Hands-on experience on OGC Web Processing Services using 52north web processing framework

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Introduction

This tutorial[1] has been developed for the AGILE workshop about *Test-bed for geospatial web service interoperability* in May 2007. The tutorial will allow you to discover the possibilities of the combination of geo services based on the OGC's WFS, WPS and WMS standards in an open source software environment. We will use uDIG as client-software to access a few services as part of a fire hazard assessment scenario in the Spanish province of Gallicia. In this scenario we basically carry out a simple analysis in which we assess the affected areas of wildfires with respect to road infrastructure and landcover, which is done at a rather small scale In this scenario we will take the following steps:

1. Load a large scale road data service (WFS at ITC) and simplify it with a generalisation service (WPS at ITC), by WFS-WPS chaining
2. Load fire hazard areas (WFS at JRC) and calculate a hazard area around them with a buffer service (WPS at ITC), by WFS-WPS chaining
3. Load a service with Corine land cover data and administrative boundaries (WMS at ITC).

All the above services are visible in one window as map layers and can be used for visual analysis.

Remark

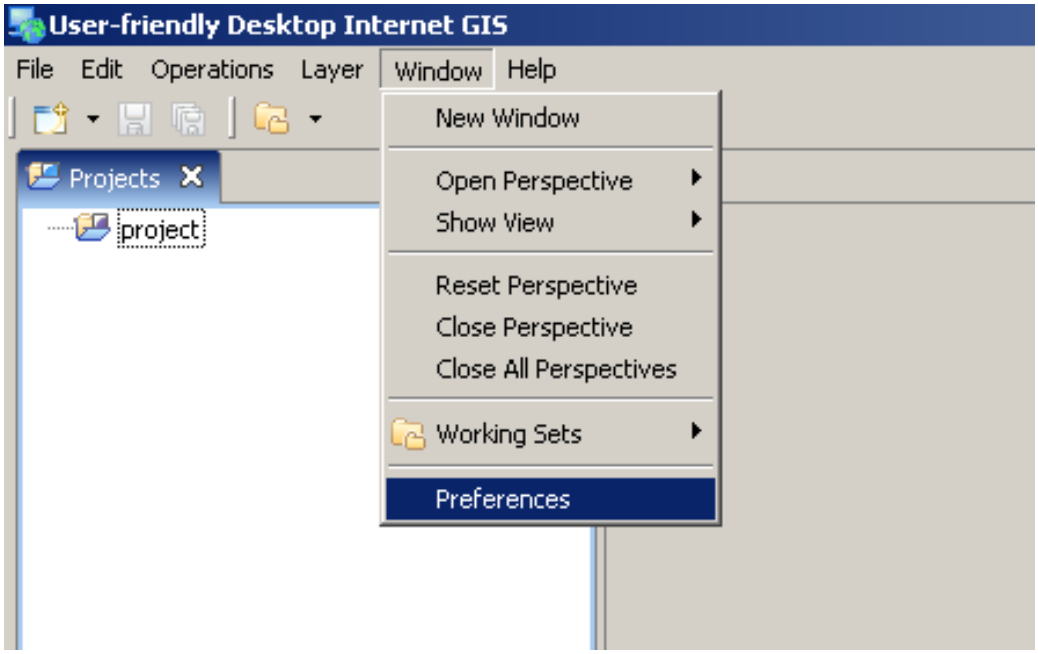
If you have a Web Processing Service running locally, please feel free to exchange http://geoserver.itc.nl:8080/wps/WebProcessingService with your own WPS endpoint.
Please make sure, that the 52n udig WPS client plugin is installed correctly in your udig distribution.

Tutorial

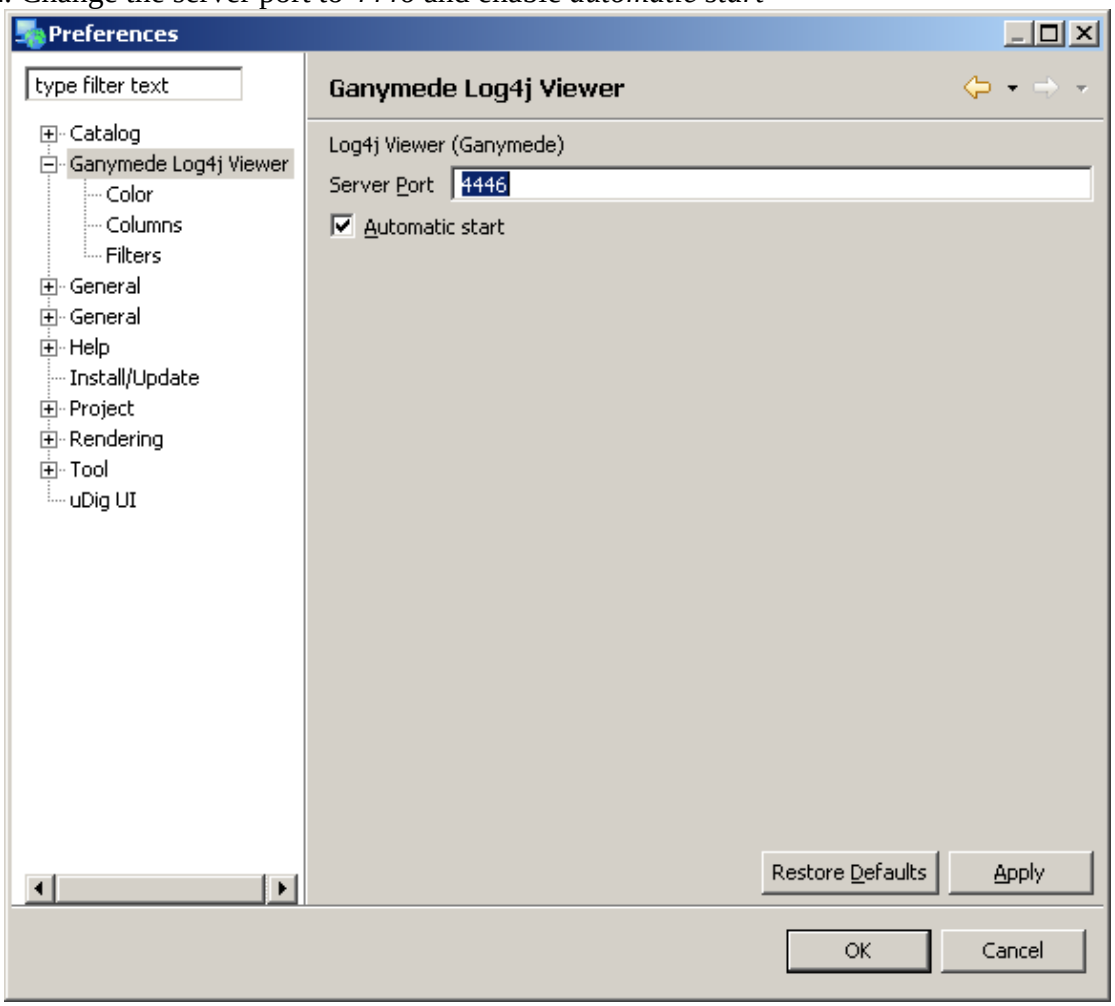
- Go to your udig root directory and start udig.exe
- Enable the Ganymede tool to log the WPS communication

[1] The data referenced in this tutorial is kindly provided by JRC, Italy and ITC, the Netherlands.

1. Go under Windows ➔ Preferences

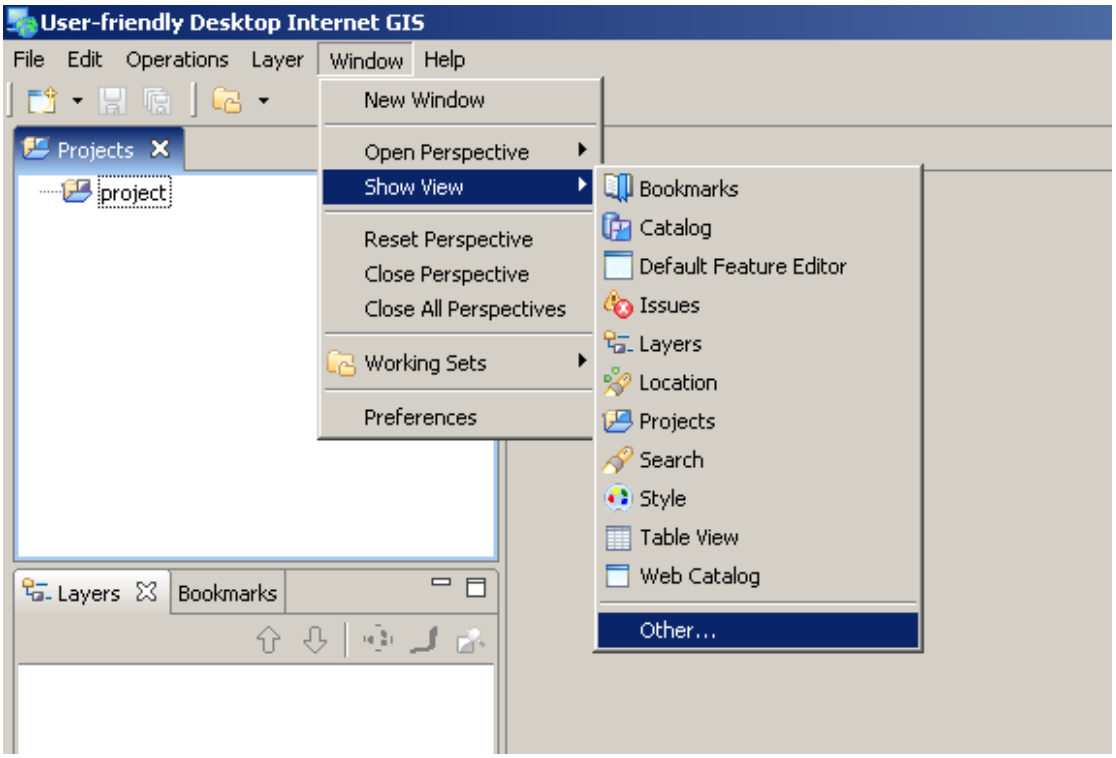


2. Change the server port to *4446* and enable *automatic start*

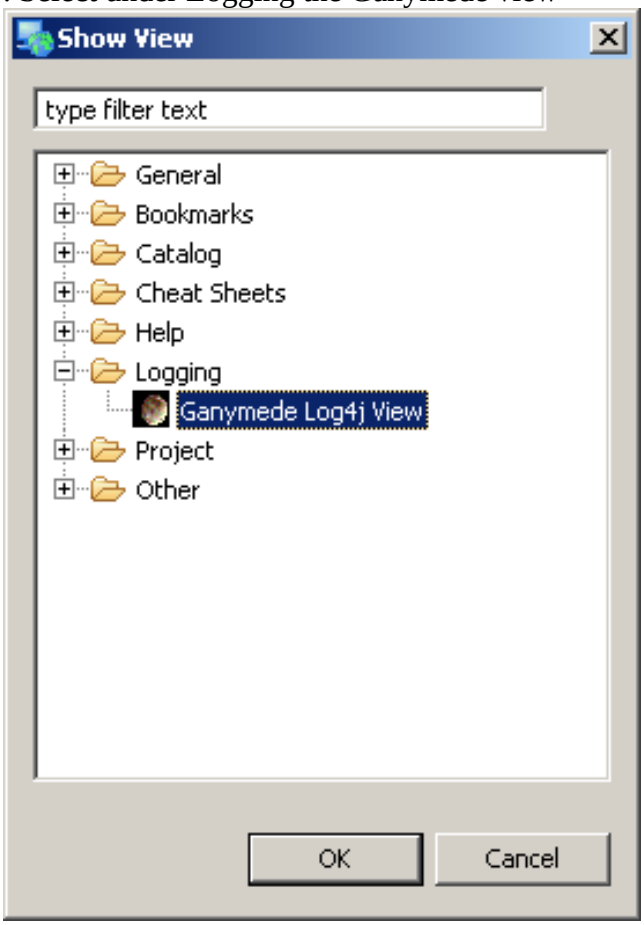


3. Add the columns you like, we suggest Date and Message

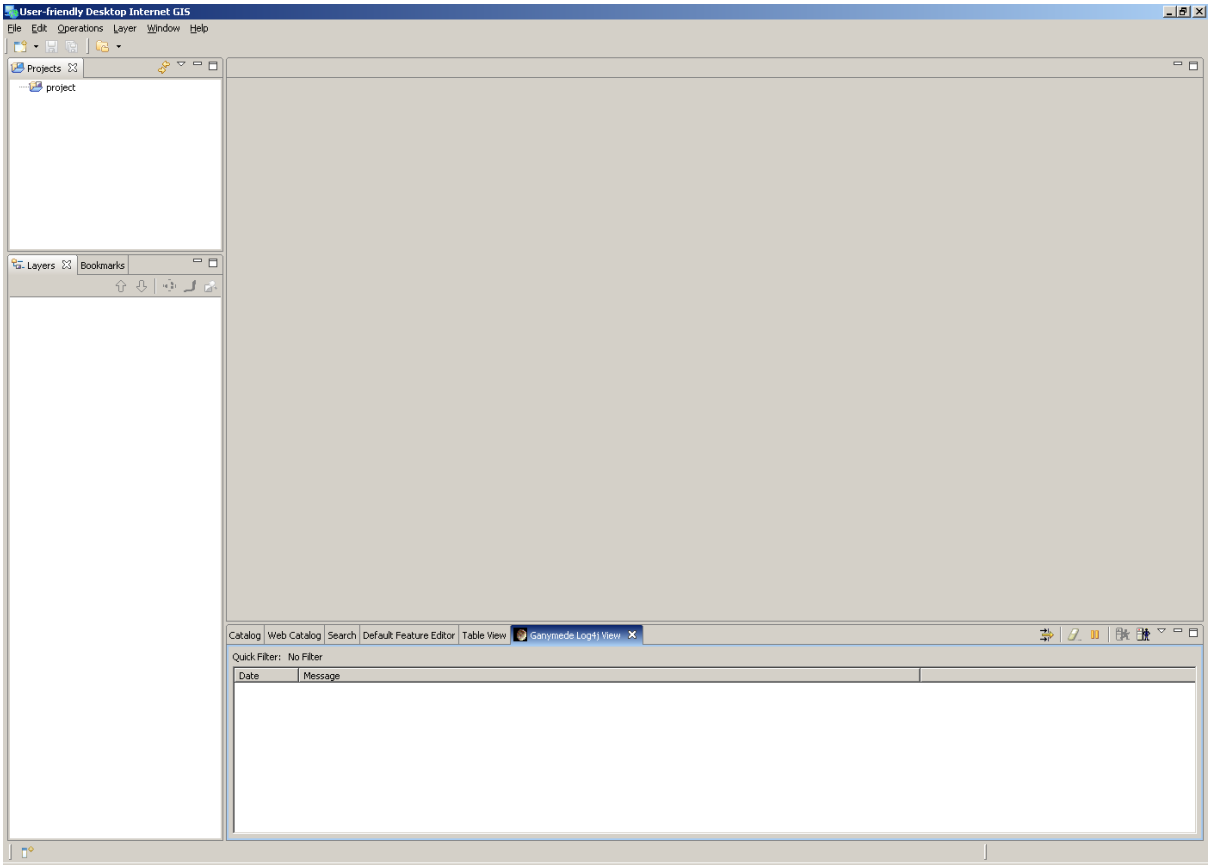
4. Press Ok to apply and store the settings to udig and go to Window ➔ Show View ➔ Other…



5. Select under Logging the Ganymede view

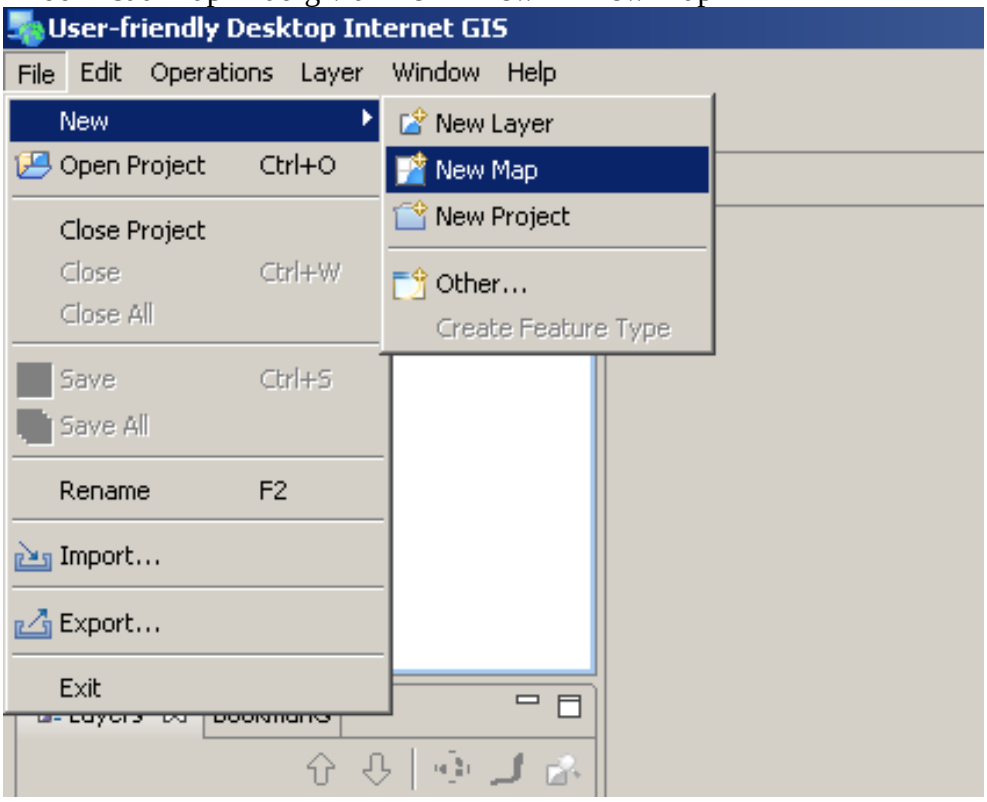


6. Your screen should now look like this:

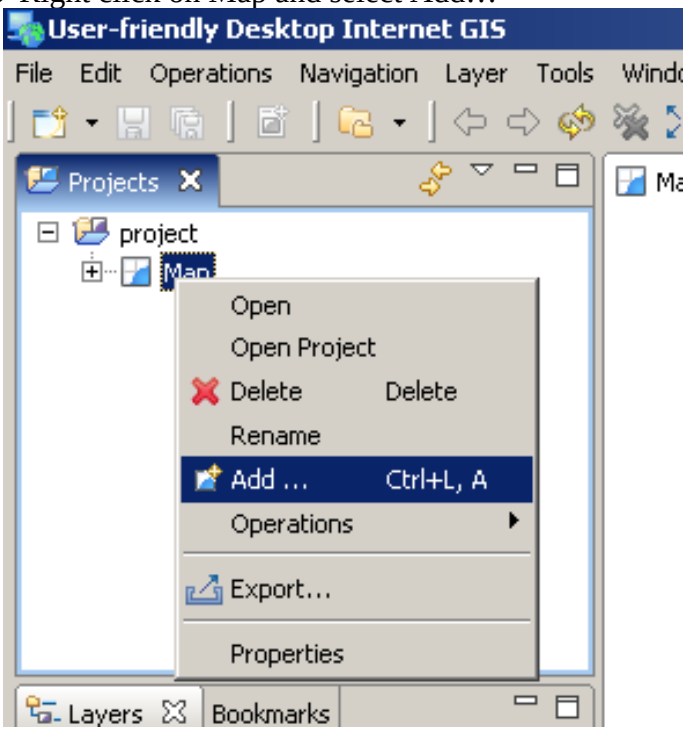


- Log in the Web Feature Service containing the roads

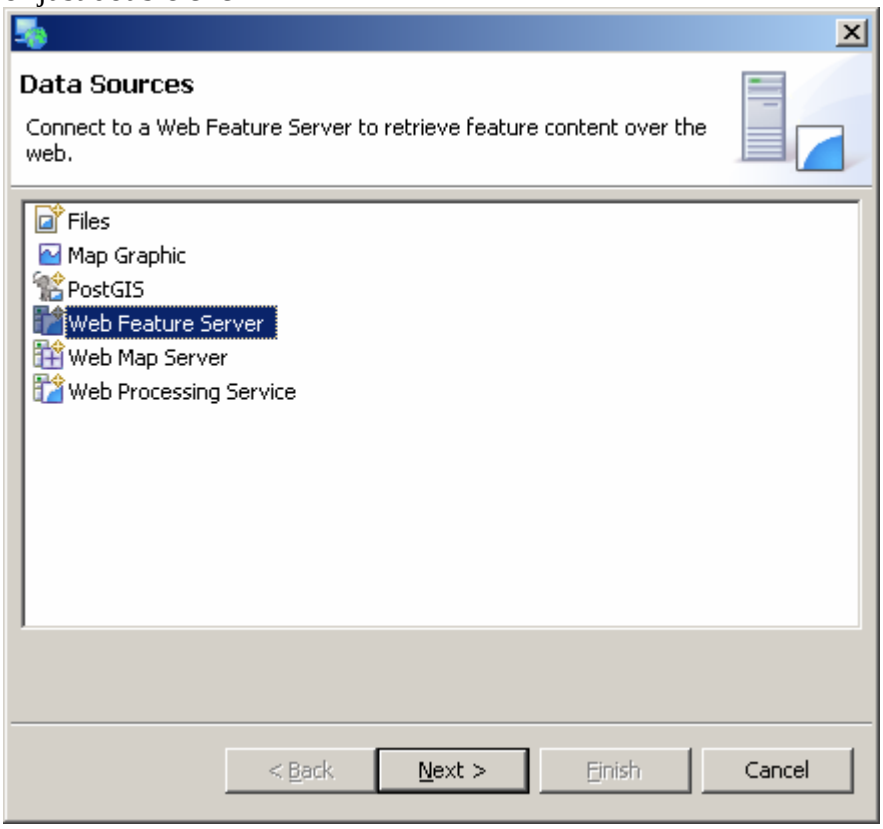
o Add first a Map in udig via File ➔ New ➔ New Map



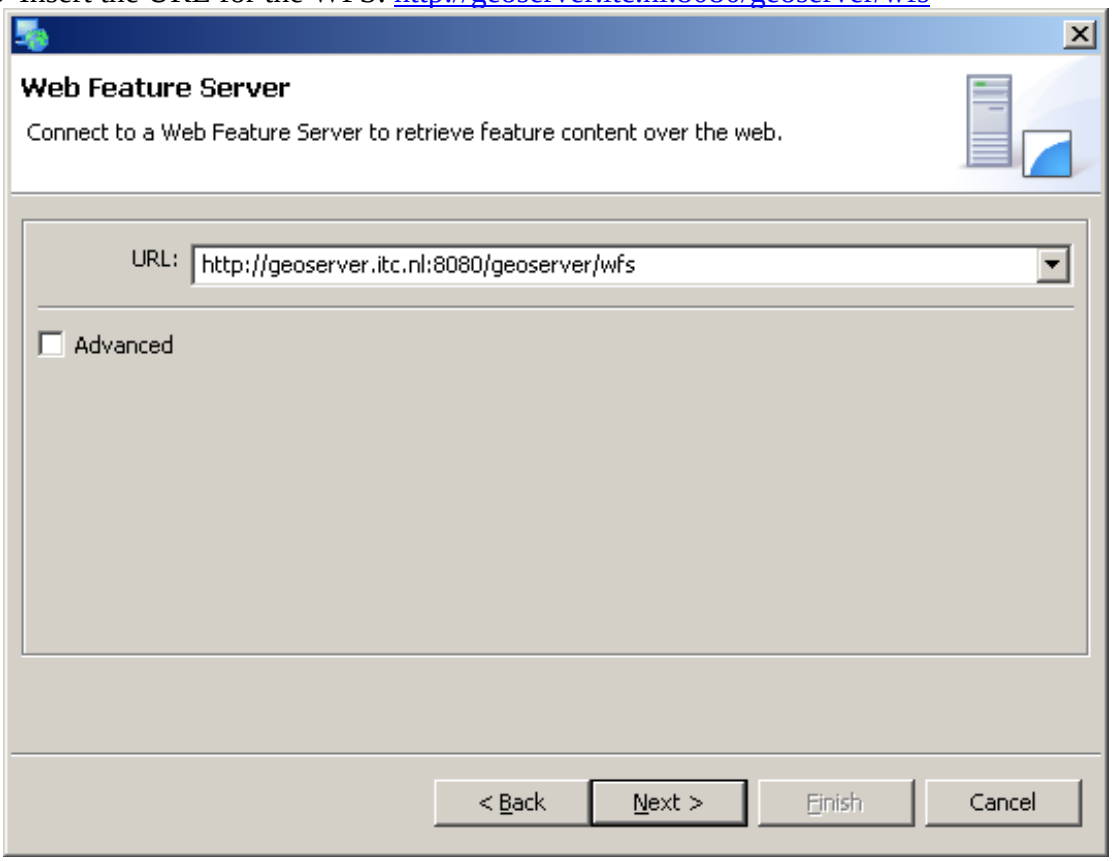
- Right click on Map and select Add…



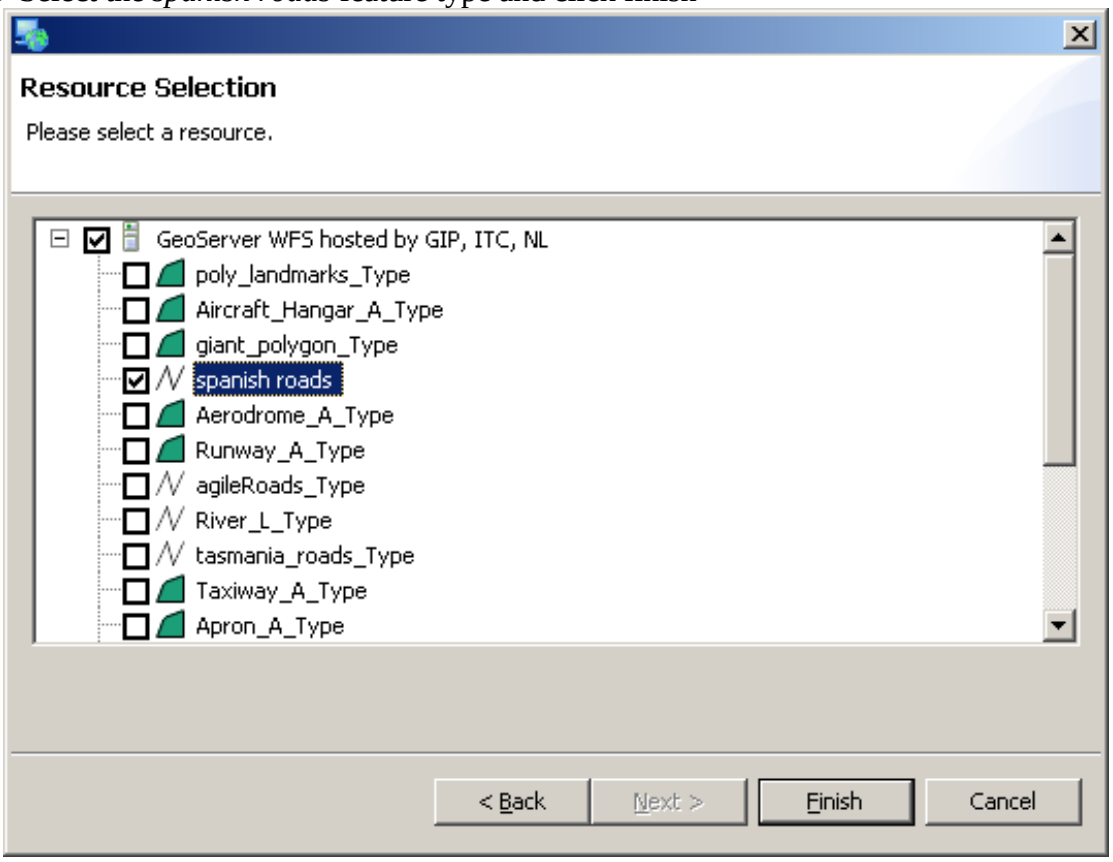
- Select the data source you want to add to the map: *Web Feature Server* press next or just double click



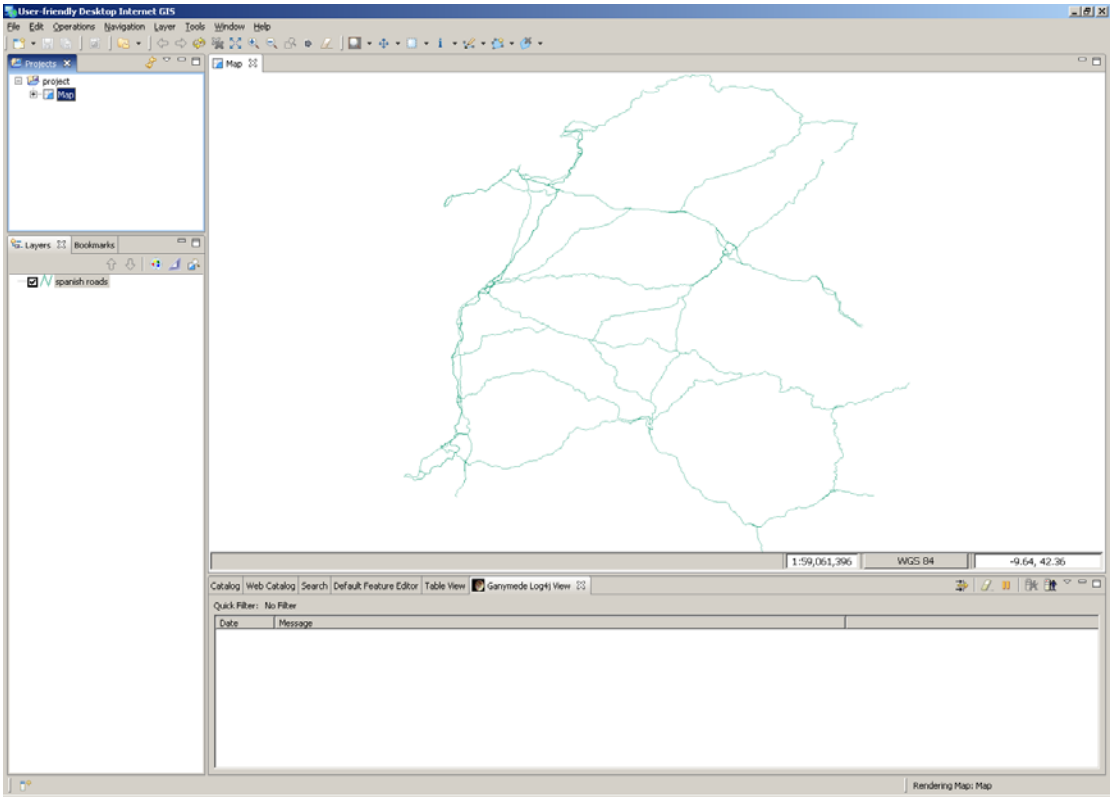
- Insert the URL for the WFS: http://geoserver.itc.nl:8080/geoserver/wfs



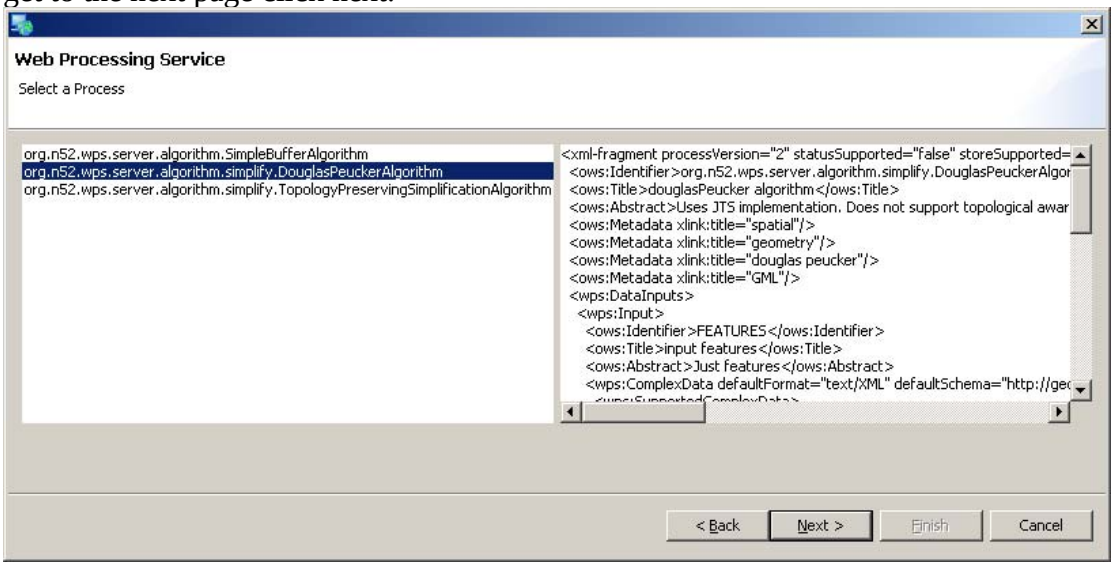
- Select the *spanish roads* feature type and click finish



- You should now see this screen

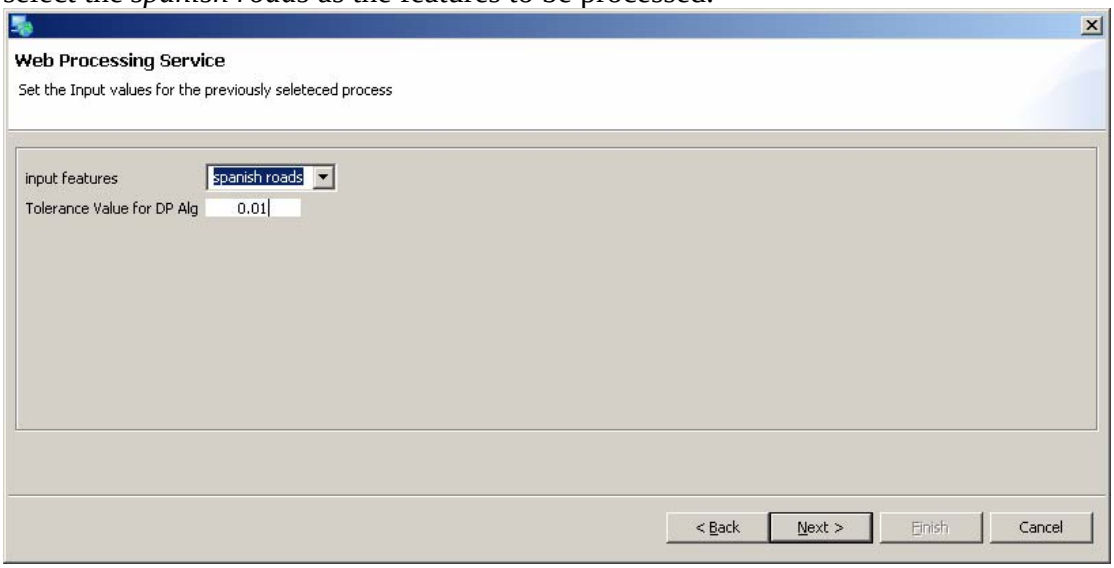


- As the roads are too detailed, they have to be simplified. Thus we will login a remote process, which simplifies the geometries of such features. The features are send by reference to the process.
- We add a Web Processing Service with http://geoserver.itc.nl:8080/wps/WebProcessingService as the WPS endpoint. Then this window will appear and you will select the appropriate algorithm (in this case org.n52.wps.server.algorithm.simplifyDouglasPeuckerAlgorithm) on the left. On the right side of the page you see the XML description of the selected process. To get to the next page click next.

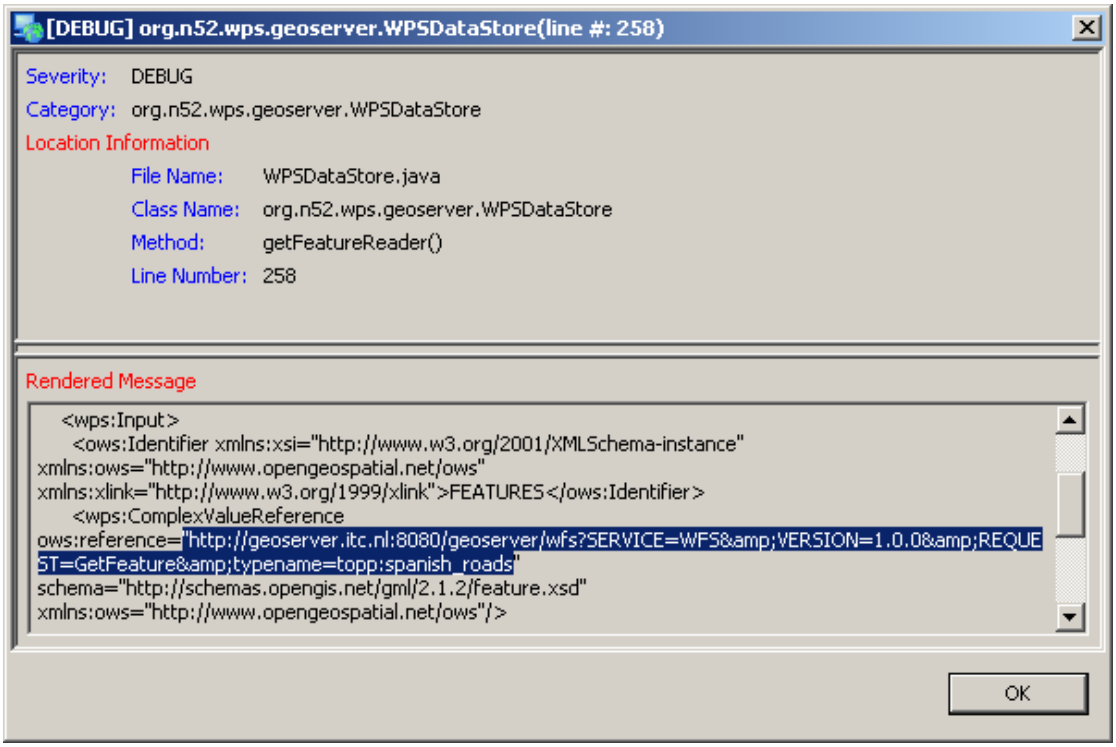


- Now the parameters and the data to be processed can be chosen. In our case set the tolerance value of the algorithm to 0.01 (degree distance due to WGS84) and

select the *spanish roads* as the features to be processed.

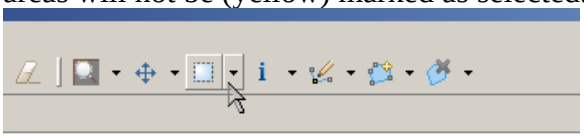


- On the last page please just press finish in order to confirm.
- In the Ganymede Log4j View you are now able to watch the messages being send and received to/from the WPS. Double-click on each item you are specifically interested. In the screenshot below you see for instance, that the data is send as a WFS-reference to the WPS.

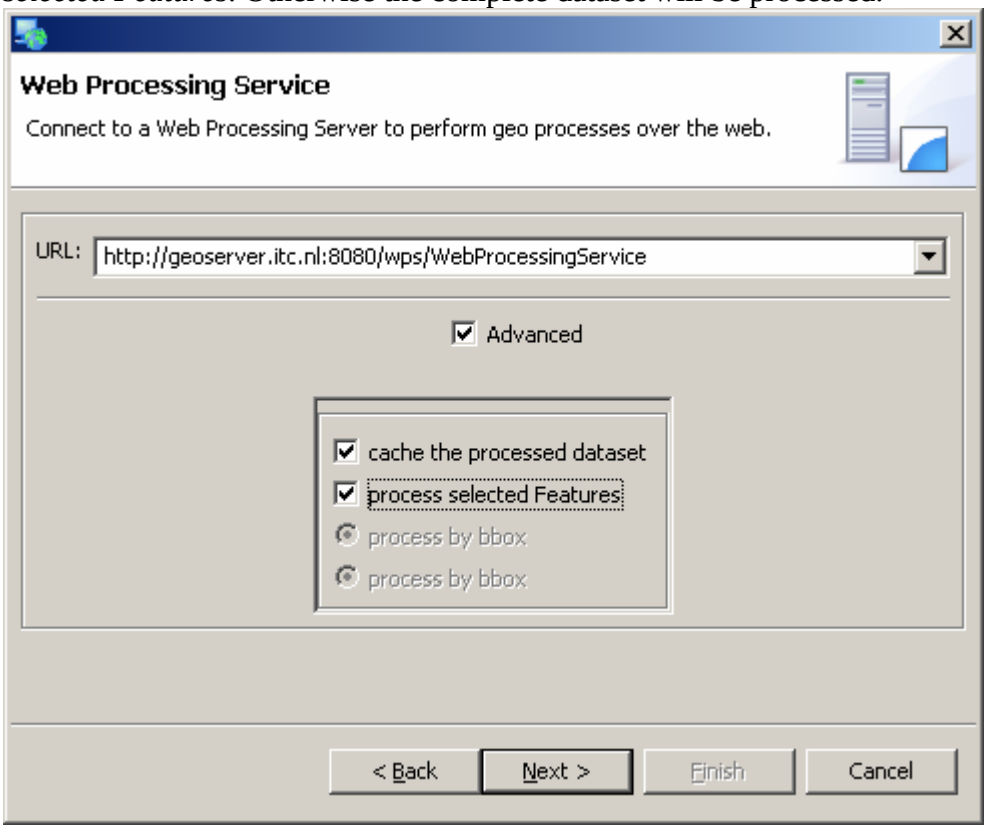


- Now log in the Web Feature Service of the JRC using this endpoint: http://naturegis.jrc.it:8080/geoserver/wfs and select the *ras2006_type*. This feature type contains all the burned areas of 2006 in Europe. We are now interested in the (indirectly) affected areas in our area.
- In order to detect those areas we will again use a WPS process to build a buffer around the areas of interest. Thus select a couple of areas in the near of the roads with the cursor tool for bounding box selection tool for features (5th tool from the right) Make sure, that the burnt areas dataset is selected, otherwise the selected

areas will not be (yellow) marked as selected..

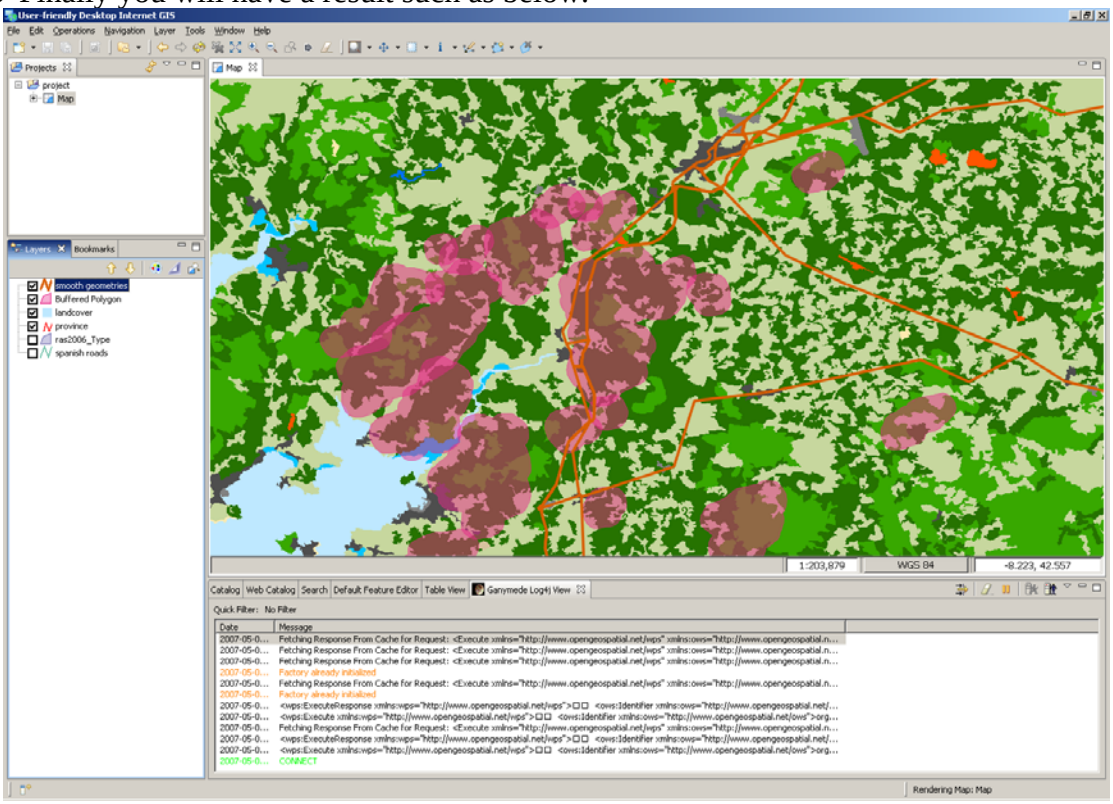


- Now login the WPS at http://geoserver.itc.nl:8080/wps/WebProcessingService. But at this time make sure, that you check the *Advanced* option and select *process selected Features*. Otherwise the complete dataset will be processed.



- Now select the appropriate algorithm for buffering (org.n52.wps.server.algorithm.SimpleBufferAlgorithm) and set the appropriate processing parameters. The polygons to be buffered are in *ras2006_Type* and a good buffer distance is 0.01 (distance in degree due to WGS 84). For the confirmation please select *Buffered Polygon* at the last page.
- Now you can finally add the WMS to also have some additional background visualization. http://geoserver.itc.nl/cgi-bin/mapserv.exe?map=D:/Inetpub/geoserver/mapserver/configGalicia.map.

- Finally you will have a result such as below.



The udig client implementation to access the WPS was mainly contributed by Bastian Schäffer, as part of his MSc. at the Institute for Geoinformatics, Münster, Germany.

The client implementation and the WPS implementation are published at 52north and can be accessed through www.52north.org and https://incubator.52north.org/twiki/bin/view/Processing/52nWebProcessingService.
The client is available at:
http://incubator.52north.org/twiki/bin/view/Processing/52nUdigWPSClient
If there are any problems or comments about this tutorial please contact:
foerster@52north.org.