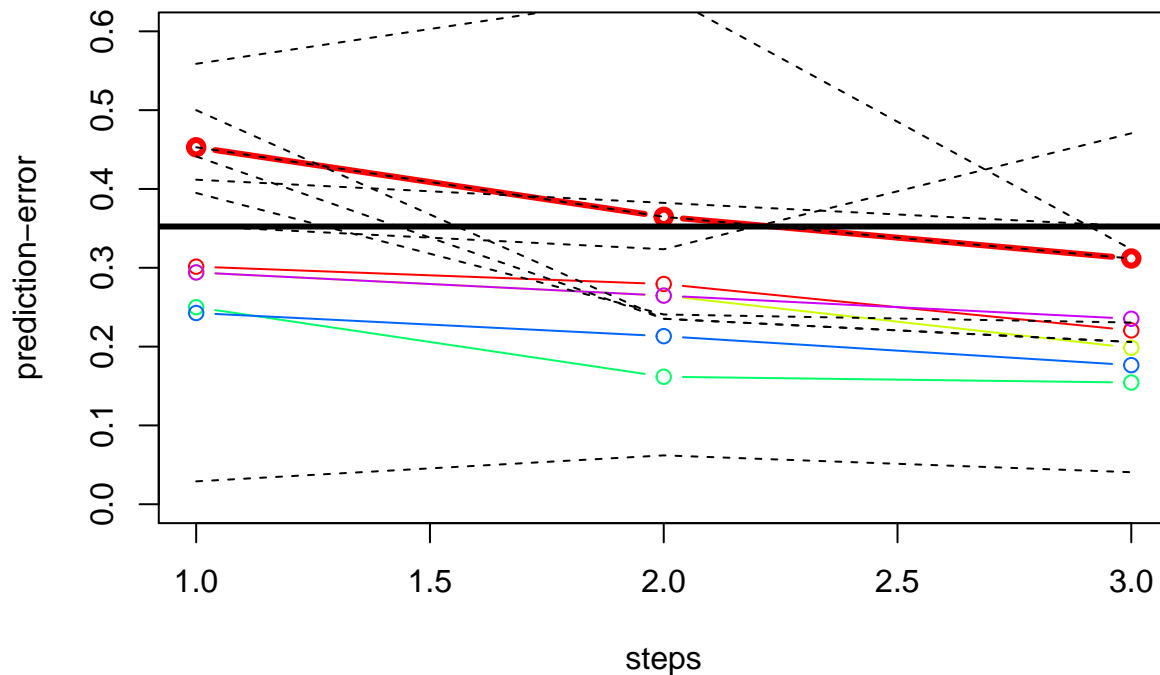
```

## 1 geom_hr_L50m_fl10_rplipdominance_UE_hr_10cells_hr
## 2 vectorruggedness_hr_ws51
## 3 geom_hr_L3_fl10_rpliprichness_UE_hr_20cells_hr
## k 3
## 1 geom_hr_L3_fl10_rplipmps_UE_hr_5cells_hr
## 2 geom_hr_L3_fl10_rlippatchdensity_UE_hr_5cells_hr
## 3 geom_hr_L3_fl10_rlippatchnum_UE_hr_5cells_hr
## k 4
## 1 terraintexture_hr_ws29_tp5
## 2 terraintexture_hr_ws29_tp25
## 3 terraintexture_hr_ws13_tp25
## k 5
## 1 geom_hr_L50m_fl10_rplipshannon_UE_hr_60cells_hr
## 2 TRI_hr_ws27
## 3 TRI_hr_ws22

## [1] allchosen Freq
## <0 rows> (or 0-length row.names)

```

Allpreds till (richtig vs falsch)



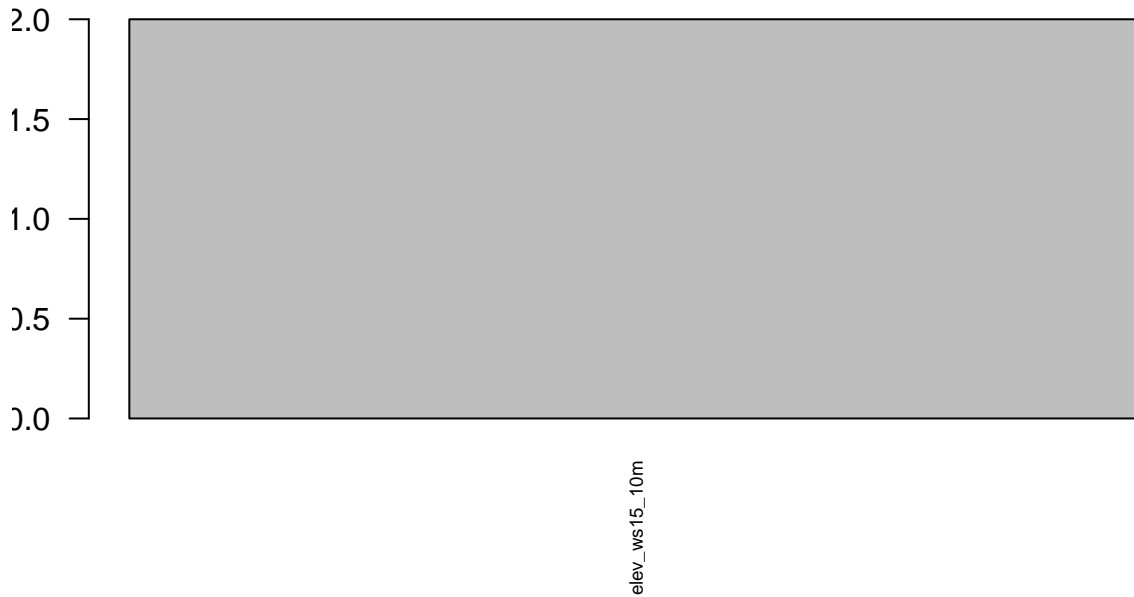
```

## [1] "Prediction error at end is: 0.452941176470588"
## [2] "Prediction error at end is: 0.364705882352941"
## [3] "Prediction error at end is: 0.311764705882353"

## k 1 k 2
## 1 maxic_DTM_50m_avg_ws3_50m Longitudinal_Curvature_50m
## 2 elev_ws11_10m elev_ws15_10m
## 3 slope_DTM_50m_avg_ws5_50m vectorstrength_hr_ws51_hr
## k 3
## 1 elev_ws15_10m
## 2 TWI_10m
## 3 geom_hr_L50m_fl10_rplipshannon_UE_hr_40cells_hr
## k 4
## 1 geom_hr_L3_fl10_rlippatchdensity_UE_hr_20cells_hr

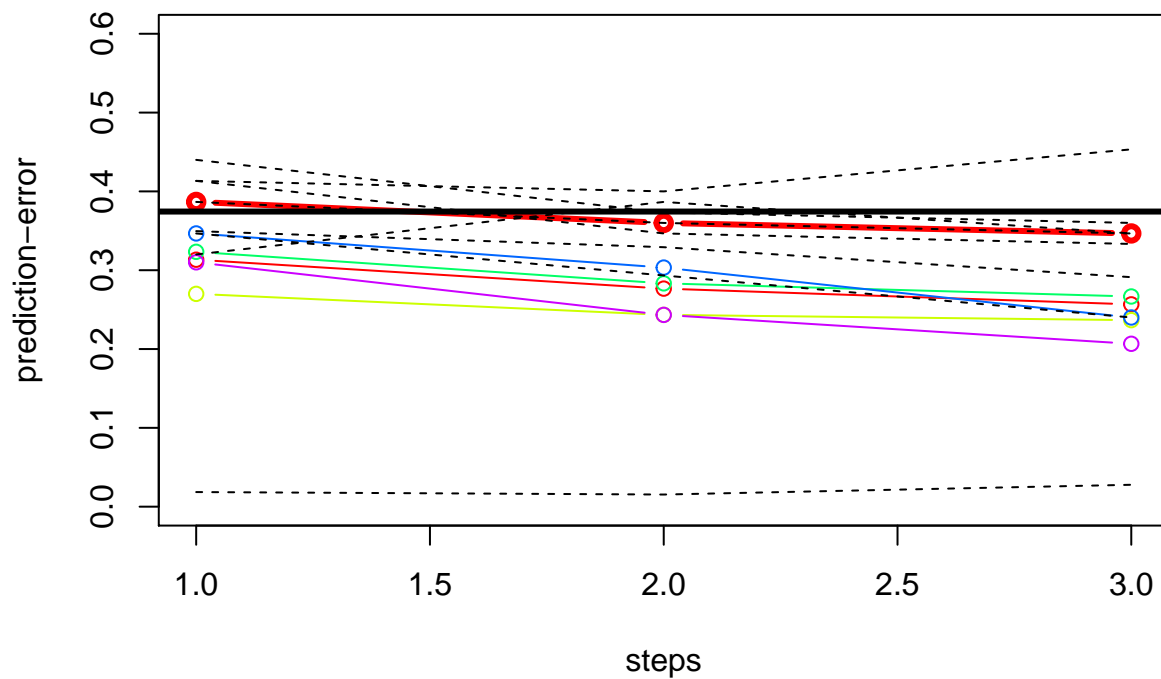
```

```
## 2 geom_hr_L50m_fl1_rplipatchdensity_UE_hr_20cells_hr
## 3 elev_ws3_10m
## k 5
## 1 geom_hr_L3_fl10_rplipshannon_UE_hr_20cells_hr
## 2 longc_ws3_hr_hr
## 3 crosc_DTM_50m_avg_ws11_50m
```



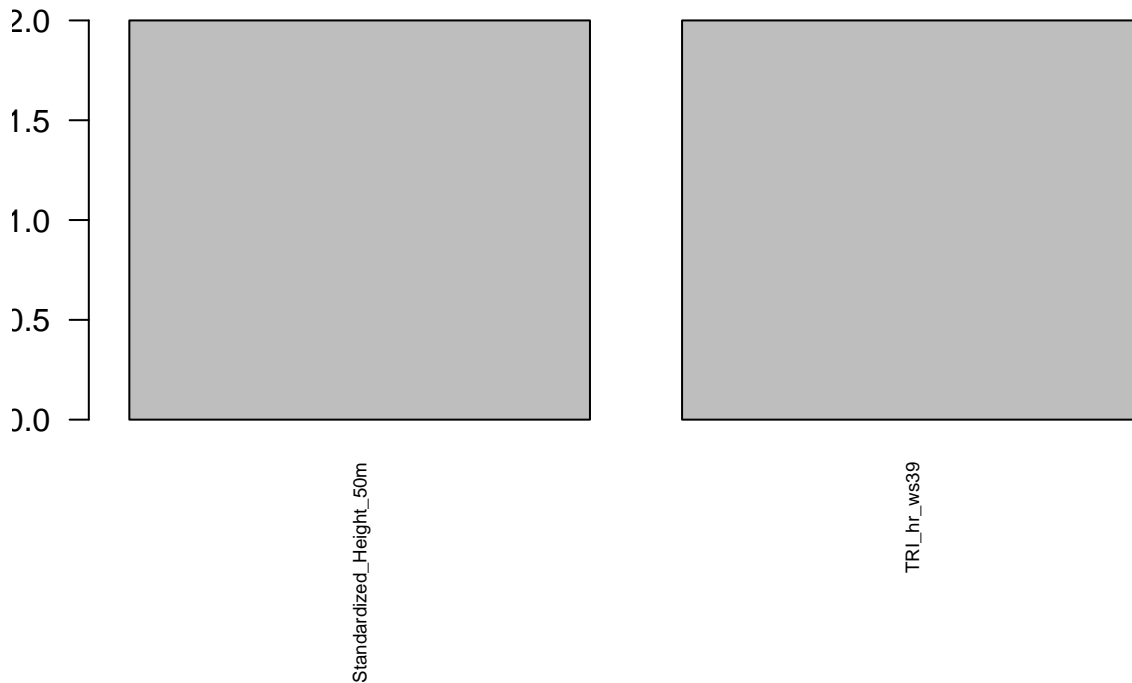
```
## allchosen Freq
## 3 elev_ws15_10m 2
```

Allpreds tillornot



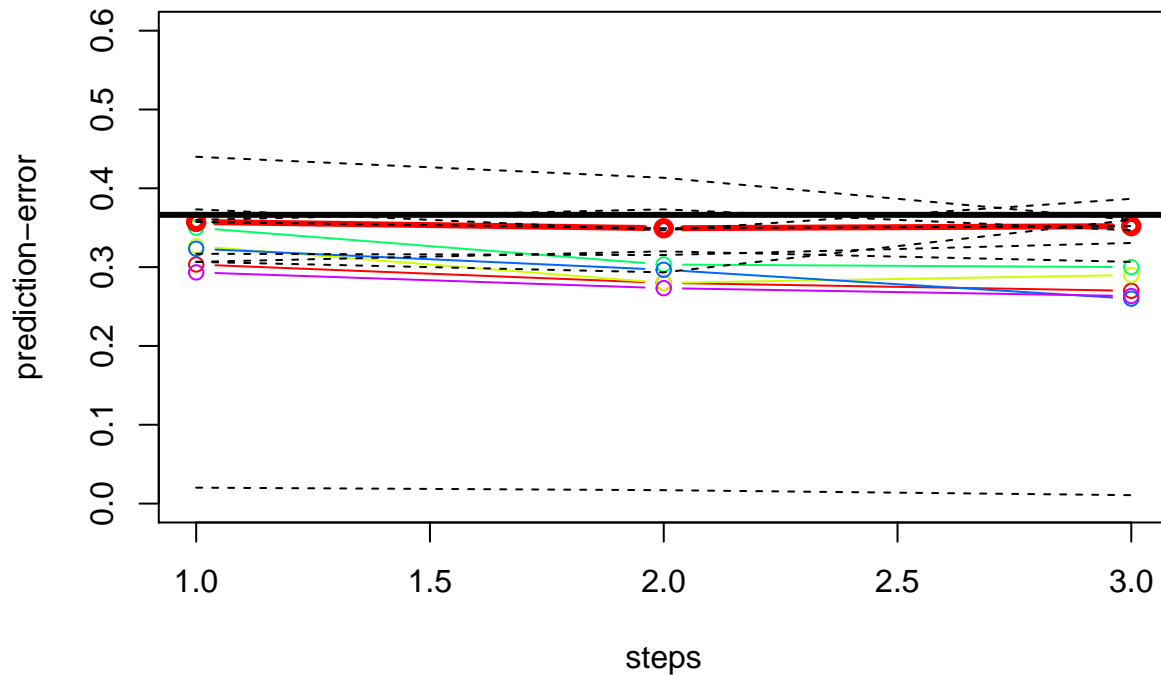
```
## [1] "Prediction error at end is: 0.386666666666667"
## [2] "Prediction error at end is: 0.36"
```

```
## [3] "Prediction error at end is: 0.346666666666667"
##                               k 1                               k 2
## 1          TRI_hr_ws39                               TRI_hr_ws39
## 2    MaximalCurvature_10m                               elev_ws3_10m
## 3 Standardized_Height_50m geom_hr_L50m_fl10_rpliprichness_UE_hr_60cells_hr
##                               k 3
## 1                               Slope_50m
## 2 geom_hr_L3_fl10_rpliprichness_UE_hr_60cells_hr
## 3 geom_hr_L50m_fl1_rpliprichness_UE_hr_40cells_hr
##                               k 4                               k 5
## 1          slope_ws5_hr_hr          slope_ws19_hr_hr
## 2 Modified_Catchment_Area_50m Standardized_Height_50m
## 3    slope_DTM_50m_avg_ws9_50m          Convexity_50m
```

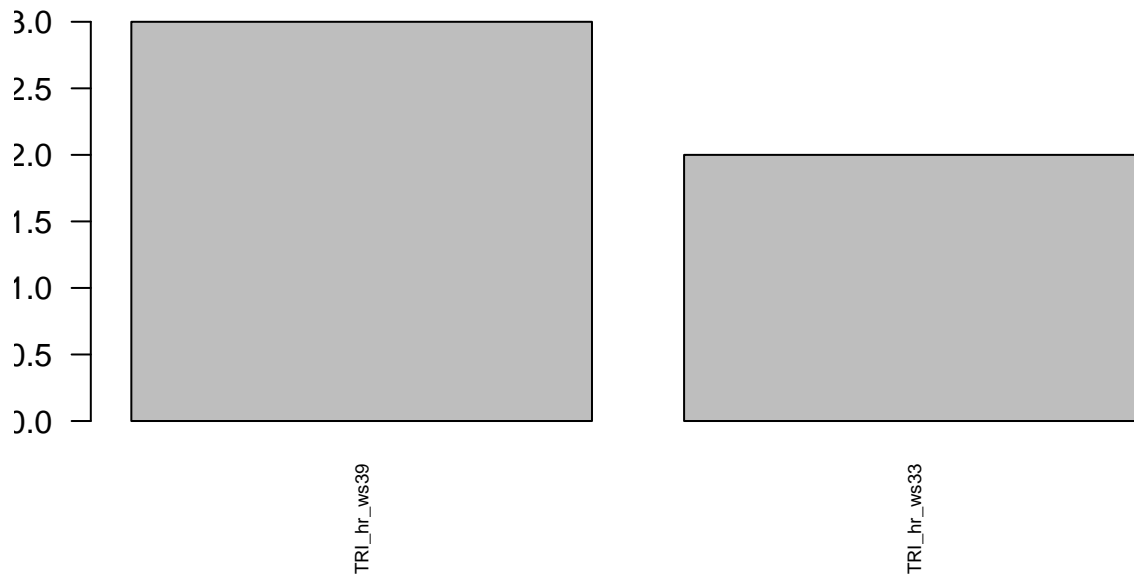


```
##                               allchosen Freq
## 12 Standardized_Height_50m          2
## 13          TRI_hr_ws39          2
```

roughness tillornot

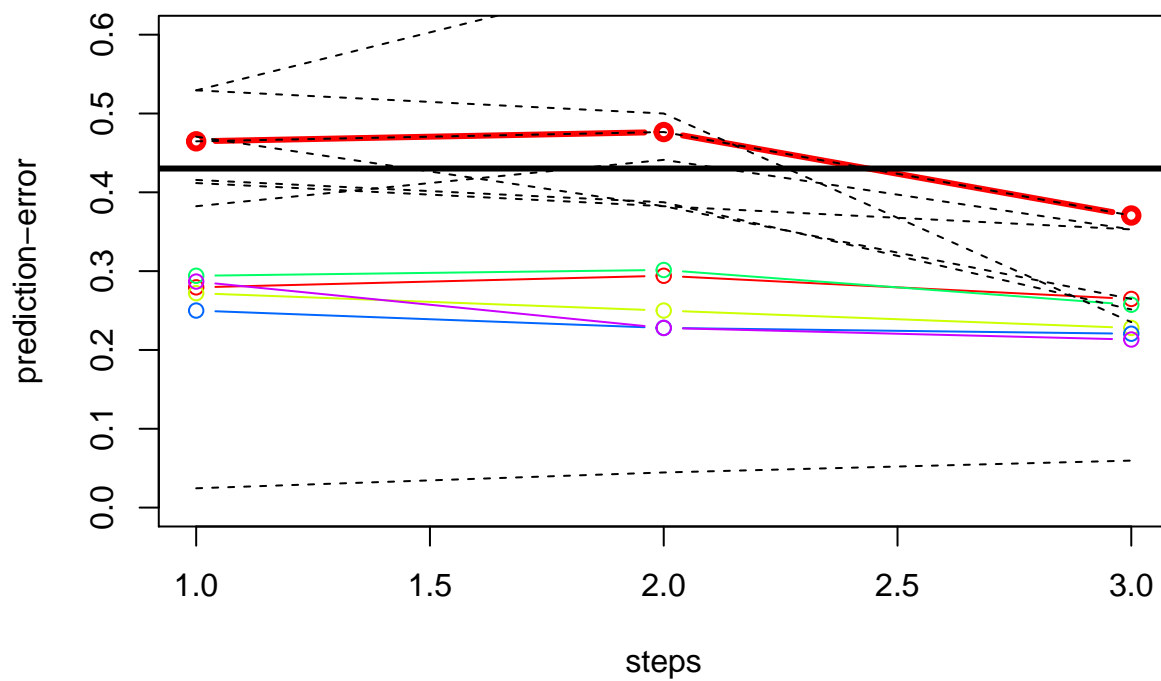


```
## [1] "Prediction error at end is: 0.357333333333333"
## [2] "Prediction error at end is: 0.349333333333333"
## [3] "Prediction error at end is: 0.352"
##                                     k 1
## 1                                TRI_hr_ws39
## 2 geom_hr_L50m_fl10_rpliprichness_UE_hr_60cells_hr
## 3      geom_hr_L3_fl1_rplipshape_UE_hr_60cells_hr
##                                     k 2      k 3
## 1                                TRI_hr_ws33 TRI_hr_ws28
## 2                                dtm_hr_TEXTURE_r30 TRI_hr_ws33
## 3 geom_hr_L50m_fl10_rplipshannon_UE_hr_60cells_hr Texture_50m
##                                     k 4
## 1                                TRI_hr_ws39
## 2 geom_hr_L3_fl1_rplipedgedensity_UE_hr_5cells_hr
## 3      terraintexture_hr_ws53_t1
##                                     k 5
## 1                                TRI_hr_ws39
## 2                                fischerk_ws3_hr
## 3 geom_hr_L3_fl1_rplipdominance_UE_hr_60cells_hr
```

```
##      allchosen Freq
## 12 TRI_hr_ws39    3
## 11 TRI_hr_ws33    2
```

roughness till (richtig vs falsch)

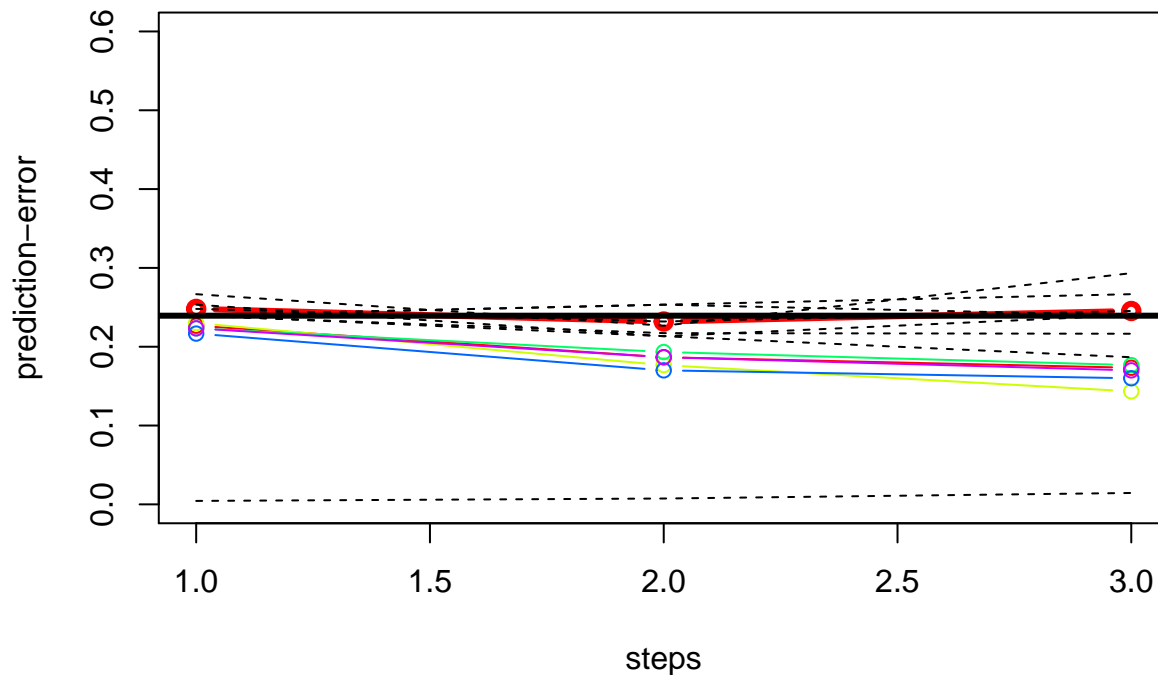


```
## [1] "Prediction error at end is: 0.464705882352941"
## [2] "Prediction error at end is: 0.476470588235294"
## [3] "Prediction error at end is: 0.370588235294118"
##                                     k 1                                     k 2
## 1          terraintexture_hr_ws57_tp25          TRI_hr_ws21
## 2          fischerk_ws57_hr          TRI_hr_ws12
## 3 geom_hr_L3_fl10_rplipsimpson_UE_hr_60cells_hr vectorstrength_hr_ws61_hr
##                                     k 3
## 1          terraintexture_hr_ws29_tp25
```

```
## 2 geom_hr_L50m_fl10_rpliprichness_UE_hr_60cells_hr
## 3 fischerk_ws61_hr
## k 4
## 1 geom_hr_L3_fl1_rplipdominance_UE_hr_40cells_hr
## 2 fischerk_ws9_hr
## 3 geom_hr_L50m_fl1_rplipdominance_UE_hr_40cells_hr
## k 5
## 1 geom_hr_L3_fl10_rplipmps_UE_hr_20cells_hr
## 2 Texture_50m
## 3 geom_hr_L3_fl10_rplipshape_UE_hr_40cells_hr

## [1] allchosen Freq
## <0 rows> (or 0-length row.names)
```

Hier tillornot mit SGU_gk allpreds



```
## [1] "Prediction error at end is: 0.248"
## [2] "Prediction error at end is: 0.232"
## [3] "Prediction error at end is: 0.24533333333333333"

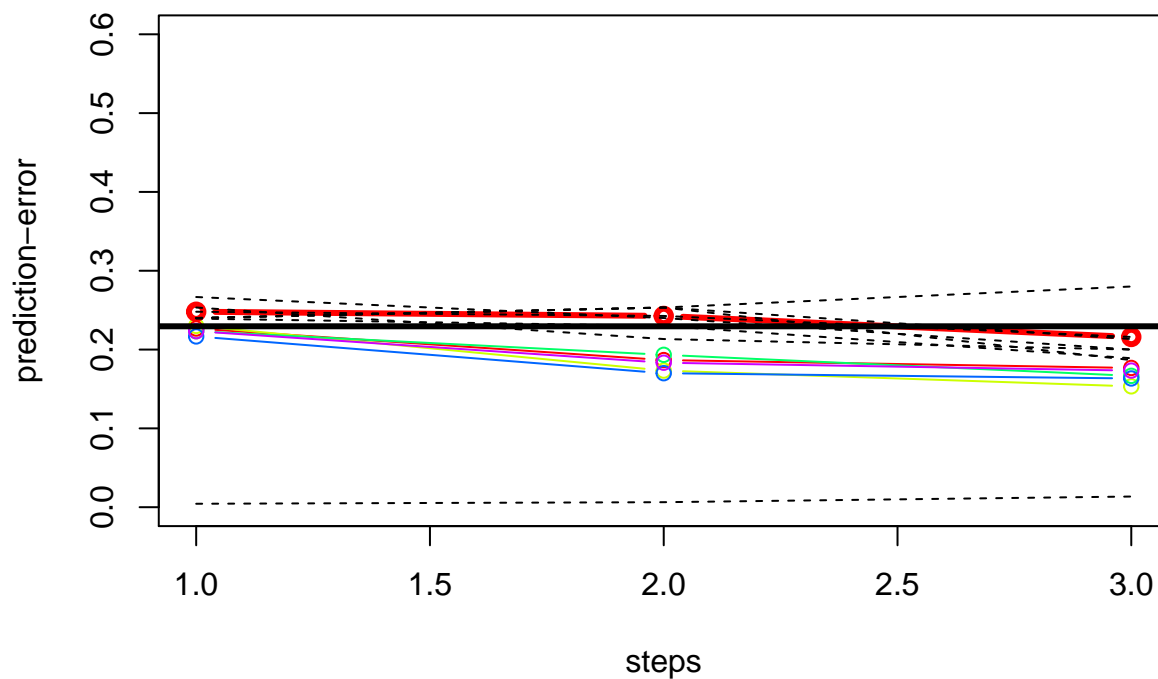
## k 1
## 1 SGU_gk
## 2 fischerk_ws35_hr
## 3 profc_DTM_50m_avg_ws11_50m

## k 2
## 1 SGU_gk
## 2 TRI_hr_ws21
## 3 geom_hr_L50m_fl1_rplipdominance_UE_hr_20cells_hr

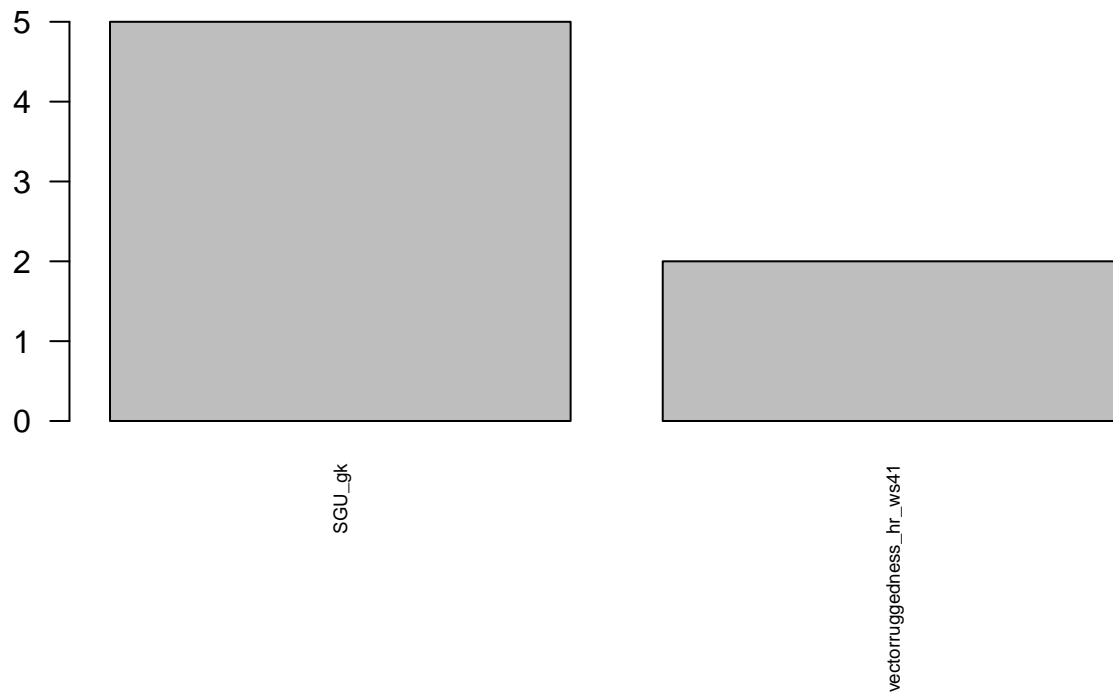
## k 3 k 4 k 5
## 1 SGU_gk SGU_gk SGU_gk
## 2 TRI_hr_ws40 TRI_hr_ws32 TRI_hr_ws31
## 3 vectorruggedness_hr_ws41 longc_ws7_10m fischerk_ws37_hr
```



```
## allchosen Freq
## 6 SGU_gk 5
tillornot mit SGU_gk roughness
```

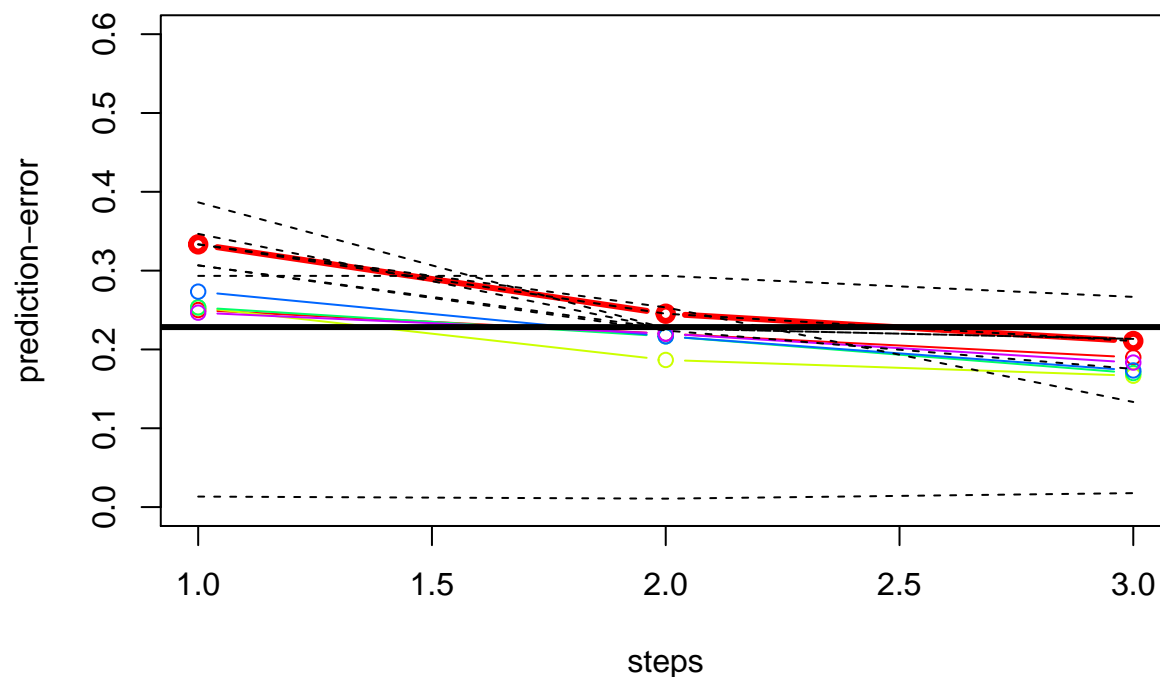


```
## [1] "Prediction error at end is: 0.248"
## [2] "Prediction error at end is: 0.2426666666666667"
## [3] "Prediction error at end is: 0.216"
##          k 1          k 2          k 3
## 1          SGU_gk          SGU_gk          SGU_gk
## 2 fischerk_ws35_hr          TRI_hr_ws21          TRI_hr_ws40
## 3          TRI_hr_ws12 vectorruggedness_hr_ws41 vectorruggedness_hr_ws41
##          k 4          k 5
## 1          SGU_gk          SGU_gk
## 2          TRI_hr_ws32 vectorstrength_hr_ws55_hr
## 3 geom_hr_L3_fl1_rplipshannon_UE_hr_60cells_hr          TRI_hr_ws34
```



```
##          allchosen Freq
## 3          SGU_gk    5
## 9 vectorruggedness_hr_ws41    2
```

slopedeposits or not allpreds

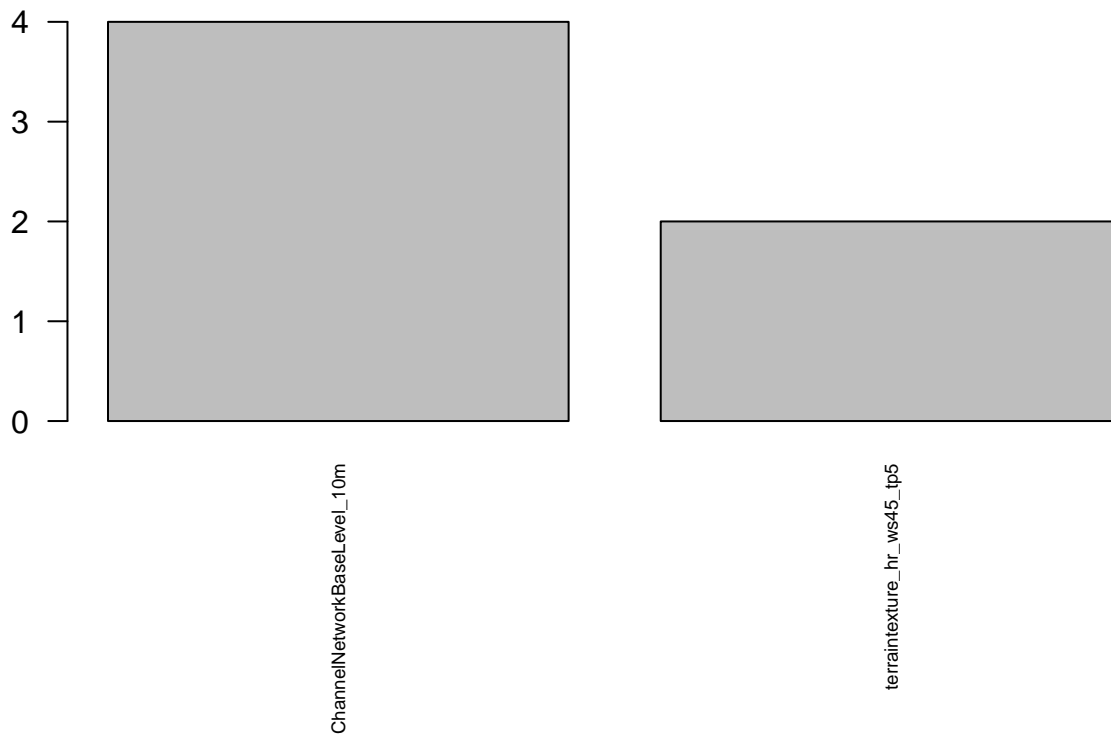


```
## [1] "Prediction error at end is: 0.3333333333333333"
## [2] "Prediction error at end is: 0.2453333333333333"
## [3] "Prediction error at end is: 0.2106666666666667"
##          k 1          k 2
## 1  terraintexture_hr_ws45_tp5  LS_Factor_50m
```

```

## 2          TRI_hr_ws35      elev_ws15_10m
## 3 ChannelNetworkBaseLevel_10m Catchment_Area_hr
##          k 3
## 1          TRI_hr_ws33
## 2 ChannelNetworkBaseLevel_10m
## 3          Minimal_Curvature_50m
##          k 4
## 1 geom_hr_L3_fl10_rpliprichness_UE_hr_60cells_hr
## 2          ChannelNetworkBaseLevel_10m
## 3          TRI_hr_ws16
##          k 5
## 1  terraintexture_hr_ws45_tp5
## 2 ChannelNetworkBaseLevel_10m
## 3          MassBalanceIndex_10m

```

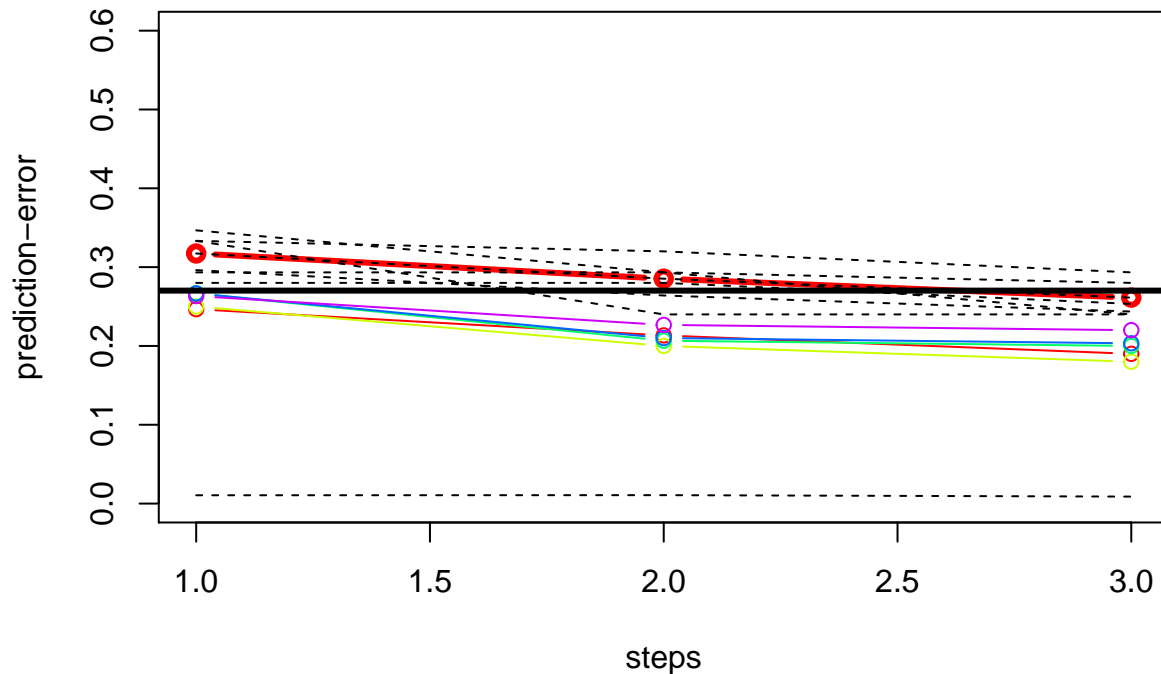


```

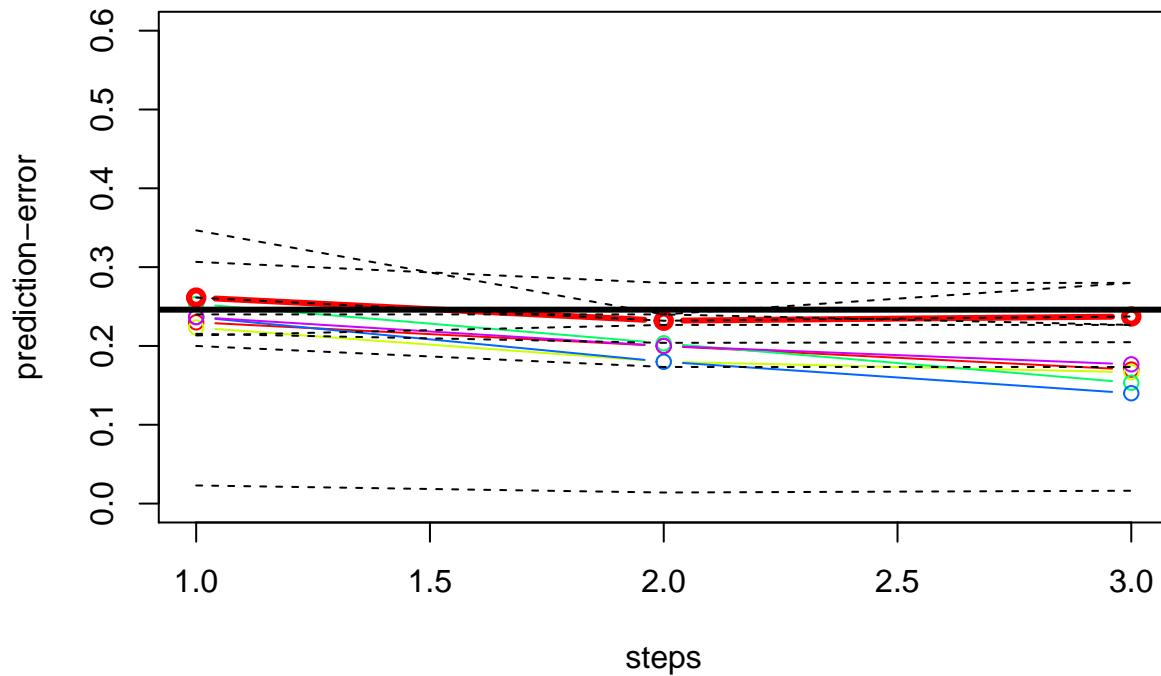
##          allchosen Freq
## 2 ChannelNetworkBaseLevel_10m 4
## 8  terraintexture_hr_ws45_tp5 2

```

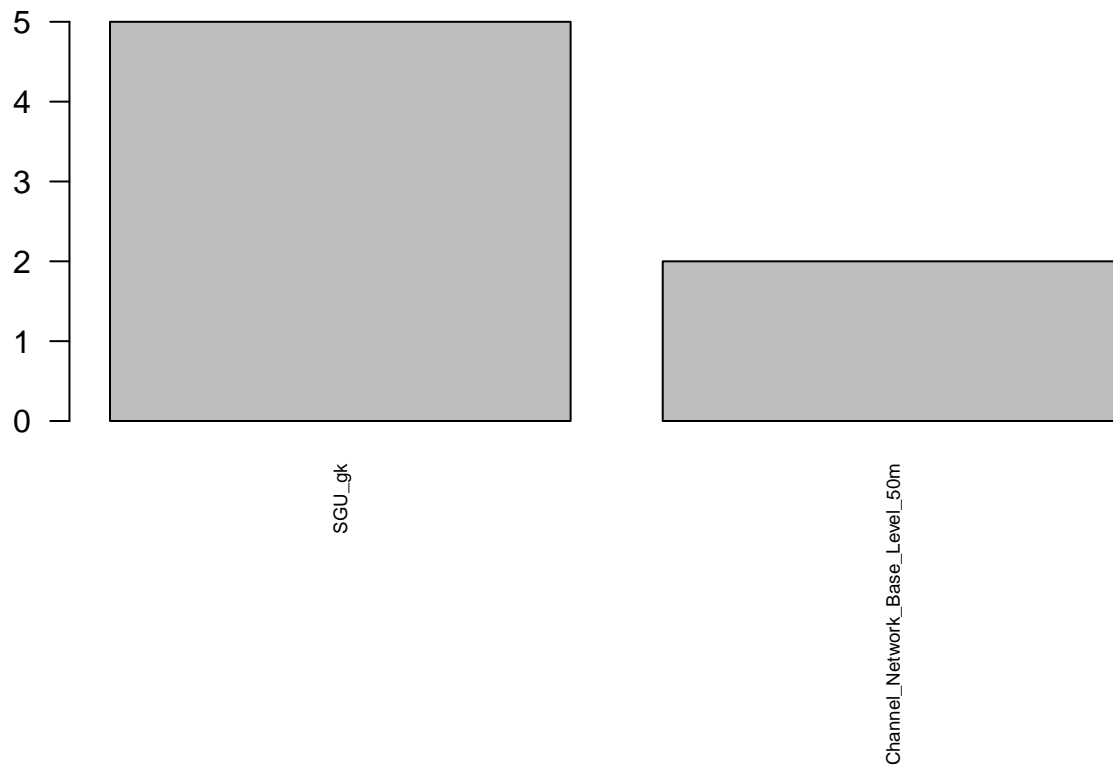
slopedeposits or not roughness



```
## [1] "Prediction error at end is: 0.317333333333333"
## [2] "Prediction error at end is: 0.285333333333333"
## [3] "Prediction error at end is: 0.261333333333333"
##
##                                k 1
## 1                                TRI_hr_ws29
## 2                                terraintexture_hr_ws53_t1
## 3 geom_hr_L50m_fl1_rplipmps_UE_hr_60cells_hr
##
##                                k 2
## 1                                TRI_hr_ws41
## 2 geom_hr_L50m_fl10_rpliprichness_UE_hr_10cells_hr
## 3 geom_hr_L3_fl10_rplipedgedensity_UE_hr_60cells_hr
##
##                                k 3
## 1                                terraintexture_hr_ws45_tp5
## 2                                TRI_hr_ws19
## 3 geom_hr_L50m_fl10_rpliprichness_UE_hr_20cells_hr
##
##                                k 4
## 1                                TRI_hr_ws39
## 2 geom_hr_L3_fl1_rpliprichness_UE_hr_40cells_hr
## 3                                TRI_hr_ws44
##
##                                k 5
## 1 geom_hr_L3_fl10_rpliprichness_UE_hr_60cells_hr
## 2                                TRI_hr_ws34
## 3 geom_hr_L50m_fl1_rplipshape_UE_hr_40cells_hr
##
## [1] allchosen Freq
## <0 rows> (or 0-length row.names)
slopedeposits or not rALLPREDS & SGU_gk
```

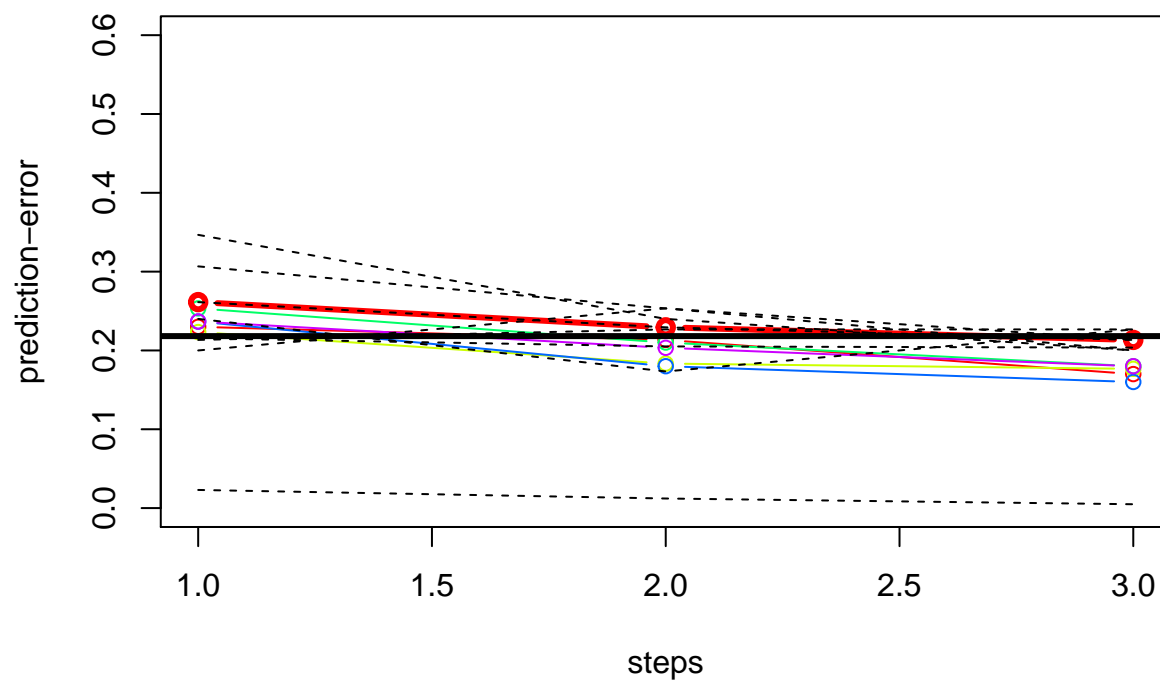


```
## [1] "Prediction error at end is: 0.261333333333333"
## [2] "Prediction error at end is: 0.232"
## [3] "Prediction error at end is: 0.237333333333333"
##          k 1          k 2          k 3
## 1          SGU_gk          SGU_gk          TRI_hr_ws33
## 2 Channel_Network_Base_Level_50m TRI_hr_ws46          SGU_gk
## 3   Relative_Slope_Position_50m elev_ws3_10m Convergence_Index_50m
##          k 4
## 1          SGU_gk
## 2 Channel_Network_Base_Level_50m
## 3   ChannelNetworkBaseLevel_10m
##          k 5
## 1          SGU_gk
## 2          MinimalCurvature_10m
## 3 geom_hr_L50m_fl1_rplipshape_UE_hr_60cells_hr
```



```
##          allchosen Freq
## 8          SGU_gk      5
## 2 Channel_Network_Base_Level_50m      2
```

slopedeposits or not roughness & SGU_gk



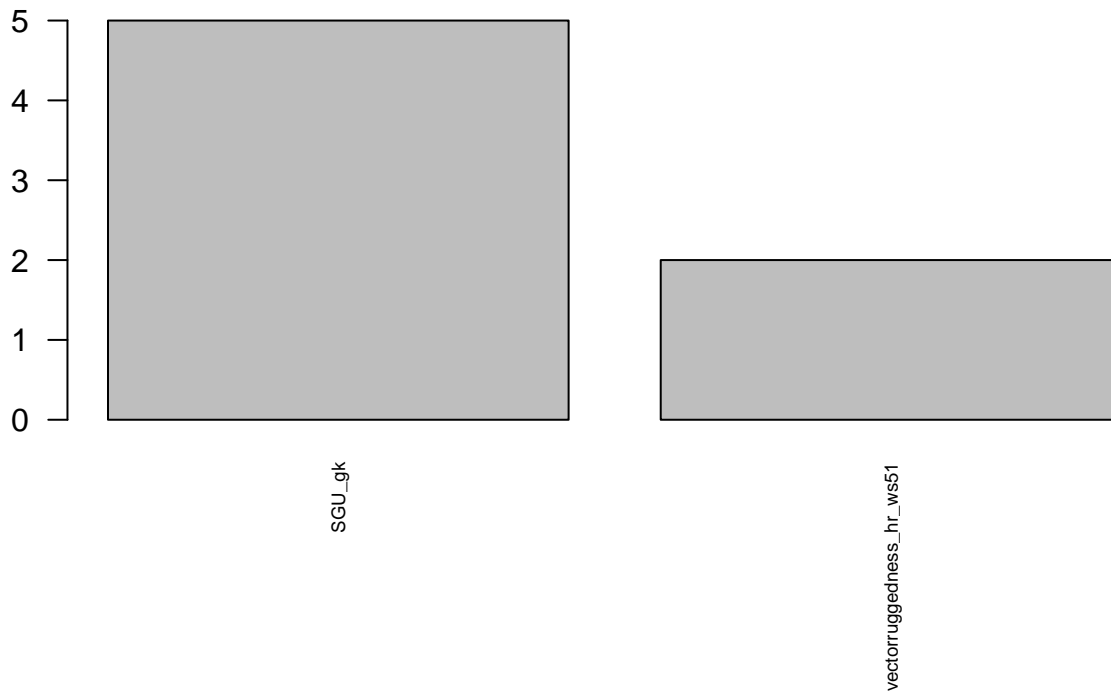
```
## [1] "Prediction error at end is: 0.261333333333333"
## [2] "Prediction error at end is: 0.229333333333333"
## [3] "Prediction error at end is: 0.213333333333333"
```



```

##                                k 1      k 2
## 1                                SGU_gk      SGU_gk
## 2                                TRI_hr_ws16 TRI_hr_ws46
## 3 geom_hr_L3_fl10_rplipedgedensity_UE_hr_20cells_hr TRI_hr_ws2
##                                k 3                                k 4
## 1                                TRI_hr_ws33                                SGU_gk
## 2                                SGU_gk                                vectorruggedness_hr_ws51
## 3 vectorruggedness_hr_ws55 geom_hr_L50m_fl10_rplipshannon_UE_hr_20cells_hr
##                                k 5
## 1                                SGU_gk
## 2 vectorruggedness_hr_ws51
## 3 vectorruggedness_hr_ws45

```



```

##          allchosen Freq
## 3          SGU_gk      5
## 9 vectorruggedness_hr_ws51      2

```