END-USER LICENCE AGREEMENT

GHSL tools suite

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.1. This licence shall be governed by the law of Belgium.

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8. Administrative provisions

.1. Any communication and correspondence from the User with reference to this licence shall be made in writing and addressed to the following addresses:

For administrative questions:

European Commission

Joint Research Centre
Disaster Risk Management
Via E.Fermi 2749, I-21027 Ispra (VA) Italy, TP 267
To the attention of Head Of Unit Tom De Groeve
ghsl-tools@jrc.ec.europa.eu

ANNEX A – TECHNICAL SPECIFICATIONS OF THE SOFTWARE SUITE

AAXY

Version: 0.1.0

Language: English

Functionalities: The software is a command line application written in Matlab with some components in C++ and compiled for Windows 7 and 10 using Matlab Runtime (http://nl.mathworks.com/products/compiler/mcr/). In future versions, it is hoped that the software will be compiled for Linux. It needs the Matlab Runtime to work (http://nl.mathworks.com/help/compiler/about-the-matlab-runtime.html).

It takes two images in input (raster data with embedded geo information): image 1 is data to process, image 2 is the reference for the Associative Analysis. The output is written on disk and it is a third image containing an Informedness measure extracted from the inputs (ENDI)

Documentation: AAXY User Guide.docx (general user guide with installation and usage instructions); Manpage.txt (short manual page that is obtained when running the command line tool)

Programming language: Matlab, C++

Third-party components: The source code is written in Matlab and uses built-in Matlab functions. It needs the Matlab Runtime to work (http://nl.mathworks.com/help/compiler/about-the-matlab-runtime.html).

The Software also includes GDAL (http://www.gdal.org/), a translator library for raster and vector geospatial data formats. In general GDAL/OGR is licensed under an MIT/X style license by the Open Source Geospatial Foundation. A collection of license terms for GDAL/OGR and subcomponents is included within the software distribution in the LICENSE.TXT file.

MASADA

Version: 1.3

Language: English

Functionalities: The software is a Graphical tool written in Matlab with some components in C++ and compiled for Windows 7 and 10 using Matlab Runtime (http://uk.mathworks.com/products/compiler/mcr/).

It supports the production of settlement layers at regional scale, by processing high and very high resolution satellite imagery. The tool builds on the Symbolic Machine Learning (SML) classifier; a supervised classification method of remotely sensed data which allows extracting built-up information using a coarse resolution settlement map or a land cover information for learning the classifier. The image classification workflow incorporates radiometric, textural and morphological features as inputs for information extraction. It includes ready-to-use workflows for specific sensors, but at the same time, it allows the parametrization and customization of the workflow by the user.

The software is designed for the processing of single scenes but also for batch processing of large data sets.

Documentation: MASADA User Guide_v1.3_final_2.pdf

Programming language: Matlab, C++, Javascript

Third-party components: The source code is written in Matlab and uses built-in Matlab functions. It needs the Matlab Runtime to work (http://it.mathworks.com/help/compiler/about-the-matlab-runtime.html).

It also includes GDAL (http://www.gdal.org/), a third-party library released under an X/MIT style Open Source license. This library is included in the global software package.

It makes use of Javascript Leaflet library to display results.

SmartDissolve

Version: 1.2

Language: English

Functionalities: The software is a vector processing tool written in Matlab, compiled for Windows 7 and 10 using Matlab Runtime (http://uk.mathworks.com/products/compiler/mcr/), with a Python script to be imported in ArcGIS 10.X. In the future, it will be compiled also for Linux.

SmartDissolve is a tool that handles minimum mapping unit, resolution mismatch between layers, or spatial uncertainty problems in GISc. This tool automatically dissolves polygons below a threshold area, updating attribute fields' values. The toolbox allows to select the ordering of polygon analysis (i.e. from the smallest to the largest area, vice versa, or order of IDs), different dissolve rules (i.e. with smallest, largest, or maximum-

border-share adjacent polygon, minimum total perimeter or maximum compactness) and different field updating operations (i.e. sum, mean or text concatenation).

Documentation: SmartDissolve User Guide_ver_1.2_v3.pdf

Programming language: Matlab, Python

Third-party components: The source code is written in Matlab and uses built-in Matlab functions.

It needs the Matlab Runtime to work (http://it.mathworks.com/help/compiler/about-the-matlab-runtime.html).

It makes use of Python arcpy, os, subprocess and muptiprocessing library to import the tool in ArcGIS 10.X.

LUE

Version: 1.0

Language: English

Functionalities: The software is a Graphical tool written in Python and works as a tool in the QGIS processing toolbox. QGIS is a cross-platform free and open-source desktop GIS application. The tool is compatible with QGIS v.2.14 and following versions.

This tool supports the measuring of target 11.3 of the SDGS. Proposed indicator 11.3.1 is:

- UN version: ratio between the land use growth rate and population growth rate.
- JRC version: change rate of the built-up are per capita

This indicator allows measuring the Land Use Efficiency (LUE), that consists in the analysis of the evolution of the relation between the use of land and the growth of population. It works with input raster data on population and built-up. The GHSL baseline data is proposed as a showcase. The user can define the area of interest for the analysis of the Land Use efficiency.

Documentation: Estimation of the land use efficiency from the Global Human Settlement Layer.docx

Programming language: Python

Third-party components: The source code is written in Python. It needs the QGIS application to work (http://www.qgis.org). It also requires GDAL (http://www.gdal.org/), a third-party library released under an X/MIT style Open Source license. This library is included in the QGIS software package.

DUG

Version: 1.0

Language: English

Functionalities: The software is a Graphical tool written in Matlab with some components in C++ and compiled for Windows 7 and 10 using Matlab Runtime (http://uk.mathworks.com/products/compiler/mcr/). In the future, it will be compiled also for Linux.

This tool supports the production of urban /rural definition layers at 1 km grid, following the "degree of urbanization" model (DEGURBA) as defined by the EC, OECD and WB. The adopted model relies on specific thresholds on population grid, which are used to discriminate between “urban centers” and “urban clusters” that are the proxy of “cities” and “surburbs and towns” at grid level. This tool allows users to modify those thresholds and in this way test different urban/rural definitions.

Documentation: DUG User Guide_v1.docx

Programming language: Matlab, C++, Javascript

Third-party components: The source code is written in Matlab and uses built-in Matlab functions. It needs the Matlab Runtime to work (http://it.mathworks.com/help/compiler/about-the-matlab-runtime.html).

It also includes GDAL (http://www.gdal.org/), a third-party library released under an X/MIT style Open Source license. This library is included in the global software package.

It makes use of Javascript Leaflet library to display results.