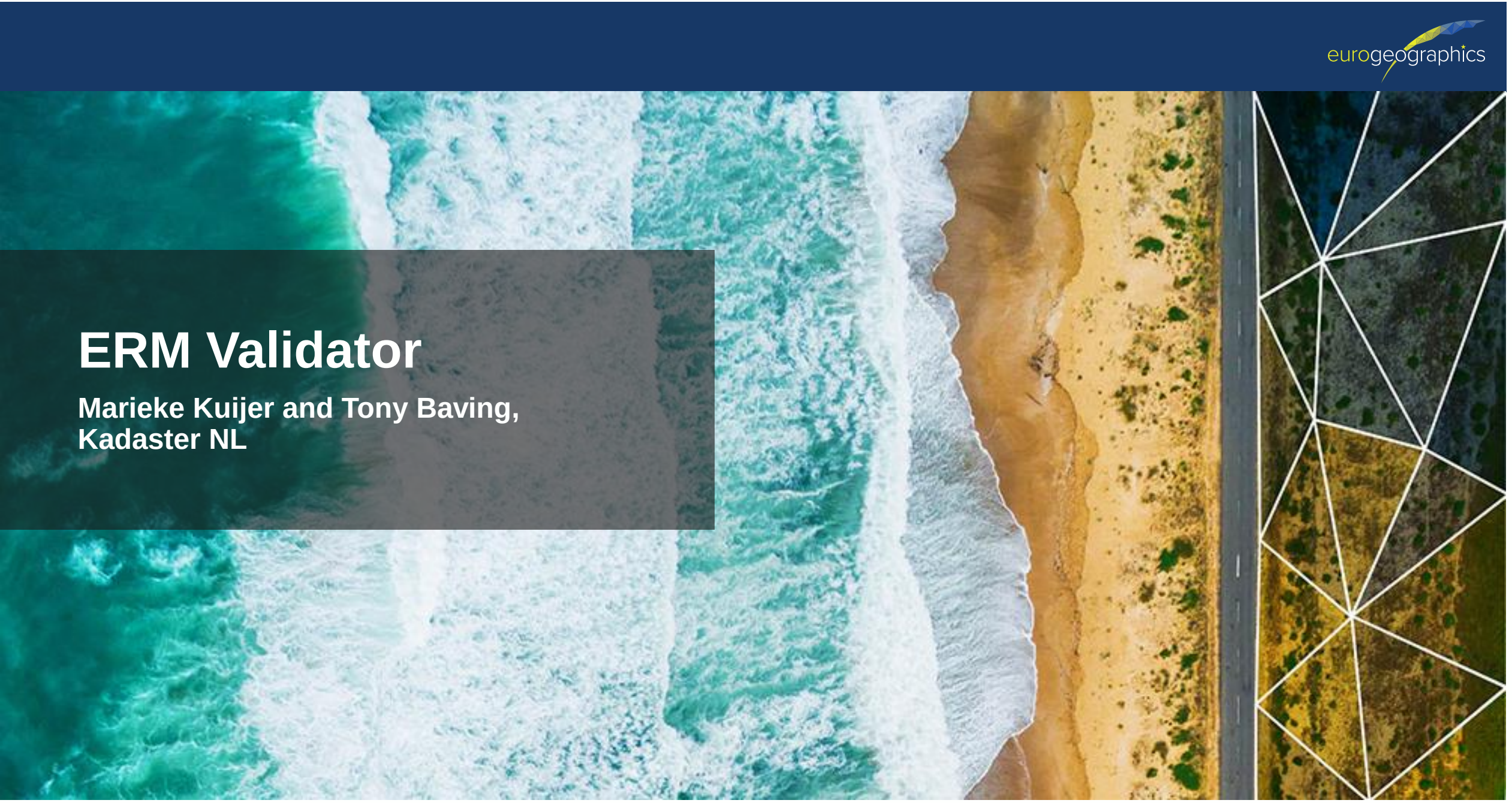
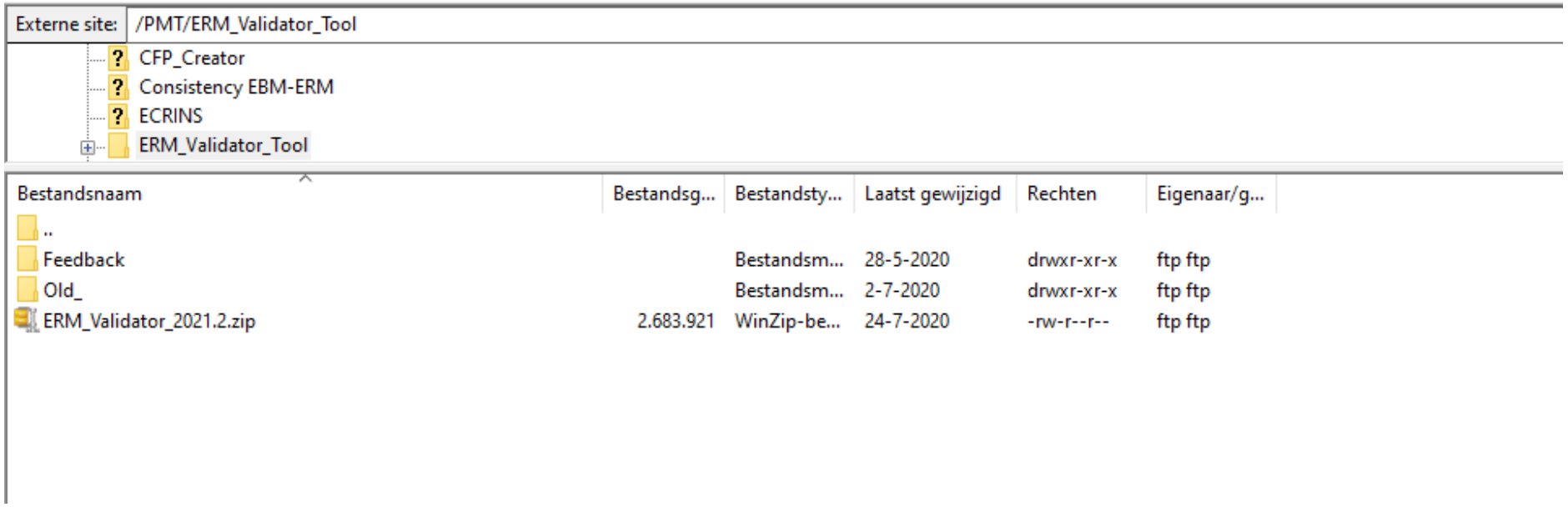


ERM Validator

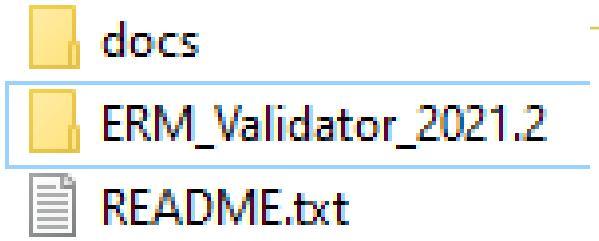
Marieke Kuijer and Tony Baving,
Kadaster NL

ERM Validator 2021.2

On BKG-ftp server – since 24 July 2020



Zip-file -> docs



- ERM_Validator_Checks_2021.0.xls
- ERM_Validator_QuickGuide_2021.0.docx
- ERM_Validator_WhatsNew_2021.0.docx
- ERM-Validator_2021_Checks_POP.docx
- ERM-Validator_2021_Checks_TRANS.docx

	Validation code	Check	Implemented in ERM Validator 2020 tool?
General Data Delivery	H001	feature classes AQUEDCTL, COASTA, COASTL, DAML, DAMC, LAKERESA, LANDICEA, ISLANDA, SEAA, SEASTRTL, SPRINGP, SPRINGC, SWAMPA, RAPIDSL, RAPIDSC, WATRCRSA, WATRCRSL, WELLP	☑
	H002	coordinate system (GEOGRAPHIC, decimal degrees)	☑
	H003	map extent (-25° < Lambda < 40° and 30° < Phi < 80°)	☑
	H004	mandatory feature classes COASTA, COASTL, DAML, DAMC, LAKERESA, LANDICEA(BJ030), ISLANDA, SEAA, SWAMPA, WATRCRSA, WATRCRSL must have features	☑
	H005	Empty or missing tables	☑
Geometric resolution (Tested in projection ETRS89 LAEA)	H006	Valid Geometry	☑
	H007	minimum allowed area size: 60 000m²	☑
	H008	minimum allowed distance between vertices of line and area features: 5m	☑
	H009	minimum allowed length of a line segment: 50m	☑
	H010	statistics of average distance between vertices	☐
Selection criteria (Tested in projection ETRS89 LAEA)	H011	The number of LAKERESA less than 400 000m²	☑
	H012	The number of WATRCRSA less than 200 000m²	☑
	H013	The number of SWAMPA, LANDICEA less than 400 000m²	☑
	H014	The number of ISLANDA less than 400 000m²	☑
	H015	The number of dams and locks less than 125m	☑
	H016	The number of dangling AQUEDCTL, WATRCRSL shorter than 1600m	☑
	H017	The number of shoreline construction (SEASTRTL) shorter than 125m	☑
Data Model and attributes structure	H018	geometrical definitions (polygon, polyline, point)	☑
	H019	attributes: complete list, ordering, definition	☑
	H020	attributes: has core attributes (FCSubtype, inspireId, beginLifespanVersion, F_CODE, ICC, SN)	☑
	H021	correct value of ICC (all FCs)	☑
	H022	Name attribute: no special character in NAMA1 or NAMA2	☑
	H023	allowed attribute values for COASTA (MCC, NAMxx)	☑
	H024	allowed attribute values for ISLANDA (NAMxx)	☑
	H025	allowed attribute values for LAKERESA (HYP, HydroID, TID, ZV2, NHI, NAMxx)	☑

What's new

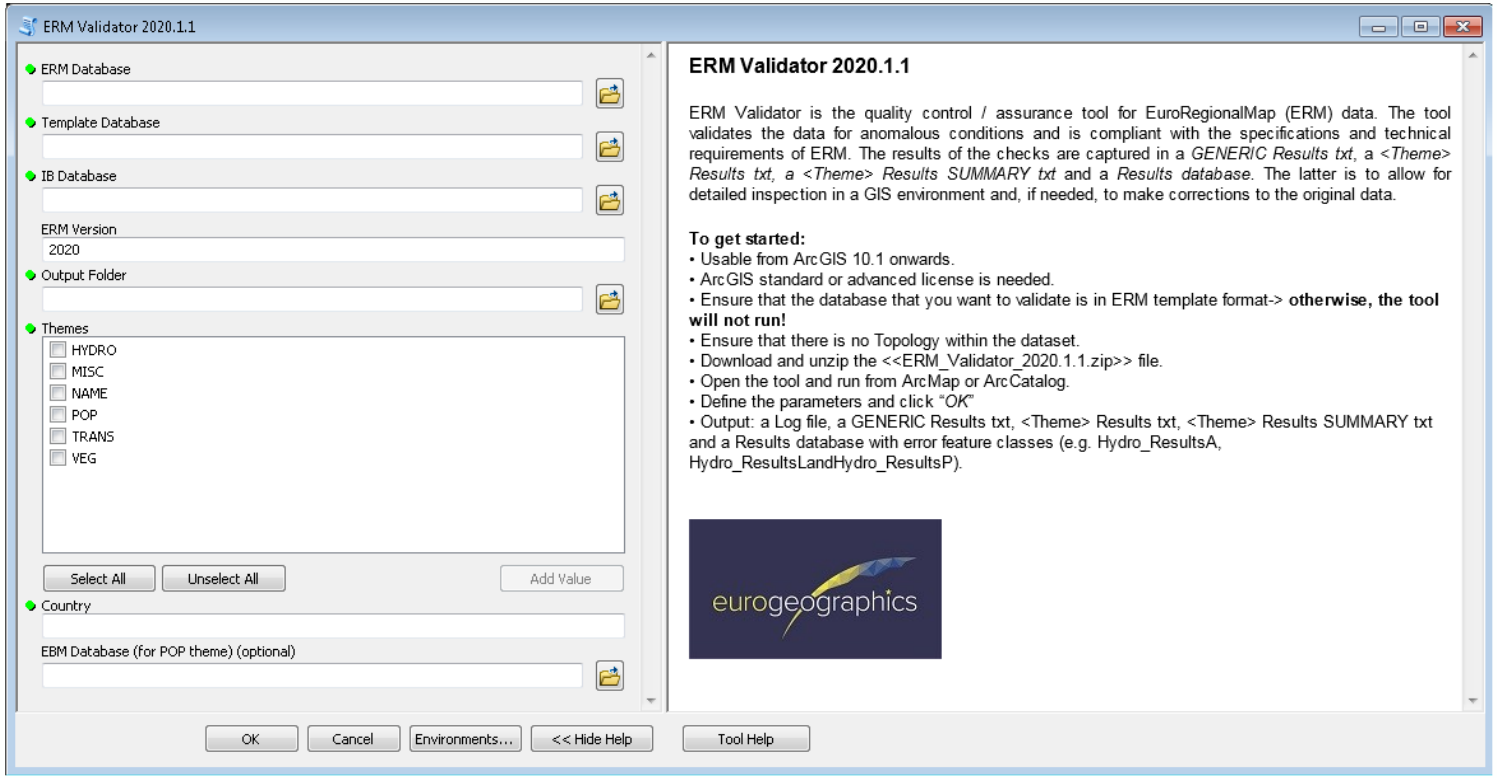
- Documentation (Quick Guide / What's New)
- Fixes (e.g. …)
  - Adding of TRANS and POP checks that where not implemented in version 2020.0 and 2020.1.
  - Checks according the change of FerryL are updated. (Modelling of ferries)
  - Fixed usage of IntercC and LevelcC
  - Handling of missing attributes (<Null>) for POP and TRANS themes
  - Fixed problems with T041 AIRFLDA, HARBORA: No adjacent faces with same attributes
  - The "Frequency tool" (advanced license needed) is fixed, now available for standard licence.
  - P010, P017, T061, T062, T065, T066: Fixed incorrect values relating to UNK
- Improvements (e.g. …)
  - Added T095 FERRYL: Must be connected to either FERRYC or Connecting Feature Point (CFP) with featureType = FerryL
- Other changes
  - Reducing the number of false positives for the pseudonodes checks.

Running the tool

- Define the parameters
  - ERM Database
  - Template Database
  - ELF Database
  - ERM Version
  - Themes
  - Country
  - EBM Database

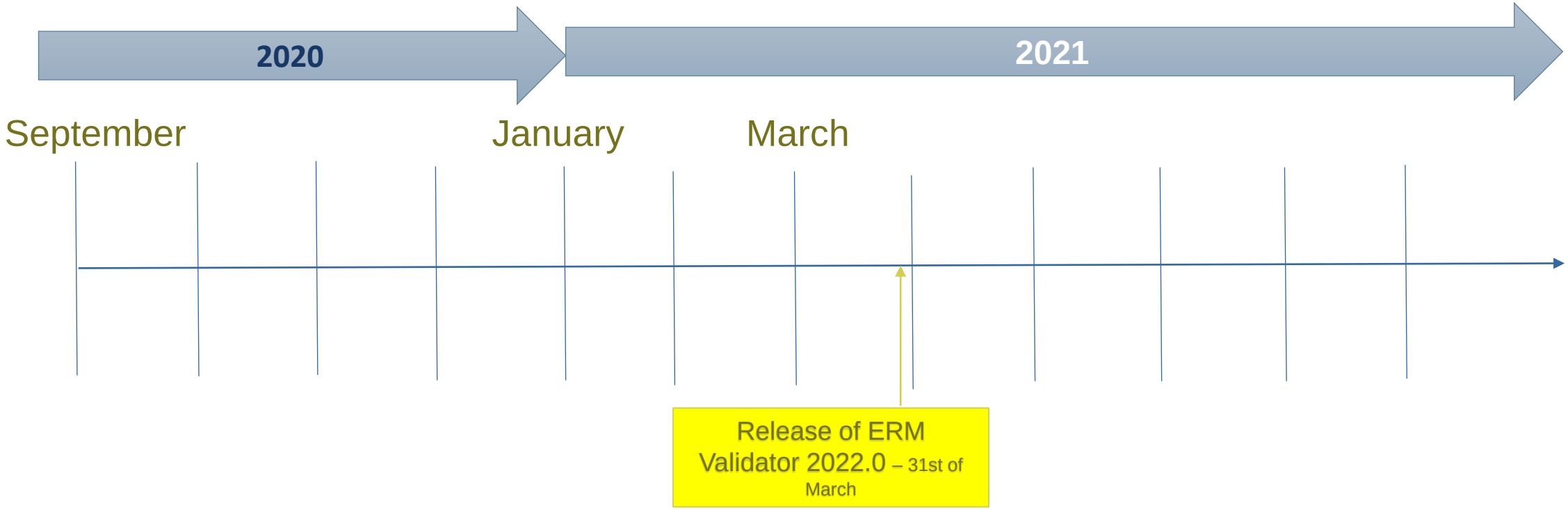
    (for POP theme) (optional)

- Click “*OK*”



Release of ERM Validator 2022.0

On BKG-ftp server – 31st of March 2021



Next steps (ERM_Validator_List_of_known_issues_20200901)

Known errors/issues to be solved in upcoming version:

- Provide a more explicit warning when validated dataset is not in correct template
- Adjust handling of missing attributes (<*Null*>) for HYDRO, MISC and VEG themes
- Update *ICC Countrycodes* list
- Investigate and fix possible issues with checks H080 and T082
- Further reduce the number of false positives for pseudonodes checks
- Add generic check for total number of features
- Add uniqueness check for PopulatedPlaceID
- Add statistics section
- Add additional tool documentation
- Add checks that are not yet implemented (*ERM_Validator_Checks xls*)

Next steps

	Validation code	Check	Implemented in ERM Validator
General Data Delivery	M001	feature classes BUILDP, CTOWERP, EXTRACTP, IMDPRODL,IMDPRODP,	☑
	M002	coordinate system (GEOGRAPHIC, decimal degrees)	☑
	M003	map extent (-25° < Lambda < 40° and 30° < Phi < 80°)	☑
	M004	mandatory feature classes BUILDP, PARKA must have features	☑
Geometric resolution (Tested in projection ETRS89 LAEA)	M005	Valid Geometry	☑
	M006	minimum allowed area size: 60 000m²	☑
	M007	minimum allowed distance between vertices of line and area features: 5m	☑
	M008	minimum allowed length of a line segment: 5m	☑
	M009	statistics of average distance between vertices	☐
Geometric resolution (Tested in projection ETRS89 LAEA)	M010	The number of PARKA less than 400 000m²	☑
	M011	The number of IMDPRODL, POWERL less than 1600m (dangling, stand-alone)	☐
	M012	The minimum allowed length of PHYSL is 1600m (dangling, stand-alone)	☐
Data Model and attributes structure	M013	geometrical definitions (polygon, polyline, point)	☑
	M014	attributes: complete list, ordering,	☑
	M015	attributes: has core attributes (FCSubtype, inspireId,	☑
	M016	correct value of ICC (all FCs)	☑
	M017	Name attribute: no special character in NAMA1 or NAMA2	☑
	M018	allowed attribute values for BUILDP (BFC,	☑
	M019	allowed attribute values for CTOWERP	☑
	M020	allowed attribute values for EXTRACTP (EXS, MIN, PRO, NAMxx)	☑
	M021	allowed attribute values for IMDPRODP	☑
	M022	allowed attribute values for LANDMRKP	☑
	M023	allowed attribute values for PHYSP	☑
	M024	allowed attribute values for POWERP (PPC, NAMxx)	☑
	M025	allowed attribute values for TOWERP (TTC)	☑
	M026	allowed attribute values for IMDPRODL	☑
	M027	allowed attribute values for PHYSL (PFN, USE, PRR)	☑
	M028	allowed attribute values for POWERL (FCO)	☑
	M029	allowed attribute values for PARKA (MA3,	☑
Topology	M030	PARKA: Must not overlap	☑
	M031	PARKA: Must be single part	☑
	M032	PARKA: No adjacent faces with same	☐
	M033	IMDPRODL, PHYSL, POWERL: Must not intersect or touch interior	☑
	M034	IMDPRODL, PHYSL, POWERL: Must not self-i	☑
	M035	IMDPRODL, PHYSL, POWERL: Must not self-intersect	☑
	M036	IMDPRODL, PHYSL, POWERL: Must be single	☑
	M037	IMDPRODL, PHYSL, POWERL: No pseudo	☑
	M038	BUILDP, CTOWERP, EXTRACTP, IMDPRODP, LANDMRKP, PHYSP, POWERP, TOWERP: Under do not overlap each other	☑
Attributes cross-examination	M039	Conditions for PHYSL	☑
	M040	Conditions for BUILDP, EXTRACTP, LANDMRKP, PARKA, PHYSP, POWERP:	☑
Attributes completion rate	M041	Give information on the % of unknown or not populated values for an attribute.	☐
	M042	For BUILDP with BFC, POWERP with PPC, PARKA with MA3: if NAMxx is populated, they should have a known value for the attribute giving their type	☐
Consistency with other layers	M043	PHYSP, PHYSL features are well on land	☐
	M044	Features except BUILDP (Lighthouse), POWERP (Wind Power Station), IMDPRODP (Pumping Station), POWERL, IMDPRODL (Pipeline), PARKA well inside the	☐
Specific Checks	M045	PowerL connectivity	☐
	M046	ImdprodL connectivity	☐
	M047	PowerL, ImdprodL: number of features not connected to a feature in neighbouring country (by RC)	☐
	M048	Name attribute: good consistency and correct spelling	☐

	Validation code	Check	Implemented in ERM Validator 2021 tool?
General Data Delivery	T001	feature classes AIRFLDA, AIRFLDC, AIRFLDP, EXITC, FERRYC, FERRYL, HARBORA, HARBORC, HARBORL, HARBORP, HELIP, INTERCC, LEVELCC, MISAEROP, RAILRDC, RAILRDL, RESTC, ROADL, RUNWAYL	☑
	T002	*DEPRECATED	☑
	T003	coordinate system (GEOGRAPHIC, decimal degrees)	☑
	T004	map extent (-25° < Lambda < 40° and 30° < Phi < 80°)	☑
	T005	AIRFLDA, AIRFLDC, AIRFLDP, FERRYC, FERRYL, HARBORA, HARBORC, HARBORP, INTERCC, LEVELCC, RAILRDC, RAILRDL, RESTC, ROADL, RUNWAYL must have features	☑
Geometric resolution (Tested in projection ETRS89 LAEA)	T006	Valid Geometry	☑
	T007	minimum allowed area size: 60 000m²	☑
	T008	minimum allowed distance between vertices of line and area features: 5m	☑
	T009	minimum allowed length of a line segment: 50m	☑
	T010	statistics of average distance between vertices	☐
Geometric resolution (Tested in projection ETRS89 LAEA)	T011	The number of HARBORA areas less than 400 000m²	☑
	T012	The number of AIRFLDA areas less than 400 000m²	☑
	T013	The number of RAILRDL features less than 1600m	☑
	T014	The number of FERRYL features less than of 125m	☑
Data Model and attributes structure	T015	geometrical definitions (polygon, polyline, point)	☑
	T016	attributes: complete list, ordering, definition	☑
	T017	attributes: have valid values (FCSubtype, F_CODE). No NULL values.	☑
	T018	correct value of ICC (all FCs)	☑
	T019	Name attribute: no special character in NAMA1 or NAMA2 (only ASCII)	☑
	T020	*DEPRECATED	☑
	T021	allowed attribute values for AIRFLDA (IKO)	☑
	T022	allowed attribute values for AIRFLDP (CAA, EXS, FUC, IKO, TEN, TUC, USE, ZV3)	☑
	T023	allowed attribute values for AIRFLDC (CAA, EXS, FUC, IKO, TEN, TUC, USE, ZV3)	☑
	T024		☑
	T025	allowed attribute values for FERRYC (FStationID)	☑
	T026	allowed attribute values for HARBORA (HID)	☑
Topology	T027	FERRYL: Must be connected to either FERRYC or Connecting Feature Point (CFP) with featureType = FerryL	☑
Attributes cross-examination	T061	Conditions for AIRFLDC	☑
	T062	Conditions for AIRFLDP	☑
	T063	DEPRECATED	☑
	T064	Conditions for RAILRDC	☑
	T065	Conditions for RAILRDL	☑
	T066	Conditions for ROADL	☑
	T067	Conditions for AIRFLDC, AIRFLDP, EXITC, FERRYC, HARBORC, HARBORP, HELIP, INTERCC, RAILRDC, RAILRDL, RESTC, ROADL: NAMxx-NLNx	☑
	T068	*DEPRECATED	☑
	T069	*DEPRECATED	☑
Attributes completion rate	T070	Gives information on the % of unknown, unpopulated, not applicable and no values for an attribute.	☐
Consistency with other layers	T071	All features are well inside administrative boundaries	☑
	T072	EXITC well covered by an international boundary	☑
	T073	*DEPRECATED	☐
	T074	*DEPRECATED	☐
Specific Checks	T075	Connectivity of European roads inside one country and cross-border (by RC)	☐
	T076	AIRFLDC should have the same IKO attribute value as AIRFLDA it is inside, one-to-one-relationship	☑
	T077	HARBORC should have the same HID attribute value as HARBORA it is inside, one-to-one relationship	☑
	T078	Connectivity of AIRFLDP with road or railway network	☑
	T079	Connectivity of HARBORP with road or railway network	☑
	T080	INTERCC well on intersection of 2 ROADL with different location level (LLE)	☑
	T081	INTERCC: all present in the motorway network	☑
	T082	INTERCC: RJC = 1 well on intersection of 2 motorways, RJC = 2 well on intersection of motorway and other road RJC = 3 well on intersection of 2 or more motorways and at least one other road	☑
	T083	LEVELCC (AQ062) well on all intersections of at least 1 ROADL and 1 RAILRDL at the same location level (LLE = 1)	☑
	T084	LEVELCC (AQ063) well on all intersections of at least 3 ROADL at the same location level (LLE = 1)	☑
	T085	EXITC check against the map of Schengen countries	☑
	T086	RAILRDL connectivity	☑
	T087	ROADL connectivity	☑
	T088	*DEPRECATED	☐
	T089	Consistency of the TEN attribution (RAILRDL, ROADL) with official TEN-T network	☐
	T090	*DEPRECATED	☐
	T091	FERRYC-FERRYL: consistency between FerryID and StationID values	☐
	T092	*DEPRECATED	☐
	T093	*DEPRECATED	☐

	Validation code	Check	Implemented in ERM Validator 2021 tool
General Data Delivery	P001	feature classes BUILTUPA, BUILTUPP, URBANP	☑
	P002	coordinate system (GEOGRAPHIC, decimal degrees)	☑
	P003	map extent (-25° < Lambda < 40° and 30° < Phi <80°)	☑
	P004	mandatory feature classes BUILTUPA, BUILTUPP must have features	☑
Geometric resolution (Tested in projection ETRS89 LAEA)	P005	Valid Geometry	☑
	P006	minimum allowed area size: 60 000m²	☑
	P007	minimum allowed distance between vertices of line and area features: 5m	☑
	P008	statistics of average distance between vertices	☐
Geometric resolution (Tested in projection ETRS89 LAEA)	P009	The number of BUILTUPA less than 400 000m²	☑
	P010	The number of BUILTUPP(AL022) with PP1 < 5000	☑
Data Model and attributes structure	P011	geometrical definitions (polygon, polyline, point)	☑
	P012	attributes: complete list, ordering, definition	☑
	P013	attributes: have valid values (FCSubtype, F_CODE). No null values.	☑
	P014	correct value of ICC (all FCs)	☑
	P015	Name attribute: no special character in NAMA1 or NAMA2 (only ASCII)	☑
	P016	allowed attribute values for BUILTUPA (PopulatedPlaceID)	☑
	P017	allowed attribute values for BUILTUPP (PopulatedPlaceID, PP1, PP1, PP2, USE, NAMN1, NAMA1, NLN1)	☑
	P018	allowed attribute values for URBANP (NAMN1, NAMA1, NLN1)	☑
Topology	P019	BUILTUPA: Must not overlap with features from the same feature class	☑
		BUILTUPA: Must not self-overlap	☑
	P020	BUILTUPA: Must be single part	☑
	P021	BUILTUPA: No adjacent faces with same attributes	☑
	P037	BUILTUPP, URBANP: Must not intersect with features from the same feature class	☑
	P022	BUILTUPP, URBANP: Must not intersect with features from other feature class	☑
	P023	URBANP must be inside BUILTUPA	☑
	P024	BUILTUPP (AL020) must be well outside BUILTUPA	☑
	P025	BUILTUPP (AL022) must be inside BUILTUPA	☑
Attributes cross-examination	P026	Conditions for BUILTUPP	☑
	P027	Conditions for BUILTUPP, URBANP: NAMxx-NLNx	☑
Attributes completion rate	P028	Gives information on the % of unknown, unpopulated, not applicable values for an attribute	☐
Consistency with other layers	P029	*DEPRECATED	☑
	P030	BUILTUPA, BUILTUPP, URBANP features are well inside administrative boundaries	☑
	P031	BUILTUPA, BUILTUPP, URBANP do not overlap AIRFLDA, HARBORA	☑
	P032	BUILTUPA, URBANP do not overlap SOILA, VEGA	☑
	P033	Connectivity of BUILTUPP with road network	☑
	P036	BUILTUPP (ERM) and ResidenceOfAuthority (EBM) should be consistent	☑
Specific Checks	P034	BUILTUPP (AL022) should have the same PopulatedPlaceID attribute value as BUILTUPA it is inside	☑
	P035	Name attribute: good consistency and correct spelling	☐

	Validation code	Check	Implemented in ERM Validator 2021.2 tool?
General Data Delivery	V001	feature classes SOILA, VEGA	☑
	V002	coordinate system (GEOGRAPHIC, decimal degrees)	☑
	V003	map extent (-25° < Lambda < 40° and 30° < Phi < 80°)	☑
Geometric resolution (Tested in projection ETRS89 LAEA)	V004	Valid Geometry	☑
	V005	minimum allowed area size: 60 000m²	☑
	V006	minimum allowed distance between vertices of line and area features: 5m	☑
	V007	statistics of average distance between vertices	☐
Selection criteria	V008	The number of SOILA, VEGA less than 400 000m²	☑
Data Model and attributes structure	V009	geometrical definitions (polygon, polyline, point)	☑
	V010	attributes: complete list, ordering, definition	☑
	V011	attributes: has core attributes (FCSubtype, inspireId, beginLifespanVersion, F_CODE, ICC, SN)	☑
	V012	correct value of ICC (all FCs)	☑
	V013	Name attribute: no special character in NAMA1 or NAMA2	☑
	V014	allowed attribute values for SOILA (MCC)	☑
	V015	allowed attribute values for VEGA (PRO, NAMxx)	☑
Topology	V016	SOILA, VEGA: Must not overlap	☑
	V017	SOILA, VEGA: Must be single part	☑
	V018	SOILA, VEGA: No adjacent faces with same attributes	☐
	V019	SOILA must not overlap with VEGA	☑
Attributes cross-examination	V020	Conditions for VEGA	☑
Attributes completion rate	V021	Gives information on the % of unknown or not populated values for an attribute.	☐
Consistency with other layers	V022	SOILA, VEGA features are well on land	☑
	V023	SOILA, VEGA features are well inside administrative	☑

FAQ

ERM Validator tool immediately returns an error, what can be the problem?

1. Database is not in the correct ERM template format
2. There is a Topology within the dataset
3. Folder structure has **.gdb** in the name

```
20200909-10:27:04 MainProcess MainThread INFO Logging Created, logfile: L:\ERM_2020\NL\Validation_results\ERMValidator_20200909-102704.log
20200909-10:27:04 MainProcess MainThread INFO Start ERM Validator version: ERM Validator 2021.2 - 20200615
20200909-10:27:04 MainProcess MainThread INFO Start with parameters:
20200909-10:27:04 MainProcess MainThread INFO Input database    : L:\ERM_2020\ERM_2021_NL_POP-TRANS_2021.gdb\ERM_2021_NL_POP-TRANS_2021_20200909.gdb
20200909-10:27:04 MainProcess MainThread INFO Template database: L:\ERM_2020\ERM_2021_template.gdb
20200909-10:27:04 MainProcess MainThread INFO ELF database      : L:\ERM_2020\IB_Regional_2021.gdb
20200909-10:27:04 MainProcess MainThread INFO ERM Version       : 2021
20200909-10:27:04 MainProcess MainThread INFO Result folder     : L:\ERM_2020\NL\Validation_results
20200909-10:27:04 MainProcess MainThread INFO Themes            : POP;TRANS
20200909-10:27:04 MainProcess MainThread INFO Country           : NL
```


Questions via Sli-do

Is your organization using ArcGIS Pro now or will it start using it within the next 2 years?

- Yes, also for the production of ERM
- Yes, but not for the production of ERM
- No

Do you use other tools next to the ERM Validator to validate your ERM data?

- No
- Yes
  - If yes, why? (e.g. missing checks in ERM Validator?)

EG Producer Meeting, Online, 22-23 September 2020

Thank you for your attention!

Contact:

Email: qmeg@kadaster.nl

