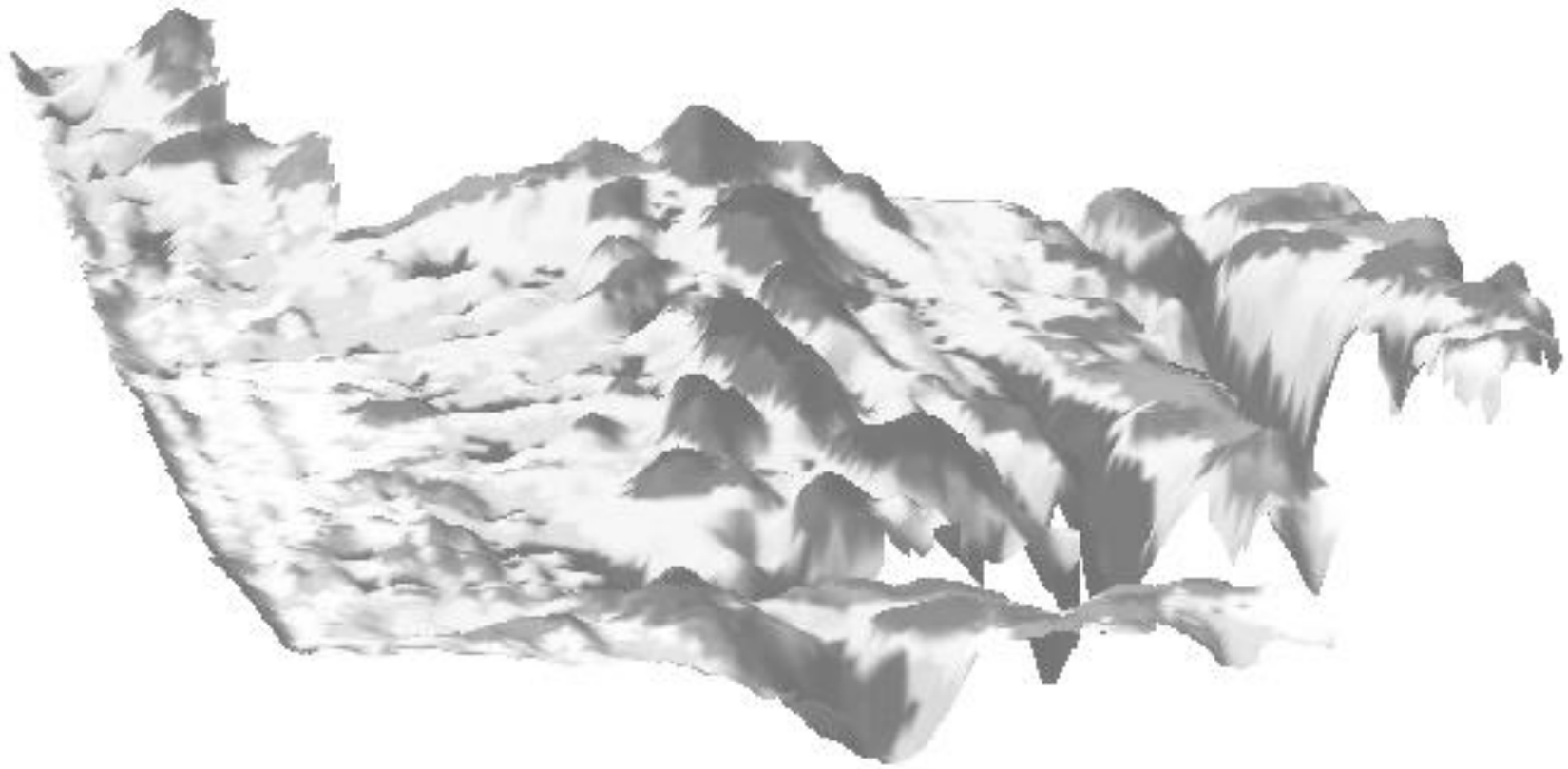
MARCH 31, 2016



Accuracy of Geomorphologic Phonotypes (Geomorphons) Technique IN GRASSGIS

TRAVIS VANOS

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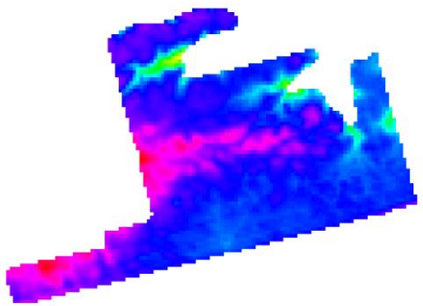
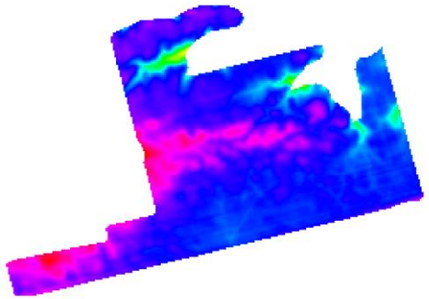
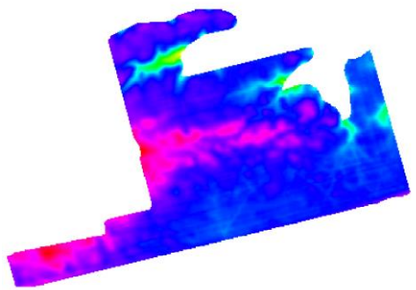
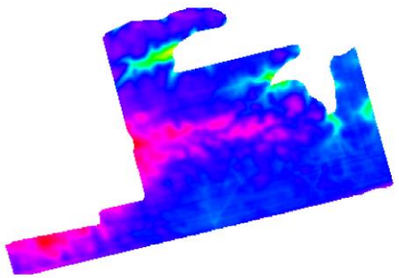
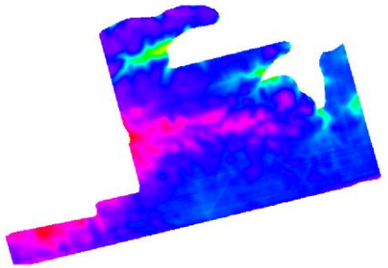
				

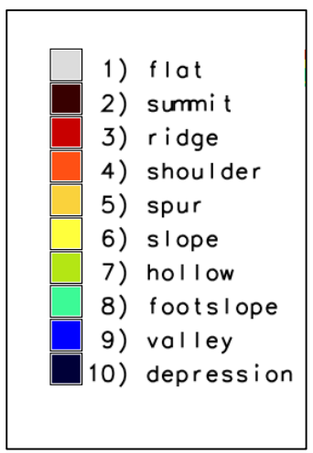


Figure 1 Symbology of Geomorphon classification (Default Grass)

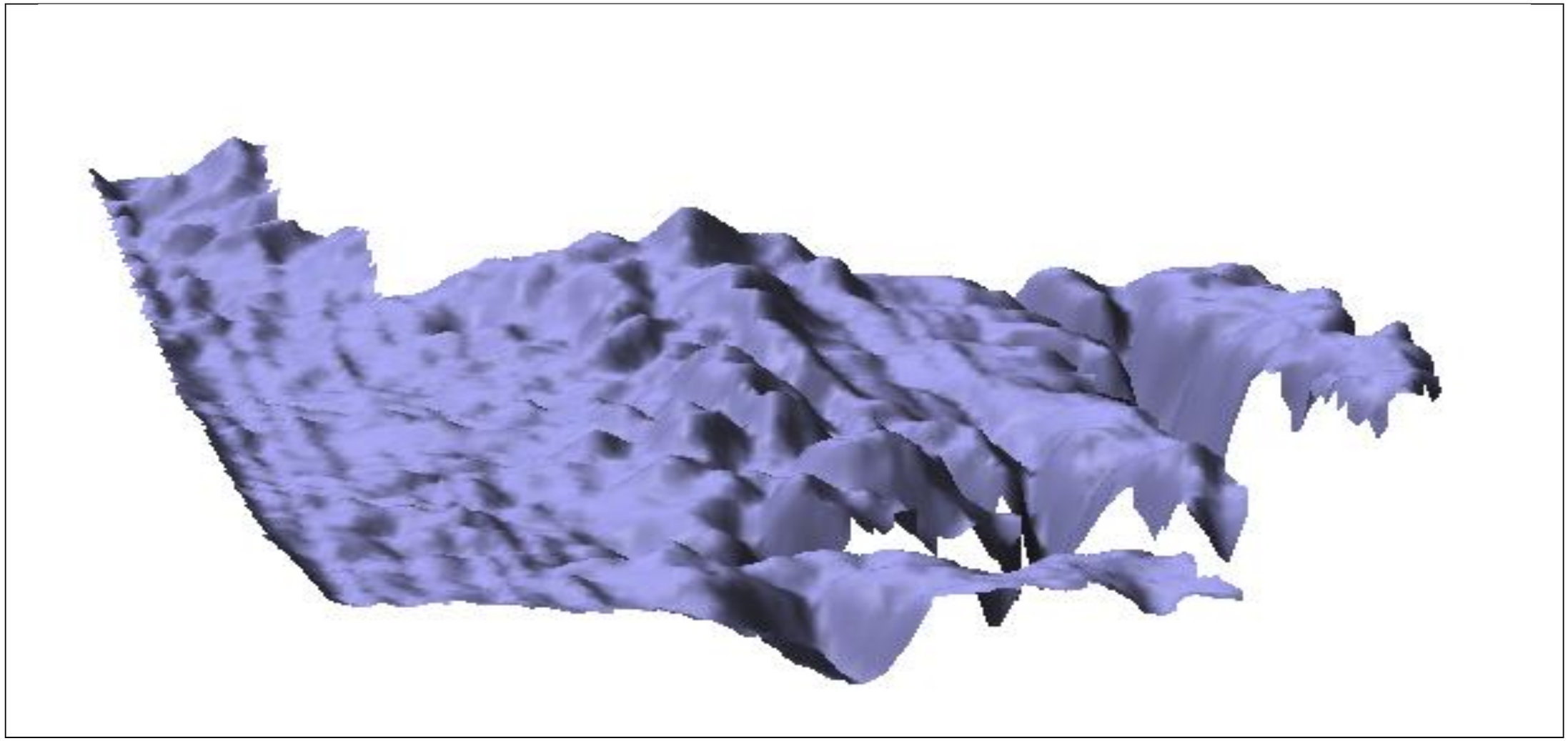


Figure 2 Exaggerated z Values Raw CulOwned 2011 Field DEM

R.Geomorphon Computational settings (Outer Search, Inner Search, Flatness, Flatness distance)

Figure 3 R.Geomorphon Options in GrassGIS

DEM

Input Digital Elevation Model. Data can be of any type and any projection. During calculation DEM is stored as floating point raster.

Search

Determines length on the geodesic distances in all eight directions where line-of-sight is calculated. To speed up calculation is determines only these cells which centers falls into the distance

Skip

Determines length on the geodesic distances at the beginning of calculation all eight directions where line-of-sight is yet calculated. To speed up calculation this distance is always recalculated into number of cell which are skipped at the begining of every line-of-sight and is equal in all direction. This parameter eliminates forms of very small extend, smaller than skip parameter.

Flat

The difference (in degrees) between zenith and nadir line-of-sight which indicate flat direction. If higher threshold produce more flat maps. If resolution of the map is low (more than 1 km per cell) threshold should be very small (much smaller than 1 degree) because on such distance 1 degree of difference means several meters of high difference.

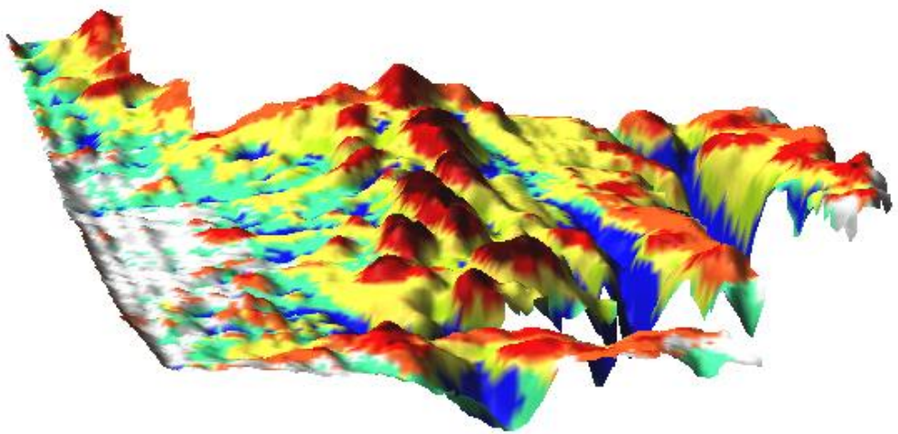
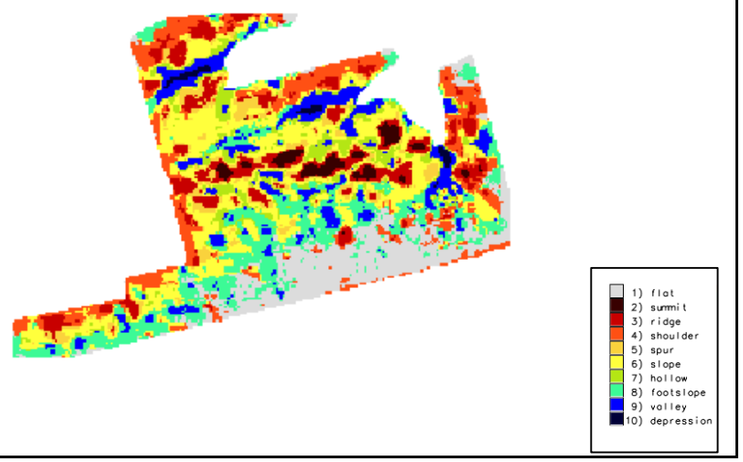
Distance

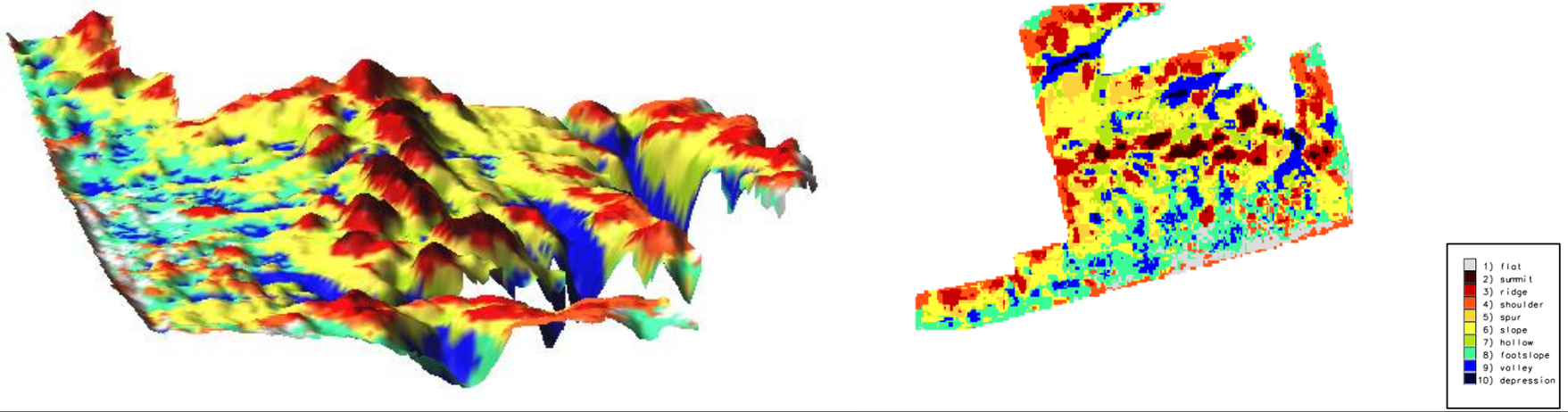
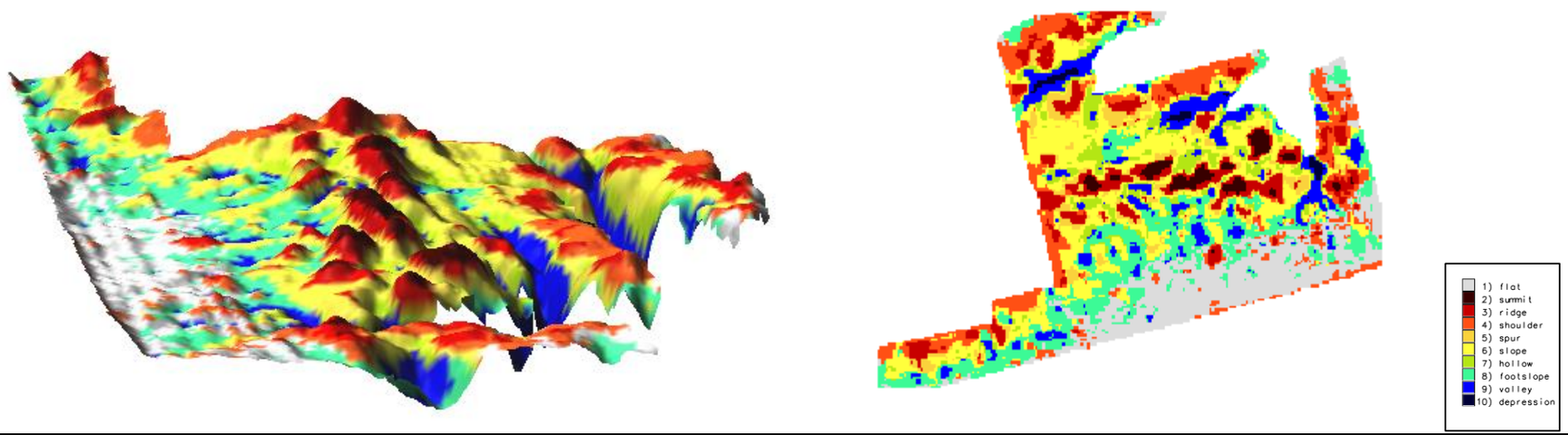
>Flat distance. This is additional parameter defining the distance above which the threshold starts to decrease to avoid problems with pseudo-flat line-of-sights if real elevation difference appears on the distance where its value is higher DO POPRAWKI

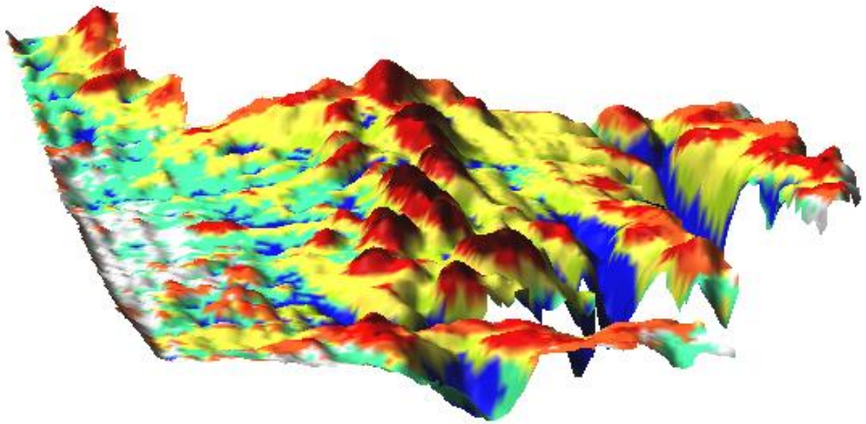
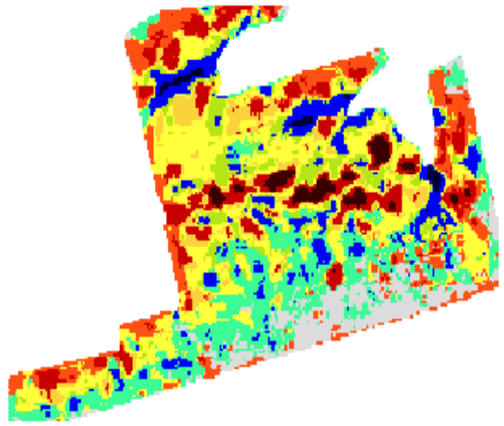
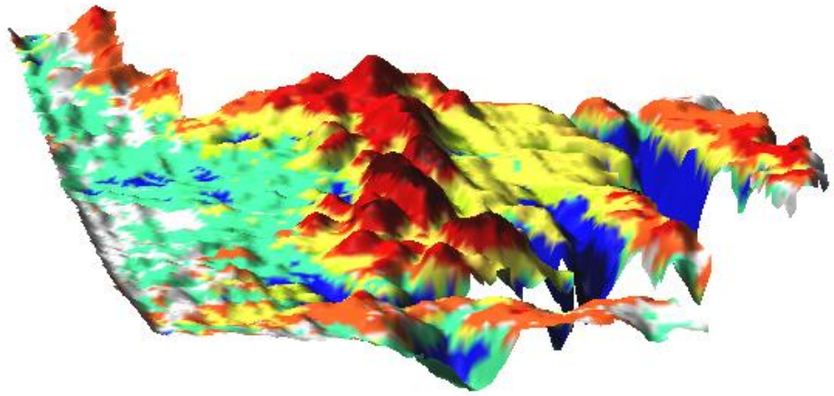
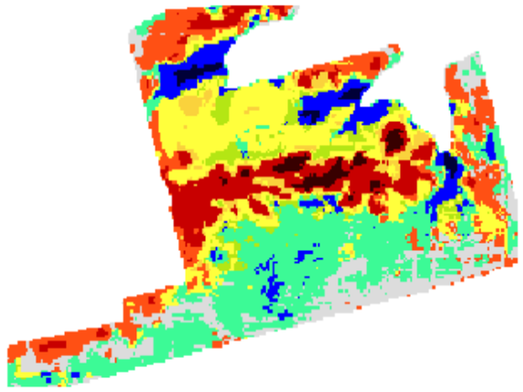
Accuracy of Geomorphon to Known Digital Elevation Model

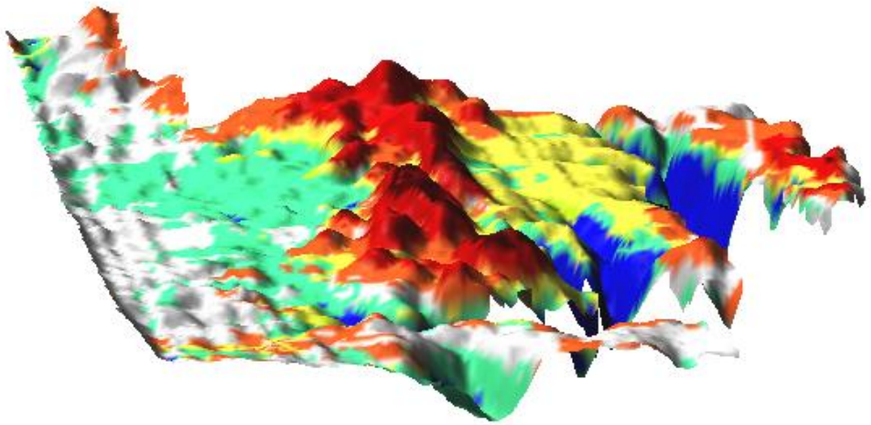
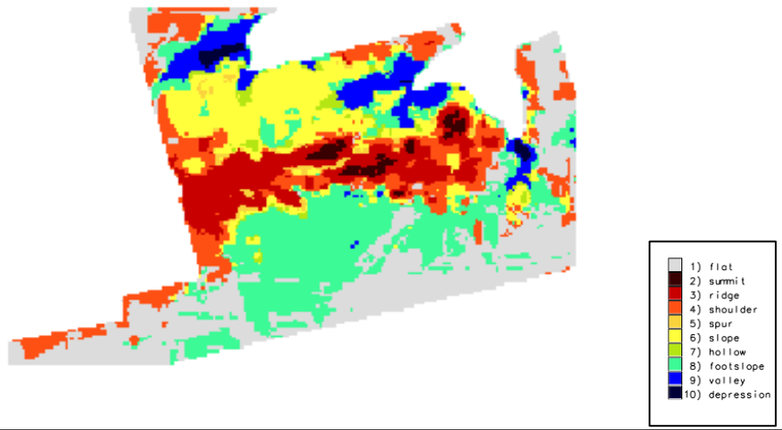
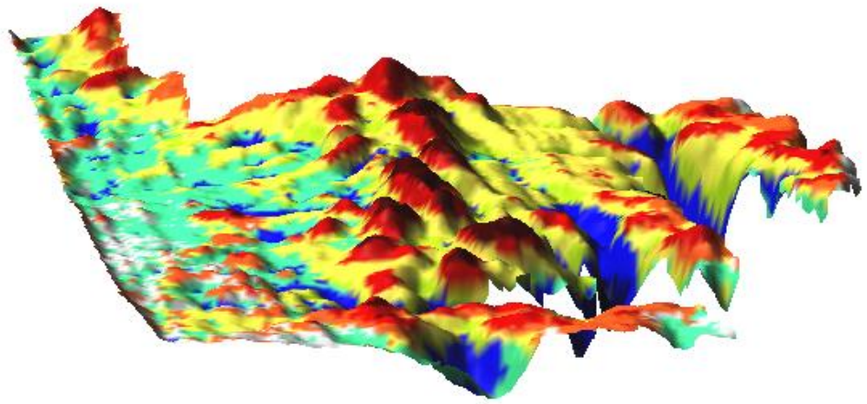
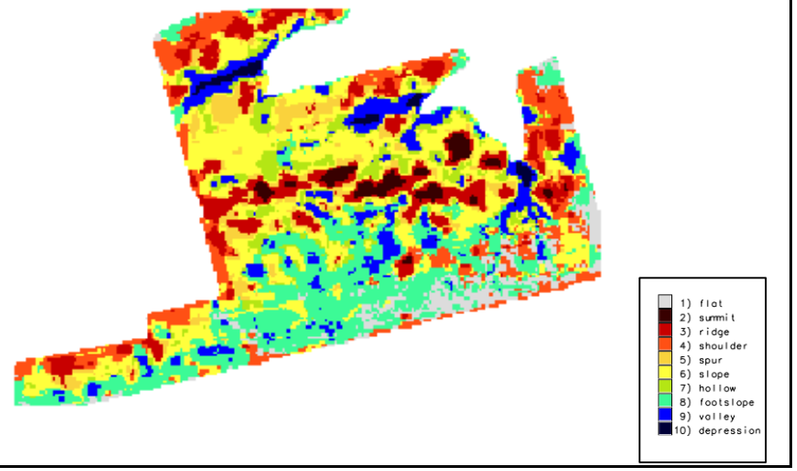
Kriged Data 2m resolution (Lag = 25, Lag Tolerance = 50, Min Neighbours = 20, Max Neighbours = 200)

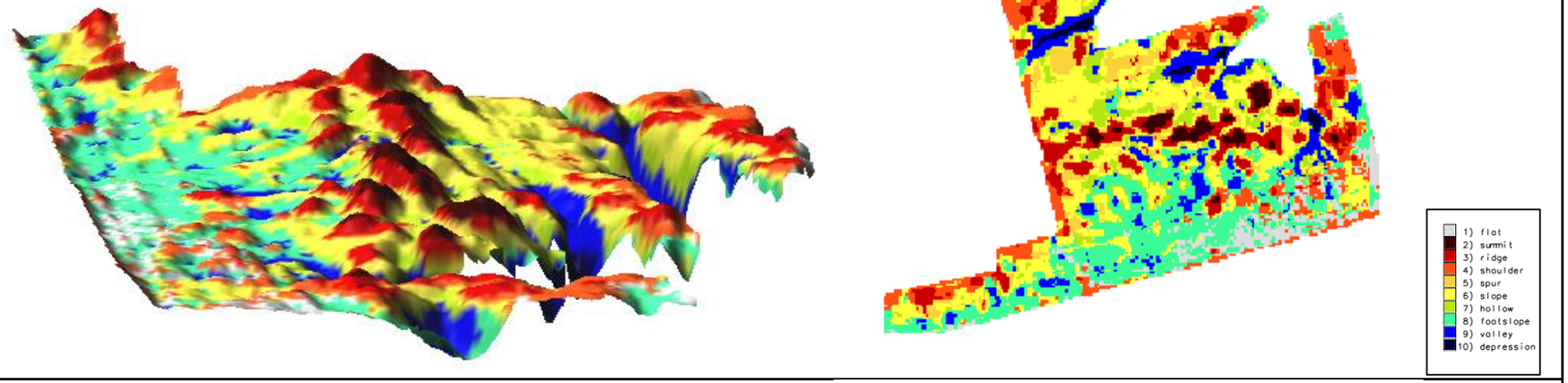
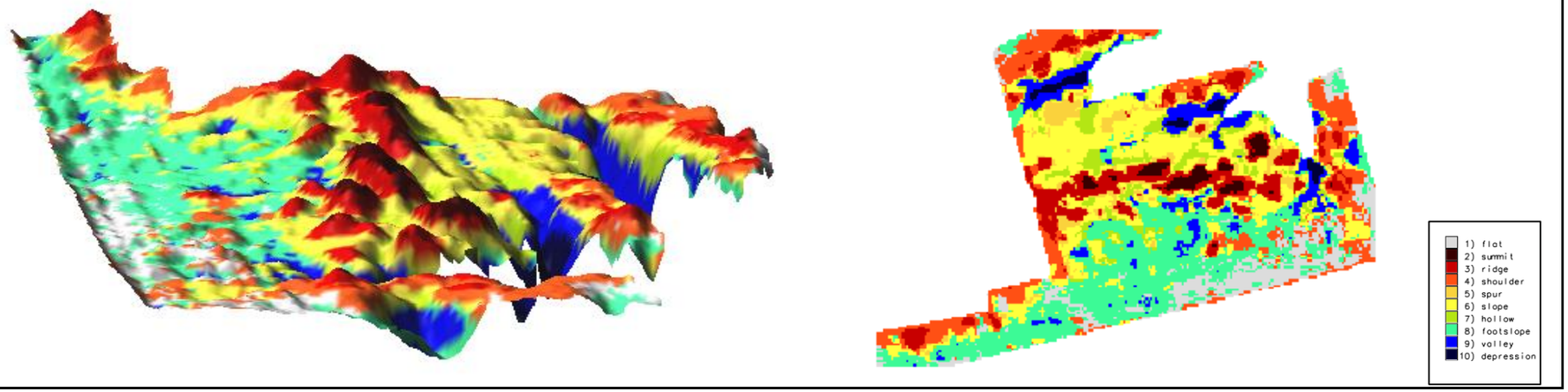
Table 2 2m Resolution 3D and 2D models

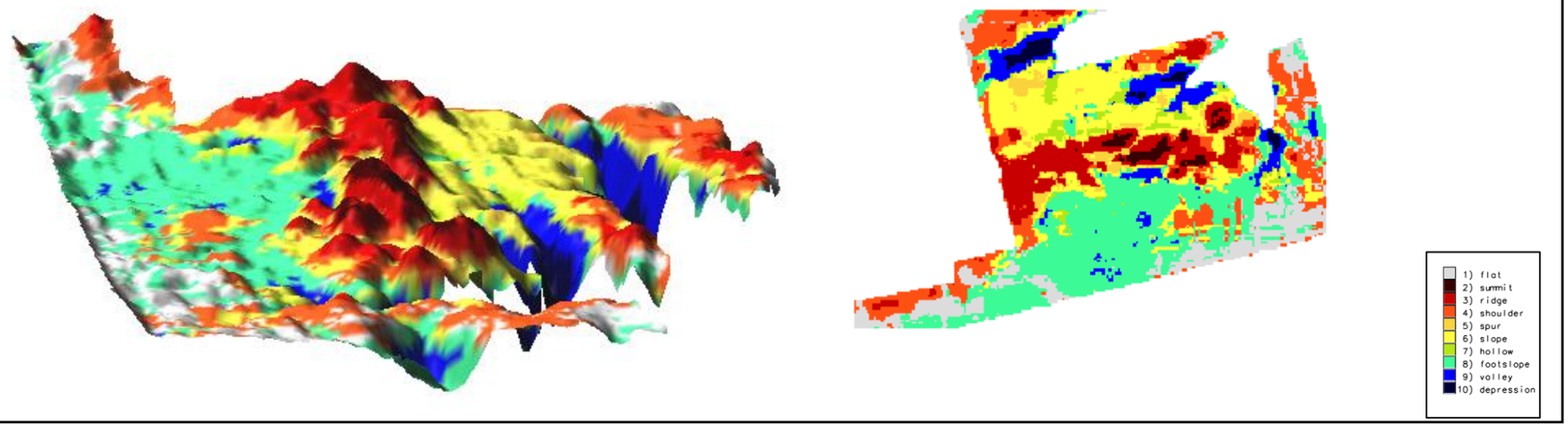
r.geomorphon Settings ***(Search, Skip, Flat, Distance)***	3D Model	Geomorphon 2D model
150 25 1 75		

200 25 1 50	
250 25 1 25	

250 25 1 75		
250 55 1 75		

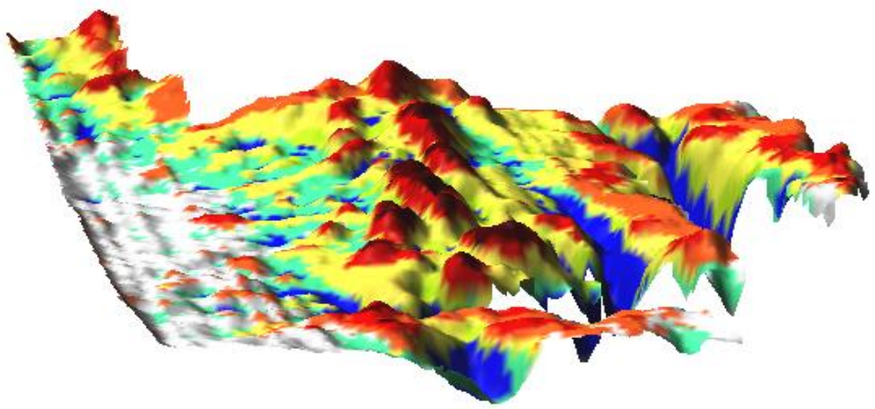
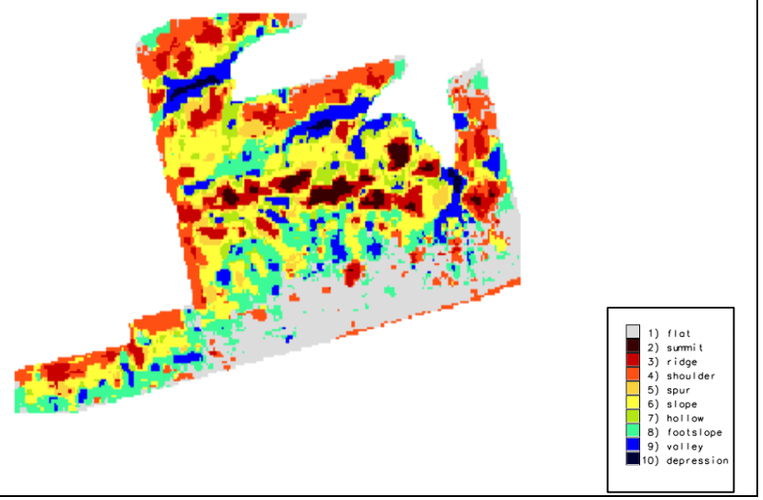
250 75 1 105		
250 75 1 125		

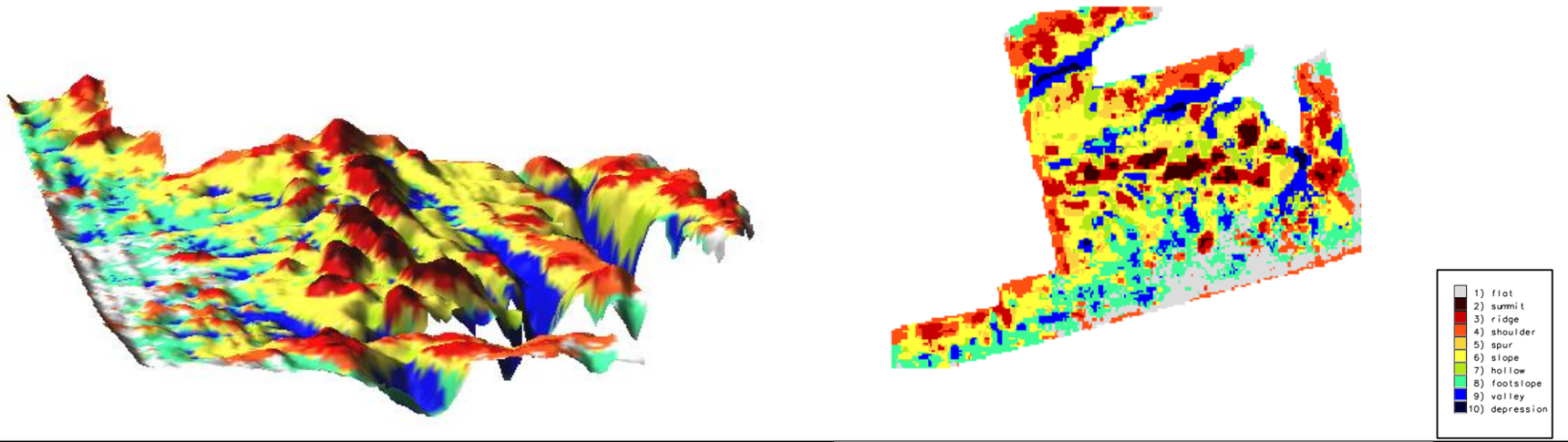
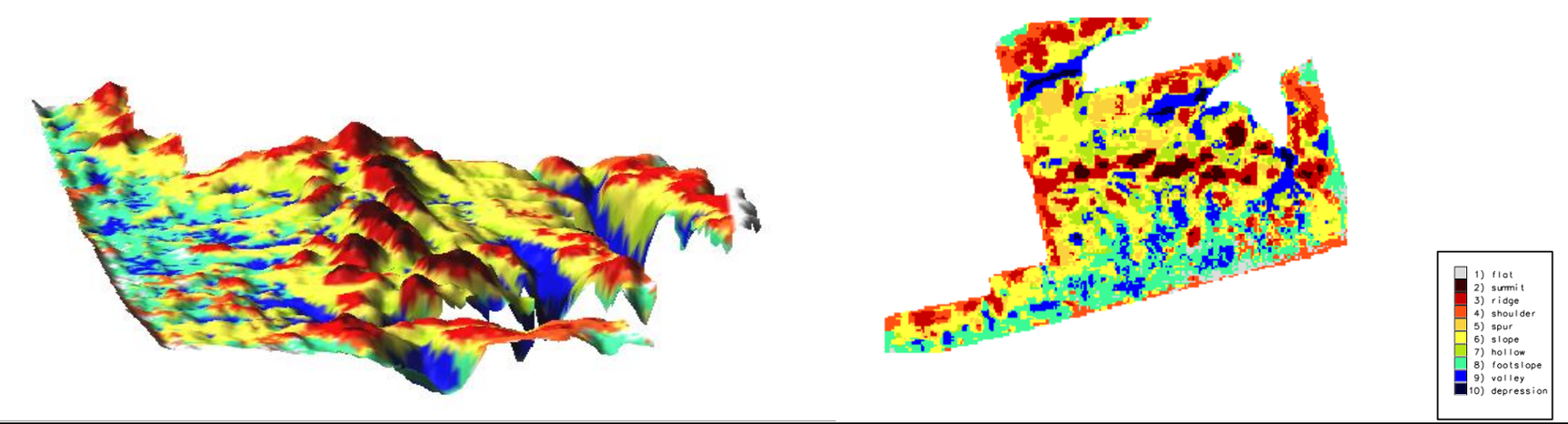
300 25 1 100	
300 35 1 100	

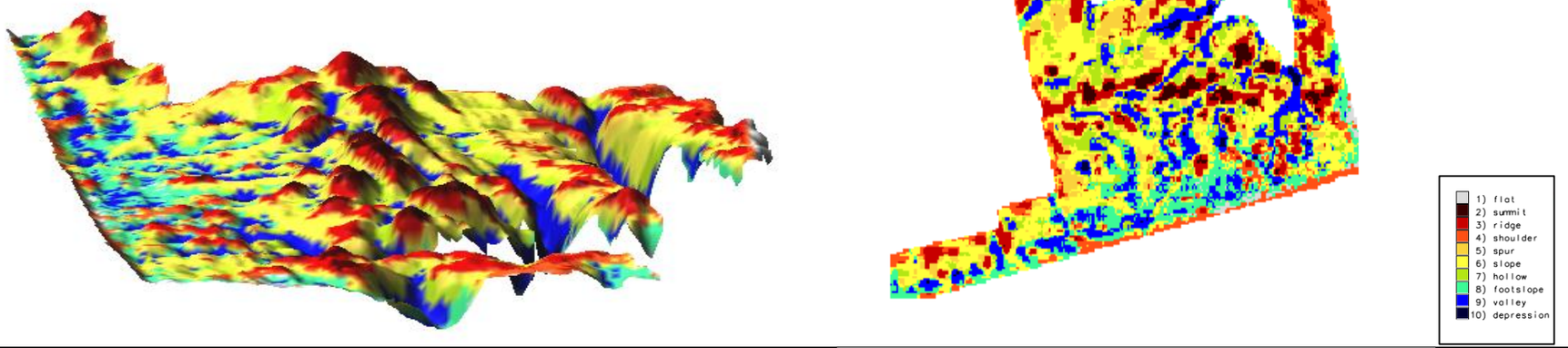
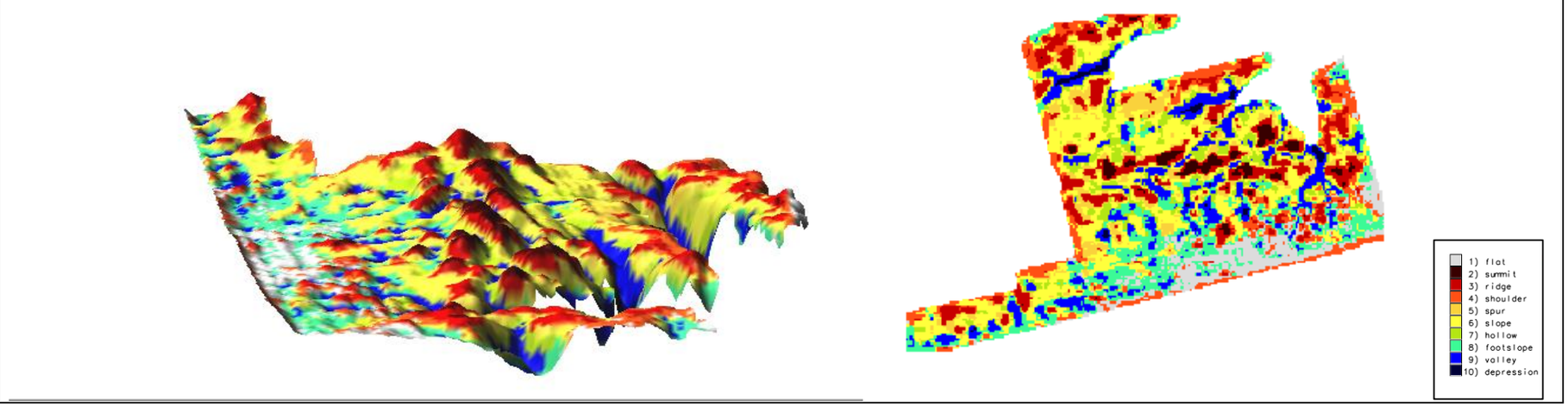
350 55 1 100	

Kriged Data 3m resolution(Lag = 30, Lag Tolerance = 50, Min Neighbours = 20, Max Neighbours = 200)

Table 3 3m Resolution 3D and 2D models

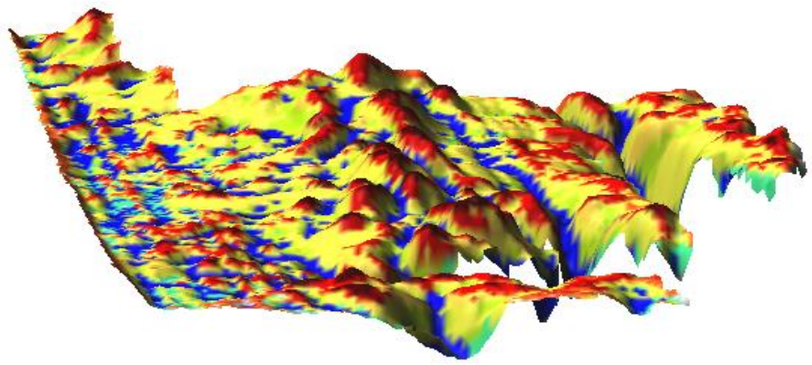
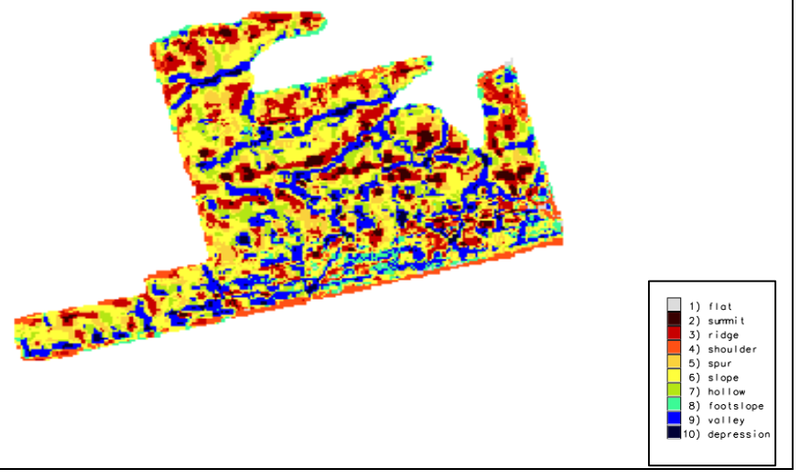
r.geomorphon Settings ***(Search, Skip, Flat, Distance)***	3D Model	Geomorphon 2D model
150 25 1 15		

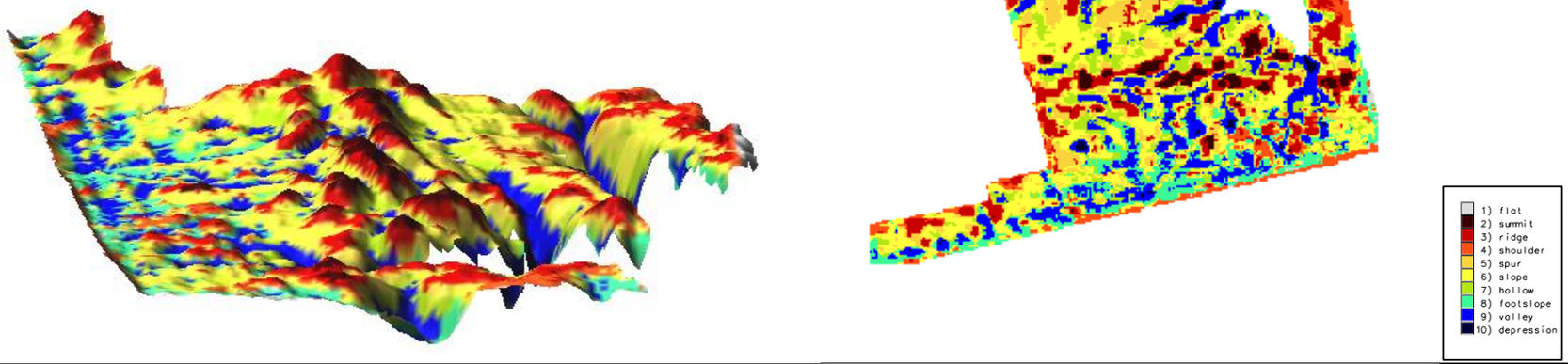
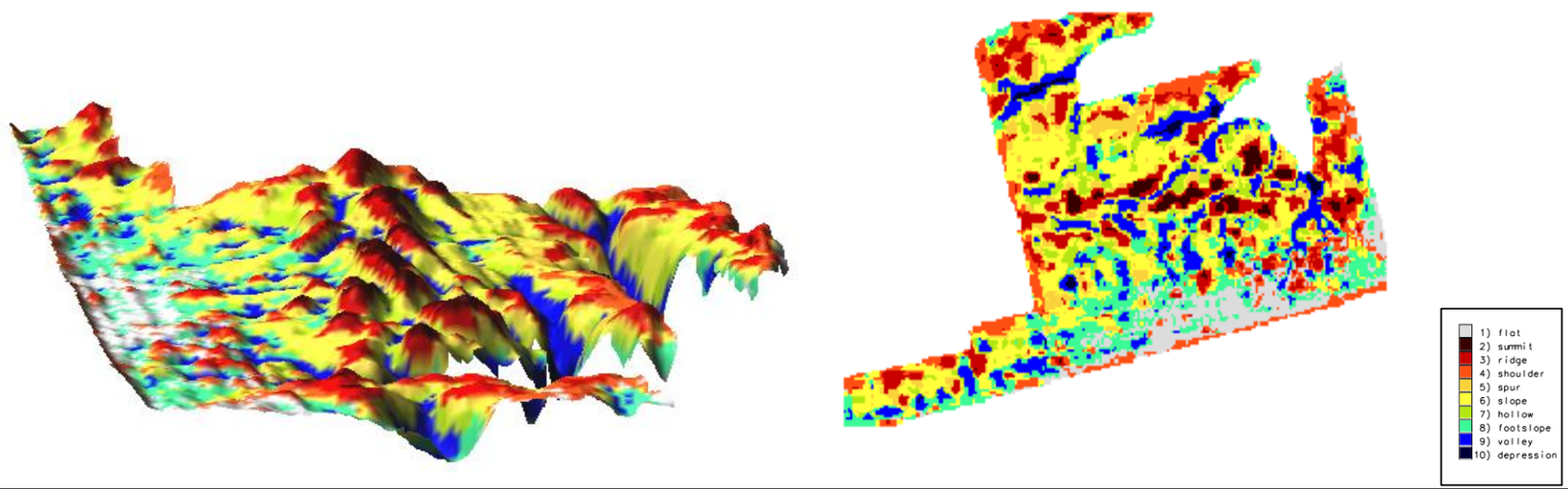
150 25 1 50	
250 25 1 50	

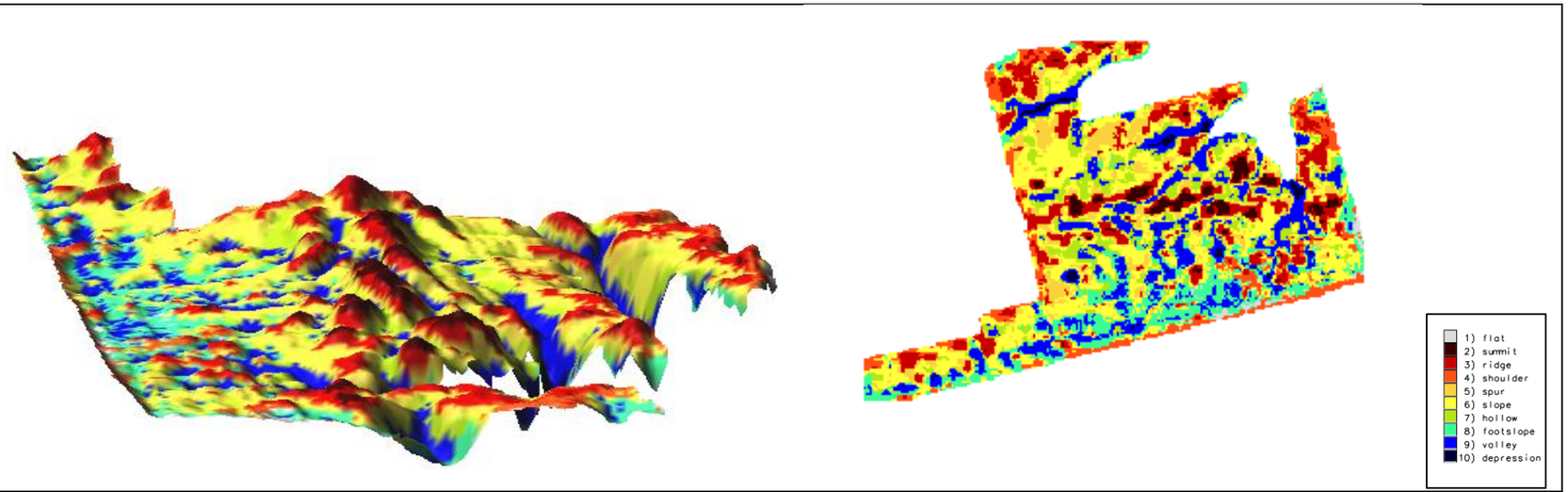
250 5 1 25	
350 15 1 15	

Kriged Data 3m resolution (Lag = 25, Lag Tolerance = 50, Min Neighbours = 25, Max Neighbours = 250)

Table 4 3m (25,50,25,250) Resolution 3D and 2D models

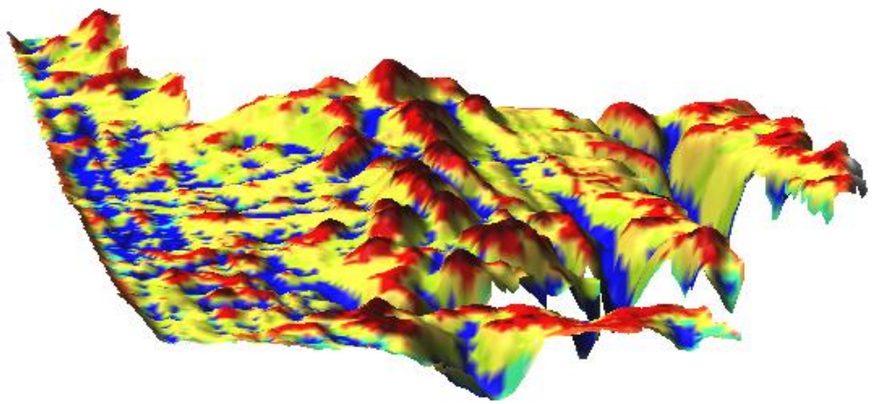
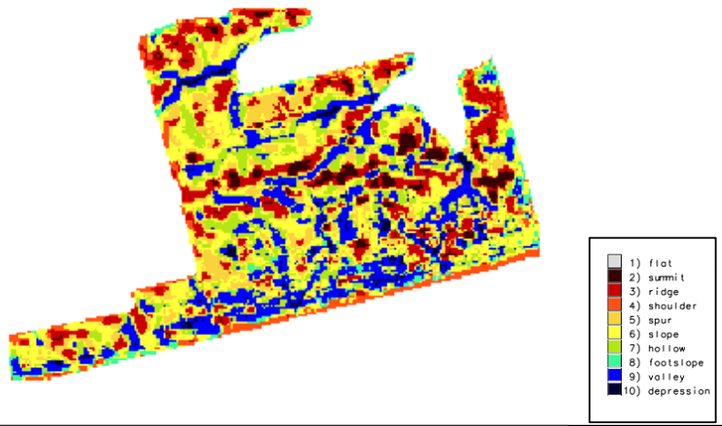
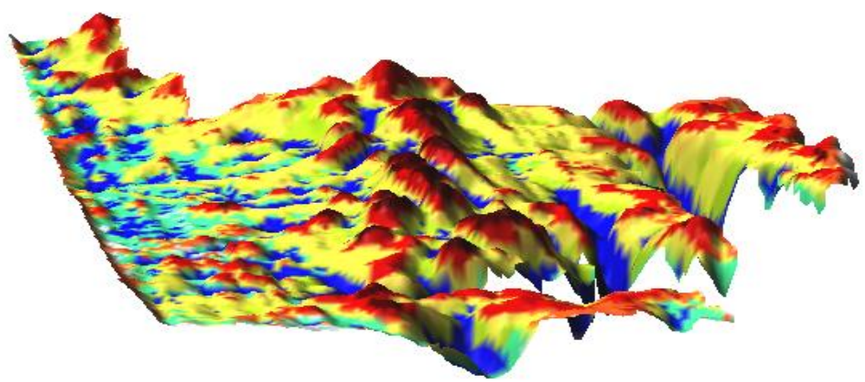
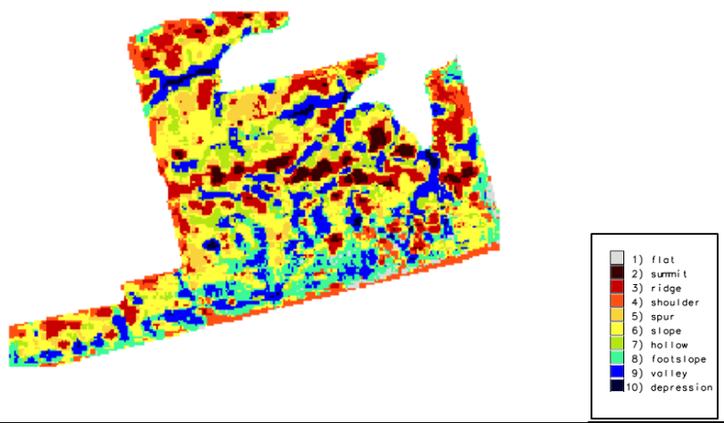
r.geomorphon Settings ***(Search, Skip, Flat, Distance)***	3D Model	Geomorphon 2D model
100 5 1 25		

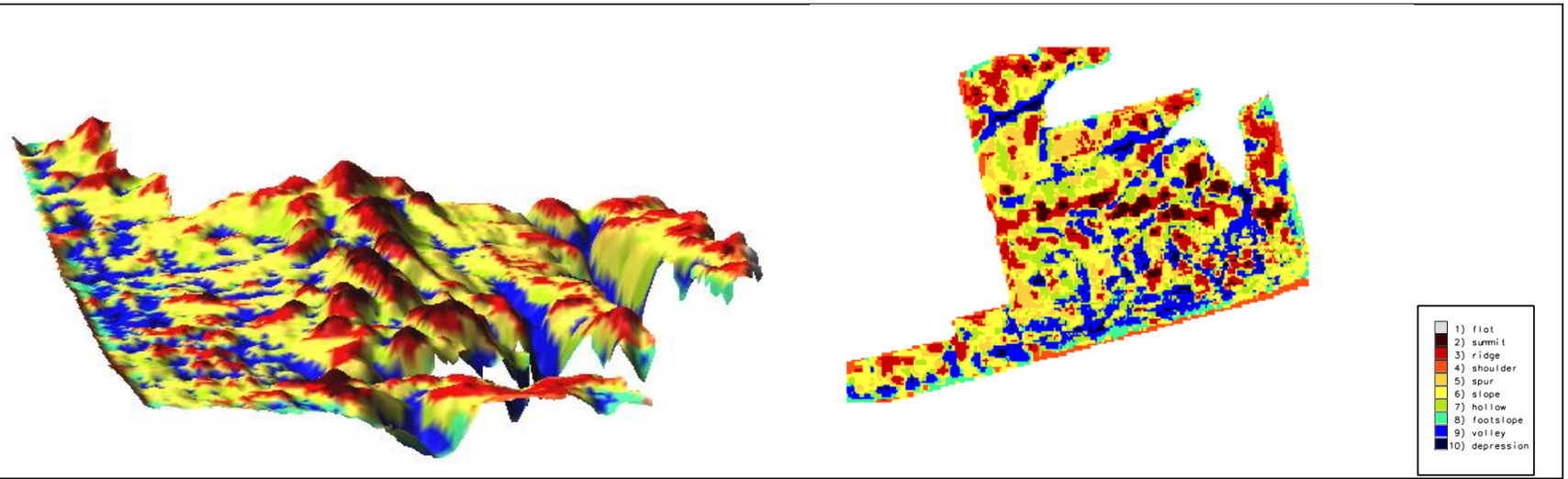
350 15 1 50	
250 15 1 10	

250 15 1 50	

Kriged Data 5m resolution (Lag = 25, Lag Tolerance = 50, Min Neighbours = 20, Max Neighbours = 200)

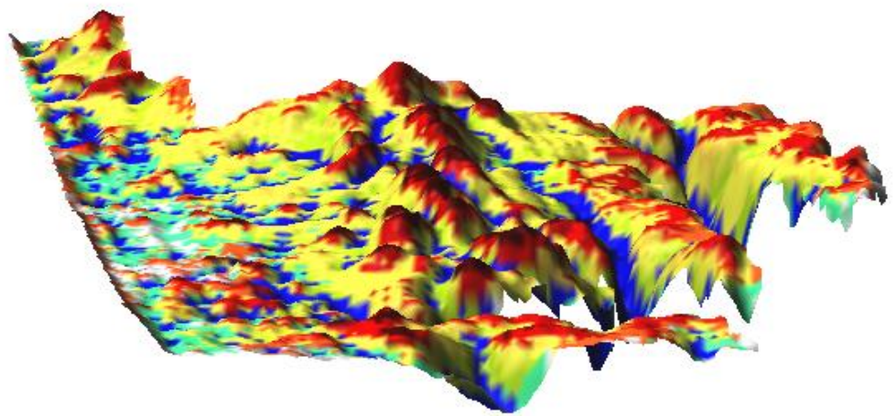
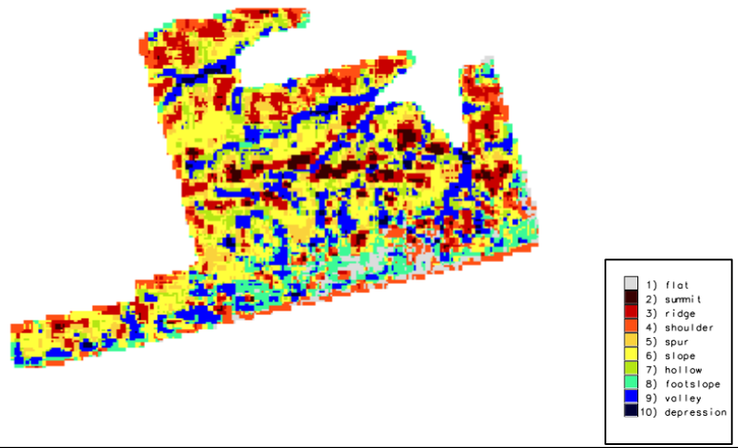
Table 5 5m Resolution 3D and 2D models

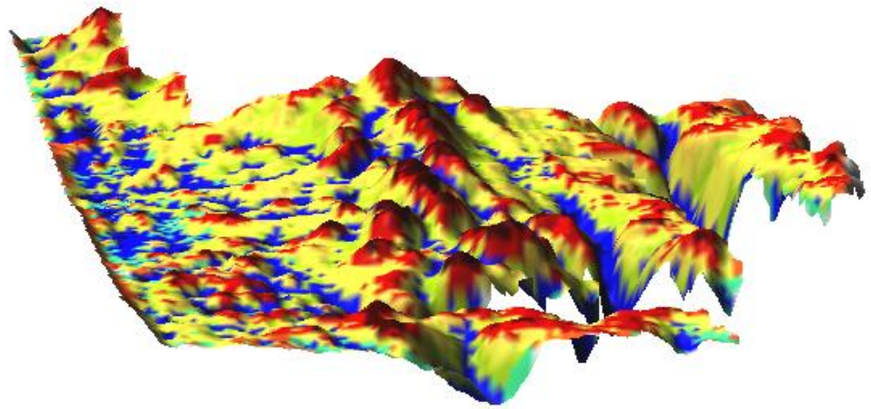
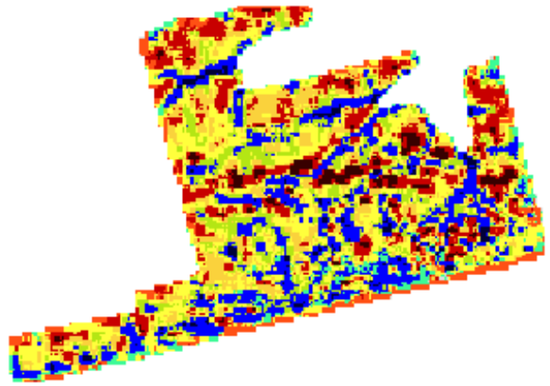
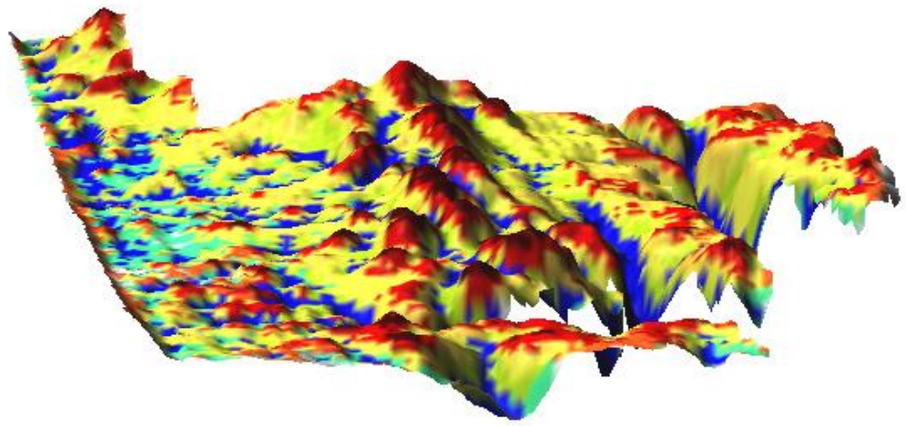
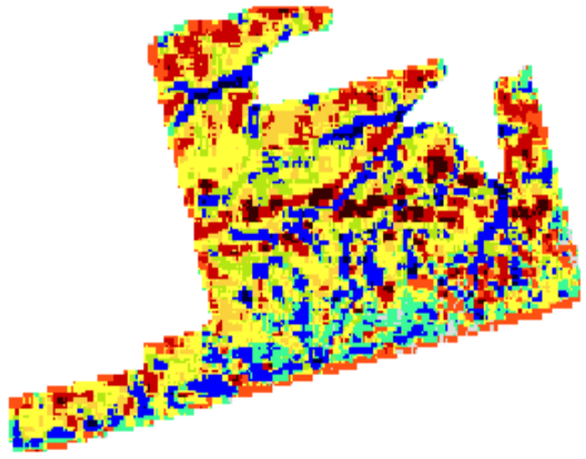
r.geomorphon Settings ***(Search, Skip, Flat, Distance)***	3D Model	Geomorphon 2D model
150 10 1 20		
250 15 1 50		

300 15 1 25	

Kriged Data 10m resolution (Lag = 25, Lag Tolerance = 50, Min Neighbours = 25, Max Neighbours = 250)

Table 6 10m Resolution 3D and 2D models

r.geomorphon Settings ***(Search, Skip, Flat, Distance)***	3D Model	Geomorphon 2D model
150 10 1 50		

250 10 1 25		
250 10 1 50		

350 10 1 25