

Delivery Report European Mosaic

EEA-FTSP-Sealing_DeliveryReport-EuropeanMosaic

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1 INTRODUCTION

1.1 PURPOSE AND SCOPE

This document presents the delivery report of EEA's Fast Track Service Precursor Sealing Product "European Mosaic" which has been generated based on the 38 country products.

1.2 APPLICABLE DOCUMENTS

ITD-0490-PRO-0006	Proposal responding to EEA's Invitation for Tender, Technical Offer including Management Part –Issue 1
ITD0490-EEA-FTS-PMP-I02	Project Management Plan
ITD0490-EEA-FTS-PMP-Annex-III-I01	PMP Annex III: European Mosaic Product Specification

1.3 REFERENCE DOCUMENTS

EEA/IDS/07/001	Tender Specifications "GMES Fast Track Service on Land Monitoring", EEA, 2006
ISO9001	ISO 9001: 2000 Standard
ITD-QMS-POL-0001_Infoterra_Quality_Policy	Quality Policy Statement
QMS-ITD-MA-0011_QMSManual_I3.1	Quality Management System (QMS) Manual
ITD-UMS-POL-0001_Infoterra_Environmental_Policy	Declaration of Enterprise Environmental Policy
ITD-QMS-STD-0001-ControlOfDocumentation	Control of Documentation and Data
QMS-ITD-ST-0001_CSM	Customer Satisfaction Measurement
QMS-ITD-PR-0003_PM_ProductDevelopment_I4	Project Management, Product (Prototype) Development and Production

2 PRODUCT SPECIFICATION

2.1 TECHNICAL PRODUCT SPECIFICATION

Content
<p><i>Seamless European mosaic of:</i></p> <ol style="list-style-type: none"> 1. <i>Raster dataset of built-up and non built-up areas including continuous degree of soil sealing ranging from 0 - 100% in full spatial resolution (20 x 20 m) with the associated metadata.</i> 2. <i>Raster dataset of built-up and non built-up areas including continuous degree of soil sealing ranging from 0 - 100% in aggregated spatial resolution (100 x 100 m) with the associated metadata - see averaging methodology below.</i> 3. <i>Annex to product 2: raster dataset of 100 x 100 m cells; cell values represent the number of valid "sealed" 20 x 20 m cells within one 100 x 100 m cell; will be delivered with the associated metadata.</i>
Geographic coverage
<p><i>EU27 and neighbouring countries, in total 38 countries (area covered ~5,8 km²): Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France (without French overseas departments and territories), Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey, United Kingdom, Albania, Bosnia-Herzegovina, Croatia, Former Yugoslavian Republic of Macedonia, Montenegro and Serbia</i></p>
Input data sources
<ul style="list-style-type: none"> ▪ <i>Country products (deliverable 3): 38 files with raster datasets of built-up and non built-up areas including degree of soil sealing, 2006, in full spatial resolution (20m by 20m) with the associated meta-data (e.g. mitigation shape file – see PMP Annex II).</i> ▪ <i>Description of national coordinate reference systems (CRS_v8.xls)</i>
Methodology
<p><i>Product 1: Re-projection of country products into European CRS; mosaicing and tiling.</i></p> <p><i>Product 2: Aggregation of product 1 by using the following decision tree:</i></p> <ol style="list-style-type: none"> 1. <i>>=13 pixels with valid sealing value?</i> → Yes: <i>average sealing degrees (taking into account the sealed pixels only)</i> → No: 2. <i>No data (255) pixels >= unclassifiable (254) pixels?</i> → Yes: <i>assign "no data" to the cell</i> → No: <i>assign "unclassifiable" to the cell</i> <i>In this case, 255 would be preferred when it comes to equality.</i> <p><i>Product 3: Calculation of number of valid "sealing" cells (20 x 20 m) within one 100 x 100 m cell – will be done for all 100 x 100 m cells.</i></p>

Spatial resolution
<i>Product 1: pixel resolution 20m x 20 m</i> <i>Product 2 & 3: pixel resolution 100m x 100 m</i>
Tiling
<i>100 km x 100 km tiles both for 20 m as well as 100 m products (with exactly same corner coordinates);</i> <i>Same corner coordinates as CLC2000 product</i> <i>Naming according to CLC products using the location of the left corner (example: 100KME15N10) – see also Corine download viewer http://www.eea.europa.eu/themes/landuse/clc-download.</i>
Coordinate Reference System
<i>according to ETRS_1989 LAEA 52N 10E.prj provided by EEA</i> <i>Map Projection Name: Lambert Azimuthal Equal Area</i> <i>Longitude of Projection Center: 10.000000</i> <i>Latitude of Projection Center: 52.000000</i> <i>False Easting: 4321000.000000</i> <i>False Northing: 3210000.000000</i> <i>Geodetic Model</i> <i>Horizontal Datum Name: D_ETRS_1989</i> <i>Ellipsoid Name: Geodetic Reference System 80</i> <i>Semi-major Axis: 6378137.000000</i> <i>Denominator of Flattening Ratio: 298.257222</i>
Geometric accuracy (positioning scale)
<i>According to orthorectified satellite image base delivered by ESA</i>
Thematic accuracy (in %)
<i>Classification accuracy of built-up non built-up areas is > 85% (see Delivery Reports of country products - CDR)</i>
Delivery format
<i>IMAGINE Image (IMG)</i>
Data type
<i>Raster</i>

Raster coding
<p><i>Thematic pixel values product 1 & 2:</i></p> <p>0: Non-built up areas, water bodies inland</p> <p>1-100: sealing values for built-up areas</p> <p>254: "unclassifiable" (no thematic information could be extracted due to e.g. cloud coverage – see PMP Annex II)</p> <p>255: "no data" (No EO image information available)</p> <p><i>Thematic pixel values product 3:</i></p> <p>0-25: Number of valid sealing cells (20 m) within the 100 m cell</p>
Metadata
<p>According to EEA metadata standards (EEA MSGI specification)</p> <p>Metadata will also contain a lookup table (LUT) allowing the aggregation of the continuous values of degree of soil sealing into the following 5 degree of soil sealing classes:</p> <ul style="list-style-type: none"> 0 - 29% 30 - 49% (30% threshold compatible to lower limit of CLC class 1.1.2, 49% threshold a median of CLC class 1.1.2) 50 - 79% (79% threshold compatible to ceiling of CLC class 1.1.2) 80 - 99% (80% threshold compatibility to CLC class 1.1.1) 100%

2.2 ALGORITHMS USED

Processing steps
<ul style="list-style-type: none"> Re-projection of individual country products into European CRS (see 2.1 – Coordinate reference System) preserving the spatial resolution of 20m x 20m Mosaicing of re-projected country products into tiles with full spatial resolution (20m x 20m)– mosaicing lines set inside the overlapping buffer of neighbouring country products (no blending applied) Aggregation of tiles with reduced spatial resolution of 100m x 100m (see 2.1 – Methodology)
Transformation Method
<ul style="list-style-type: none"> Application of 7 parameter Bursa-Wolf transformation using the parameters listed in the CRS description table (CRS_v8.xls) Applied resampling method: "Nearest Neighbour"

2.3 FORMAT DESCRIPTION

Delivery format
<i>ERDAS IMAGINE Image (IMG)</i> <i>Data Type: unsigned 8-bit</i> <i>Compression: Run-length encoding (ESRI)</i> <i>Number of bands: 1</i> <i>Pixel size: Product 1: 20 m</i> <i>Product 2&3: 100m</i>
Data type
<i>Thematic Raster</i>
Metadata
<i>According to EEA metadata standards (EEA MSGI specification)</i>

2.4 METADATA

See European Environment Agency – Metadata Standard for Geographic Information (EEA-MSGI), Version 1.1a (18 August 2004).

The metadata is provided as XML-file and as PDF-document according to EEA Metadata Standard for Geographic Information (EEA-MSGI).

3 SUMMARY OF PRODUCTION

3.1 TIMETABLE, PRODUCTION MILESTONES

Delivery by prime	Data Reception	Production	
		Start	End
Subsequently after approval of country deliverables by EEA; (except: FR delivered after submission to EEA)	Subsequently First country: DK Last country: FR	01.05.2008	23.10.2008

3.2 TECHNICAL PROBLEMS ENCOUNTERED, MITIGATION MEASURES

None

4 QUALITY CONTROL

Quality control aspects
<ul style="list-style-type: none"> • Check of compliance to technical specifications • Check of format and projection • Sample plot plausibility check of product 2 versus 1 • Sample plot plausibility check of product 3 versus 2 • Check of metadata

5 DETAILED LIST OF PROVIDED DATA

- Raster dataset of built-up and non built-up areas including degree of soil sealing, 2006, in full spatial resolution (20 m x 20 m). European Mosaic in 905 tiles with spatial extent of 100x100km (Naming according to CLC products using the location of the left corner)
- Raster dataset of built-up and non built-up areas including degree of soil sealing, 2006, in aggregated spatial resolution (100 m x 100 m). European Mosaic in 905 tiles with spatial extent of 100x100km (Naming according to CLC products using the location of the left corner)
- Raster dataset in aggregated spatial resolution (100 m x 100 m) representing the number of valid 20m-cells in one 100m-cell. European Mosaic in 905 tiles with spatial extent of 100x100km (Naming according to CLC products using the location of the left corner)
- ArcMap Legend File for raster data set for plotting a degree of soil sealing, aggregated to thematic classes
- ArcMap Legend File for raster data set for plotting a degree of soil sealing in a range from 1-100 %
- Vector dataset defining all areas which deviate from the ITT's EO data specifications
- Vector dataset representing the footprints of the raster tiles
- Vector dataset containing the national country borders in EEA CRS
- XML-Metadata of raster and vector data according to EEA specifications
- EEA Metadata Stylesheet
- Report including description of raster and vector data and production methodology

ANNEX 1: LIST OF COUNTRY PRODUCTS USED

The following list provides information about the country products which were used to create the European Mosaic.

Table 1: List of country products for the production of the European Mosaic

Country	Name of country deliverable (incl. version)
AL	EEA-FTSP-Sealing_AL_F1v0
AT	EEA-FTSP-Sealing_AT_F1v0
BA	EEA-FTSP-Sealing_BA_F1v0
BE	EEA-FTSP-Sealing_BE_F1v0
BG	EEA-FTSP-Sealing_BG_F1v0
CY	EEA-FTSP-Sealing_CY_F1v0
CZ	EEA-FTSP-Sealing_CZ_F1v0
DE	EEA-FTSP-Sealing_DE2_F1v0 EEA-FTSP-Sealing_DE3_F1v0 EEA-FTSP-Sealing_DE4_F1v0 EEA-FTSP-Sealing_DE5_F1v0
DK	EEA-FTSP-Sealing_DK_F1v1
EE	EEA-FTSP-Sealing_EE_F1v0
ES	EEA-FTSP-Sealing_ES28_F1v0 EEA-FTSP-Sealing_ES29_F1v0 EEA-FTSP-Sealing_ES30_F1v0 EEA-FTSP-Sealing_ES31_F1v0
FI	EEA-FTSP-Sealing_FI_F1v0
FR	EEA-FTSP-Sealing_FR1_F1v0 EEA-FTSP-Sealing_FR2_F1v0
GR	EEA-FTSP-Sealing_GR_F1v0
HR	EEA-FTSP-Sealing_HR_F1v0
HU	EEA-FTSP-Sealing_HU_F1v0
CH	EEA-FTSP-Sealing_CH_F1v0
IE	EEA-FTSP-Sealing_IE_F1v0
IS	EEA-FTSP-Sealing_IS_F1v0
IT	EEA-FTSP-Sealing_IT1_F2v0 EEA-FTSP-Sealing_IT2_F2v0
LI	EEA-FTSP-Sealing_LI_F1v0
LT	EEA-FTSP-Sealing_LT_F1v0
LU	EEA-FTSP-Sealing_LU_F1v0
LV	EEA-FTSP-Sealing_LV_F1v0
ME	EEA-FTSP-Sealing_ME_F1v0
MK	EEA-FTSP-Sealing_MK_F1v1
NL	EEA-FTSP-Sealing_NL_F1v0

NO	EEA-FTSP-Sealing_NO31_F1v0 EEA-FTSP-Sealing_NO32_F1v0 EEA-FTSP-Sealing_NO33_F1v0 EEA-FTSP-Sealing_NO34_F1v0 EEA-FTSP-Sealing_NO35_F1v0 EEA-FTSP-Sealing_NO36_F1v0
PL	EEA-FTSP-Sealing_PL_F1v0
PT	EEA-FTSP-Sealing_PT1_F1v0 EEA-FTSP-Sealing_PT2_F1v0 EEA-FTSP-Sealing_PT3_F1v0
RO	EEA-FTSP-Sealing_RO_F1v0
RS	EEA-FTSP-Sealing_RS_F1v0
SE	EEA-FTSP-Sealing_SE1_F1v0 EEA-FTSP-Sealing_SE2_F1v0
SI	EEA-FTSP-Sealing_SI_F1v0
SK	EEA-FTSP-Sealing_SK_F1v0
TR	EEA-FTSP-Sealing_TR1_F1v0 EEA-FTSP-Sealing_TR2_F1v0 EEA-FTSP-Sealing_TR3_F1v0 EEA-FTSP-Sealing_TR4_F1v0
UK	EEA-FTSP-Sealing_UK1_F1v0 EEA-FTSP-Sealing_UK2_F1v0 EEA-FTSP-Sealing_UK3_F1v0