

## European Settlement Map 2015 level 3 layer, Oct. 2019

The European Settlement Map 2015 (ESM\_2015) is a spatial raster dataset that is mapping human settlements in Europe (EEA39) based on Copernicus Very High Resolution optical coverage for reference year 2015 (VHR\_IMAGE\_2015). It is produced with the Global Human Settlement Layer (GHSL) technology of the Joint Research Centre (JRC) in collaboration with the Directorate General of Regional and Urban Policy. It follows-up on the previous ESM2012\_R2016 and ESM2012\_R2017 derived from 2.5 m resolution SPOT-5/6 images acquired in the context of the pan-European GMES/Copernicus (Core\_003) dataset for the reference year 2012.

This metadata refers to the level 3 layer of ESM\_2015. The level 3 layer delivers the following city-based layers: open spaces, a distance layer that contains the Euclidean distances from built-up pixels to open spaces and green in open spaces. The pixel size for level 3 layer is 10 m and the extent of each city is defined by the urban centres database. The level 3 layer is calculated for 888 cities. Open spaces are binary layers, while the distances to open spaces are continuous layers (float data type). The distance is expressed in number of pixels. To derive the distance in meters, it has to be multiplied by 10 corresponding to the pixel size in meters. The NDVI layer is provided with a full EEA-39 coverage tiled into 100 x 100 km tiles (tile index available in the following shapefile : index\_NDVI.shp). The other layers are provided by urban city centers.

ESM\_2015 offers new opportunities in Earth observation related research by allowing to study urbanisation and related features across Europe in urban and rural areas, from continental to country perspective, from regional to local, until single blocks.

IMPORTANT NOTE: This metadata refers to the Level 3 classification, which includes scientific datasets available upon request. The metadata has been prepared by the EEA on a third party dataset and is to be used for internal purposes. The following datasets are available through this metadata (see README file provided with the dataset):

ESM\_2015 level-3 NDVI

ESM\_2015 level-3 Open spaces

ESM\_2015 level-3 Distances in meters from built-up areas to open spaces

For more information about the dataset please contact the owner. For general information on ESM and download: <https://ghsl.jrc.ec.europa.eu/download.php?ds=ESM>.

### Simple

|                            |  |
|----------------------------|--|
| <b>Date (Creation)</b>     | 2019-10-29                                   |
| <b>Date (Publication)</b>  | 2019-10-29                                   |
| <b>Edition</b>             | 01.00  |
| <b>Citation identifier</b> | jrc_r_3035_10_m_esm-2015_i_2014-2016_v01_r00 |

### Point of contact

No information provided.

### Point of contact

No information provided.

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|--|--|
| <b>Maintenance and update frequency</b>    | As needed  |
| <b>GEMET - INSPIRE themes, version 1.0</b> | <ul style="list-style-type: none"> <li>• <a href="#">Land use</a></li> <li>• <a href="#">Land cover</a></li> </ul> |
| <b>Keywords</b>                            |  |
| <b>Keywords</b>                            |  |
| <b>GEMET</b>                               | <ul style="list-style-type: none"> <li>• human settlement</li> <li>• urban area</li> <li>• green space</li> </ul>  |

|   |   |
|---|---|
| <b>Continents, countries, sea regions of the world.</b> | <ul style="list-style-type: none"> <li>• EEA39</li> </ul>   |
| <b>Spatial scope</b>                                    | <ul style="list-style-type: none"> <li>• European</li> </ul>  |
| <b>EEA topics</b>                                       | <ul style="list-style-type: none"> <li>• Land use</li> <li>• Buildings and construction</li> </ul>  |
| <b>Access constraints</b>                               | Other restrictions  |
| <b>Other constraints</b>                                | <a href="#">no limitations to public access</a>   |
| <b>Use constraints</b>                                  | Other restrictions  |
| <b>Other constraints</b>                                | <p>(c) European Union, 1995-2020</p> <p>The Commission's reuse policy is implemented by the Commission Decision of 12 December 2011 on the reuse of Commission documents. Any copyright and/or sui generis right on the dataset is licensed under the Creative Commons Attribution 4.0 International (CC BY 4.0) licence.</p> <p>Reuse is allowed provided appropriate credit is given and any changes are indicated.</p> <p><a href="https://eur-lex.europa.eu/eli/dec/2011/833/oj">https://eur-lex.europa.eu/eli/dec/2011/833/oj</a></p> <p><a href="https://creativecommons.org/licenses/by/4.0">https://creativecommons.org/licenses/by/4.0</a></p> |
| <b>Spatial representation type</b>                      | Grid  |
| <b>Distance</b>   | 10 m  |
| <b>Language of dataset</b>                              | English   |
| <b>Topic category</b>                                   | <ul style="list-style-type: none"> <li>• Environment</li> <li>• Inland waters</li> <li>• Planning cadastre</li> <li>• Society</li> </ul>  |



|                            |   |   |             |
|----------------------------|---|---|-------------|
| <b>Begin date</b>          | 2014-01-01  |   |             |
| <b>End date</b>            | 2016-12-31  |   |             |
| <b>CRS identifier</b>      | <a href="#">EPSG:3035</a>                                       |   |             |
| <b>Distribution format</b> | <ul style="list-style-type: none"> <li>• GeoTIFF ( )</li> </ul> |   |             |
| <b>OnLine resource</b>     | <b>Protocol</b>   | <b>Linkage</b>  | <b>Name</b> |
|                            | WWW:LINK-1.0-http--link   | <a href="https://ghsl.jrc.ec.europa.eu/download.php?ds=ESM">https://ghsl.jrc.ec.europa.eu/download.php?ds=ESM</a> |             |
| <b>Hierarchy level</b>     | Dataset   |   |             |

## Conformance result

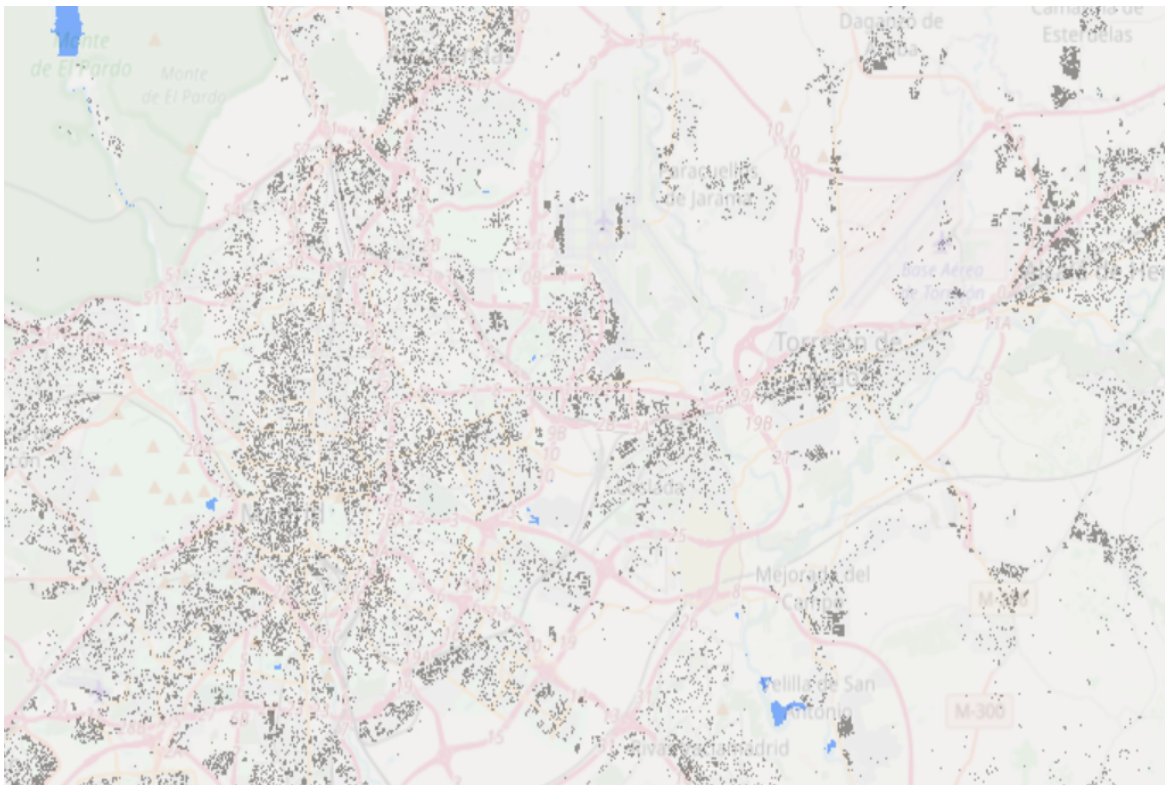
|                           |                                  |
|---------------------------|----------------------------------|
| <b>Date (Publication)</b> | 2010-12-08                       |
| <b>Explanation</b>        | See the referenced specification |

|                  |   |
|------------------|---|
| <b>Statement</b> | <p>The ESM_2015 is the latest release of the European Settlement Map produced in the frame of the GHSL project. It is produced with the Global Human Settlement Layer (GHSL) technology of the Joint Research Centre (JRC) in collaboration with the Directorate General of Regional and Urban Policy.</p> <p>The workflow was executed on the JRC Big Data Analytics platform. It follows-up on the previous ESM_2012 derived from 2.5 m resolution SPOT-5/6 images acquired in the context of the pan-European GMES/Copernicus (Core_003) dataset for the reference year 2012. The ESM_2015 product exploits the Copernicus VHR_IMAGE_2015 dataset made of satellite images Pleiades, Deimos-02, WorldView-2, WorldView-3, GeoEye-01 and Spot 6/7 ranging from 2014 to 2016. Unlike the previous ESM versions, the built-up extraction is realized through supervised learning (and not only by means of image filtering and processing techniques) based on textural and morphological features. The workflow is fully automated and it does not include any post-processing. For the first time a new layer containing non-residential buildings was derived by using only remote sensing imagery and training data. The produced built-up map is delivered at 2 m pixel resolution (level 1 layer) while the residential/non-residential layer (level 2) is delivered at 10 m spatial resolution.</p> <p>ESM_2015 offers new opportunities in Earth observation related research by allowing to study urbanisation and related features across Europe in urban and rural areas, from continental to country perspective, from regional to local, until single blocks. ESM_2015 was validated against the LUCAS 2015 survey database both at 2 and 10 meters resolution (including also the non-residential class). The validation has resulted in a Balanced Accuracy of 0.81 for the 2 m resolution built-up layer and of 0.71 for the 10 m non-residential built-up layer.</p> <p>Citation:</p> <p>Sabo, F., Corban, C., Politis, P. and Kemper, T., The European Settlement Map 2019 release, EUR 29886 EN, Publications Office of the European Union, Luxembourg, 2019, ISBN 978-92-76-12184-8 (online), 978-92-76-12183-1 (print), doi:10.2760/25824 (online), 10.2760/979189 (print), JRC118076.</p> <p>More information on the calculation of the layers is available here: <a href="http://publications.jrc.ec.europa.eu/repository/bitstream/JRC118076/jrc118076_onlinekjna29886enn.pdf">http://publications.jrc.ec.europa.eu/repository/bitstream/JRC118076/jrc118076_onlinekjna29886enn.pdf</a></p> |
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## Metadata

|                                  |  |                        |  |
|----------------------------------|--|------------------------|--|
| <b>File identifier</b>           | bef1ac69-273b-4fe9-90c4-48fbb688fdbb <a href="#">XML</a> |                        |  |
| <b>Metadata language</b>         | English  |                        |  |
| <b>Character set</b>             | UTF8   |                        |  |
| <b>Hierarchy level</b>           | Dataset  |                        |  |
| <b>Date stamp</b>                | 2021-09-21T08:01:45.144Z                                 |                        |  |
| <b>Metadata standard name</b>    | ISO 19115/19139  |                        |  |
| <b>Metadata standard version</b> | 1.0  |                        |  |
| <b>Metadata author</b>           | <b>Organisation name</b>                                 | <b>Individual name</b> | <b>Electronic mail address</b> <b>Role</b> |
|                                  | European Environment Agency                              |                        | sdi@eea.europa.eu      Point of contact    |

## Overviews



Provided by



