1 Ecosystem Classification Model - Forest4

1.1 Data identification:

Titolo: "Ecosystem Classification Model (ECM-F4)"
Data di creazione: "2021-05-31T12:00:00"
Istituto: "ISPRA"
Creato da: "CSA"
Link: "https://groupware.sinanet.isprambiente.it/prodotti-operativi-di-sorveglianza-ambientale"
Email: "federico.filipponi@isprambiente.it; alessandro.mercatini@isprambiente.it"
Identificativo: "ECM-F4_2020_v1.0"
Product version: "1.0"
Md5 checksum: "d41d8cd9-8f00-b204-e980-0998ecf8427e"

1.2

Abstract: "Ecosystem Classification Model (ECM) thematic mapping product. The F4 mapping product has a thematic legend based on 4 forest ecosystem classes: deciduous broadleaved; evergreen broadleaved; deciduous conif- erous; evergreen coniferous. The dataset has 20 m spatial resolution, covers the whole national territory of Italy and refers to year 2020. Product has been generated by means of machine learning classification models using Random Forests algorithm to estimate forest cover classes, trained with in-situ vegetation plot samplings and using geomorphological and climate variables, in synergy with Copernicus satellite Earth Observation data."

1.3 Temporal extent:

Time coverage start: "20200101T000000Z"
Time coverage stop: "20201231T235959Z"
Time coverage duration: "year"
Time coverage: "2020"
Start date: "2020-01-01"
Stop date: "2020-12-31"
Time id: "87778d18-2174-4e99-957c-25a0d85fe7c2"

1.4 Geographic reference:

Reference system identifier: "EPSG:3035"
Coordinate reference system: "ETRS89-extended / LAEA Europe"
Proj4: "+proj=laea +lat_0 = 52 +lon_0 =1 0 +x_0 = 4321000 +y_0 = 3210000 + ellps = GRS80 + towgs84 = 0,0,0,0,0,0,0 + units=m + no_defs"
Geospatial lon min: "5.233938092133146"
Geospatial lon max: "20.369492954324301"
Geosptaial lon resolution: "0.000230803936582"
Geospatial lon units: "degrees_east"
Geospatial lat min: "34.532908732502726"
Geospatial lat max: "47.219043463149831"
Geosptaial lat resolution: "0.000230803936582"
Geospatial lat units: "degrees_north"
Coverage: "Italy"
spatial resolution: "20 m"

1.5

Lineage: "Ecosystem Classification Model (ECM) Forest ecosystems mapping product with a 4 classes thematic leg- end (F4). Forest area is defined within a woodland raster mask, defined by combining datasets collected from Copernicus Land Monitoring Service, specifically Tree Cover Density (TCD), Imperviousness (IMD) and CORINE Land Cover (CLC). Supervised machine learning model (SMLM) hierarchical classification model trained using response variables (5096 plots of forest habitats according to the EUNIS II level classification divided into 4 classes in total) and selected spatially explicit predictor variables, consisting of ancillary data (topographic, cli- matic and chemical-physical variables of soils, 8 variables) and Earth Observation products, derived from year 2020 Sentinel-2 MSI satellite acquisitions (spectral indices, spectral bands, LAI biophysical index and phenologi- cal metrics, 14 variables). Applied Random Forests (RF) classifier (num tree: 767; mean node size: 2; mtry: 8), the importance of the predictor variables was calculated using the GINI index. Each RF model was trained using a stratified random sample of 70using the remaining 30the quality of the product. The final product will be accompanied by a series of quality levels. Geometric accuracy (positioning scale): Less than one pixel (20m) according to ortho-rectified satellite image base (Sentinel-2). Val- idation results ECM-F4: 90.35Accuracy 92.20 (SE: 0.008) Producer Accuracy 92.20 (SE 0.976); T2 broadleaved evergreen User Accuracy 83.80 (SE: 0.017) Producer Accuracy 83.80 (SE 0.869); T3 needleleaved evergreen User Accuracy 98.40 (SE: 0.012) Producer Accuracy 96.50 (SE 0.966); T34 needleleaved deciduous User Accuracy 47.10 (SE: 0.142) Pro- ducer Accuracy 66.70 (SE 0.555). Thematic target accuracy: RF classifier internal accuracy estimate. Spatial resolution: 20 meters."

1.6   Inspire proprieties:

Dataset language: "English"
Dataset language code: "eng"
Dataset char code: "UTF-8"
Dataset map usage: "http://www.inspire.it/inspire/use"
Dataset keywords: "Land use"
Dataset inspire version: "GEMET - INSPIRE themes, version 1.0"
Inspire version date: "2019-01-28"
keywords from controlled vocabulary1: "Land cover"
Controlled vocabulary1: "https://www.eionet.europa.eu/gemet/en/concept/4612"
keywords from controlled vocabulary2: "land use regime"
Controlled vocabulary2: "https://www.eionet.europa.eu/gemet/en/concept/11323"
keywords from controlled vocabulary3: "GEMET - Concepts, version 4.1.3"
Controlled vocabulary3: "https://www.eionet.europa.eu/gemet/en/concept/13102"
Conditions for access and use: "No conditions apply to access and use."
Limitations on public access: "There are no limitations on public access to spatial data sets and services."
License: "free and open access"
ISO 19115 topic category code: "vector"
Inspire implementing rule: "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"
Inspire implementing rule date: "2010-12-08"
Conformity to the Implementing Rules: "This data set is conformant with the INSPIRE Implementing Rules for the interoperability of spatial data sets and services"