



From SHERPA to RIAT+

Quick Start Guide

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0 INTRODUCTION

The SHERPA (Screening for High Emission Reduction Potential on Air) and RIAT+ (Regional Integrated Assessment Tool Plus) tools can be used by regional/local authorities to support the analytical activities necessary to construct an air quality plan. In particular, SHERPA is a screening tool that allows rapid exploration of potential improvements in air quality resulting from the reduction measures of national/regional/local emissions and RIAT+ is able to identify what are the good measures to improve the air quality of a given region.

One of the fundamental enhancement of 2016 version of RIAT+ tool is the possibility for a new user/Region to use a "first-guess data" (emissions, Source-Receptor models, abatement measures database) to run RIAT+ on any region in EU. The "first-guess data" is provided by the software SHERPA that succeed in solving one of the major issue for the new RIAT+ user: to collect all input data.

This user guide explains how to create and set a new "first-guess data" region from SHERPA to RIAT+.

1 SHERPA TOOL

In SHERPA main screen click on “First guess RIAT+” module (Figure 1).

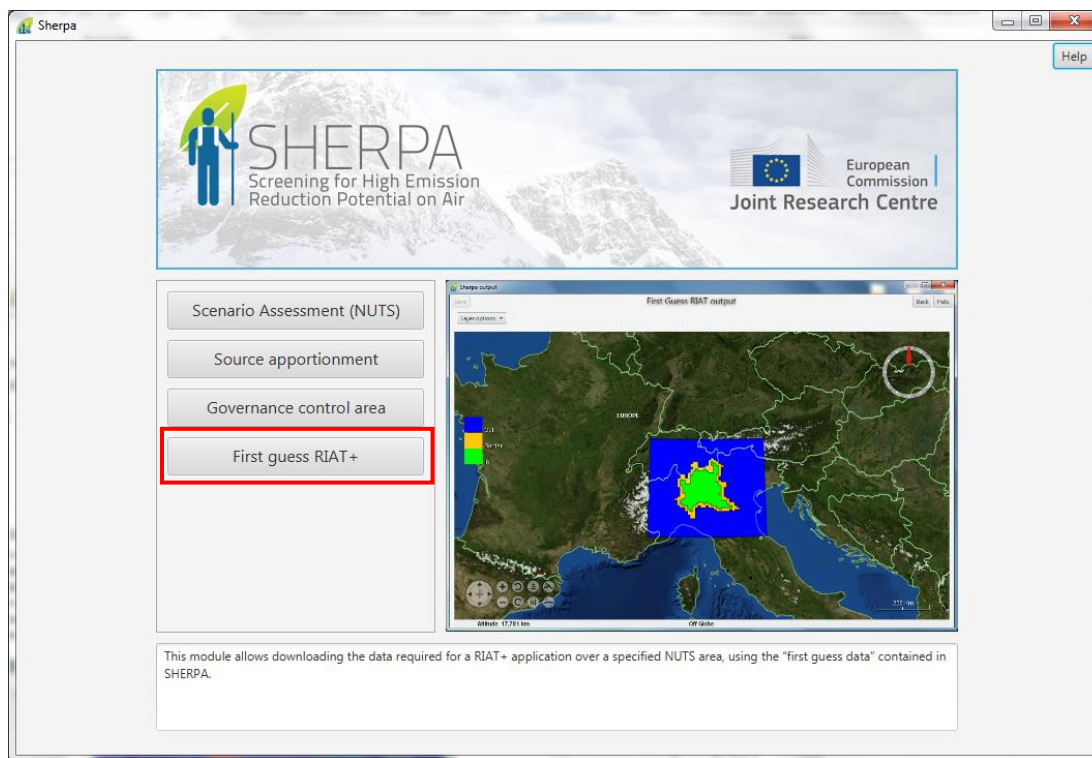


Figure 1 - “First guess RIAT+” SHERPA module.

In the next screen user must select a control area region through the map or through the NUTS list on the left. The area selected will be the Policy Application Domain (PAD) in RIAT+ tool.

On the lower part of the screen the user must enter the number of cells in each direction to enlarge the domain area and to create the grid domain for the RIAT+ elaboration (the outside domain in RIAT+).

Finally, in the last part of the screen the path of RIAT+ data directory and the name of the region must be entered.

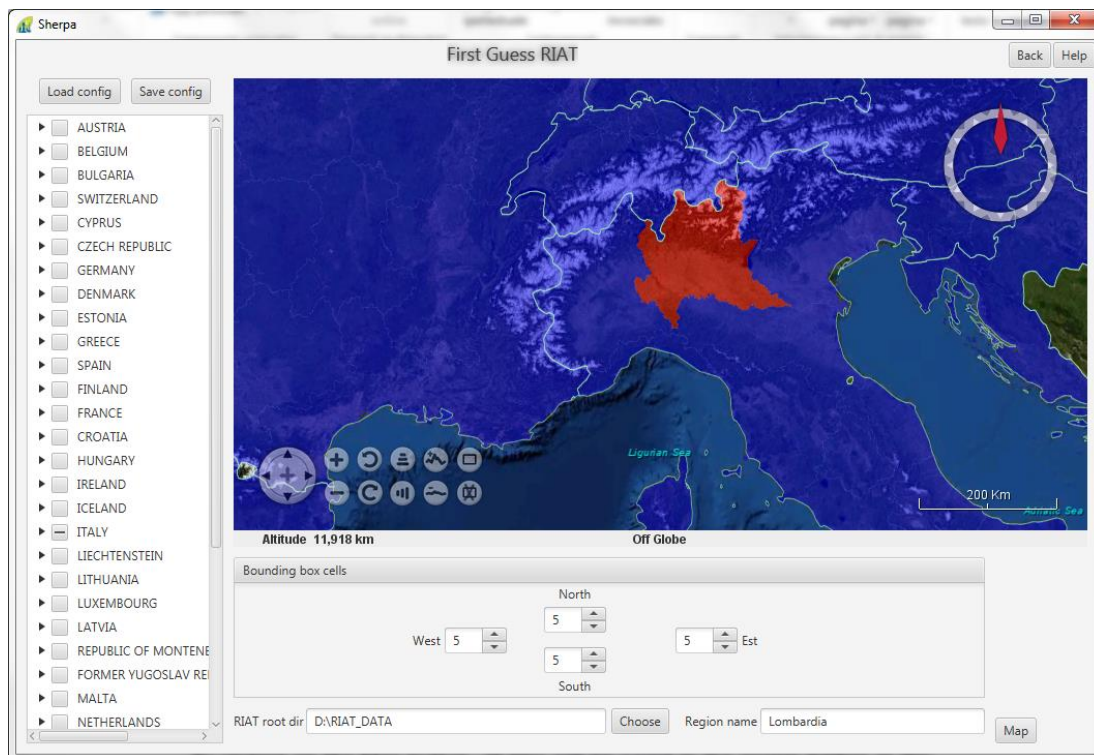


Figure 2 – Selecting the RIAT+ region

By clicking on the Map button, all files will be saved in the proper folders in the RIAT+ input data structure indicated by the user in lower text box.

The system will automatically create all the required input files for the RIAT+ tool:

- Domain file;
- Mapping file;
- Emission inventory files;
- GAINS measures database¹;
- Source-Receptor functions;
- Configurations files for RIAT+ screen.

Since the measures in the GAINS database are specific for each country, in case the area selected by the user include more than one country a windows appears and a measure DB should be selected.

At the end of the elaboration, a log file will be saved in output folder. In this file all data required in RIAT+ tool will be summarized. The output window shows this file (Figure 3).

¹ Please note that emissions are in activity detailed from INERIS and the reference year is 2010. While the measure databases is from IIASA (<http://gains.iiasa.ac.at/models/>) and related to 2010 and 2020 years. The downloaded scenario is: PRIMES 2013 REF-CLE (ID: TSAP_Sept2013_P13_REFv3)

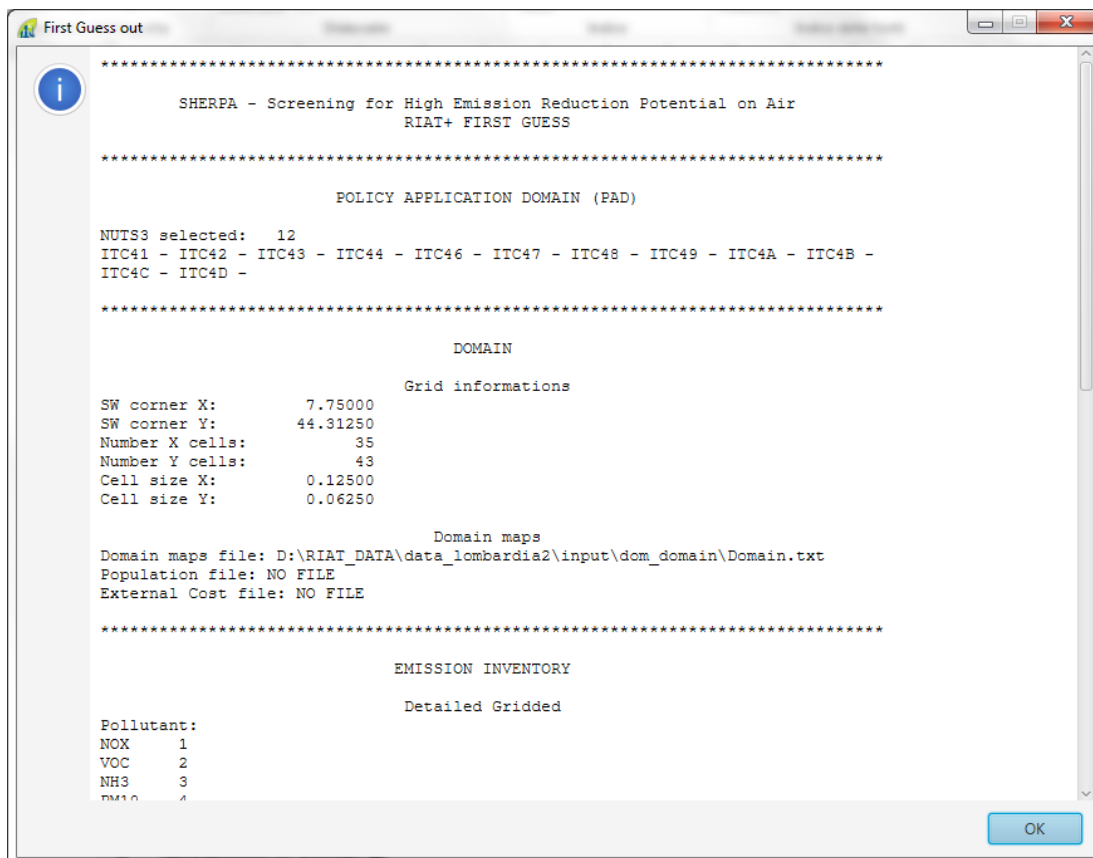


Figure 3 – RIAT+ data created.

The output map shows the RIAT+ domain created (Figure 4).

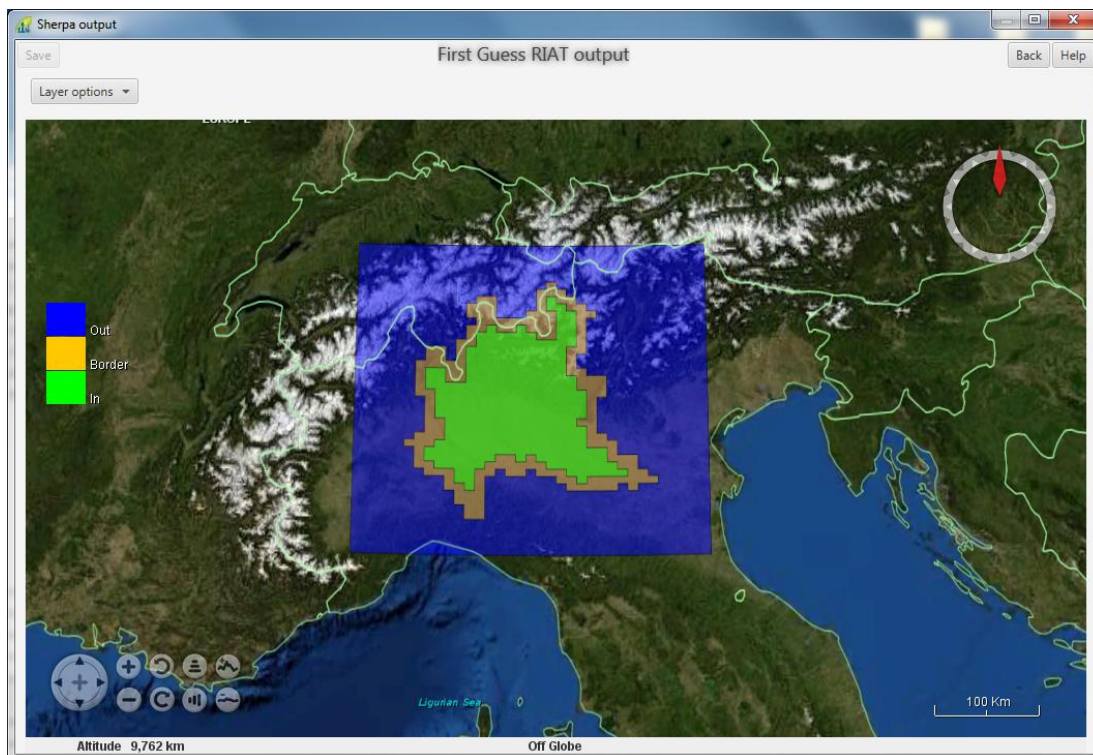


Figure 4 – RIAT+ domain

2 RIAT+ TOOL

Opening RIAT+ software, the tool will be automatically set on the new Region created by SHERPA.

The user must create a new project by clicking on the “New” button (Figure 5)

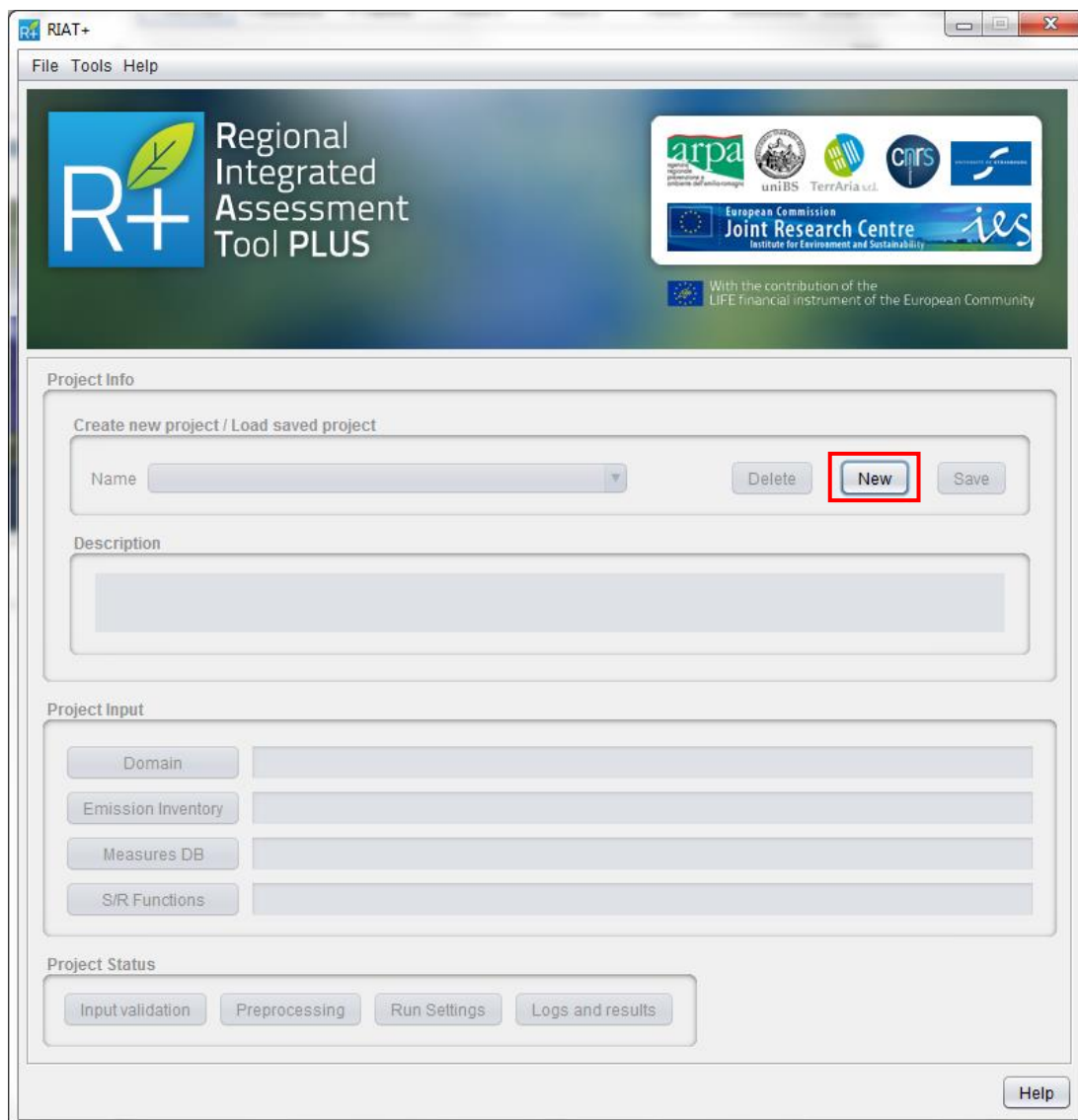


Figure 5 – Creating a new project.

Enter the name of the project and click on “OK” (Figure 6).

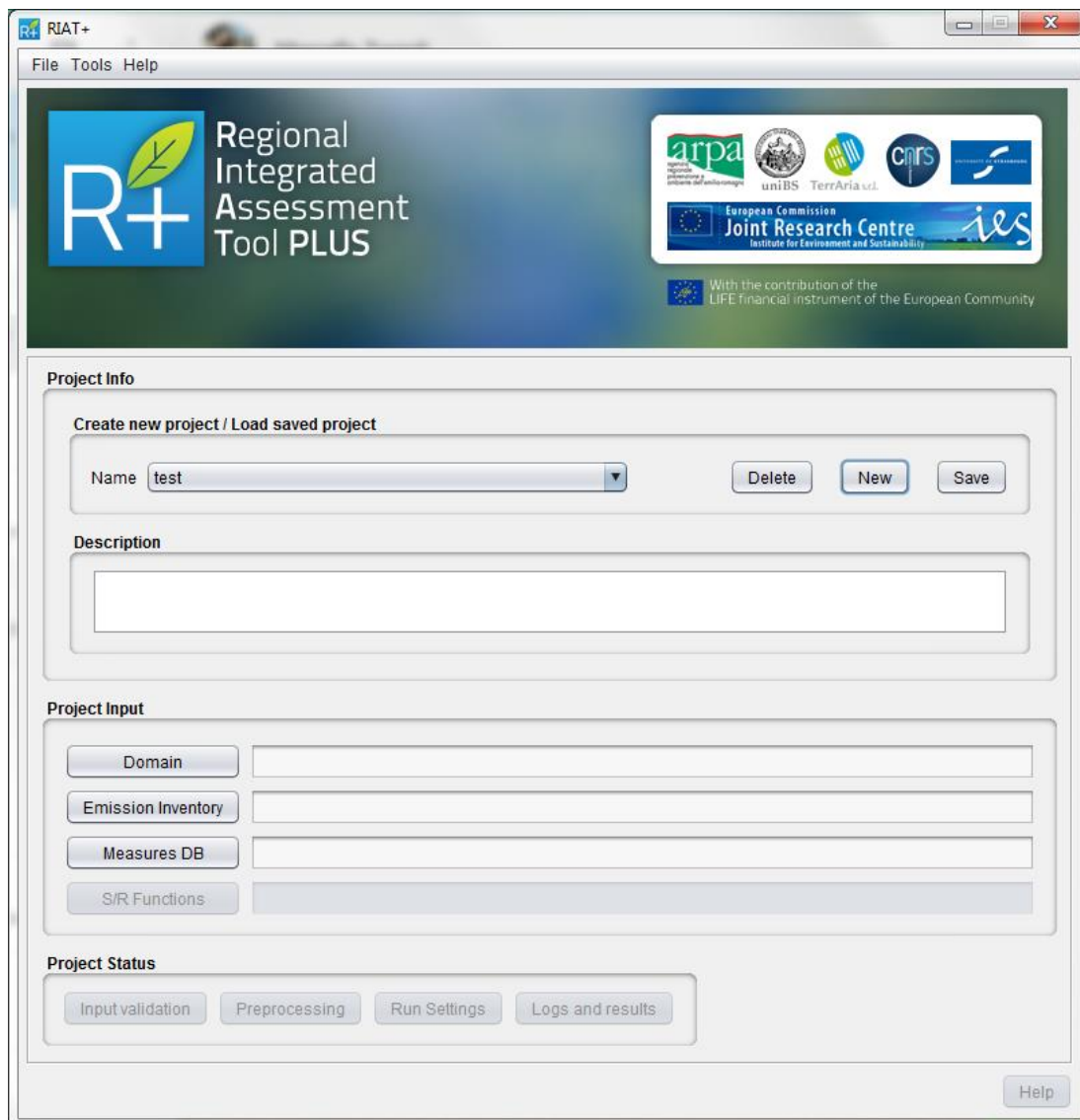


Figure 6 – New project created

Now in the “Project input” (Domain, Emission inventory, Measure DB, S/R functions) all the configuration files have already been configured by SHERPA tool, so the user must only open all the input screens and confirm by clicking on “OK” button (following figures).

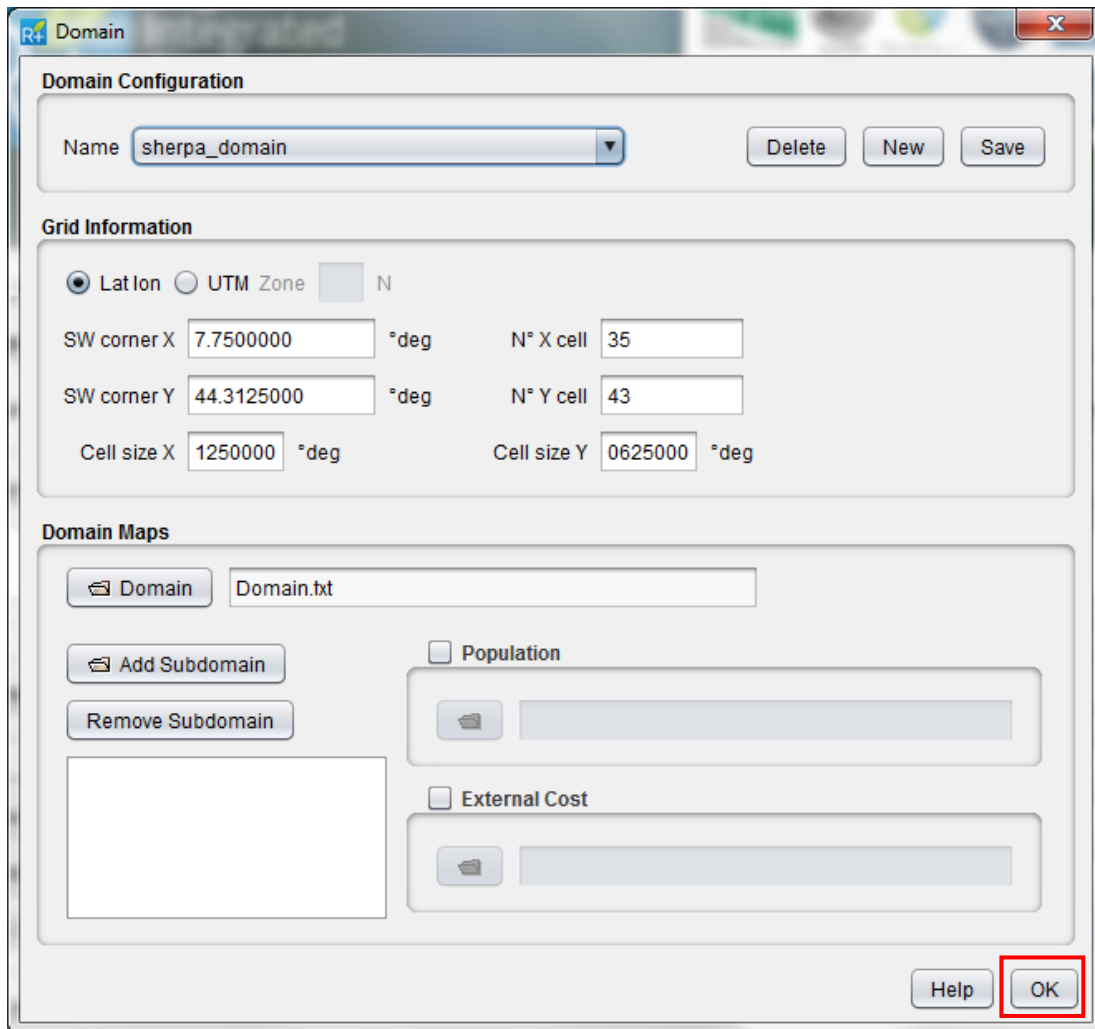


Figure 7 - Domain screen

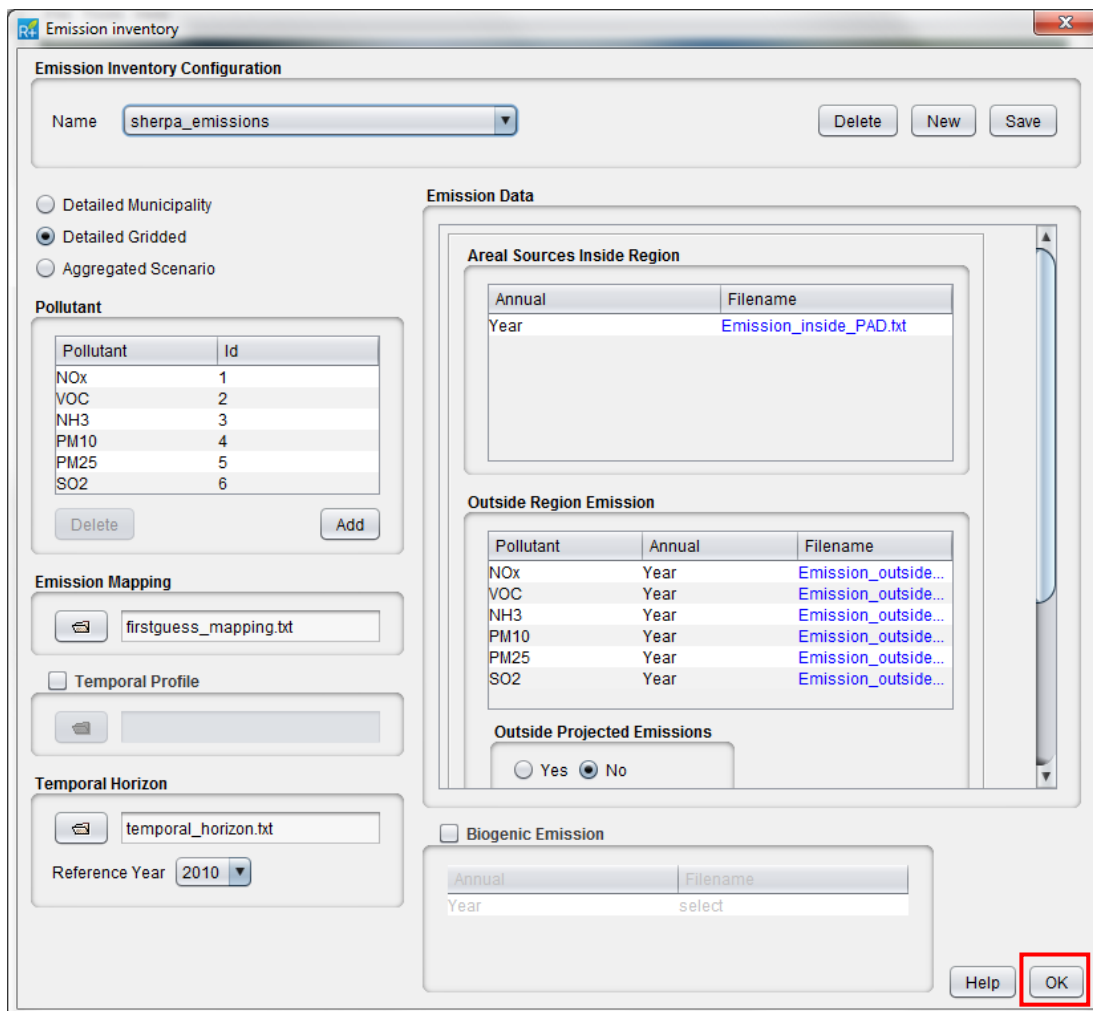


Figure 8 - Emission inventory screen

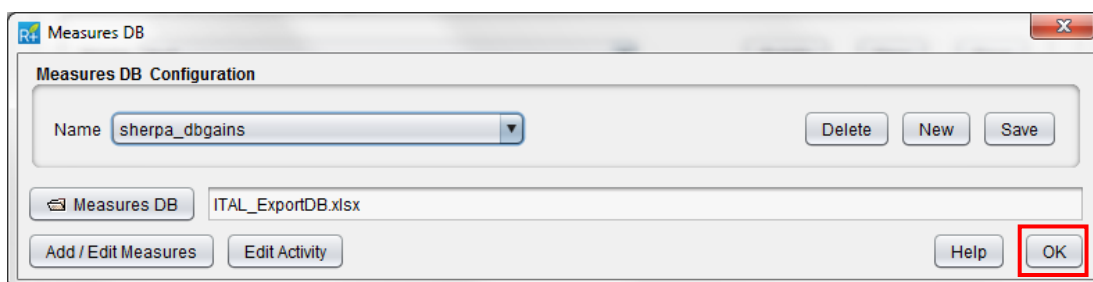


Figure 9 - Measure DB screen

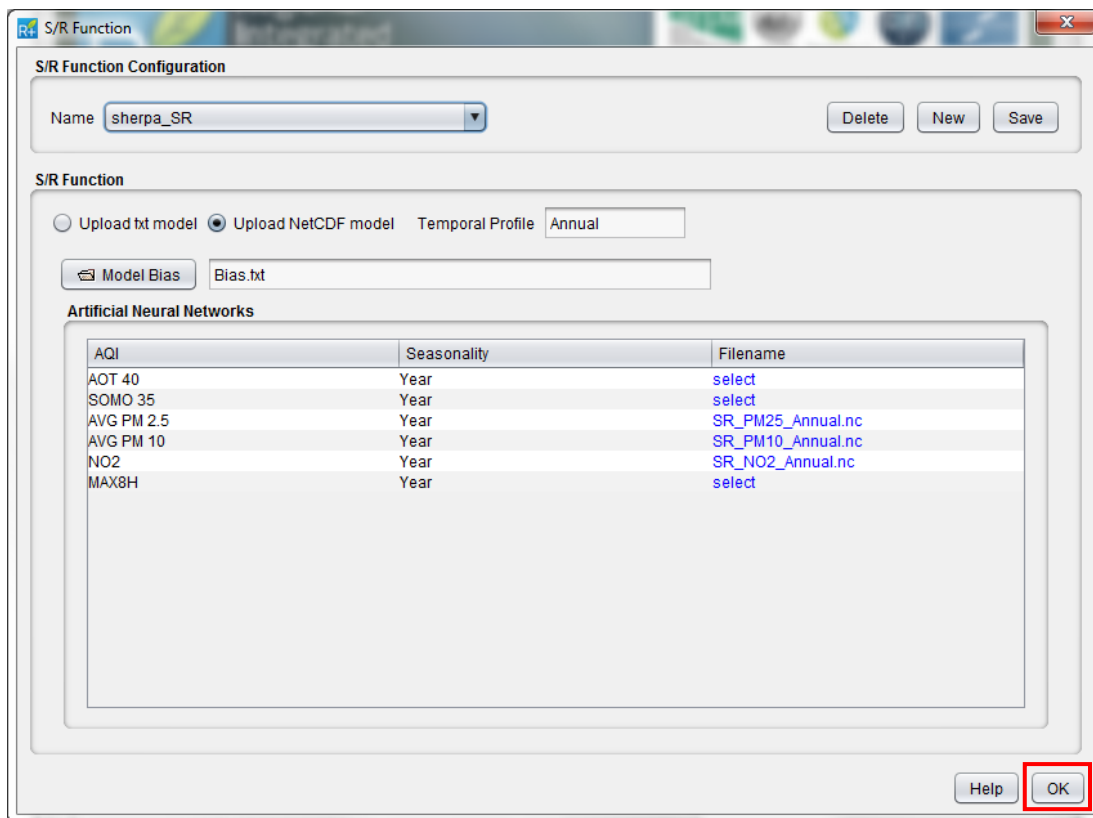


Figure 10 - S/R function screen

Now all input data are properly loaded and the tool is ready to preprocessing the data. Save the project you have just created using the “Save” button on the right side and then click on “input validation” button (it verifies the input data coherence).

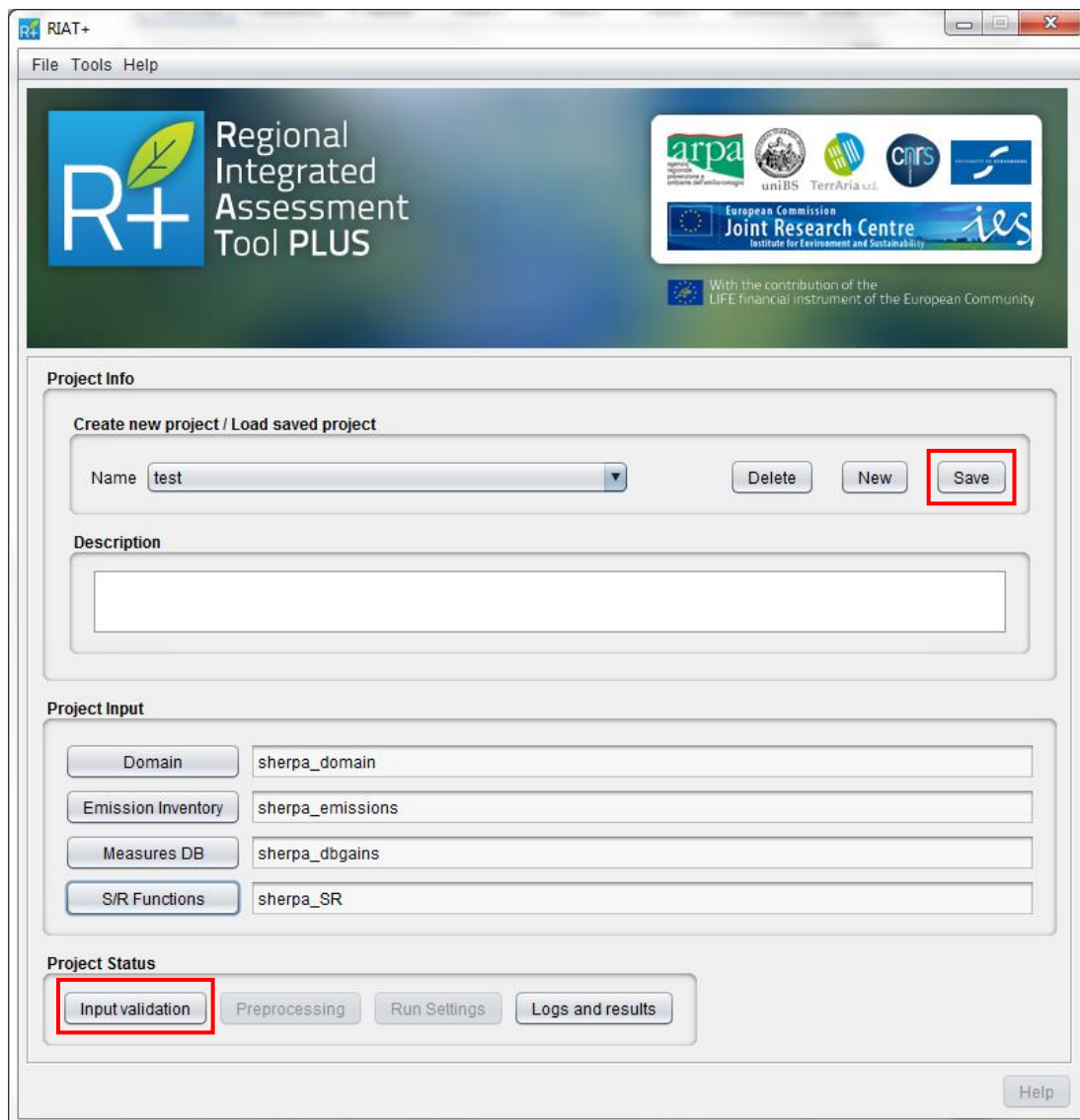


Figure 11 - Save the project and validate all input data

The user can check the progression of the process clicking on the “Logs and Results” button (click OK to return to the main GUI). This run takes about half minute and it is OK when the “Preprocessing” button will be enable and in the “Run results” you can see the message in Figure 12.

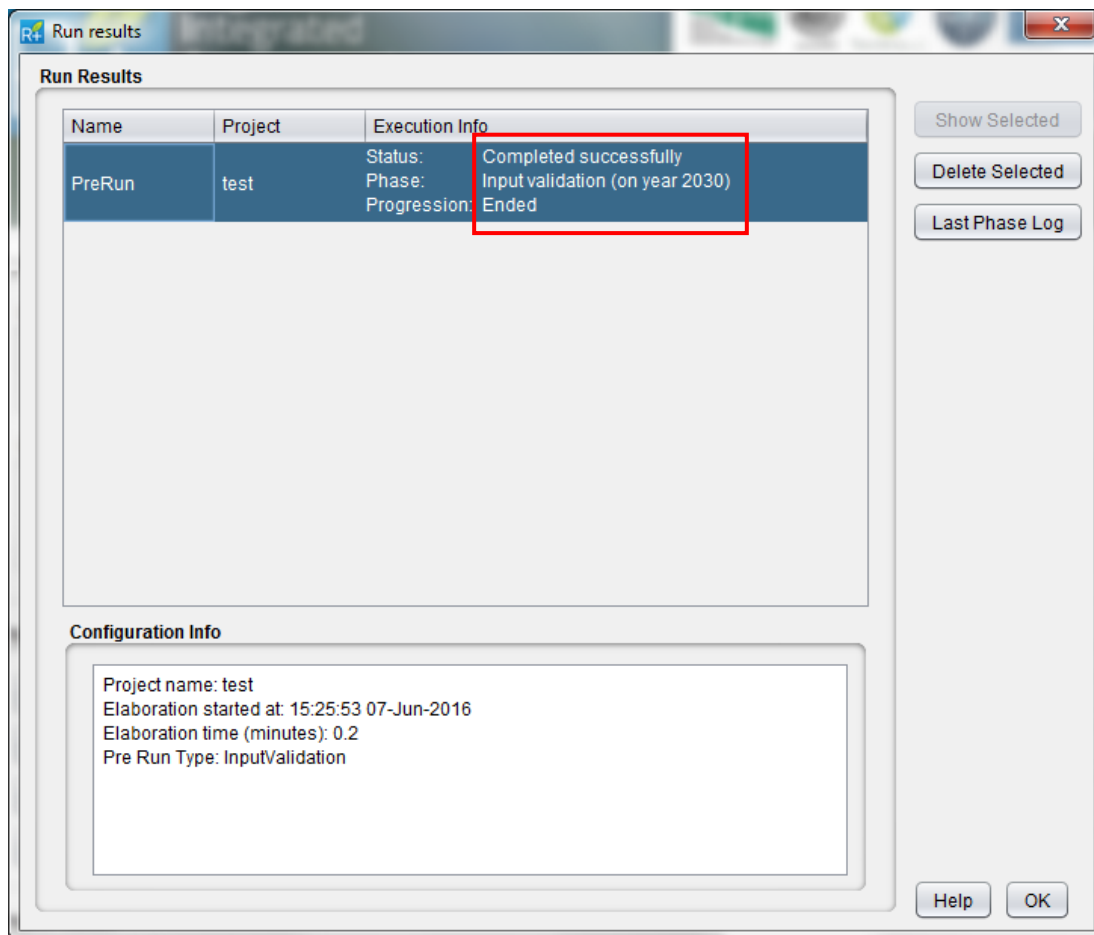


Figure 12 - Validation data: completed successfully.

Now the tool is ready for the Preprocessing. Click on the button.

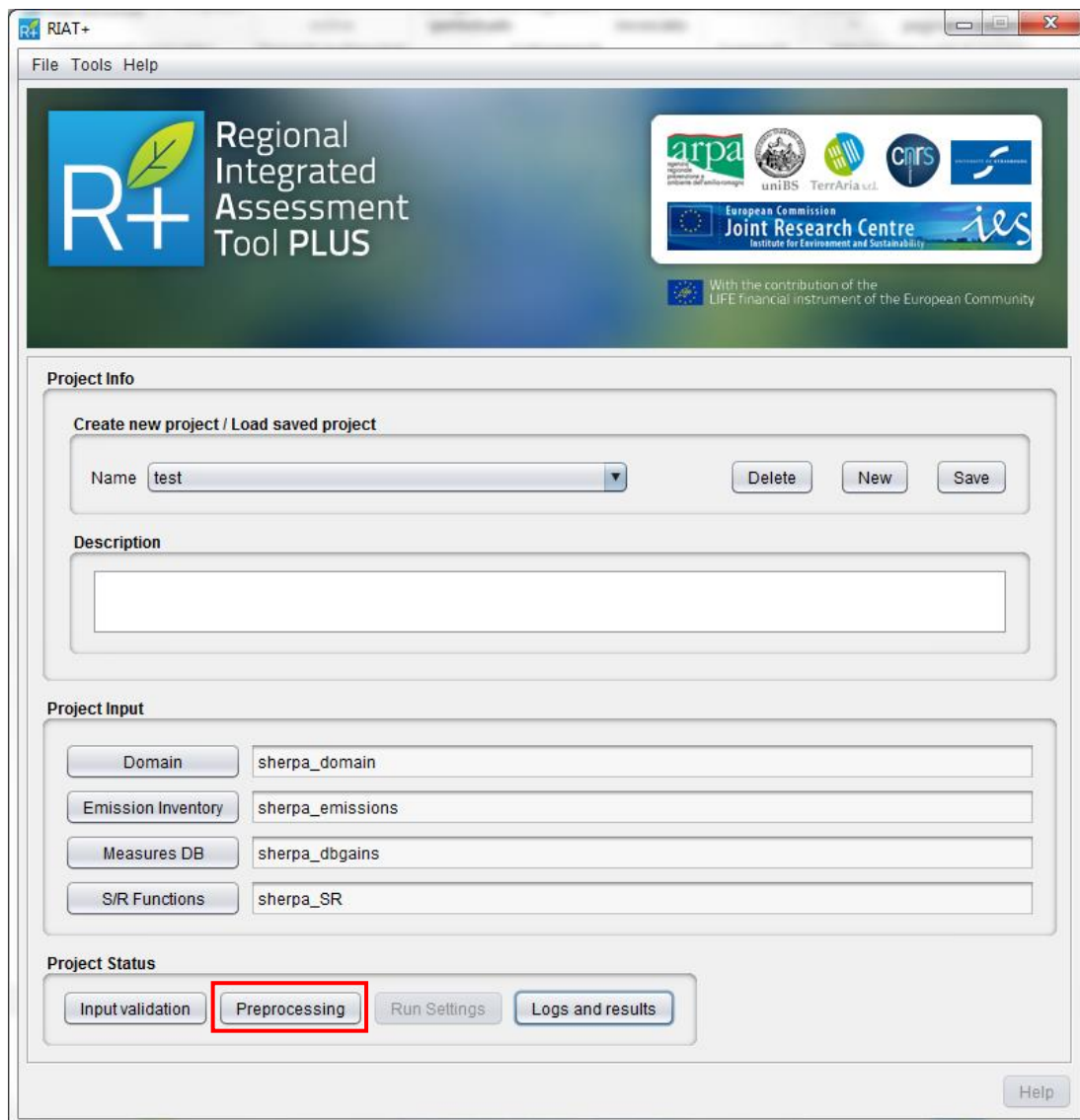


Figure 13 – Preprocessing

Also in this case, the user can check Preprocessing progression clicking on the Logs and Results button (click OK to return to the main GUI). After this, the Run Setting button in the main GUI will enable (Figure 14).

Pre-processors involved in this part produce pre-computed quadrant emissions and emission input to the optimizer; these files contain virtual pollutant emissions and virtual activity level representing the starting point for the optimization.



Figure 14 - Preprocessing completed successfully.

At the end of a successfully completed preprocessing the Run Settings button will be enabled and the user could finally perform the runs on the region.