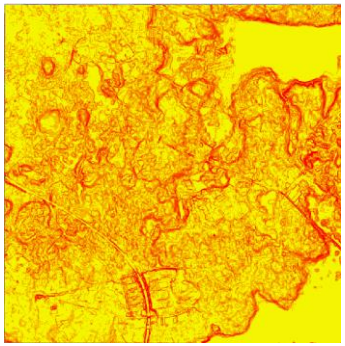
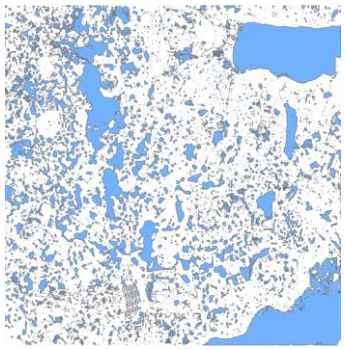
About the data sets used in the bike path exercise





Thomas Balstrøm

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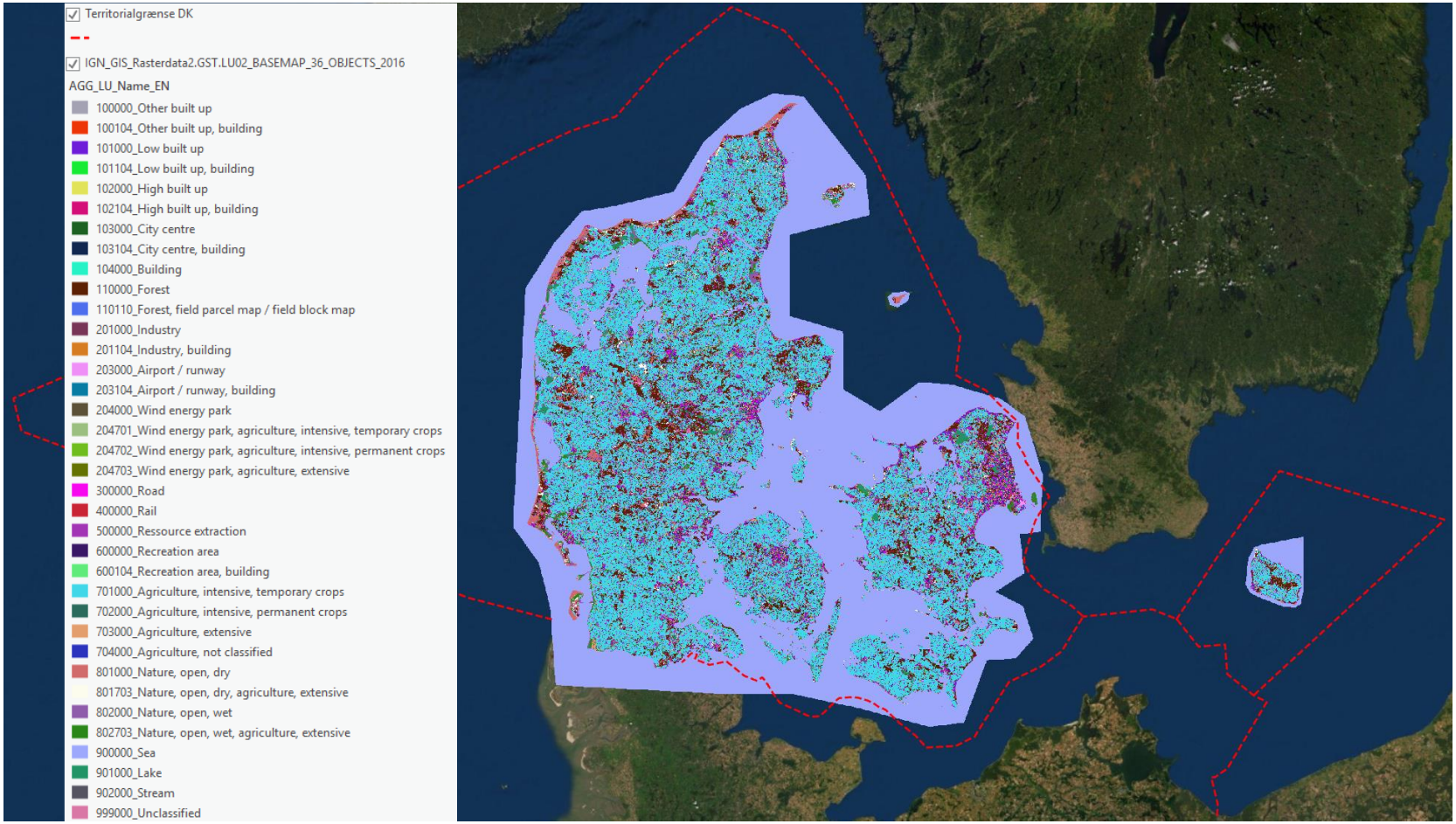
(LUCC = Land Use Class Coverage)



LUCC: a more detailed land use map than the EU based Corine map

LUCC – also named Basemap 2016

Land use map for Denmark from 2016 with a cell size of 10m.
A mash-up of digital maps from a large number of data providers

- GeoDanmark/SDFE: Kort 10
- Geodatastyrelsen: Parcel map
- Landbrugsstyrelsen: Field maps
- Naturstyrelsen: Forest maps

The map's establishment was sponsored by Denmarks Statistics and assembled by Aarhus University, DCE

Production Workflow

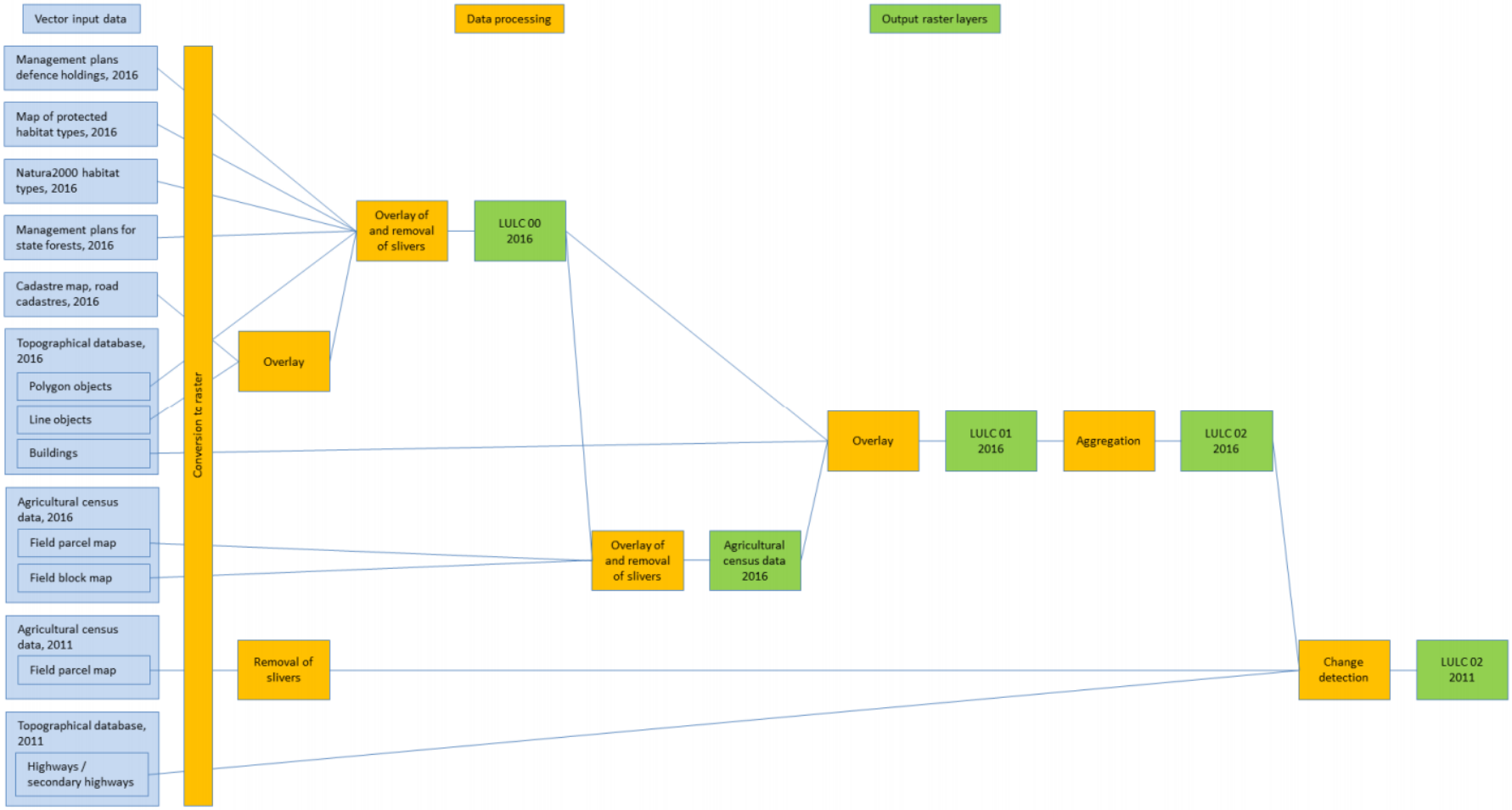


Figure 3.1 Illustration of data processing. Vector input data (blue boxes) are converted to raster format and subsequently processed (yellow boxes), resulting in 5 final output raster layers (green boxes).

Aggregation of objects

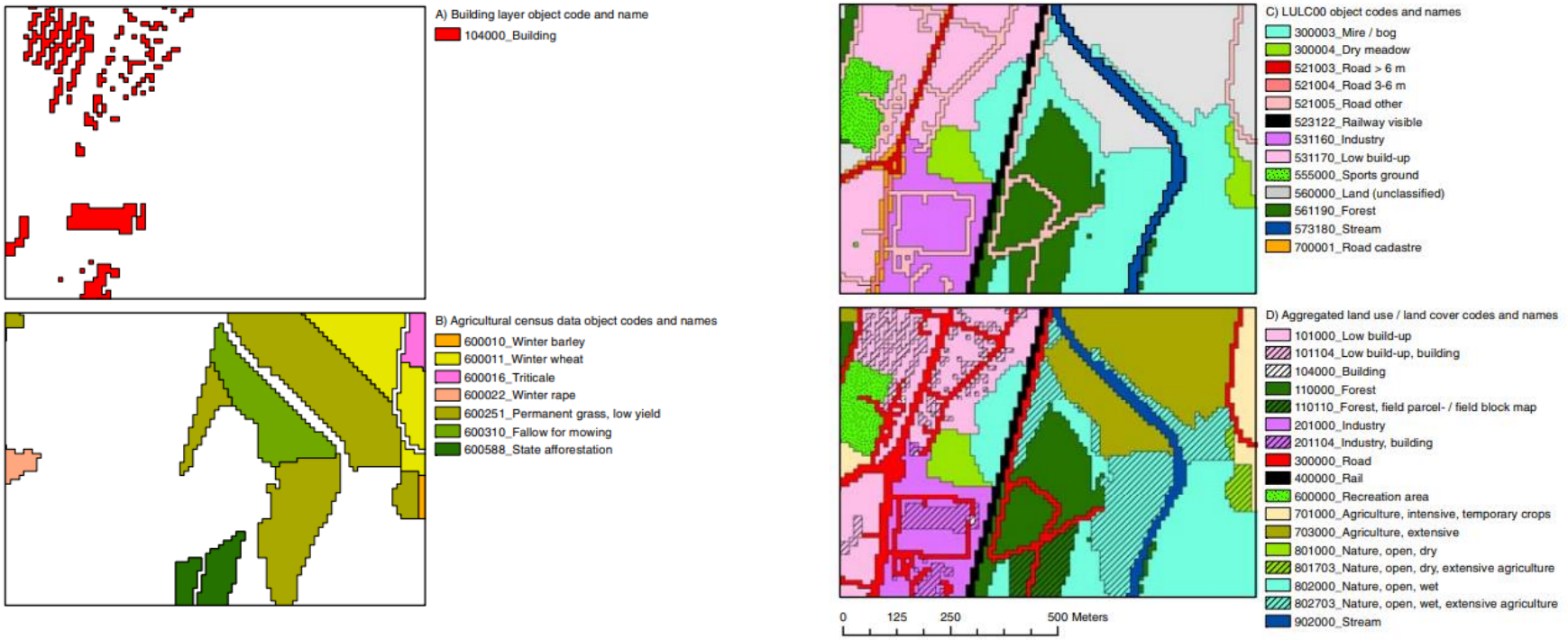
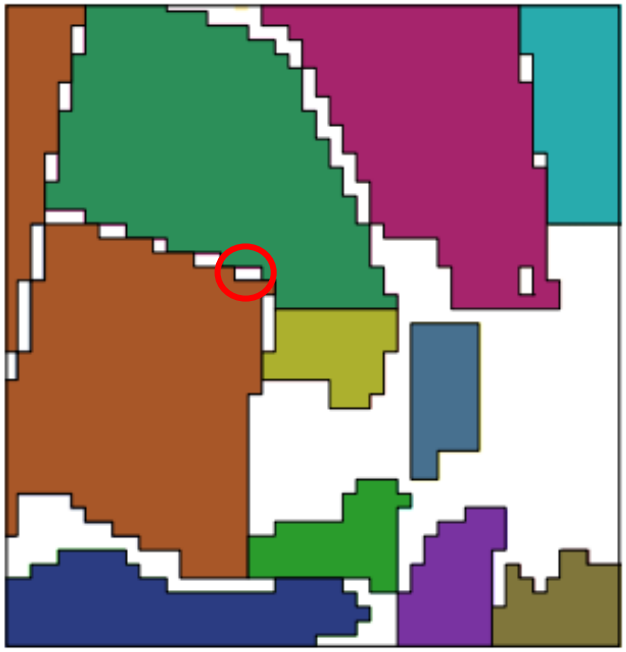


Figure 3.10 Applied method for aggregation of object types. The building layer from Kort10 (A), the agricultural census data (B) and the LULC00 layer are overlaid (C). Buildings, overlapping with build-up objects types are assigned a combined build-up/building type. Parcels from the agricultural census data, containing extensive land use and overlapping with habitat types in the LULC00 layer are assigned a combined habitat/agriculture type.

Examples of 'sliver-polygons' during conversion of the field map

A) Field parcel map in vector format

B) Field parcel map after conversion to raster format (cell size 10 x 10 meters)



Overlay-hierarchy: Prioritization of layers

Necessary to prioritize the various datasets from different organizations during the pairwise combinations.

Topographic data supersede environmental data.

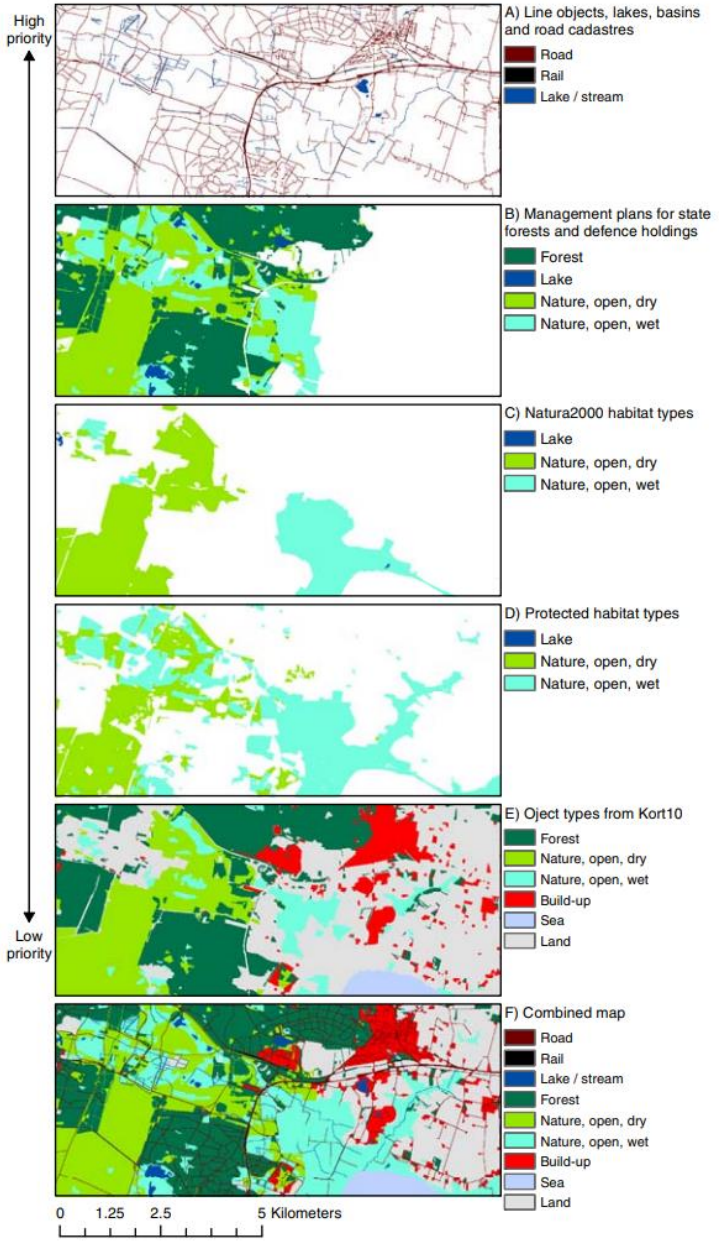


Figure 3.5 Applied method for overlay of input layers. Input layers are overlaid. Object types from layers placed in the top of the hierarchy exclude object types placed lower in the hierarchy (A-E), resulting in the final combined map (F).

Handling of non-classified areas

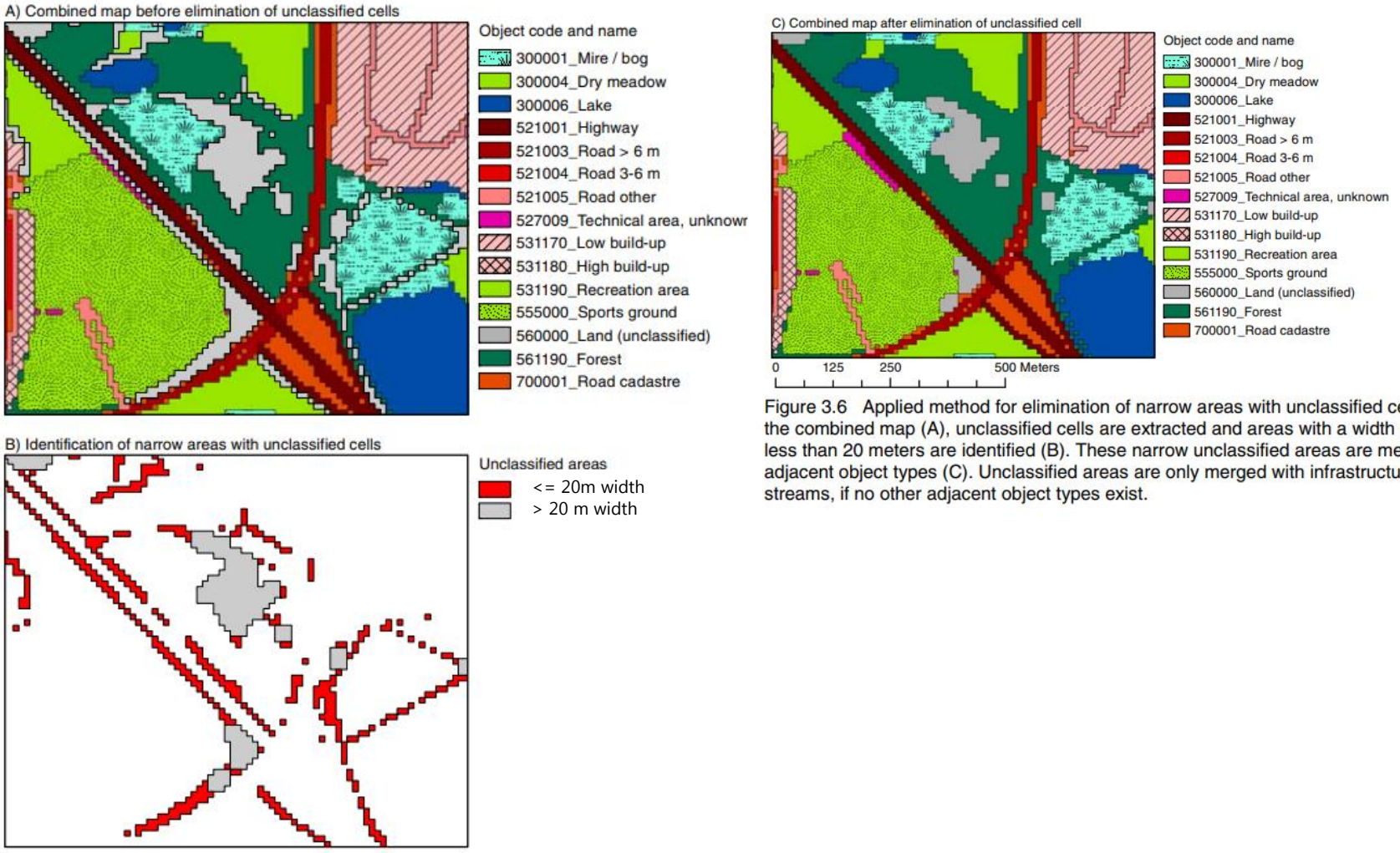
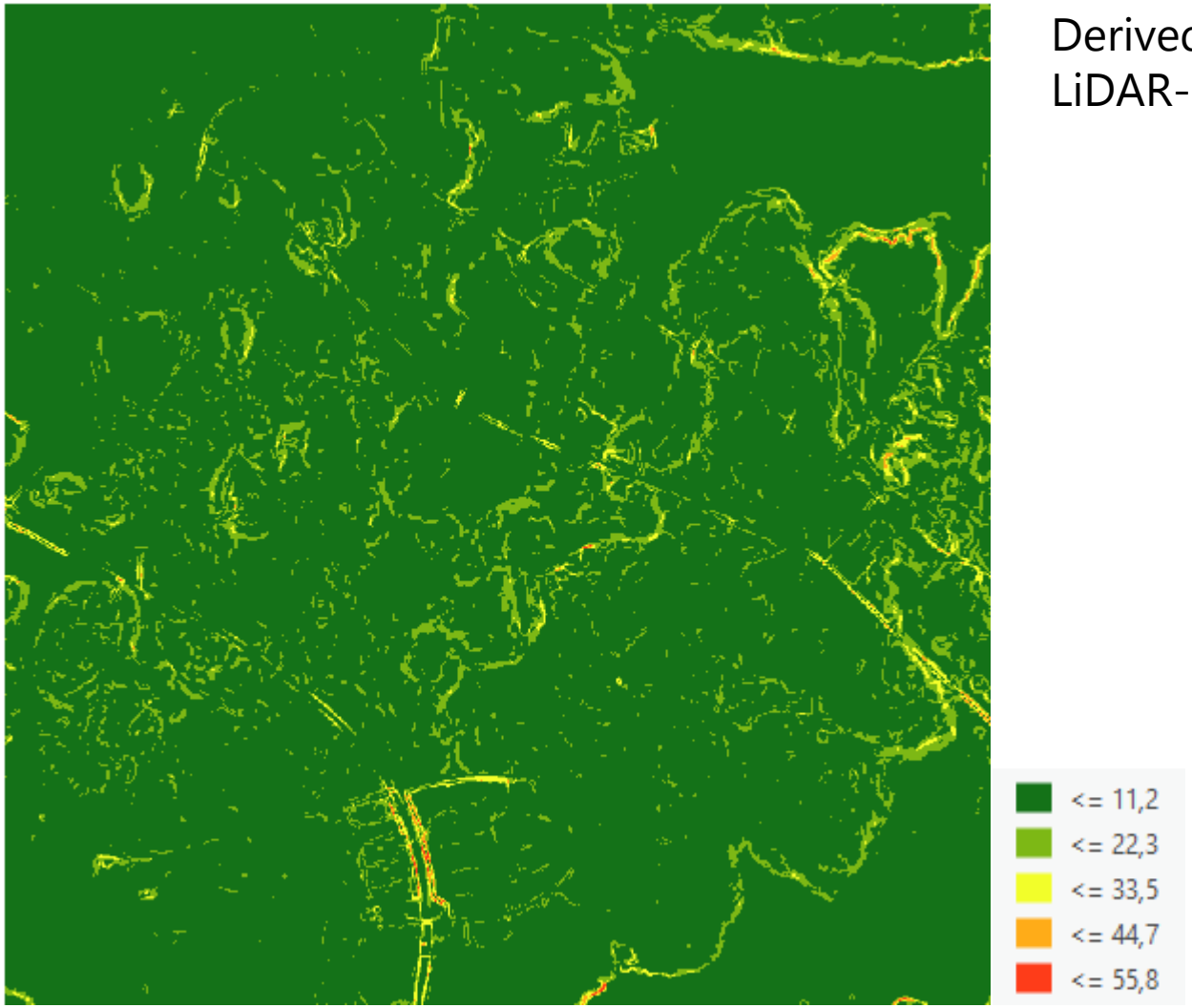


Figure 3.6 Applied method for elimination of narrow areas with unclassified cells. From the combined map (A), unclassified cells are extracted and areas with a width equal to or less than 20 meters are identified (B). These narrow unclassified areas are merged with adjacent object types (C). Unclassified areas are only merged with infrastructure or streams, if no other adjacent object types exist.

Terrain slopes (Slope)

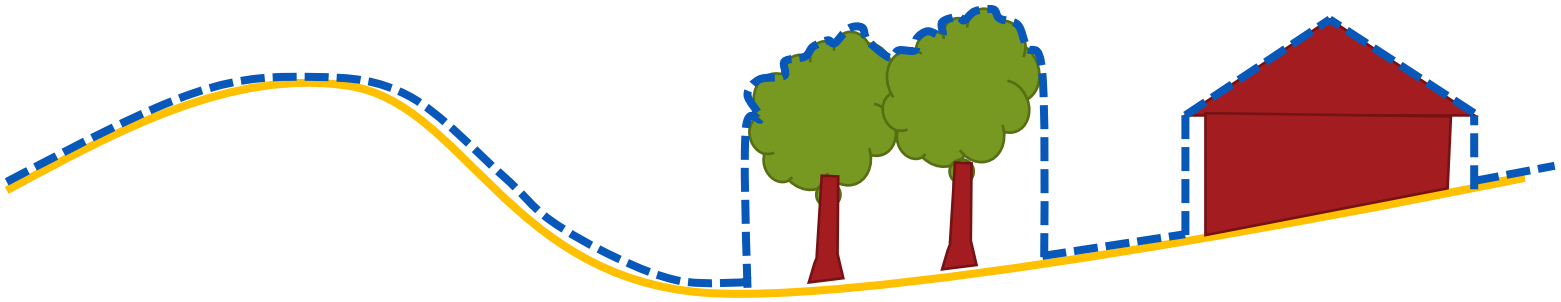


Derived from 2020 LiDAR-DTM

DSM vs. DTM

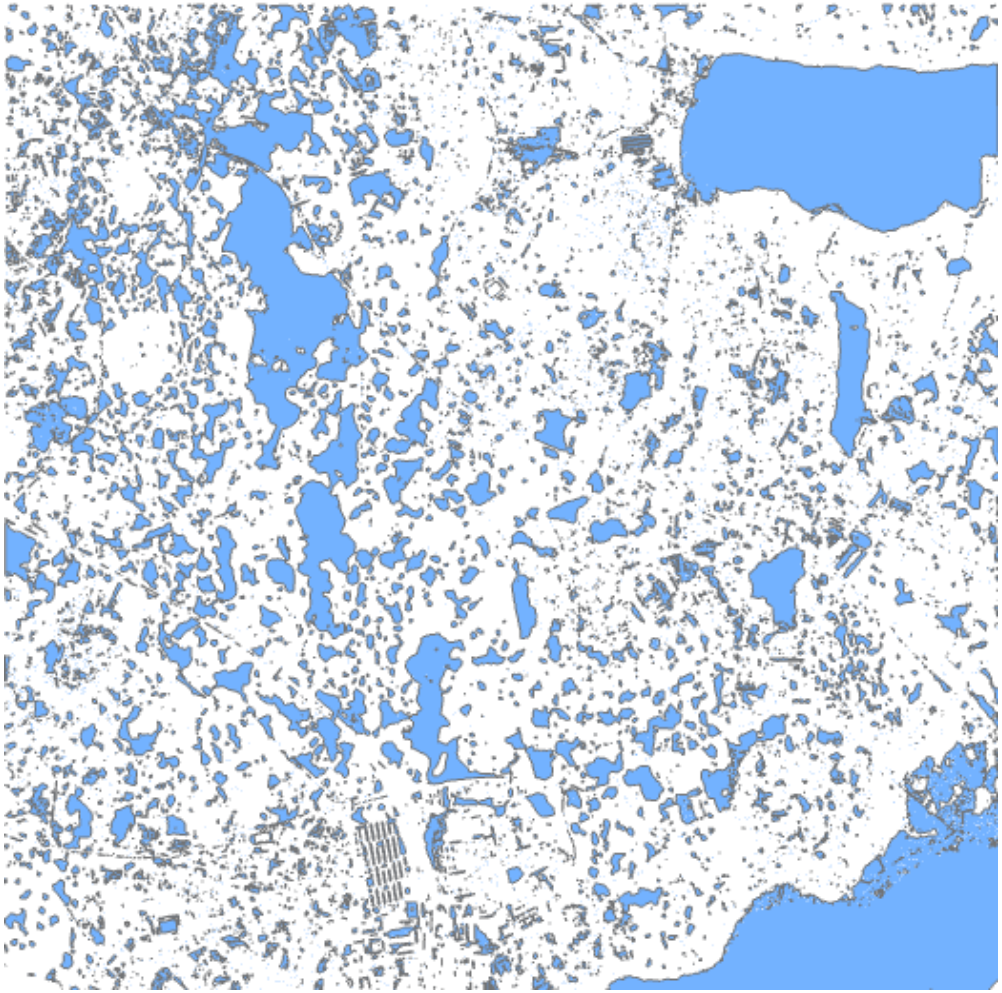
DSM, Digital Surface Model

DTM, Digitial Terrain Model



DTM was produced fra planng away buildings and vegetation from the DSM.

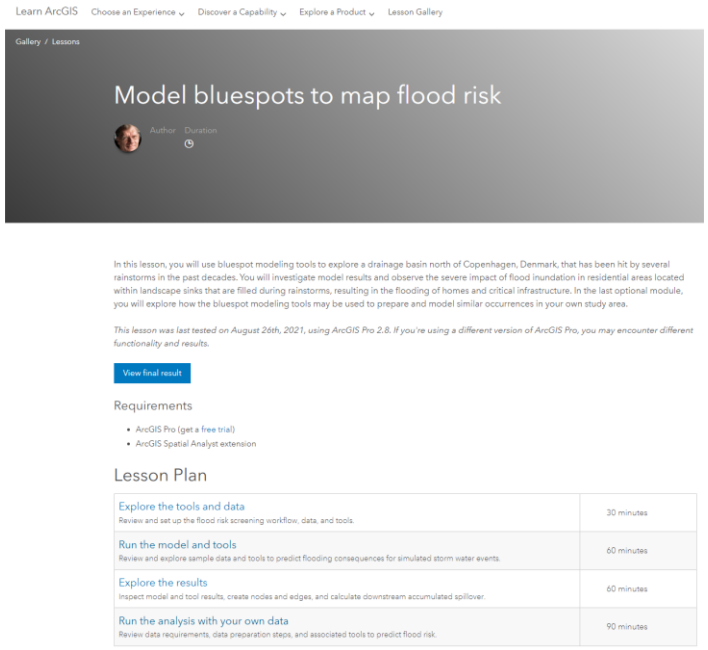
Bluespot map



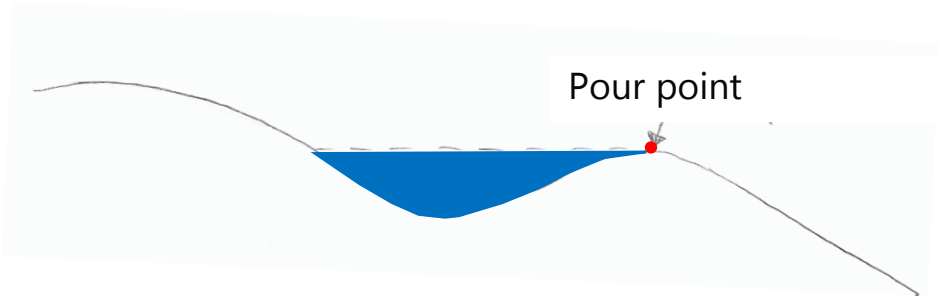
Potentially water filled sinks.

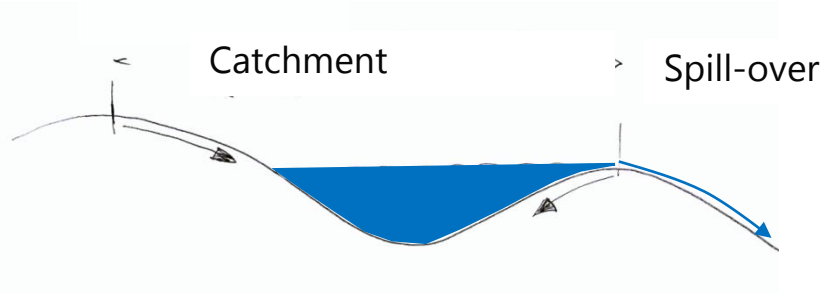
Dwerived from the DHyM and Arc-Malstrøm software developed by TB, see

Model bluespots ...

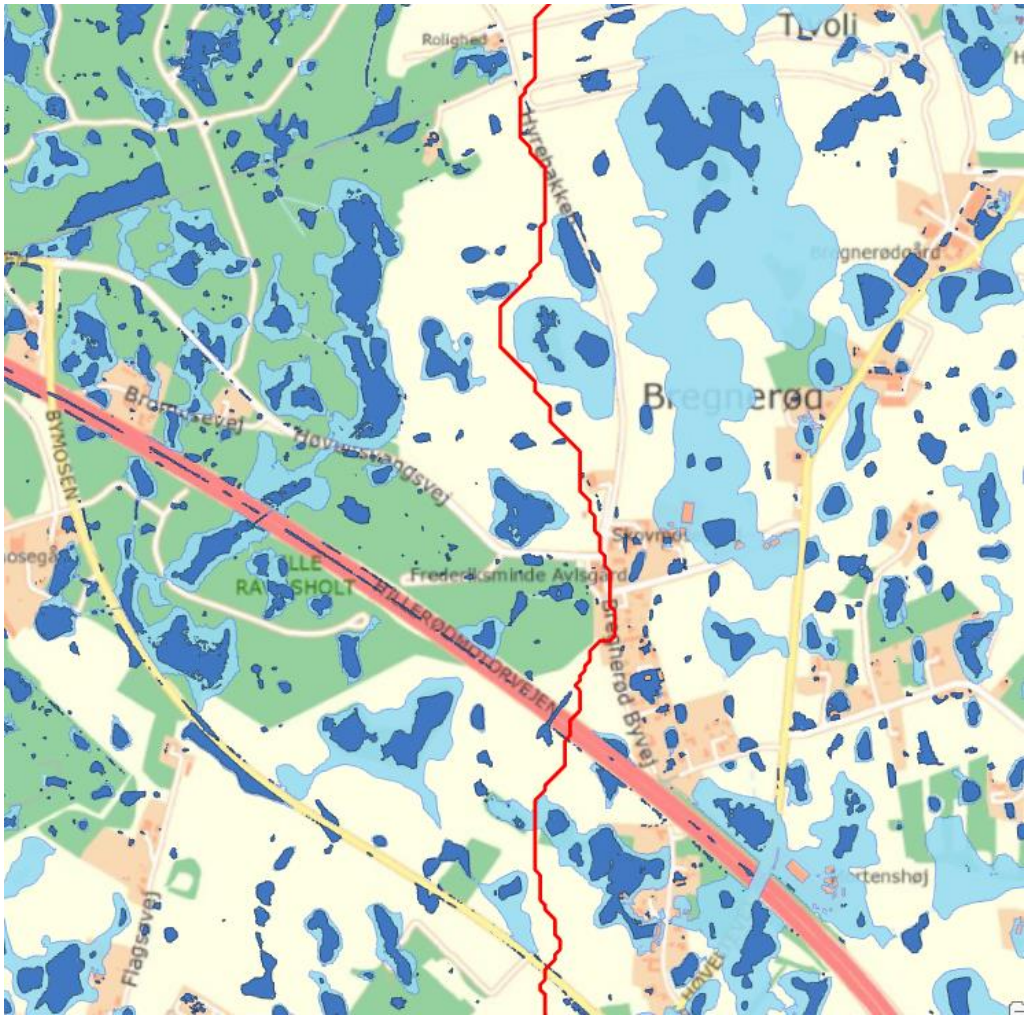


Local sinks (bluespots)





Bluespots



Presumed bluespot extents July 2nd 2011

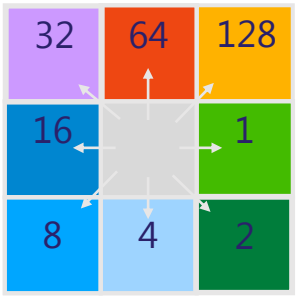
Max. bluespot extents

Terrain runoff

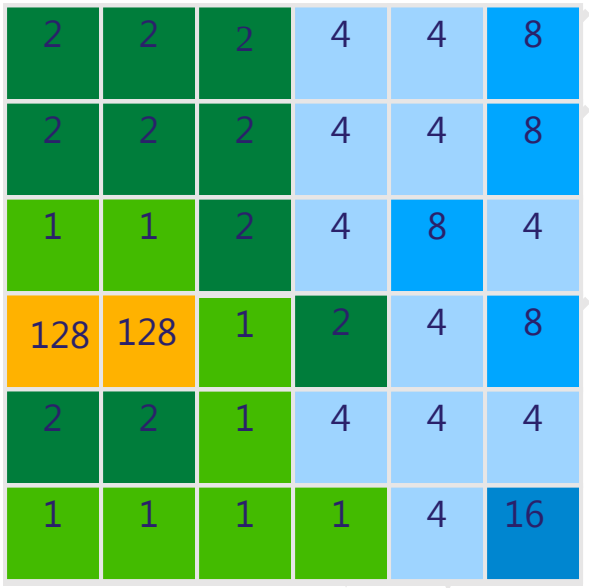
Predict flow directions cell by cell

78	72	69	71	58	49
74	67	56	49	46	50
69	53	44	37	38	48
64	58	55	22	31	24
68	61	47	21	16	19
74	53	34	12	11	12

DHyM elevation values



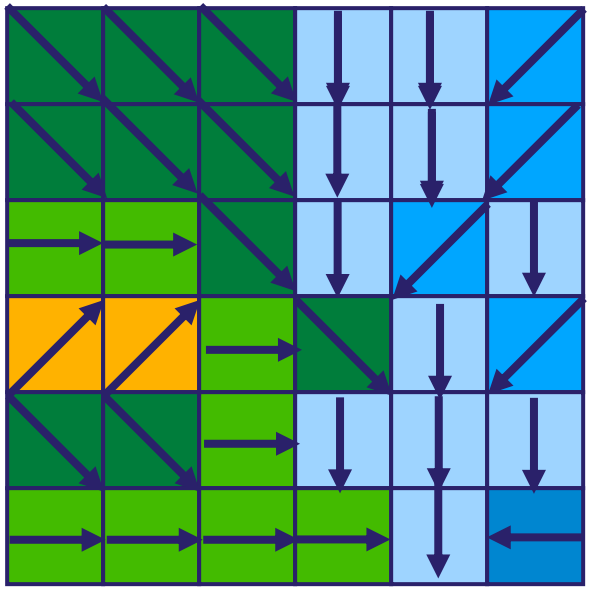
Direction encoding



Flow directions

Terrain runoff

Accumulated flow cell by cell



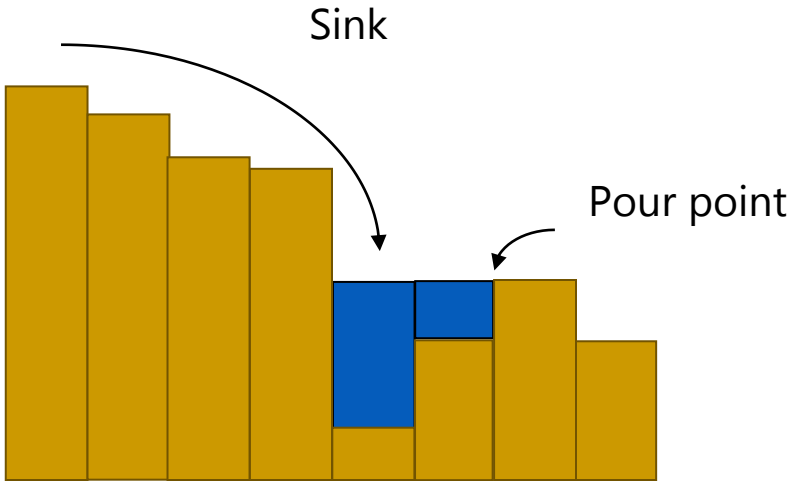
Flow directions

0	0	0	0	0	0
0	1	1	2	2	0
0	3	7	5	4	0
0	0	0	20	0	1
0	0	0	1	24	0
0	2	4	7	35	2

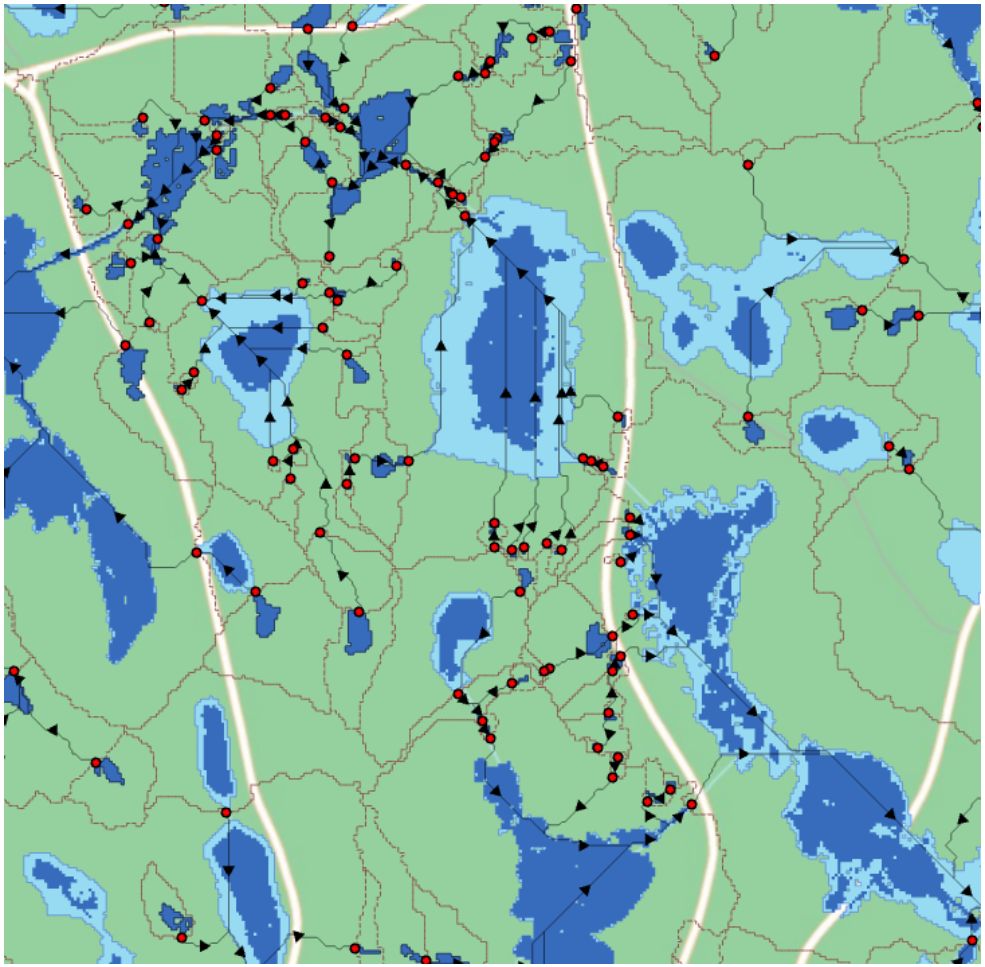
Accumulated flow

Identification of sinks to ensure a continuous downstream flow

Bluespot's pour points are located where the flow accumulation is highest.



Runoff from sink to sink



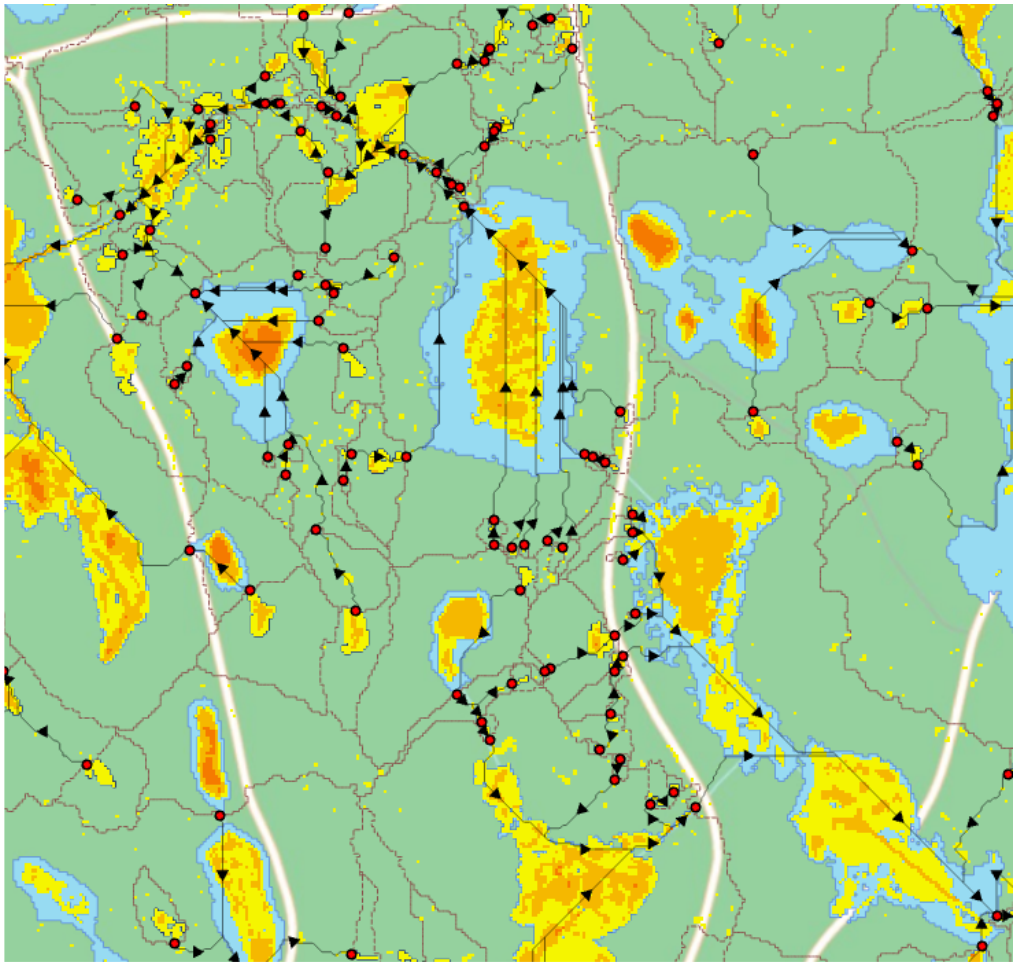
Bluespot pour points

Expected bluespot extents July 2nd 2011

Max. bluespot extents

Topographic catchments for each bluespot

Bluespot depths



Expected local water depths in meters after the stormwater event on July 2, 2011