

Establishing the European Geological Surveys Research Area to deliver a Geological Service for Europe



European Ornamental Stone Resources

Deliverables D4.1 – D4.2

Working version of the directory containing information from selected countries and Guideline for using the Directory Authors and Affiliation:

Konstantinos Laskaridis H.S.G.M.E.

Tom Heldal NGU

E-mail of lead author: laskaridis@igme.gr

Version: 13/12/2021

This report is part of a project that has received funding by the European Union's Horizon 2020 research and innovation programme under grant agreement number 731166.







Deliverable Data

Deliverable number	D4.1 / D4.2
Dissemination level	Professional / General
Deliverable name	Working version of the directory containing information from selected countries and Guideline for using the Directory
Work package	WP4 - WP4 Directory of ornamental stone resources
Lead WP/Deliverable beneficiary	H.S.G.M.E.

Deliverable status

Submitted (Author(s))	13/12/2021	Konstantinos Laskaridis
Verified (WP leader)	13/12/2021	Konstantinos Laskaridis
Approved (Coordinator)	13/12/2021	Tom Heldal

The involved Eurolithos team

GBA	Beatrix Moshammer
HGI-CGS	Željko Dedić, Marija Horvat
GSD	Christodoulos Hadjigeorgiou, George Hadjigeorgiou
HSGME	Konstantinos Laskaridis, Michael Patronis, Papatrechas Christos,
	Arapakou Angeliki
GSI	Eoin McGrath
ISPRA	Mauro Lucarini
SGSS	Maria Teresa De Nardo
SGL	Romain Meyer
NGU	Tom Heldal
LNEG	Jorge Carvalho, Vítor Lisboa, Cristina Carvalho
IGR	Valentina Cetean
GeoZS	Snježana Miletić, Mirka Trajanova
IGME	Javier Martínez Martínez
SGU	Thomas Eliasson





LIST OF CONTENTS

1.	INTRODUCTION	4
-	1.1 Scope and purpose	4
2.	EUROLITHOS DIRECTORY	4
3.	THE DIRECTORY FRAMEWORK	.5
4.	GUIDELINE FOR THE DIRECTORY	6
F		0
5.	TEMPLATE FOR OUTPOTTING ORNAMENTAL STONE S CHARACTERISTICS	.0
ANI	NEX A- AN EXAMPLE:	
FAC	CTSHEET FILLED IN FOR THASSOS CRYSTALLINA SEMI WHITE	L7
AN	NEX B:	
GU	IDE FOR UPLOADING	28





1. INTRODUCTION

The Work package 4 of the EUROLITHOS project aims to develop a European "identity card" for ornamental stone to form the core of a European directory, which will represent the technical characterization of each stone. The Directory of Ornamental Stones will provide basic information regarding the composition of each stone, physical – mechanical properties, quality and "performance in use" criteria. This ornamental stone knowledge base will be under the umbrella of the existing European Geological Data Infrastructure (EGDI).

1.1 Scope and purpose

This document is the deliverables D4.1 and D4.2 – "Working version of the Directory containing information from selected countries M36" and "Guidelines for the Directory M36".

Main objectives of the Work Package 4 are to develop a pilot (aided by the IP) and establish a working directory for selected partner countries, accompanied by guidelines. There are many stone "libraries" and databases in the world which are being digitalized step - by - step. However, most of them are presently still under development or there is no accessibility. In addition, data from private companies display promotional materials (companies, suppliers) and contain a trade name of the materials and not a name according to EN 12440 – Denomination Criteria. Thus, the WP4 will create a harmonized database of the broad range of information available on ornamental stones which will be made public through the GeoERA information platform.

2. EUROLITHOS DIRECTORY

Eurolithos creates input to information platform of relevance to ornamental stone which includes database on specific stone types – directory of ornamental stone properties. The Eurolithos directory deals with the definition content of the "identity card", precisely the use of names and terminology, petrographic information, geological context, physical – mechanical properties, geochemical properties, performance criteria. It investigates and exploits existing standards and the need for additional data, which feeds into the D6.1, definitions and requirements for the IP (M0-6). It intends to establish structure for data delivery and storage, and connection to Atlas and other databases.





The purpose of the directory is to create pan-European databases with coordinated structure for data storage and comparability of their features, and to publish the directory for selected partner countries, accompanied by guidelines.

Figure 1 depicts the structure of the Eurolithos project and the cooperation between the work packages to establish a European Natural Stone information platform.



Figure 1: Structure and workflow of the Eurolithos project

3. THE DIRECTORY FRAMEWORK

The WP4 addresses one of the three main challenges, which is the need for a harmonised directory, or "identity card" for Ornamental stone. Thus, it focuses on the collection of data and the evaluation from active ornamental stone quarries for establishing a relevant evaluation database.

The framework of the directory consists of the "identity card" of each ornamental stone concerning the name of the stone according to the European standard EN 12440: Natural Stone – Denomination Criteria, its commodity type for distinguishing the main kinds of ornamental stones (i.e. marble, granite, limestone, etc) and its lithology (i.e. calcitic marble, gneiss, travertine, etc) and its typical colour based on the corresponding code list of Stone colours, according to the guidelines given in the context of Deliverable D.3.2, as well as its place of origin.

The "identity card" provides also information about petrography, mineralogical composition, physical – mechanical properties and chemical properties of each ornamental stone. Physical – mechanical properties determination is crucial for a





stone type, in order to specify its potential applications. Furthermore, data concerning geological setting of each stone quarried and applications, uses or heritage, are included in the Eurolithos Directory of Ornamental Stones.

For this, all partners are asked to provide a list of the ornamental stones quarried in their country with all the above information, for the Eurolithos Directory while this list could be updated in the future.

4. GUIDELINE FOR THE DIRECTORY

The template for filling in the characteristics for each ornamental stone described previously in the Directory framework in paragraph 3, is given in word document file which will be converted to portable document format (pdf) presented in paragraph 5. This pdf-downloadable factsheet for each unique ornamental stone should be uploaded to the corresponding egdi production repository in order for the database to be created. In particular the required information for filling in, are the following:

Name of natural stone: based on the European Standard EN 12440: Natural stone – Denomination Criteria which aims to unify the designation criteria of natural stone varieties, maintaining the traditional names and introducing terms of petrologic nature, typical colour and place of origin. The name of the natural stone may be its traditional or commercial name, and corresponds to a particular type of rock with a specific place of origin.

Short description: including a representative photograph and the macroscopic characterization of the ornamental stone. The macroscopic description should include the colour, the rock structure (joints, bedding, stylolites, etc), grain size, macroscopic cracks, pores, cavities, weathering and alteration, macrofossils, xenolithic or autolithic inclusions.

<u>Commodity</u>: referring to rocks of igneous, sedimentary or metamorphic origin and precisely, basalt, granite, limestone, marble, sandstone, slate, miscellaneous ornamental stones (as demonstrated in Table 5 -Deliverable 3.2: Country-level and European-level Atlas templates for harmonized data).

<u>Lithology</u>: correspondingly, detailed information about the vocabulary of lithology is presented in Deliverable 3.2. For example, calcitic marble, dolomitic marble, dolomite, travertine, dolomitic limestone, andesite, monzonite, greywacke, schist, serpentinite, etc are common lithologies used as ornamental stones.

The link which provides the vocabulary of commodity and lithology of ornamental stones is the following:

https://data.geoscience.earth/ncl/geoera/eurolithos/CommodityCodeValue

EUROLITHOS European Ornamental Stone Resources



Typical colour: means the range of colour that a stone variety shows which is obtained by a visual impression under shadow natural light. Partners have suggested a list of stone colours that they considered relevant to be part of the Eurolithos Code List of Stone Colours. Thus, the typical colour of each stone should be selected according to the new created list of colours.

<u>Place of origin</u>: is the location of the area or quarry from where the ornamental stone is extracted, including the Country, the County/District or Province, the Municipality/Community and the City/Town or Village.

<u>Geological Setting</u>: providing the relevant geological map and information about the geology of the area where the ornamental stone is quarried referring also to the geological age and unit as well as to production data.

Application, use and heritage: brief description of uses and applications of each stone in remarkable constructions, either historical (i.e. monuments, ancient buildings, statues, etc.) or new structures including relevant photographic record of examples.

<u>Petrography</u>: including photographic record of a thin section of each stone (i.e. microphotograph) and microscopic description which includes fabric, constituents, discontinuities, alterations. The petrographic classification is assigned to each stone using the European Standard EN 12670: Natural stone – Terminology, which establishes the terminological bases for geological and petrologic definitions of natural stone and its classification.

Mineral composition: is determined by the petrographic examination according to EN 12407, and it identifies the main, subordinate or accessory minerals composing the natural stone (i.e. calcite, quartz, feldspar, dolomite, mica, orthoclase, etc).

Physical-Mechanical properties: Test methods are carried out at the laboratory to determine physical-mechanical properties mainly in compliance of European Standards EN or other relevant Standards (i.e. ASTM), being fully harmonized with the current practice in EU Member–States. The main physical–mechanical properties proposed for the Eurolithos Directory to form the "identity card" of an ornamental stone, are shown in Table 1.

<u>Chemical properties</u>: including the main elements (i.e. SiO_2 , Al_2O_3 , Cao, MnO, LOI, etc), the trace elements (i.e. V, Cr, Mn, Ni, Cu, Sr, As, Ag, U, etc) and the rare earths (i.e. La, Ce, Pr, Nd, Eu, Lu, etc).

During the uploaded process of each pdf, point location or rectangle of a wider area with corner coordinates should be chosen for each ornamental stone. x & y <u>coordinates of each stone</u> should be given according to specific coordinate system (using decimal degrees wgs84), determining the position of the area where the stone is quarried, as precisely as possible.





Physical-Mechanical properties	EN Standard
Apparent density	EN 1936
Real density	EN 1936
Open porosity	EN 1936
Total porosity	En 1936
Water absorption at atmospheric pressure	EN 13755
Water absorption coefficient by capillary	EN 1925
Uniaxial compressive strength	EN 1926
Flexural strength under	ENI 12272
concentrated load	LN 12372
Flexural strength under	FN 13161
constant moment	
Frost resistance	EN 12371
Abrasion resistance	EN 14157
Resistance to ageing by thermal shock	EN 14066
Resistance to salt	EN 12370
crystallization	
Breaking load at dowel hole	EN 13364
Slip resistance	EN 14231
Rupture energy	EN 14158
Thermal conductivity	EN 1745

Table 1: Main physical-mechanical properties and corresponding EN Standards

Use of the data provided

In the case of mineral composition, physical-mechanical properties and chemical properties, the figures given in the directory should be considered as indicative only, unless link to traceable laboratory data is provided.

5. TEMPLATE FOR OUTPUTTING ORNAMENTAL STONE'S CHARACTERISTICS

The final version of the template for outputting all the aforementioned information concerning the characteristics of each ornamental stone is presented in the following pages. The corresponding created pdf for each stone, updated to the EGDI repository, will be downloadable. The same files will be also included in a printable edition of an Atlas of European Ornamental Stones.

	THOS Europea Stone Re	en Omamental esources			Geo	OERA IW MATERIALS
UROL	ITHOS	aropoen Omanentar Ione Resources				A STATE
			Uniqu Alterna Alterna	Je Name ative name 1 ative name 2		
Short descr	Picture of sca	stone surface indicat	; either 1) use te approximate	scale on photo, 2) use t	the black box below	v, 3)
Short descr	Picture of Sca iption:	stone surface indicat	; either 1) use te approximate	scale on photo, 2) use t e scale in the black box l	the black box below below forigin	v, 3)

Figure 1: Contents of the template for displaying characteristics of the ornamental stone (first page)





	Geological setting	GeoERA
	Map showing geological setting	
Geology:		
Production:		
Geological age: Geological perio Geological unit: Geological unit	d/era and/or exact age name	
		CC D

Figure 2: Contents of the template for displaying characteristics of the ornamental stone (2nd page)





	G	SOERA
	Application, use and heritage	
Description:		
	Picture showing example o fuse; it is possible to have several examples	
		2 2
		© Ì

Figure 3: Contents of the template for displaying characteristics of the ornamental stone (3rd page)





EUROLITHOS Larger Transfer Transfer	Petrography	GeoERA
	Photomicrograph, thin section or other	
Description: Source of information:		
		CCC U

Figure 4: Contents of the template for displaying characteristics of the ornamental stone (4th page)





EUROLITHOS	angean Omarrental Inne Resources				GeoERA	
		Minera	al comp	osition		
If no accurate num	ber, use MM=mair	n minerals, SM = S	ubordinate mineral	s, AM=accessory m	inerals	· · · · · · · · · · · · · · · · · · ·
Mineral 1 (%)	Mineral 2 (%)	Mineral 3 (%)	Mineral 4 (%)	Mineral 5 (%)	Mineral 6 (%)	Mineral 7 (%)
Mineral 8 (%)	Mineral n (%)					
Source of informa	ation:					
					ì	

Figure 5: Contents of the template for displaying characteristics of the ornamental stone (5th page)





Apparent density (EN 1936) kg/m3	pparent Open porosity Water absorption at ensity (EN (EN 1936) atmospheric pressur 936) kg/m3 % vol 13755) % wt				t re (EN	e (EN strength (EN 1926) MPa				rength under ted load (EN 'a	
Real density 1936) kg/m3	Water absorption coefficient by Flexura capillary (EN 1925) (g/m2 x s0,5) momen					al strength u nt (EN 1316	inder constant 1) MPa				
		1		1							
			- 1 - 1	F	rost resis	tance (E	N 1237	1)			
Tec Flexural strength (EN 12372) after freeze-thaw cycling, MPa			Number of	ogical fe	cycles Uniaxial compr strength (EN 1 after freeze-t cycling, MP			Number of cycles		Identificat Number of prior to	ion Test (Test B): cycles completed stone failure
Change in dyr of elasticity decrea	iamic (incre se: -)	modulu ease: +; %	Resi us Change i (increase	stance to n open p e: +; decr %	o ageing l oorosity ease: -)	by therm Chang vel	e in ult ocity (i decrea	ck (EN 1406) trasound pul increase: +; ase: -) %	5) se	Change in fl under conc. l decre	exural strength oad (increase: +; ase: -) %
,	Abra	sion re	sistance (EN	14157)		R cr	esista ystalli 12	nce to salt sation (EN 2370)	Brea	king load at 133	dowel hole (EN 64)
Method A - V Wheel Abras Test, mn	Method A - Wide Method B - Böl Wheel Abrasion Test, mm cm ³ /50cm ²		od B - Böhme rasion Test, n ³ /50cm ²	e Method C - Amsler Abrasion Test, mm		- i sion	Change in mass (increase: +; decrease: -), %		Breaking load, the t N specir m		Thickness of the test specimens, mm
Slip re	sista	nce by (EN 14	means of th 231 / CEN/T	e pendi 8 16165	ulum tes)	ter	F	lupture ene	ergy	Thermal Co	onductivity (EN
Tested surface finish	Tested Slip Resistance Valu surface Dry test condition W		ce Value We	e — SRV t test co	ndition		(EN 14158 Joule	-),	1 W	745), //m·K	
Source of inf	orma	ition:		8							

Figure 6: Contents of the template for displaying characteristics of the ornamental stone (6th page)





EUROL	ITHOS	Econe Hassurose								Geog	RA
			(Che	mica	al pro	op	ertie	S		
Aain ele	ments										
SiO2 Al2O3 Fe2O3 (%) (%) (%)		TiO ₂ (%)	MgO (%)	CaO (%)	Na ₂ O (%)	K20 (%	O Mn() (%)	O P ₂ O ₅ (%)	SO (%	3 LOI) (%)	
Trace ele	ements										
V (ppn	n) (r (ppm)	Mn (pp	om) (Co (ppm)	Ni (pp	m)	Cu (ppm) Zn (pp	m)	As (ppm)
V (ppm) Cr (ppm) Sr (ppm) Cd (ppm)		Ba (pp	m) I	Pb <mark>(ppm)</mark>	Be (pp	m)	Rb (ppm) Bi (pp	m)	U (ppm)	
Sc (ppm) Cd (ppm) Sc (ppm) Y (ppm)		Th (pp	m) :	Sb (ppm)	Ta (pp	m)	Nb (ppm) Zr (pp	m)	Sn (ppm)	
Ag (pp	Ag (ppm) B (ppm)		Mo (pp	om)	W (ppm)	Ga (pp	m)	Ge (ppm) Se (pp	m)	Cs (ppm)
TI (ppr	n)			83		10			in the		
REE	m) (co (nnm)	Dr. (pp)	m) /	Id (nom)	Sm (nn	ml	Fu (nnm)	Cd (pp		Th (nom)
La (ppr	n) C	e (ppm)	Pr (pp	m) i	va (ppm)	Sm (pp	m)	Eu (ppm)) Ga (pp	in)	(nrdd) ar
Dy (ppi	m) H	lo (ppm)	Er (ppi	m) 1	ī <mark>m (ppm)</mark>	Yb (pp	m)	Lu (ppm))		
Method	s applie	d and sour	c <mark>e o</mark> f infor	mation		.81	80 -				

Figure 7: Contents of the template for displaying characteristics of the ornamental stone (7th page)





vpe of information	Name of provider	URL	
his data sheet			
lon-commercial irectory			
ommercial directory		8	
cientific publication			
ther publication		5	
ompiled by:			Logo
			I

Figure 8: Contents of the template for displaying characteristics of the ornamental stone (last page)





ANNEX A - AN EXAMPLE: FACTSHEET FILLED IN FOR THASSOS CRYSTALLINA SEMI WHITE





Thassos Crystallina Semi White



Scale 1:1

Short description: Medium grained semi white calcitic marble with large calcite crystals.

Commodity	Lithology	Typical colour		Place of	origin	
(vocabulary)	(vocabulary)	(code list)	Country	County / District / Province	Municipality / Community	Place/town / Village
Marble	Calcitic marble	Semi White	Greece	East Macedonia and Thrace	Thassos	Theologos







Geological setting



Geology: Thassos Crystallina Semi White (blue curve) is a metamorphic rock belonging to the carbonate marbles of Rhodope Mass area, which is part of the region of East Macedonia and Thrace. (Source: Geological Map of Greece 1:50000, Thassos Sheet).

Production: The most important quarry area is near the village of Theologos, in the central part of the island of Thasos.

Geological age: -Geological unit: Metamorphic system







Application, use and heritage

Description: Thassos Crystallina Semi White marble has been used in various construction projects. It provides a high reflection of sunlight and holds its cool temperature, making it perfect suitable for claddings in warmer regions. Being a marble with high strength properties, it is suitable for interior and exterior use, wall cladding, flooring, stairs, and other design projects.



Thessaloniki Concert Hall: External Cladding finished in October 2010.

(photo: http://www.tch.gr/)









Pavement recreation with Thassos Crystallina Semi White marble.









Alyki Ancient Quarries of Thassos Crystallina Semi White marble.







Petrography



Description: Photomicrograph of thin section, showing calcite crystals and veins filled with calcite of sencondary origin.

Source of information: Hellenic Survey of Geology and Mineral Exploration







Mineral composition

If no accurate number, use MM=main minerals, SM = Subordinate minerals, AM=accessory minerals

Calcite (%)	Apatite (%)	Sphalerite (%)		
100	AM	AM		

Source of information: Hellenic Survey of Geology and Mineral Exploration







Physical properties

Apparent	Open porosity	Water absorption at	Uniaxial Compressive	Flexural strength under
density (EN	(EN 1936)	atmospheric pressure (EN	strength (EN 1926)	concentrated load (EN
1936) kg/m ³	% vol	13755) % wt	MPa	12372) MPa
2710	0,2	0,1	71	10,6

Real density (EN	Total porosity (EN	Water absorption coefficient by capillary (EN 1925) (g/m ² x s ^{0,5})	Flexural strength under constant
1936) kg/m ³	1936) % vol		moment (EN 13161) MPa
-	-		

Frost resistance (EN 12371)										
Flexural strength (EN 12372) after freeze- thaw cycling, MPa	Number of cycles	Uniaxial compressive strength (EN 1926) after freeze-thaw cycling, MPa	Number of cycles	Identification Test (Test B): Number of cycles completed prior to stone failure						
7,9	48									

Resistance to ageing by thermal shock (EN 14066)									
Change in dynamic modulus of elasticity (increase: +; decrease: -) %	Change in open porosity (increase: +; decrease: -) %	Change in ultrasound pulse velocity (increase: +; decrease: -) %	Change in flexural strength under conc. load (increase: +; decrease: -) %						
-		-							

Abras	sion resistance (EN 1	4157)	Resistance to salt crystallisation (EN 12370)	Breaking load at 133	dowel hole (EN 64)	
Method A - Wide Wheel Abrasion Test, mm	ethod A - de Wheel ision Test, mm Method B - Böhme Abrasion Test, cm ³ /50cm ² Test,		Change in mass (increase: +; decrease: -), %	Breaking load, N	Thickness of the test specimens, mm	
-	20	-	-	1400 3		

Slip re	esistance by means of th (EN 14231 / CEN/T	ie pendulum tester S 16165)	Rupture energy	Thermal Conductivity (EN
Tested surface finish	Slip Resistan Dry test condition	ce Value — SRV Wet test condition	(EN 14158), Joule	1745), W/m·К
			5	-

Source of information: Hellenic Survey of Geology and Mineral Exploration







Chemical properties

Main elements

SiO ₂	AI_2O_3	Fe ₂ O ₃	TiO ₂	MgO	CaO	Na ₂ O	K ₂ O	MnO	P_2O_5	SO3	LOI
(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
<0,10	<0,10	<0,10	<0,10	0,60	51,80	3,90	0,18	<0,05	-	-	42,70

Trace elements

V (ppm)	Cr (ppm)	Mn (ppm)	Co (ppm)	Ni (ppm)	Cu (ppm)	Zn (ppm)	As (ppm)
0,3	27	25	2,0	12	3,0	24	2,7
Sr (ppm)	Cd (ppm)	Ba (ppm)	Pb (ppm)	Be (ppm)	Rb (ppm)	Bi (ppm)	U (ppm)
170	0,7	46	5,5	0,2	18	<0,1	0,2
Sc (ppm)	Y (ppm)	Th (ppm)	Sb (ppm)	Ta (ppm)	Nb (ppm)	Zr (ppm)	Sn (ppm)
18	3,5	0,5	1,1	3,0	4,7		
Ag (ppm)	B (ppm)	Mo (ppm)	W (ppm)	Ga (ppm)	Ge (ppm)	Se (ppm)	Cs (ppm)
TI (ppm)							

REE

La (ppm)	Ce (ppm)	Pr (ppm)	Nd (ppm)	Sm (ppm)	Eu (ppm)	Gd (ppm)	Tb (ppm)
Dy (ppm)	Ho (ppm)	Er (ppm)	Tm (ppm)	Yb (ppm)	Lu (ppm)		

Methods applied and source of information: Hellenic Survey of Geology and Mineral Exploration







Sources of more information

Type of information	Name of provider	URL
This data sheet	Hellenic Survey of Geology	https://www.eagme.gr/
	and Mineral Exploration	
Non-commercial		
directory		
Commercial directory		
Scientific publication		
Other publication	Thessaloniki Concert Hall	http://www.tch.gr/

Compiled by:	Hellenic Survey of Geology and Mineral Exploration (H.S.G.M.E.) https://www.eagme.gr/	PLANE AND
--------------	--	---



ANNEX B: GUIDE FOR UPLOADING

Eurolithos uploading directory documents (pdf)

Description/tutorial:

http://egdi-public.gitlabpages.geus.dk/egdi-documentation/#/main-content/AdministrationModule

Get access/login rights

Send name and email to Project Lead, who will pass that on. When you have got confirmation, you can continue. (Note: As default, PL ask for access to both test and production Version).

Access uploading

> Introduction	Accessing the administration module
> Delivering data to EGDI	You can find the administration module here:
> Creating spatial data sets	
> Working with GeoPackages	https://data.geus.dk/egdiadmin/login.jsp
 Uploading data to EGDI 	For testing purposes we have a test version of the administration module here:
Getting a user account	http://egditest01.geus.dk/egdiadmin/login.jsp
Accessing the administrati	When you logon to the administration module you must have a username and a password and if you work for
Delivering unstructured da	more than one project, you must also supply a project name. When you get a user account this will be assigned
Naming conventions	to one or more project. All the data that you upload will be assigned to this project and can be changed by all
Licences	users assigned to the project.
Language	Login

First, in the guidelines, choose between administration module (openly published to EGDI) or test version (for trial and testing without publishing).

Note: Data uploaded to the EGDI test repository is for test purposes only. To make the data public the pdf's must be uploaded to the production repository once testing is concluded.

Start uploading (same for both versions)

S EGDI Admin Data set Web map Couplings	EUROLITHOS: TOM.HELDAL@NGU.N
EGDI ADMIN	
This is where we register and maintain our data sets. Here, you can define new data sets and create interactive web maps on top. Read the user manual here.	
Data sets Web maps Couplings	
Documents / images / data / doi	
O Upload documents / images / data / doi	
Edit documents / images / data / doi	
Data sets	
A data eat is a wall-dafinad table structure with visualization instudiod. Sources can be database. WES: WMS: share files as nonenalizas	
© EGDI	contact

You will see this screen with your name top right. You have two options. Upload or edit documents

🤇 EGDI Admin Data set Web map Couplings	EUROLITHOS: TOM.HELDAL@NGU.NO
linia di diffica di dal	
Upload pdf, jpeg of dol (step 1 of 2)	
In this page you can upload doi links or pdf / jpeg / csv files and their attachments. Read the user manual here.	
Select the type of document to upload	
File (pdf, jpeg or csv) ~	
Select main pdf, jpeg or csv file*	
Drag jpeg, pdf or csv file here	
or click here to select the file manually PDF IF IF CSV	
Include attachments	
Upload	
8 F (D)	and her live

You will see this screen. Click on pdf.

Apne						×	o – o ×
← → • ↑ 📜 > On	eDrive - Norges Geologiske Undersøkelse >	geofagavdeling	Eurolithos > Directory	o norwegian directory	~ [©]		☆ 🗯 🏝 🗄
Organiser • Ny mappe						1 - 1	LITHOS: TOM.HELDAL@NGU.NO
diverse ^	Navn	Status	Endringsdato	Туре	Størrelse		
diverse bilder	Bergan_larvikitt	ØR	18.05.2021 09:12	Microsoft Edge PD	867 kB		
Documents	grorud	ØR	15.05.2021 21:57	JPG-fil	1 101 kB		
Eurolithos	📾 krukåsen_larvikite	Ø A	18.05.2021 09:11	Microsoft Edge PD	683 kB		
foredrag etc	Iys_larvikitt	Ø A	18.05.2021 09:14	Microsoft Edge PD	1 449 kB		
Gamle filer og al	📾 Malerød_larvikitt	Ø A	18.05.2021 09:14	Microsoft Edge PD	938 kB		
gamle prosjekter	mørk_larvikitt	ØR	18.05.2021 09:15	Microsoft Edge PD	1 379 kB		
GeoEra RM2B	Stålaker_larvikitt	Ø A	18.05.2021 09:15	Microsoft Edge PD	932 kB		
geofagavdeling							
Geomanofold							
geonarker							
info							
kart og standard							
kart og standard							
kamprosjekter							
komite geoparki							
manus							
My Pictures							
Filnavn:	Bergan_larvikitt					Egendefinerte filer v	
						Åpne 💌 Avbryt	
L	Upioad						
	© EGDI						contact us

Find you file and open



You will then see your file name in the box. Click Upload.

You will now be asked to fill in metadata. More about this below.

Adding Metadata

FOR FOR	
EGDI Ad	Imin Data set Web map Couplings
Please enter requir	ed metadata, so the file can be imported correctly into the EGDI system.
File name: bergan	Jarvikitt.pdf
Attachments:	
Title*	
Enter title	×
Title of the unstruct	ured document 🕫 View example
Abstract*	
Enter abstract	×
Brief description of Priew example	the unstructured document and the contents it contains
Keywords*	
Enter keywords	. *
Comma-separated	keywords (important for document search) # View example
Created date*	
18/05/2021	*
Date the document	was generated (dd/mm/yyyy) 🔊 View example
Authors*	
Tom Heldal	*
Comma-separated	ist of the documents authors (people/organizations) # View example
Accessibility*	
Attribution 4.0 Int	ernational (CC BY 4.0)
The license defining	the accessibility to the document / data # View example
Language*	
nb	*
Document languge	(use ISO 639-1 code - etc "en")
F View example	
Spatial coverage	
Bounding box -	Enter spatial coverage
Spatial boundinobo	of the document/image in WGS84 (the value should be in format:
© EGDI	

You will see a list of metadata to add. Step by step below:



"Title" should be same as the main unique name you have decided.

feldspar cry	<mark>stals</mark> . The ima	ge displays a j	polished surfac	Jished surface.						
Commodity	Lithology	Typical	Place <u>of origin</u>							
Commodity Lithology (vocabulary) (vocabulary)	(code list)	Country	County / District / Province	Municipality / Community	Place/ <u>town</u> / Village					
Commercial Granite	Monzonite	Dark grey	Norway	Vestfold-Telemark	Larvik	Bergan				

«Abstract» should be the generic part of short description.

"Key-words" should be commodity, lithology, colour and country. You may also include others if you like from specific needs.

EGDI Admin Data set Web map Couplings	EUROLITHOS: TOM.HELDAL	@NGU
Title*		
Bergan larvikitt	✓	
Title of the unstructured document 🕫 View example		
Abstract*		
Bluish-grey, coarse-grained monzonite displaying grey to blue schillerisation within temary feldspar crystals	~	
Brief description of the unstructured document and the contents it contains		
Keywords*		
× Granite, (freetext) monzoni	✓	
monzonit		
monzonite		
monzonitic rock		
quartz monzonite		
Authors*		
Tom Heldal	✓	
Comma-separated list of the documents authors (people/organizations) 🔊 View examples	mple	
Accessibility*		
© EGDI		contact u

When you fill in keywords: there are terms in the different vocabularies, so if you write "monzoni" there will come up a list to choose from.

Please us this vocabulary for commodity and lithology:

project vocabularies (schmar00.github.io)

Please use this list for colours:

Ornamental Stones colour values
Beige
Black
Black-Green
Blue
Blue-Grey
Brown
Dark Grey
Green
Grey
Grey-Brown
Grey-Green
Light-Grey
Light-Pink
Multicoloured
Pink
Red
Reddish Brown
White
Semi-white
White-Black
Yellow

Tom Heldal	*	
Comma-separated	list of the documents authors (people/organizations) 🔊 View example	
Accessibility*		
Attribution 4.0 In	ternational (CC BY 4.0) 🗸 🗸	
The license defining	g the accessibility to the document / data 🕫 View example	
Language*		
en	✓	
Document languge	(use ISO 639-1 code - etc "en")	
Spatial coverage		
Bounding box -	Enter spatial coverage	
Point Bounding box	e document/image in WGS84 (the value should be in format: where latitudes (Y) are = 90 to -90 and longitudes (X) are = 180	

Location: you can choose between point location or rectangle of a wider area with corner coordinates.

Always use decimal degrees wgs84, and up to 6 decimals (remove last if you have seven decimals).



This is correct: North coordinate first, then East, separated by comma and space.

When finished, click "Save".

is EGDI - Uploa	d files (v1.6.5128) 🗙 🛛 🎭 Uploading data to EGDI	🗙 🥱 EGDI - Documents (v1.6.5128) 🗙 💈	GDI Repository	Search platform 🗙 📔 🌄 No	rgeskart × +	0	-	o ×
$\leftarrow \ \ \rightarrow \ \ G$	egditest01.geus.dk/egdiadmin/dodocs.jsp?nod	eid=83ad7229-1bc1-4be6-b779-e6c12e7d897f&su	ccess=Documen	%20uploaded%20successf	ully.%20The%20document%20url%20	is%20https://eg @	☆ 윩	± :
	EGDI Admin Data set V	Neb map Couplings			EUROLITHOS: TOM	.HELDAL@NGU.NO		^
	O Document uploaded successfully. The	document url is https://egditest01.geus.dk/egd	lidocs/eurolitho:	i/bergan_larvikitt.pdf		×		
	Documents In this page you view all the documents upload Upload new Go back	ded to EGDI for your project. You can also view	v metadata for t	he documents in solar /	agdi-search here.			
	Name	Keywords	Туре	Uploaded by	Attachments			
	Bergan larvikitt	monzonite granite dark grey Norway	pdf	tom.heldal@ngu.no		Telete 🕄		
	Light larvikite	dimension monzonite Light Larvikite	pdf	tom.heldal@ngu.no		Telete 0		
	© EGDI					contact us		
문 🔎 Skri	v her for å søke O	H 💽 🖬 🔒 🐋 🛂	o 🐖	💶 🐠 👘 🕏	3 🚯 🌧 💪 🖪	🕐 ^ 👄 🖮 <i>(</i> .	(⊅)) 14:35 (⊅)) 20.05.20	121 🖵

You have now one or several uploaded documents. You will see metadata on this list, keywords in green colour. If you click here after egdi-search you can search for your data.

Searching your data (or others')

GEOGRA	EGDI Repository Search platform (test version 1.6.5) - Documents in the repository: 96.	
		?
	Basic search O Semantic search O Advanced search Use Spatial search	
	monzo	
	monzodiorite	
	monzogabbro	
	monzonite	
	monzonitic rock	
	quartz monzonite	

Start writing search term i.e. "monzonite" and click on the best suited

$\leftarrow \rightarrow$ C $($ geo-zs.si/db/egdi-search/		☆ 🛊 😩	:
GeoCRA	EGDI Repository Search platform (test version 1.6.5) - Documents in the repository: 96.	≡	*
		•	
	Basic search O Semantic search O Advanced search Use Spatial search		
	monzonite X		
Searched word(s) monzonite	Basic Search		
	egdi-documents (4)		П
	₩		
	Bergan larvikitt		П
	keywords: monzonite,granite,dark grey,Norway abstract: Bluish-grey, coarse-grained monzonite displaying grey to blue schillerisation within ternary feldspar crystals description: Bluish-grey, coarse-grained monzonite displaying grey to blue schillerisation within ternary feldspar		*

Here, you find the document and others with monzonite.

OR, you can choose advanced search:

GeoERA	EG	DI Repository Search platform (test version 1.6.5) - Documents in the repository: 96.	0 Ⅲ
Searched criteria: "dark grey"	С	□ Basic search ○ Semantic search ● Advanced search □ Use Spatial search	*
	"dark grey"	Advanced Search	
	egdi-documents (3)	Bergan larvikitt	
	Å	keywords: monzonite,granite,dark grey,Norway content: Country County / District / Province Municipality / Community Place/town / Village Granite Monzonite Dark grey Norway Vestfold-Telemark Larvik Bergan 5 centimeters Show all metadata	
	L.	Rare earth elements distribution, mineralisation and exploration potential in Sweden	

That means for instance words not in standardized lists. Here, I have used exact term between " " for colour, and you get the document.

OR, we can combine terms with spatial areas:



Here, only the monzonite within the square on the map will be shown.