- VALIDATE DATA AND DATABASE UPLOAD
- Select data file type (location, time series). User defined templates are also supported.
- Select MsExcel data file and template (edd/app/ems/clean/template).
- Validate input file vs. template rules; if it fails ("File not OK") go to next step, otherwise skip.
- ---- Explore Data, Template and Result; identify and fix errors (cell-by-cell), go back one step.
- ----- Upload to the database; if it fails ("File not OK") go to next step, otherwise skip.
- Explore **Data, Template** and **Result**; identify and fix errors (record), go back one step.

A Huge files validation and database uploading can take time. Be patient! Focus on errors description; they generally share similar pattern, format issues, compulsory data, etc.

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Select data file type: Location		Dat Show	a Tem	olate R ntries	tesult [D	B] Measur	ement types	Search:]
 Time series User defined 			Code	×≑	Υ÷	Srid	Туре 🔶	Note	÷	Provider
Select MsExcel data file	:	1	AR0401	797306	1633620	32628	Monitoring point	The code could already exist in the database		CERES
Browse data_cere	s2021_location-point_LEV1-0_VvlEr	2	TEST02	797283	1633652	32628	Monitoring point			CERES
L	Jpload complete	3	TEST03	797232	1633741	32628	Geophysical point			CERES
Select MsExcel template	ð:	4	TEST04	797219	1633795	100000	Monitoring point			CERES
Browse template_	location.xlsx	5	TEST05	797085	1633954	110000	Monitoring point			LAB1
		6		797063	1633958	32628	Monitoring point	Lacking code		LAB2
Validate input file vs. ter	mplate	7	TEST07	797209	1633914	32628	Monitoring point			CERES
Partial upload		8	TEST08	797900	1633900	32628	Monitoring point	To check potential conflicts with existing coordi	inates	CERES
Upload to the database		9	TEST09	797800	1633800	32628	Monitoring point	To check potential conflicts with existing coordi	inates	CERES
File is not OK!		10	TEST10	797236		32628	Monitoring point	Lacking Y coordinate		CERES
		Showi	ing 1 to 10 d	of 10 entries	\$			Prev	vious	1 Next

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Select data file	e type:	Data	Templa	ite F	Result	[DB] Measu	irement types				
Location		Сору	CSV	Excel	Print	PDF		Search:			
 Time series 						·					
 User defined 	d		Row	Col	Val	\$	Msg				÷
Select MsExce	el data file:	1	6	1	NULL		[Error] Null attribute violates the not null cor	nstrain for this colu	mn		
Browse	data_ceres2021_location-point_LEV1-0_VvlEr	2	10	3	NULL		[Error] Null attribute violates the not null cor	nstrain for this colu	mn		
	Upload complete	3	4	4	100000		[Error] Value 100000 violates the valid value	e list constrain (vvľ	vvl_srid.csv)		
Select MsExce	el template:	4	5	4	110000		[Error] Value 110000 violates the valid value	e list constrain (vvl	vvl_srid.csv)		
Browse	template_location.xlsx	5	3	5	Geophy	sical point	[Error] Value Geophysical point violates the	valid value list cor	nstrain (vvl\vvl_type	.csv)	
		6	5	7	LAB1		[Error] Value LAB1 violates the valid value I	ist constrain (vvl\v	/l_provider.csv)		
Validate input	t file vs. template	7	6	7	LAB2		[Error] Value LAB2 violates the valid value I	ist constrain (vvl\v	/l_provider.csv)		
Partial uploa	Partial upload		1 to 7 of 7	entries					Previous 1	Nex	t
Upload to the	e database										
File is not OK!											

VISUALIZE AND ANALYZE DATA



— Analyze parameter values; select parameter, symbol size and explore data through the map, table or graph; views being interlinked and any selection being reflected on all of them.

AP

Analyze Law/EQS (Environmental Quality Standard) **limit exceedance**; select data provider(s), media, law(s) and EQS(s), only exceeding parameters, standardized symbol size at law limit and date interval. A small arrow at the bottom starts animation over time.







The dashboards seamlessly connect to the already setup database. Map, table and graph are interlinked. Menu selection filters out not relevant data.

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Disclaimer

The developed tools and utilities as well as the views expressed are based on the current information available to the authors and may not in any circumstances be regarded as stating an official or policy position of the European Commission.

ENVIRONMENTAL ems **MONITORING SYSTEM**

Science for policy

The Joint Research Centre (JRC) provides independent, evidence-based knowledge and science, supporting EU policies to positively impact society









STEP-BY-STEP



INSTALL AND CONFIGURE

- ----- Run the EMS MsWindows (v. 10 or higher) installer.
- Install locally PostgreSQL database and PostGIS, its geographic extension, if not already available.

Leave the defaults, where possible; keep note of database password and port (default 5432, if not used). In case of access to remote database(s), skip database install and ask IT system administrator for credentials.

🐳 Setup				-		×
Select Components						\Rightarrow
Select the components you want to install; clear the cor you are ready to continue.	mponer	ts you do not v	rant to i	nstall. Cl	ick Next 1	when
PostgreSQL Server pgAdmin 4 Stack Builder Command Line Tools	Click	on a componen	t to get	a detaile	ed descrip	ition
		G				
VMware InstallBuilder					-	
		< Back	Nex	t >	Car	icel
PostGIS Bundle 3.1.4 for PostgreSQL x64 13	3 Setup			-		X
Choose Comport Choose which fee x64 13 you want	nents atures o t to inst	of PostGIS Bur all.	ndle 3.1	L.4 for F	PostgreS	QL
Check the components you want to install and install. Click Next to continue.	uncheo	k the compon	ents yo	u don't	want to	

Select components to install:	Create spatial database	Description Position your mouse over a component to see its description.
Space required: 289.4 MB		
Nullsoft Install System v3.06.1 —		

- Run EMS through the desktop shortcut 📷 and main interface shows up.
- Select Language from dropdown list; translation.json file can be edited to extend language support.
- Access **Database connection** window and configure parameters, as from the installation.
- **Test** the database connection.
- Initialize the database the first time only. Database objects are created and data copied.

EMS is a web application and opens in your browser Main window provides access to all application features.



Server	Database	postgres				
Localhost	User ID	postgres				
C Remote IP	Password	*****				
	Port	5432				
Test	Init	ialise				



Tabs to access database content are colored in: black (application-specific monitoring data), green (system data), red (legal limits) and blue (queries of general interest, combining data from distinct tables).

Error messages are issued if: no record has been selected on editing or deleting; more than one record has been selected on editing. Info provides a detailed overview of database architecture.

- Organize location and time series data in MsExcel files following the rules defined in the standard templates available at **edd/ app/ems/clean/template**; (Re)name

- Check column names, their sequence, data types, compulsory attributes and (where stated) content being present in the VVL (Valid Values List). VVL files are updated regularly at application start based on the database content and they are available at edd/app/ems/clean/vvl.

	А		B	5	С	D		E	F	16 17	AR040 AR040	1 D	USSOLVED OXYGEN	Water % Water meter/Kg	2021-03-17 1 2021-03-18 1	5:52:00 5:52:00	700000 243	CERES	
1	Pos	Colu	umr	name	Data type	Required	Description		Valid values list	18	AR040	2 P	H	Water unitless	2021-03-19 1	5:57:00	700000	CERES	
2	1	Cod	le		TEXT (100)	Y	Monitoring p	oint code		20	AK040	12 11	EMIPERATURE	water 'C	2021-03-201	5:57:00	/00000	CERES	
3	2	Х			NUMERIC	Y	x coordinate		l	4	•	Da	ta 🕂						•
4	3	Y			NUMERIC	Y	y coordinate												
5	4	Srid			INTEGER	Y	Spatial refere	ence ID (as from EPSG)	vvl srid.csv										
6	5	Тур	е		TEXT (100)	Y	Type of mon	itoring point	vvl type.csv										
7	6	Not	e		TEXT (255)	N	Descriptive n	ote											
8	7	Pro	vide	r	TEXT(100)	Y	Locational da	ata provider	vvl provider.csv	1									
9											_								
•	Þ	-		Α	В	С	D		E								F		
			1	Pos C	olumn name	Data typ	e Required	Description							Valid	value	es list		
			2	10	ode	TEXT (20) Y	Monitoring point code	e (eg. P01)										
			3	2 P	arameter	TEXT(100	D) Y	Parameter (eg. indiffe	rently code, cas o	or I	name	e)			vvl_p	aram.	.csv		
			4	3 N	/ledia	TEXT(20)	Y	Anyone from media ta	ble (eg. Water)						vvl_m	nedia.	csv		
			5	4 L	Init	TEXT(20)	Y	Measurement unit fro	m unit table (eg.	m	asl)				vvl_u	nit.cs	v		
			6	5 C	ate	DATE	Y	Measurement date an	d time in ISO860	1 f	orma	at	(time being o	ptional)					
			7	6 N	leasure	TEXT(100	D) Y	Measurement in text f	ormat. Conversio	on	to nu	um	ber, if feasibl	le, is manage	ed intern	ally by	y the da	tabase	
			8	7 N	lote	TEXT(100	00) N	Note specific to each s	ingle measureme	en	t								
			9	8 P	rovider	TEXT(100)) Y	Provider code or name	e, from provider	tal	ole				vvl_p	rovide	er.csv		
			10																
				•	Data (+)												Þ	*

Clearly state in contracts with third parties what data format is expected to be used for data delivering and share standard templates. Alternatively, if not agreed upon, demand for consistent digital data formats reporting data as clean as possible.



2	А	В	С	D	1				F		G		
1	Code	x	Y	Srid	Type		Note				Provider		
2	AR0401	797306	1633620	32628	8 Monitori	ng point	The code coul	d alread	ly exist in t	he database	CERES		
3	TEST02	797283	1633652	32628	8 Monitori	ng point					CERES		
4	TEST03	797232	1633741	32628	Geophys	cal point					CERES		
5	TEST04	797219	1633795	100000	Monitori	ng point					CERES		
5	TEST05	797085	1633954	110000	Monitori	ng point					LAB1		
7		797063	1633958	32628	8 Monitori	ng point	Lacking code				LAB2		
в	TEST07	797209	1633914	32628	8 Monitori	ng point					CERES		
9	TEST08	797900	1633900	32628	8 Monitori	ng point	To check pote	ntial co	nflicts with	existing coordinates	CERES		
0	TEST09	797800	1633800	32628	8 Monitori	ng point	To check pote	ntial co	nflicts with	existing coordinates	CERES		
1	TEST10	797236		32628	8 Monitori	ng point	Lacking Y coor	rdinate			CERES		
2			-				P	c	D	E	E	G	u
4	> [Data	(+)	_	1 Code	D	oromotor	Modia	Unit	Data	Mooruro	Note	Brovidor
					2 AR	DIELDR	IN	Water	ug/l	2021-03-06 15:52:00	700000	NOLE	CERES
					3 AR	SUM FI	NDOSLII FANES	Water	110/1	2021-03-07 15:52:00	700000		CERES
					4 AR	SUSPEN	IDED MATTER	Water	nnm	2021-03-08 15:52:00	700000		CERES
					5 AR	ORGAN	IC CARBON	Water	mg/l	2021-03-09 15:52:00	700000		CERES
					6 AR	Piombo		Water	110/1	2021-03-40	<0.03		CERES
					7 AR	Ferro		Water	ug/I	2021-04-12 15	<0.03		CERES
					8 AR	Manga	nese	Water	110/1	2021-03-10 15:52:00	<2		LAB1
					9 AR	ORTHO	PHOSPHATE	Water	mg/l	2021-03-11 15:52:00	700000		LAB2
					10 AR	TOTAL	PHOSPHORUS	Fau	mg/l	2021-03-12 15:52:00	<0.005		CERES
					11 AR	TOTAL	NITROGEN	Cloud	mg/l	2021-03-13 15:52:00	<0.30		CERES
					12 AR040	DISSOL	VED OXYGEN	Water	ppm	2021-03-14 15:52:00	700000		CERES
				- I-	13 AR040	L PH		Water	unitless		8		CERES
				- I-	14 AR040		RATURE	Water	°C	2021-03-15 15:52:00			CERES
					15 AR040	CONDU	CTIVITY	Water	Kg/I	2021-03-16 15:52:00	43		CERES
					16 AR040	DISSOL	VED OXYGEN	Water	%	2021-03-17 15:52:00	700000		CERES
			F		17 AR040		NTY	Water	meter/Kg	2021-03-18 15:52:00	243		CERES
		/alid	valuer	list	18 AR040	2 PH		Water	unitless	2021-03-19 15:57:00	700000		CERES
		valla	values	inst	19 AR040	2 TEMPE	RATURE	Water	°C	2021-03-20 15:57:00	700000		CERES
					20								



For existing data or not compliant formats, transfer data to standard templates, manually or automatically (preferred option) and always keep a copy of the original deliverables.