EEA geospatial data catalogue

Landscape fragmentation Effective Mesh Density 2018: major and medium anthropogenic fragmenting elements (FGA2-S), Dec. 2021

This dataset is the new version of the Effective Mesh Density (seff) 2018 dataset with improved input data, for the year 2018. This new dataset uses the 2018 10m Copernicus Imperviousness Density and the TomTom TeleAtlas datasets as fragmenting geometries.

The Effective Mesh Density (seff) is a measure of the degree to which movement between different parts of the landscape is interrupted by a Fragmentation Geometry (FG). FGs are defined as the presence of impervious surfaces and traffic infrastructure, including medium sized roads. The more FGs fragment the landscape, the higher the effective mesh density hence the higher the fragmentation. The geographic coverage of the dataset is EEA39.

An important consequence of landscape fragmentation is the increased isolation of ecosystem patches that breaks the structural connections and decreases resilience and ability of habitats to provide various ecosystem services. Fragmentation also influences human communities, agriculture, recreation and overall quality of life. Monitoring how fragmentation decreases landscape quality and changes the visual perception of landscapes provides information for policy measures that aim at improving ecosystem condition and restoration as well as maintaining the attractiveness of landscapes for recreational activities.

Simple

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Point of contact

No information provided.

Point of contact

No information provided.

Maintenance and update frequency	Irregular
GEMET - INSPIRE themes, version 1.0	• Transport networks • Soil • Habitats and biotopes
Keywords	
Keywords	
GEMET	• animal habitat • built-up area • built environment • animal corridor • landscape
Continents, countries, sea regions of the world.	• EEA39
Spatial scope	• European

Temporal resolution	• Triennial
EEA Management Plan	• 2019 1.8.4
EEA topics	• Agriculture and food • Forests and forestry • Land use • Biodiversity
Access constraints	Other restrictions
Other constraints	no limitations to public access
Use constraints	Other restrictions
Other constraints	EEA standard re-use policy: unless otherwise indicated, re-use of content on the EEA website for commercial or non-commercial purposes is permitted free of charge, provided that the source is acknowledged (http://www.eea.europa.eu/legal/copyright). Copyright holder: European Environment Agency (EEA).
Aggregate Datasetindentifier	25f51134-c776-43c4-bba7-75dcd75082c6
Association Type	Cross reference
Aggregate Datasetindentifier	493f3285-25ff-4a51-8620-59ac50613117
Association Type	Cross reference
Aggregate Datasetindentifier	98d63709-5a79-44a8-ac5b-fd9a08466bf1
Association Type	revision of
Spatial representation type	Grid
Distance	100 m
Language of dataset	English
Topic category	• Environment

71.64	N	35.17	S	46.00	E	-26.00	W

Begin date	2017-01-01
End date	2019-11-30
Coordinate reference system identifier	EPSG:3035
Distribution format	• GeoTIFF (6.0)

OnLine resource

Protocol	Linkage	Name
EEA:FOLDERPATH	https://sdi.eea.europa.eu/webdav/datastore/public/eea_r_3035_100_m_fga2-s-2018_p_2017-2019_v01_r00/	
WWW:URL	https://sdi.eea.europa.eu/data/67110f21-39cb-48be-878e-d08b64a72256	Direct download
ESRI:REST	https://land.discomap.eea.europa.eu/arcgis/rest/services/Fragmentation/Fragmentation_2018_mesh_density/ImageServer	
OGC:WMS	https://land.discomap.eea.europa.eu/arcgis/services/Fragmentation/Fragmentation_2018_mesh_density/ImageServer/WMSServer?request=GetCapabilities&service=WMS	Fragmentation_2018_mesh_density: FragmentationSymbology

Hierarchy level	Dataset

Conformance result

Title	Commission Regulation (EU) No 1089/2010 of 23 November 2010 implementing Directive 2007/2/EC of the European Parliament and of the Council as regards interoperability of spatial data sets and services
Date (Publication)	2010-12-08
Explanation	See the referenced specification

Statement

The meff index expresses the probability that any two points chosen randomly in an area are connected; that is, not separated by barriers of a Fragmentation Geometry (FG) such as transport routes or built-up areas. Hence, meff is a measure of landscape connectivity, i.e. the degree to which movements between different parts of the landscape are possible. The larger the meff, the more connected the landscape.

The seff value is calculated based on the Effective Mesh Size (meff) index, such as seff=1000 km2/meff. Hence seff is the number of meshes per 1000 km2.

The 10m resolution Copernicus High Resolution Layer - Imperviousness degree (30% of IMD) is the source layer for the build-up area. The TomTom TeleAtlas road network database is the source of the transport infrastructure. The original TeleAtlas dataset is hosted at ESTAT and is not publicly available. Multinet: https://www.adci.com/tomtom/gis/).

The line vectors are buffered according to the road class they represent, resulting in a polygon layer. Buffering is also applied to prevent small topological inconsistencies (e.g. gaps) in data. Buffers applied to the various Tele Atlas classes:

	Tele Atlas road class Buffer size [m] Buffer width [m] motorways, freeways 15 30 major roads less important than a motorway 10 20 other major roads 7,5 15 secondary roads 5 10 local connecting roads 2,5 5 railroads 2 4 Tunnels are excluded from the dataset. The maping computation steps are: 1) selection of no build-up areas from the HRL imperviousness layer (no build-up areas represent "landscape", fragmented by build-up) 2) selection of transport routes relevant to the fragmentation geometry 3) deleting of tunnels from the transport routes 4) creating of buffers around the transport routes. A buffer size is dependent on the route class 6) erasing of the buffered routes from the "landscape", fragmented by build-up (created as step 1 result) 7) computation of meff values for each reference units For a detailed methodology, please consult the "Landscape fragmentation in Europe" report http://www.eea.europa.eu/publications/landscape-fragmentation-in-europe and https://www.eea.europa.eu/data-and-maps/indicators/mobility-and-urbanisation-pressure-on-ecosystems/assessment and https://forum.eionet.europa.eu/etc-urban-land-and-soil-systems/library/c1.-action-plan-2019/1.8.2.3-re-analysis-landscape-fragmentation-time-series/eea-core-set-indicator-landscape-fragmentation-pressure-urban-and-transport/index_html
Source	• Imperviousness Density 2018 (raster 10 m), Europe, 3-yearly, Aug. 2020

Metadata

File identifier	67110f21-39cb-48be-878e-d08b64a72256 XML
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Metadata standard name	ISO 19115/19139
Metadata standard version	1.0
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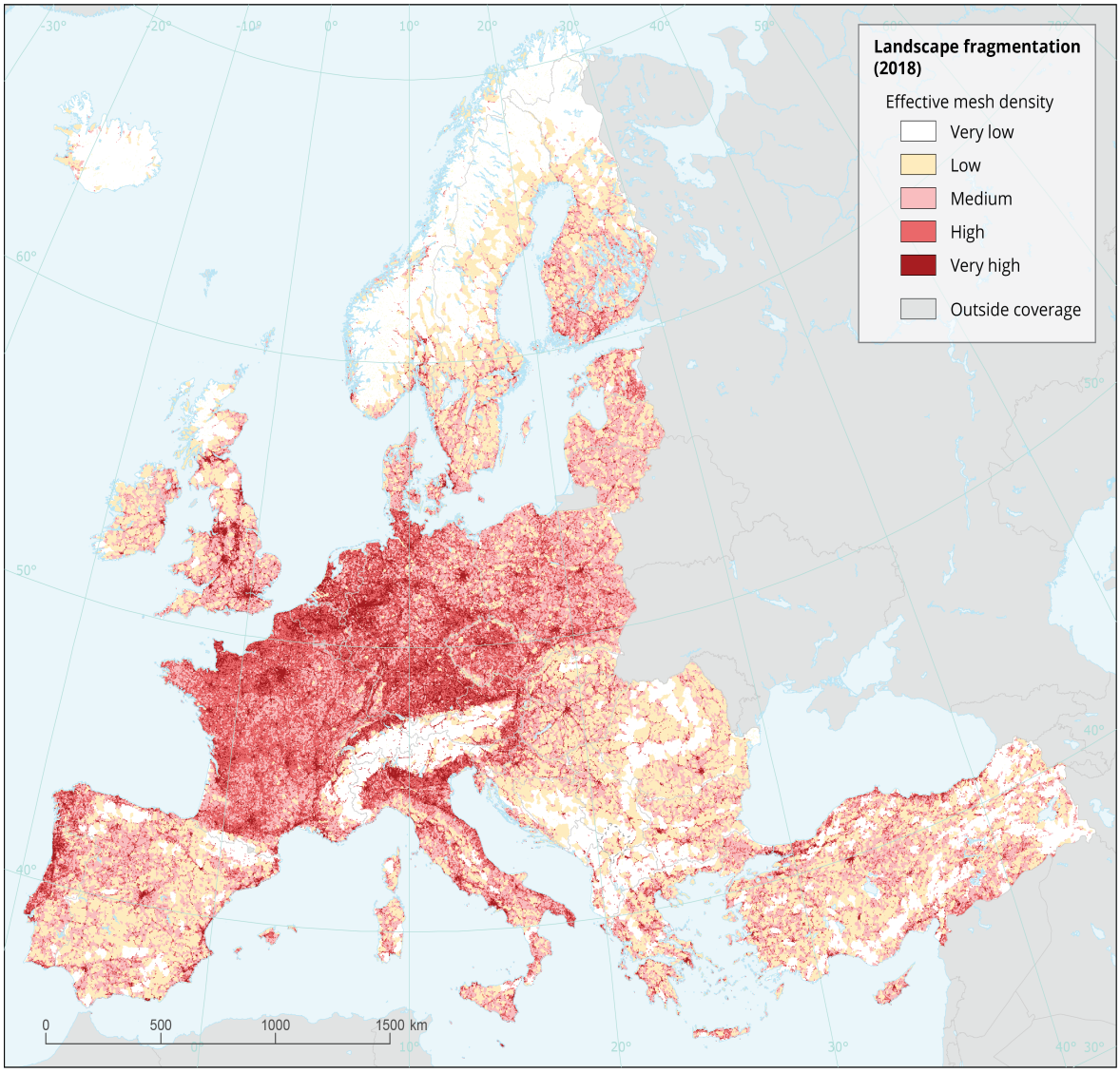
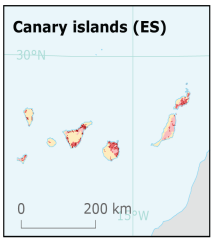
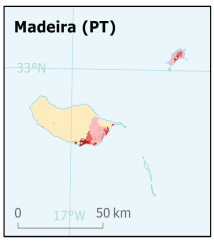
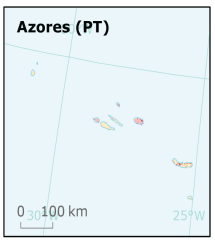
Overviews

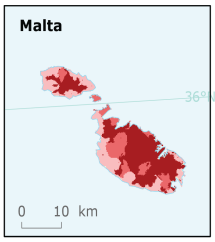


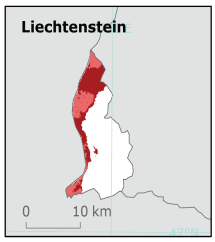
Reference data: © EuroGeographics, © FAO (UN), © TurkStat Source: European Commission – Eurostat/GISCO











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