



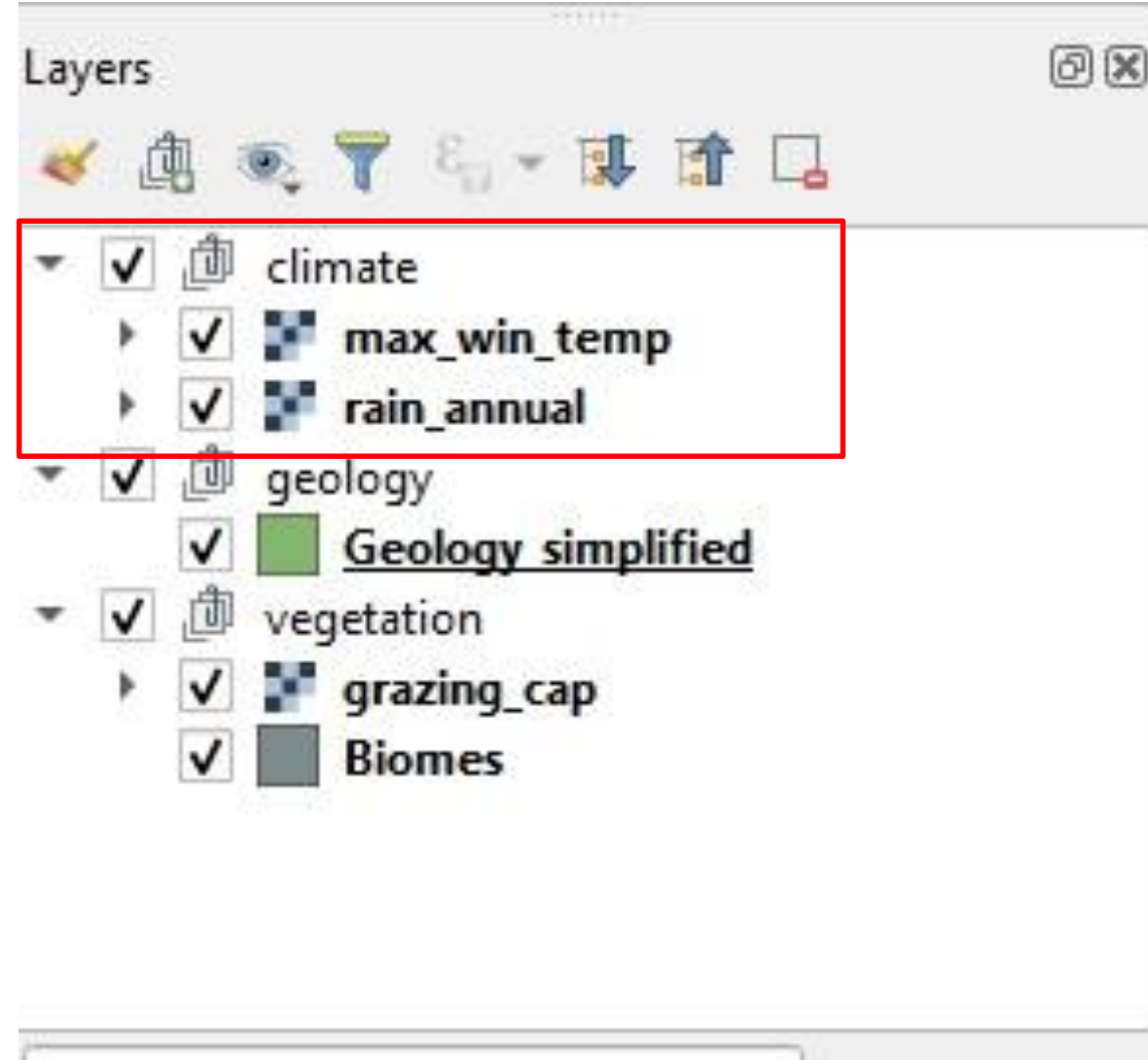
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Tools for adding map viewer elements to QGIS generated web maps with grouped layers

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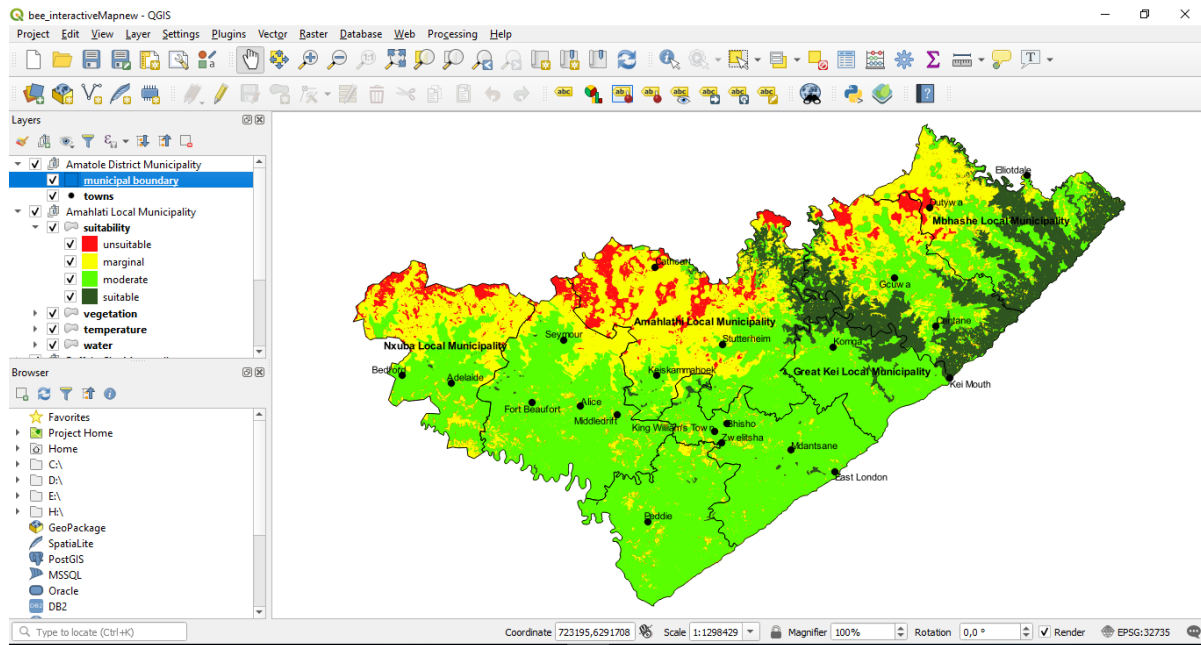
Background – Grouped layers

- **Grouped layers** refer to a collection of layers that can be managed together.
- The layers are arranged in a tree-like view.
- Usually each group contains related data.



Background - The qgis2web plugin

- The qgis2web plugin creates web GIS sites by exporting QGIS projects to html pages.



The user creates data and style it in QGIS.

The generated html pages simulate the appearance of GIS layers in QGIS.

The problem

- A distorted qgis2web dialog window.
- It lacks check boxes for controlling the visibility of a particular group.
- The layerswitcher is always longer than required because of the inability to collapse/expand the legend symbols of a layer and the inability to hide/expand the layers of a group.
- The generated site does not show the geographic coordinates of the mouse location.

Technical innovation of note

- The capability to collapse/ expand a group so that a user can hide/show grouped layers on the layerswitcher.
- Check box next to the group so that a user can control the visibility of a particular group instead of individual layers only.
- We ensured that the web page has a status bar showing the coordinates of the mouse location on the map.
- Steps to specify pop up fields.

How to use the tools

- **Currently there is no GUI based application to add the tools.**
- **It is advisable to use a text editor such as Notepad++, which numbers each line of a program code to insert the tools.**
- **Steps of enhancing the layerswitcher**
 - **Open the folder created by the created by the qgis2web plugin and navigate to the folder named resources.**
 - **In the resources folder open the ol3-layerswitcher.js file.**
 - **Scroll down the program and paste the hideShowLayerGroup script on line 175.**
 - **Add the addCheckBox script immediately.**

How to use the tools

```
// add hide/show button
var input2 = document.createElement('input');
input2.type = 'button';
input2.value = '+';
input2.id = lyrId;
li.appendChild(input2);
input2.onclick = function() {

    var cln = ul.cloneNode(true);
    var ulNew = document.createElement('ul');
    ulNew.appendChild(cln);
    if(ul.hasChildNodes()) {
        while (ul.lastChild) {
            ul.removeChild(ul.lastChild);
        }
        input2.value = '+';
    }
    else {

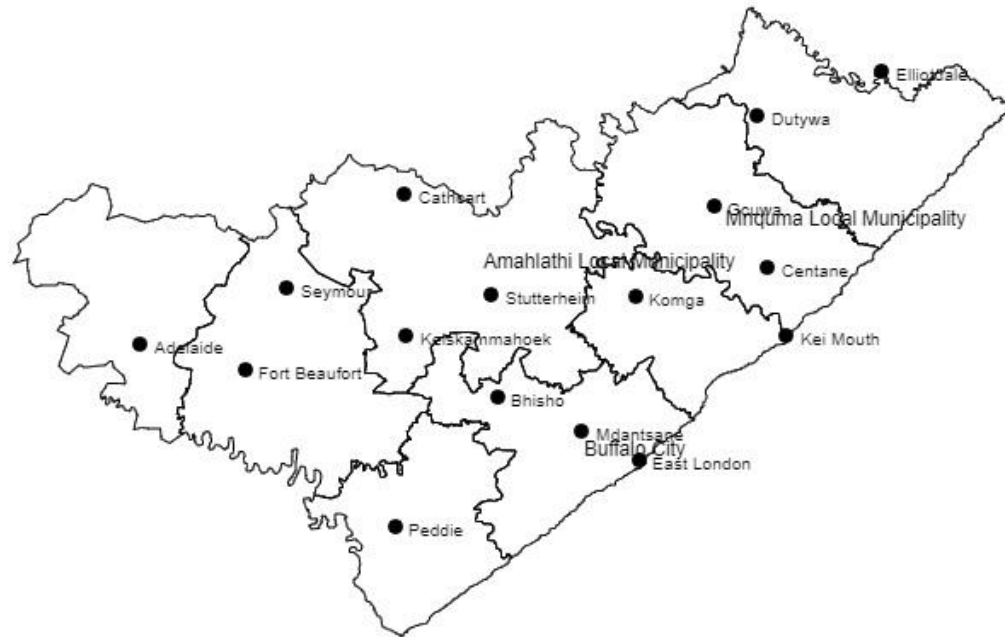
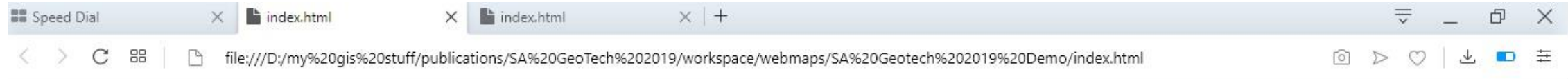
        var ul1 = ulNew.cloneNode(true);
        ul = ul1.cloneNode(true);
        li.appendChild(ul);
        this_.renderLayers_(lyr, ul);
        input2.value = '-';
        while (ulNew.lastChild) {
            ulNew.removeChild(ulNew.lastChild);
        }
    }
};
```

```
// append check box
var input = document.createElement('input');
input.type = 'checkbox';
input.id = lyrId;
input.checked = lyr.get('visible');
input.onchange = function(e) {
    this_.setVisible_(lyr, e.target.checked);
};
li.appendChild(input);
```

Case study - Background

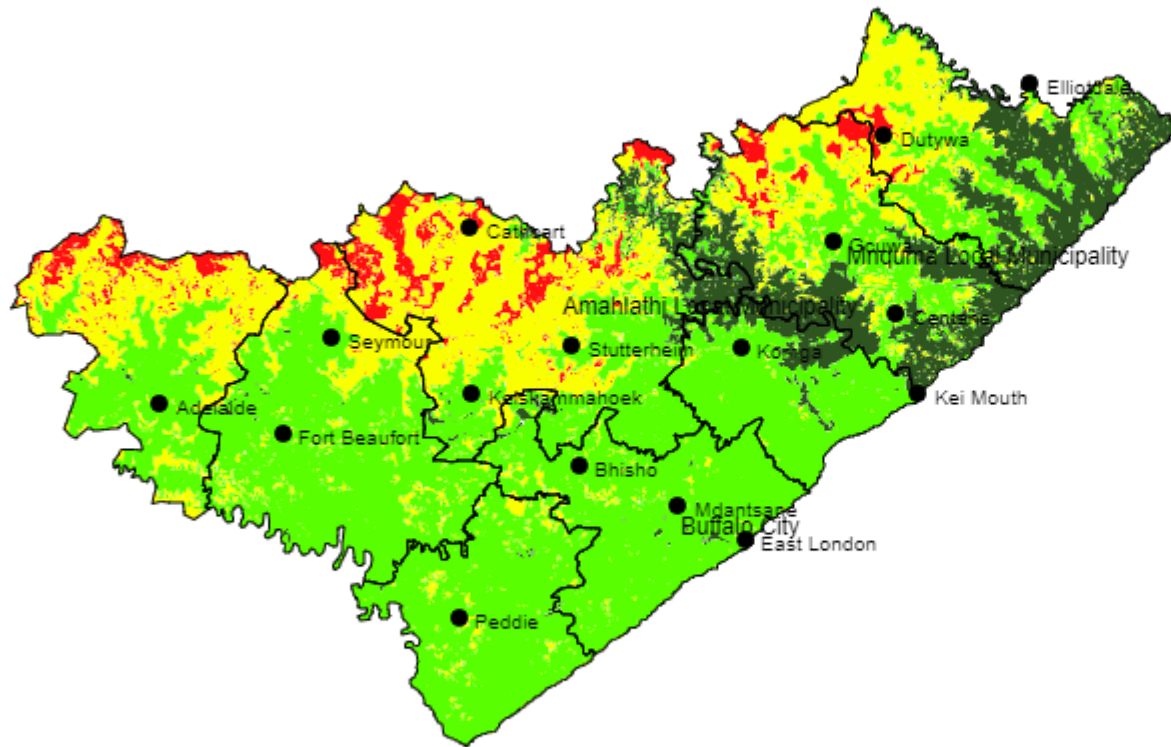
- **A platform for distributing interactive maps of beekeeping suitability for each local municipality in the Amathole District Municipality.**
- **A collaboration between the Fort Hare University and stakeholders in the beekeeping industry including farmers, beekeepers, local authorities and foresters.**
- **The project created beekeeping-suitability map layer based on temperature, water and vegetation.**
- **The web GIS site required the interactive maps to show the suitability of each factor in order to determine the limiting factor at each location.**

Application of the developed tools



- Amathole District Municipality
- Amahlathi Local Municipality
- Buffalo City Metropolitan
- Great Kei Local Municipality
- Mbashe Local Municipality
- Mquma Local Municipality
- Ngqushwa Local Municipality
- Nkonkobe Local Municipality
- Nxuba Local Municipality

Application of the developed tools



- Amatole District Municipality
 - towns
 - municipal boundary
- Amahlathi Local Municipality
 - suitability
 - unsuitable
 - marginal
 - moderate
 - suitable
 - vegetation
 - unsuitable
 - marginal
 - moderate
 - suitable
 - temperature
 - unsuitable
 - marginal
 - moderate
 - suitable
 - water
 - unsuitable
 - marginal
 - moderate
 - suitable
- Buffalo City Metropolitan
- Great Kei Local Municipality
- Mbashe Local Municipality
- Mquma Local Municipality

Significance of the problem

- Improved visualisation on web GIS sites.
- Due to popularity of grouped layers on web GIS sites availability of free and open tools to handle grouped layers will greatly facilitate the publishing of geospatial data on the web due to reduced development time and costs.
- The function is important if web GIS sites are to extend the role of desktop GIS.