

Introduction to GIS

This assignment is meant to be an introduction to some basic Geographic Information Processing using the web-application gis-app (<https://thaikari.github.io/gis-app/>). You will receive some data from Trondheim, which contains a secret message. Your mission is to use the various geoprocessing tools available to reveal this secret message.

Good luck!

Follow the bellow steps to find the hidden message in the data.



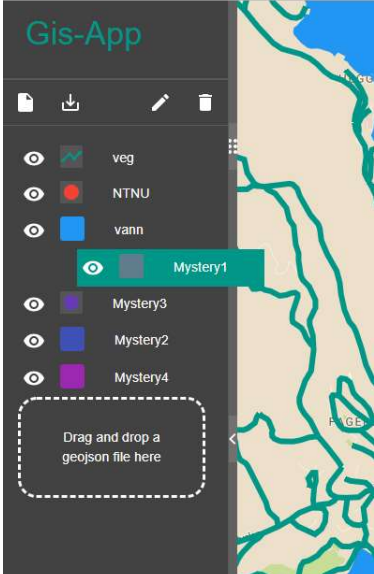
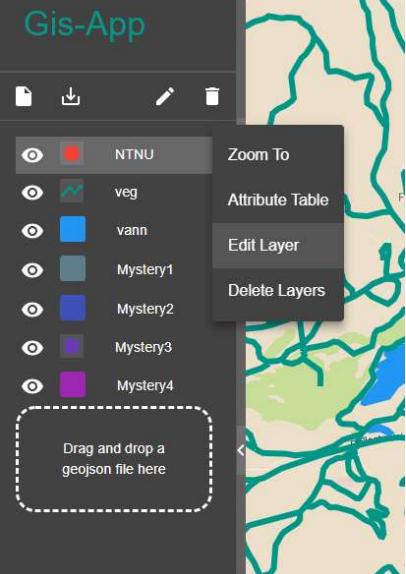
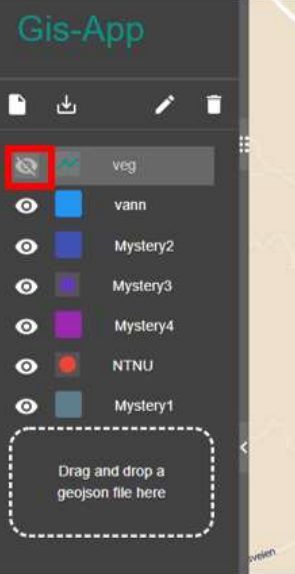
** A tip is to download your data each time you have created a new layer. This way you do not lose your work if the page reloads. (<https://youtu.be/aoe9GijdaJo>)*

Instructions

1. **Open the website:** <https://thaikari.github.io/gis-app/>
2. **Unzip the folder data.zip** to see the data you will be working with. The folder should contain the following json Files: 'veg', 'vann', 'NTNU', 'Mystery1', 'Mystery2', 'Mystery3', 'Mystery4'. Data can be downloaded from <https://github.com/thaiKari/gis-app/blob/master/data.zip>
3. **Upload the files:** Select all the files in the data folder and upload them by drag and dropping to the specified location on the site. The result should look something like this:



4. Explore the data:

		
<p>Reorder the layers by clicking on the layer in the sidebar and dragging it to the desired position. The layer on the top of the list will appear on the top in the map.</p>	<p>Right click on a layer to reveal a menu. Try Zoom To the layer 'vann'. If you click Edit Layer, you can change the name and color of the layer.</p>	<p>Click on the eye icon to toggle on and off layer visibility</p>

Having Trouble ? Watch this demo video: <https://youtu.be/rEGzcf5eY2I>

- Click on the **tool icon** in the top right corner to reveal the available geoprocessing tools:
- All the data we are interested in is within 2000m of **NTNU**. Use the **BUFFER** tool to create a 2000m buffer around the point **NTNU**. Name the output layer **NTNU2000**.



Buffer

Choose a Layer *

NTNU

Distance (m)

2000

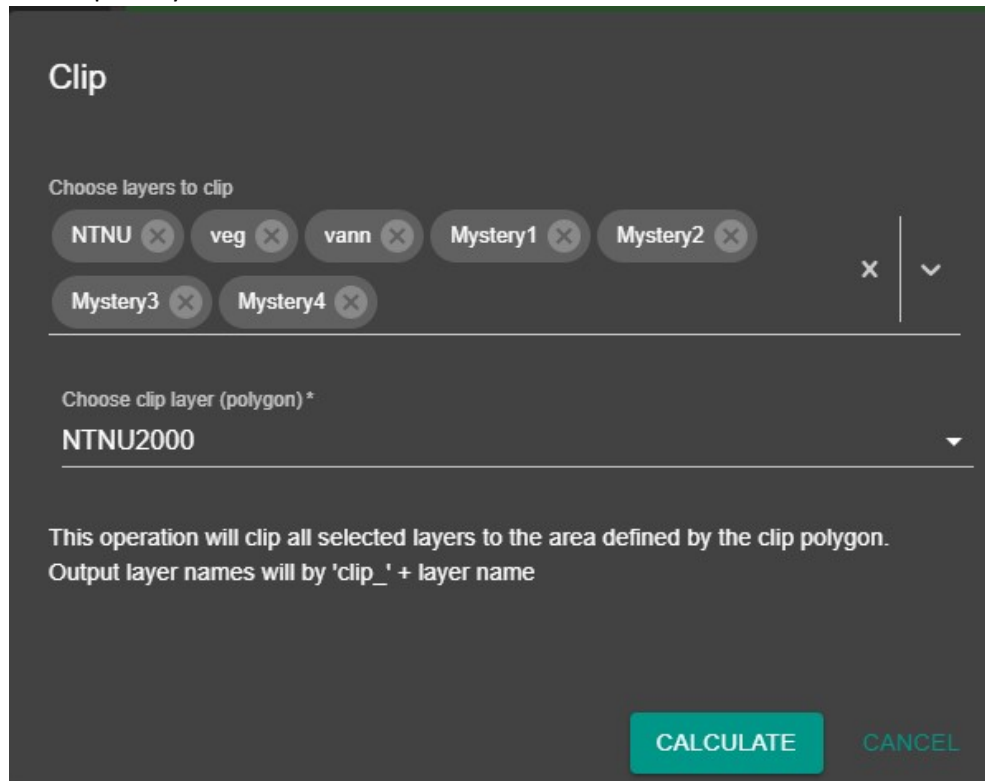
Output layer name

NTNU2000

CALCULATE CANCEL

Having Trouble ? Watch this demo video: <https://youtu.be/1YcvM4MBOGY>

7. Use the **CLIP** tool to clip all layers to NTNU2000:



Having Trouble ? Watch this demo video: <https://youtu.be/c-9hDdN9TBc>

8. Delete layers: *NTNU*, *veg*, *vann*, *Mystery1*, *Mystery2*, *Mystery3*, *Mystery4*. Remaining Layers are the ones called '*clip_**' and *NTNU2000*.

Having Trouble ? Watch this demo video: <https://youtu.be/xrx9tY4O3Bo>

9. Do **INTERSECT** between layers *clip_Mystery1* and *clip_vann*. Call the output layer *A*.

Intersect

intersect operation only accepts Polygons

Layer 1 (Type: Polygon) *

clip_Mystery1

Layer 2 (Type: Polygon) *

clip_vann

Output layer name

A

CALCULATE CANCEL

Having Trouble ? Watch this demo video: https://youtu.be/d9loR9dG8_4

10. Use **BUFFER** on *clip_Mystery2* with a distance of 150m. Call the output layer *B*.

Buffer

Choose a Layer *

clip_Mystery2

Distance (m)

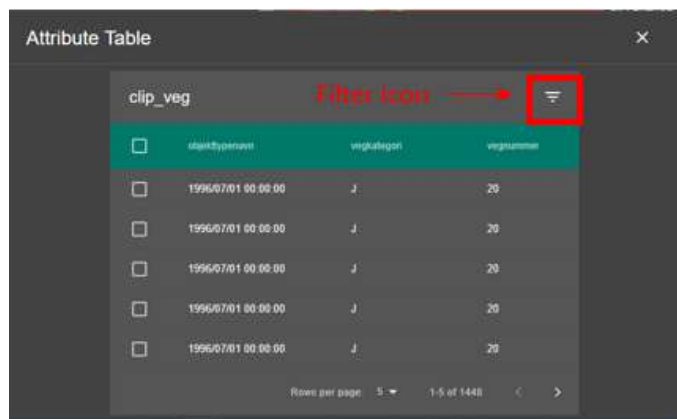
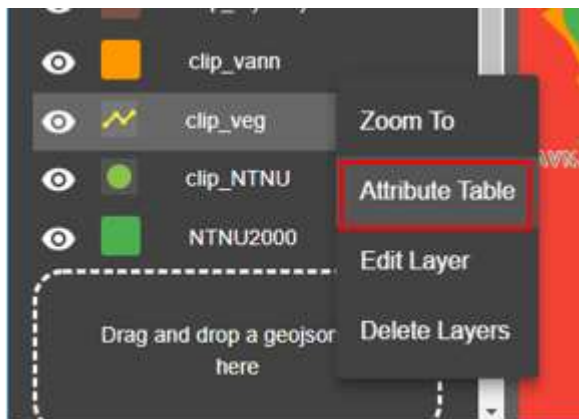
150

Output layer name

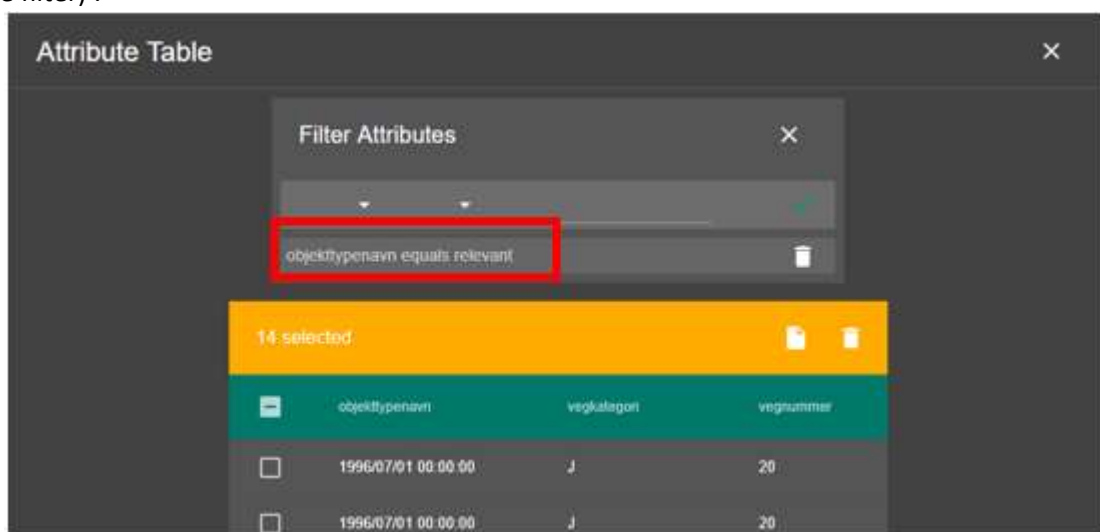
B

CALCULATE CANCEL

11. Right click on *clip_veg* and select **Attribute Table**.



12. Click on the **Filter Icon**. Select those features that have 'objekttypenavn equal relevant' (press the tick to apply the filter) :



13. Press the paper icon next to where it says '14 selected'. In order to create a new layer from the selection. This new layer will automatically be named *clip_veg_filtered*.

Having Trouble ? Watch this demo video: <https://youtu.be/e9q-8oppdjs>

14. Use the **VORONOI** tool on *clip_Mystery3*. Click on **Calculate BBOX from Geometry**. The output layer can be called *Voronoi*.

Having Trouble ? Watch this demo video: <https://youtu.be/TcJwQD4HY9Q>

Voronoi

voronoi operation only accepts Point layers

choose layers *

clip_Mystery3 x v

Bounding box (optional)

minX	miny	maxX	maxY
10.37926501571	63.40431862783	10.40788666080	63.42367155298

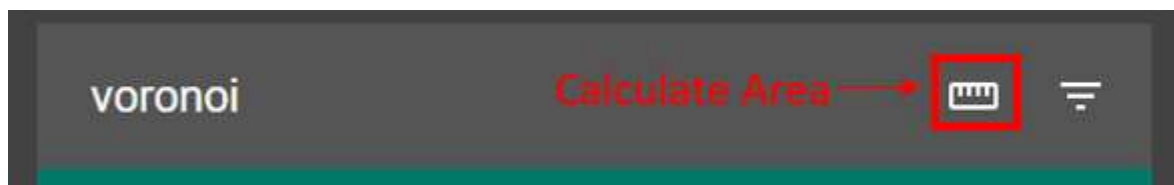
CALCULATE BBOX FROM GEOMETRY

Output layer name

voronoi

CALCULATE CANCEL

15. Open the attribute table for *Voronoi*. Click on the ruler icon to **Calculate Area** of each polygon in the layer. A new column should appear in the table called 'Area_(m^2)'.



16. Click on the filter icon and select all features that have area greater than 1775m² and less than 6000 m²:

Attribute Table

Filter Attributes x

Area_(m^2) > 1775

Area_(m^2) < 6000

76 selected

Area_(m^2)

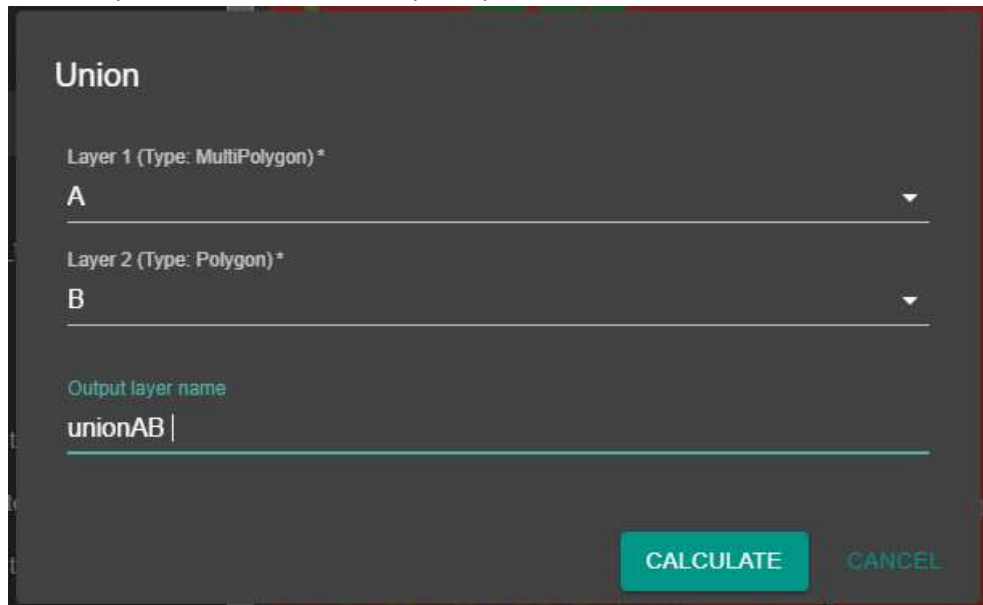
17. Create a new layer from the selection by clicking the paper icon. The output layer will be named *Voronoi filtered*. Edit this layer (right click -> edit Layer). Name it C.'

Having Trouble ? Watch this demo video: <https://youtu.be/vLnMU8NlfgU>

18. Use the **DIFFERENCE** geoprocessing tool. Select *NTNU2000* as the Input Layer and *clip_Mystery4* as the Difference Layer. Name the Output Layer *D*.

Having Trouble ? Watch this demo video: <https://youtu.be/Eb-hW9b8k2w>

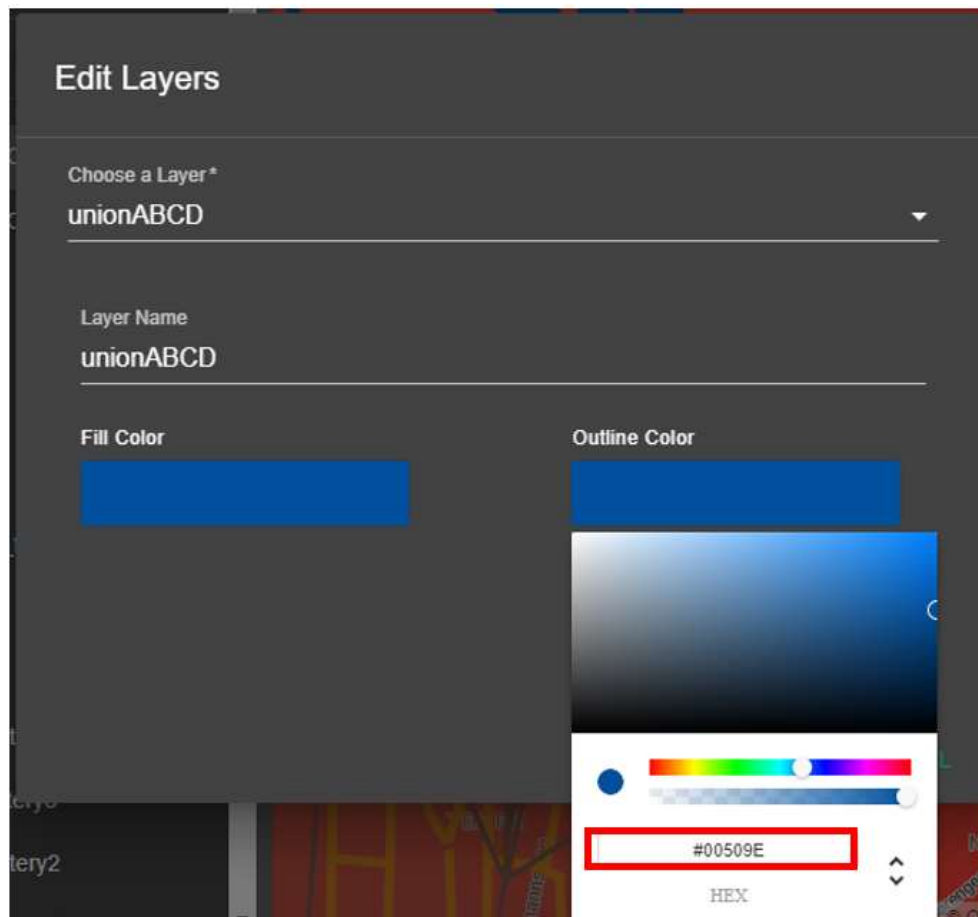
19. Use **UNION** to unite layers A and B. Call the output layer *unionAB*:



20. Use **UNION** again to unit *unionAB* and C. Call the output layer *unionABC*:
21. Use **UNION** again to unit *unionABC* and *D*. Call the output layer *unionABCD*:

Having Trouble ? Watch this demo video: <https://youtu.be/9bw-pj2b-dk>

22. Edit layer *unionABCD*. Set the Fill and outline color to hex value #00509E.



Having Trouble ? Watch this demo video: <https://youtu.be/ad9CxbS8Zxl>

23. Hide all layers except *unionABCD* and *clip_veg_filtered*. Edit the color of *clip_veg_filtered* to whatever you want. Zoom to a nice view of the result by using the scroll wheel on your mouse. Take a screen shot of the solution.

See the next page for the solution. Does your map look the same?

SOLUTION:



Full Demo: <https://youtu.be/xOLmTdqVv5g>