

PM MAPPER® Service Level Agreement

NSI - MEEO Documentation

PM MAPPER® Service Level Agreement
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MEEO S.r.l.

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1.3	22/01/10	Third Revision: Update of MEEO address and telephone/fax number (S. Pasetti)	7, 11, 17

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1 INTRODUCTION

1.1 PURPOSE OF THIS DOCUMENT

This document is the Service Level Agreement (SLA) of the PM MAPPER® Service provided by MEEO.

1.2 SCOPE

The present document provides a description of the PM MAPPER® service capabilities, its provision model, the point of contact, the use conditions and a section named “How To” that describes the basic steps for the PM MAPPER® Service use.

The PM MAPPER® Service has been implemented on the Service Support Environment (SSE) in the framework of the NSI Project.

1.3 APPLICABLE DOCUMENTS

#	REFERENCE ID	REFERENCE DOCUMENT	ISSUE, DATE
[AD 1]	ME-ICD-0001-SPB	Service Support Environment Interface Control Document	Issue 1.5 29/09/2006
[AD 2]	ECSS-Q-80B	ECSS – Space Product Assurance	10/10/2003
[AD 3]	ECSS-E-40B 1b	ECSS – Space Engineering Standards – Software – Part 1	28/11/2003
[AD 4]	ECSS-E-40B 2b	ECSS – Space Engineering Standards – Software – Part 2	31/03/2005
[AD 5]	SPB-NSI-SOW-002	New Earth Observation Services Integration into the Service Support Environment SoW	Issue 1.0 date: 25 /06/2006

Table 1-1. List of applicable documents.

1.4 REFERENCE DOCUMENTS

#	REFERENCE ID	REFERENCE DOCUMENT	ISSUE, DATE
[RD 1]		SSE Documentation http://services.eoportal.org	
[RD 2]	NSI-SUM-520-INT	SSE TOOLBOX User Manual	Issue: 2.0 Date: 11/10/2006
[RD 3]	EPA 600/P-99/002aF-bF,	U.S. EPA. Air Quality Criteria for Particulate Matter (October 2004). U.S. Environmental Protection Agency, Washington, DC,	2004
[RD 4]	IDEA	IDEA - Infusing Satellite Data into Environmental Applications http://idea.ssec.wisc.edu	

Table 1-2. List of reference documents.

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1.5 ACRONYMS AND DEFINITIONS

ACRONYM	EXPLANATION
AOI	Area Of Interest
AQI	Air Quality Index
FTP	File Transfer Protocol
ICD	Interface Control Document
MEEO	Meteorological and Environmental Earth Observation
MODIS	Moderate Resolution Imaging Spectroradiometer
NASA	National Aeronautics and Space Administration
PM	Particulate Matter
RFQ	Request For Quotation
SLA	Service Level Agreement
SSE	Service Support Environment
US-EPA	United States Environmental Protection Agency

Table 1-3. Acronyms and Definitions List.

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2 PM MAPPER® SERVICE LEVEL AGREEMENT

2.1 INTRODUCTION

Meteorological and Environmental Earth Observation (MEEO) is a private company mainly devoted to the implementation and development of products and services based on remote sensing of the Earth-Atmosphere system.

MEEO provides a wide range of commercial products and services “off the shelf” based on satellite data analysis for agriculture, soil management, environmental monitoring, cloud and precipitation monitoring based on single sensor, multisensor, multispectral and multitemporal data analyses. Moreover MEEO develops customised/dedicated services based on remote sensing applications, wave propagation, data mining and data fusion.

The proposed Service, named PM MAPPER® is a dedicated system product that allows monitoring the atmospheric PM_{2.5} near surface content by means of multispectral satellite data with 10 x 10 km spatial resolution and almost daily coverage.

The PM MAPPER® service allows the user to select the satellite image to be elaborated, and generates PM_{2.5} thematic maps with chromatic identification of human health risk index based on US-EPA 2006 classification.

2.2 HELPDESK

The exchange between the customer and MEEO (Service Provider) is possible by email, fax and telephone. During normal working days, inquiries are treated within the next two working days. Contact persons are available during office hours (Monday to Thursday: 9 – 17, Friday: 9 – 16)

2.3 CONTACTS

Contact: MEEO Help Desk

E-mail: helpdesk@meeo.it

Tel: +39-0532 1861501

Fax: +39-0532 1861637

2.4 DEFINITION AND ACRONYMS

- Service Support Environment (SSE)

ESA environment provided in support provision of services published as Web Services.

- PM MAPPER® SERVICE

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The SSE Service described in this SLA.

- **PM MAPPER®**

PM MAPPER® is an original remote sensing image elaboration system developed and supported by the Meteorological and Environmental Earth Observation (MEEO - <http://www.meeo.it>) company. It maps input image pixels onto a floating point map representing the PM_{2.5} concentration near surface in µg/m³; a further map representing the Air Quality Index (AQI) in compliance with the US EPA 2006 recommendations is also provided; the system does not require any user supervision.

- **Output Product**

Two image maps generated by PM MAPPER® within the PM MAPPER® Service. An Output Product is stored on a temporary FTP server for user transfer within the next 5 calendar days. A link to the Output Product (FTP account information, i.e.: FTP address, username and password) is provided via the user order list within the SSE Portal.

The output dataset is made of two image files:

- PM_{2.5} concentration file: it contains continuous values of the retrieved PM_{2.5} field, in float format;
- Air Quality Index Map:

Available output data formats for the map files are:

- GeoTIFF data format:
 - o PM_{2.5} concentration map file (float);
 - o Air Quality Index Map file (byte);
- JPEG data format:
 - o PM_{2.5} concentration map file with only qualitative indication of near surface PM_{2.5} concentrations;
 - o Air Quality Index Map file;
- ENVI data format:
 - o PM_{2.5} concentration map file (float);
 - o Air Quality Index Map file (byte).

- **MODIS Databases**

The PM MAPPER® service is configured to allow the user accessing to different MODIS catalogues in order to select the image to be elaborated; so far the only available MODIS catalogue has been implemented by MEEO over the NASA MODIS FTP database. The integration of the TELEGIS laboratory MODIS database will be also performed.

- **TELEGIS**

Telegis Laboratory of the University of Cagliari, Italy. MODIS data Provider.

<http://telegis.unica.it>

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2.5 SCOPE OF SERVICE – SERVICE ELEMENTS

The objective of this service is to provide PM_{2.5} concentration maps at ground level and healthy risk maps (AQI) based on US EPA 2006 classification; the user is allowed selecting the image to be elaborated through the selection of an Area of Interest (AOI) and a time interval for the search operation. Two different data providers have been involved in order to ensure to the user the widest possible choice for the image selection; presently only one catalogue is available for the search operation. Once the image search has provided the result list, the user is required to select the image to be processed, and format output options.

The PM MAPPER® service provides a very effective instrument for atmospheric monitoring that allows an unprecedented precision and instantaneous view at regional scale.

It can be applied worldwide.

2.6 QUALITY OF THE PRODUCT

The PM MAPPER® service provides concentration of PM_{2.5} at ground level expressed in µg/m³. It provides also AQI maps expressed in risk index based on US EPA 2006 classification (see Table 4).

- Spatial resolution: 10 km x 10 km along track;
- Output Projection: UTM-WGS84;
- Values: 32 bit real for PM_{2.5} concentration (µg/m³);
- Values: 8 bit (256 levels) for risk map classification.

Index	Category	PM _{2.5} (µg/m ³)	PM ₁₀ (µg/m ³)
1	Good	0-15.4	0-54
2	Moderate	15.5-40.4	55-154
3	Unhealthy for sensitive groups	40.5-65.4	155-254
4	Unhealthy	65.6-150.4	255-354
5	Very unhealthy	150.5-250.4	355-424

Table 4. US EPA 2006 categories classification of atmospheric particulate matters PM_{2.5} e PM₁₀ (US EPA 2006).

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The quality of the Output Products depends on the PM MAPPER® algorithm exclusively. This algorithm might be improved / refined on the fly based on user feedbacks supported by ground truth data.

2.7 CONDITIONS OF SERVICE AVAILABILITY

During the MEEO working days, the service is always active except when network or servers maintenance activities are being performed or due to circumstances beyond the MEEO control. The service is monitored on a daily basis.

2.8 DELIVERY

The delivery of the product is done through a FTP site. The user receives the FTP account information (FTP address, username and password) directly via the order list of the SSE Web portal.

The product will stay available on the FTP site for a maximum of 5 calendar days. After this period the product and the account are removed.

2.9 DELIVERY TIME

Three working days after the order and payment confirmation.

2.10 QUALITY OF SERVICES

MEEO warrants that the Services will be performed in a professional and workmanlike manner consistent with industry standards reasonably applicable to such services. If the client considers that a breach of this guaranty has occurred and notifies the service provider in writing stating the nature of the breach, then the service provider will be required to urgently correct any affected services in order that they comply with the warranty.

PM MAPPER® service provision is ensured until December 2008.

2.11 PRICE & PAYMENT CONDITIONS

The price for the products is a fixed quotation that depends on the searched catalogue and is provided automatically after the RFQ (request for quotation) is submitted via the SSE Portal.

The Service has to be pre-paid. As soon as the payment is fulfilled to the bank account of the Service Provider, product preparation will be started.

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In case of unavailability of the service or a defective product that could not be fixed within 2 weeks after complaints the payment will be refunded completely.

2.12 COMPLAINTS

Complaints from users can be accepted either via e-mail or by fax. The content of the complaint will be taken into consideration only if relevant with the indication enclosed within the Service Level Agreement between the User and MEEO.

It won't be accepted complaints expressed after more than 5 working days from the reception of the product.

An answer related to the notified complaint will be guaranteed to the user within 5 working days from complaint receipt, regarding the point of view of MEEO with respect to the complaint itself, ensuring also, if applicable, and the recovery action by MEEO himself.

2.13 TERMS OF USE AND LEGAL RESTRICTIONS

2.13.1 RIGHTS IN PRODUCT

Commercial reproduction

For commercial purposes, no part of the products provided via SSE may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording or by any information storage or retrieval system, except with written permission from MEEO. Requests by mail should be addressed to "Meteorological and Environmental Earth Observation S.r.l., via Saragat, 9, I-44122 Ferrara, Italy, Attn. Mantovani Simone", or by email: mantovani@meeo.it

MEEO does not assume any liability deemed to have been caused directly or indirectly by any product provided via SSE.

The customer acknowledges that copyrights subsist in the Products and that all property and other rights in the Product and all trademarks and logos used on or in relation with the Products shall remain with the MEEO or licence providers.

2.13.2 WARRANTY

The Product will be improved/refined in case that the quality conditions have not been respected.

No other warranties – The foregoing provisions of this clause represent the entire liability of MEEO in respect of a defective Product. All other conditions, warranties of any kind, written, oral, statutory, expressed or implied by statute or common law with respect to the

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Product provided via SSE including but not limited to the implied warranty of satisfactory quality, merchantability and fitness for purpose are hereby excluded.

No liability for consequential damage – The foregoing provisions state the entire obligation of MEEO with respect to the Products and in no event shall the Service Provider be liable in any way for any loss of profit, loss of turnover, economic or consequential loss suffered by the customer or any third party arising directly or indirectly from this contract.

2.13.3 FORCE MAJEURE

MEEO shall not be liable for any failure to perform its obligations arising from circumstances outside its control including (without limitation) acts of God, war, riots, explosions, abnormal weather conditions, fire, flood, strikes, lock out, Government action, delay by suppliers, accidents and shortage of materials, labor or manufacturing facilities.

Arbitration

In case of dispute or difference between the Parties arising out of or in connection with the contract/agreement, the Parties shall first endeavour to settle it amicably. Otherwise disputes or differences which cannot be settled as provided for in the preceding paragraph shall be finally settled by arbitration under the Rules governed by Italian Law. The parties agree to submit to the jurisdiction of the Italian Courts. The decision of the Arbitrators shall inure to the benefit of, and be binding upon the Parties, which hereby waive and renounce any right of appeal. The arbitration award shall decide upon the arbitration expenses.

2.14 TERMINATION

If the Customer defaults in or commits any breach of any of its obligations to MEEO, MEEO shall have the right forthwith to terminate providing the services. In such an event no refund of the price (or part thereof) shall be due to the customer, and such termination shall not prejudice or restrict the rights or remedies of MEEO. In the event of early termination or cancellation by customer, no refund of the price (or part thereof) shall be made by MEEO.

2.15 DISCLAIMER

MEEO does not assume any liability deemed to have been caused directly or indirectly by any content on its web site.

Disclaimer of liability. With respect to documents or data provided via SSE, neither MEEO nor any of its employees, makes any warranty, explicit or implied, including the warranties of fitness for a particular purpose, or assumes any legal liability or responsibility for the accuracy, completeness, or usefulness of any information, Product, or process disclosed, or represents that its use would not infringe privately held rights.

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Disclaimer of endorsement: Reference herein to any specific commercial products, process, or service by trade name, trademark, manufacturer, or otherwise, does not necessarily constitute or imply its endorsement, recommendation, or favour by MEEO. The views and opinions of authors expressed herein do not necessarily state or reflect those of MEEO, and shall not be used for advertising or product endorsement purposes.

2.16 TRADEMARKS

All brand names and Product names are trademarks or registered trademarks or Service marks of their respective owners.

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3 HOWTO

This section gives a synthetic description of the basic guidelines to use the PM MAPPER® service.

Locate the service on SSE

In order to locate the PM MAPPER® service the logged in user needs to start from the SSE Portal (<http://services.eoportal.org>) and select “Services”. In the section “2.Thematic Services” the user shall select “Environmental Stress”: in the page that will show up the user will find the link to the start page of the PM MAPPER® service. Alternatively, the user can use the “Search” box inserting the words “PM MAPPER®” or “MEEO”.

Access to the Service

An SSE registered and logged in user can access the service start page to operate it. At the bottom of this page there is the “Search” button which, if clicked, gives access to the Search operation.

Select an image for elaboration

Once on the Search page, the user is able to select an image and proceed to the next operation. The Search page allows:

- selecting the archive over which the “Search” operation will be performed (MEEO/NASA or TELEGIS);
- selecting a geographical Area Of Interest (AOI) on the SSE AOI Tool (note that only one rectangular AOI is allowed);
- selecting the start date and the end date search constraints by means of two date input fields;

The selected AOI will be shown on the map as a red rectangle. When all inputs are filled, the user shall click on the “Search” button. In few seconds a list of MODIS products, matching the search parameters, with their metadata will be shown in the scrolling window at the bottom of the page. If the list is greater than the number indicated in the box “Retrieve metadata”, the user can click on the button “Next” to see more metadata.

The resulting granules that fully contain the selected AOI, can be displayed at the top of the list sorting the table by “percentage of overlap”.

More detailed information, along with an RGB composite preview in high resolution, of each dataset can be requested by clicking on the image thumbnail located on the right side of metadata, if present, this image, or alternatively a “see details” link allows accessing the Present operation offered by the catalogue services, if available.

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To proceed to the next operation, the user shall choose one or more products from the list, add the selected product(s) to the basket and go to the basket, by clicking the buttons at the bottom of the page (not the scrolling window).

Request a Quotation

This operation is available once the shopping basket holds at least one product from a search operation; In the shopping basket the user can select only one product and click the button “Send RFQ”.

On the following “Confirmation Page” the user is request to review all information set on the RFQ page. The button “Cancel” allows going back to review the information, the button “Send RFQ” confirms the operation by sending the request for quotation to MEEO.

The available quotation options will be available in few moments on the “Order List” page.

Order the service

Once the quotation options are available, as results from an RFQ operation, the user can access the order page to complete the service ordering.

In the order page there is one drop down list to select the output data format and a checkable list of the available quotation options. Payment information (bank account) is also contained in the Order page.

To submit an order request, the user shall chose the output format from the drop down list and check only one quotation option, then click on the “Order” button and confirm the order on the confirmation page that will appear next.

Once the Service Provider receives the payment, it authorises the execution of the service. The user is notified by means of an e-mail that confirms that the payment was received and the elaboration operation was authorised.

Download the Service Results

When the service result is available, the user receives a notification e-mail containing the link to the “Order Result Page”. Alternatively the user can routinely check the “Order List” page (the link is in the top menu bar) until the order status turns to “Completed”. By clicking on the Order ID link, the user will see the “Order Result page” where a download link is provided in the field “Order Result URL”.

The Output Product will be available for downloading via FTP for 3 calendar days following the elaboration conclusion date.

Obtain support and information

In order to obtain any information or request support in relation to the PM MAPPER® Subscription service, the user shall contact the MEEO Helpdesk (MEEO HelpDesk, e-mail: helpdesk@meeo.it, phone: +39 0532 1861501).