OUTPUT TITLE:

30 EXPERTS TRAINED AT

3. SIMONA TRAINING EVENT

OUTPUT T5.3

PROJECT TITLE:

SEDIMENT-QUALITY INFORMATION, MONITORING AND ASSESSMENT SYSTEM TO SUPPORT TRANSNATIONAL COOPERATION FOR JOINT DANUBE BASIN WATER MANAGEMENT

ACRONYM: SIMONA

PROJECT DURATION:

1ST JUNE 2018 TO 30TH NOV 2021, 42 MONTHS

DATE OF PREPARATION:

15/11/2021

Project co-funded by the European Union (ERDF, IPA and ENI)

Danube Transnational Programme
Sediment-quality Information, Monitoring and Assessment System
to support transnational cooperation for joint Danube Basin water management

INVITATION

TO

SIMONA FINAL CONFERENCE EVENT

9TH – 10TH NOVEMBER 2021

BAIA MARE, ROMANIA

ONLINE EVENT

Project co-funded by the European Union (ERDF, IPA and ENI)

Event: SIMONA FINAL CONFERENCE EVENT

Date: 9TH – 10TH NOVEMBER 2021

Topic: SIMONA 3rd Training Event and Final Conference Meeting (Scientific Conference and Stakeholder Workshop)

Type: ONLINE

Time zone: EEST time (Buchurest)

Organizers: RO-TUCN project partners (Prof Gheorghe Damian, Dr Zsolt Szakacs, Dr Daniel Nasui, Gheorghe Iepure) – local organizers with support of scientific coordinator (Dr Gyozo Jordan), WP7 Training leader (Dr Edith Haslinger and Paul Kinner), LP team GEO-ZS (project manager Dr Meta Dobnikar, Kristina Koret and Dr Teja Čeru)

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iepureg@cunbm.utcluj.ro

09 NOVEMBER, Tuesday – AFTERNOON SESSION (EEST TIME ZONE)	
3rd Training Event: Sediment Quality Evaluation and IT Tool Application	
13:00 – 13:30	Registration on site, welcome coffee; Online meeting room will be opened, virtual morning coffee
13:30 – 13:40	Meta Dobnikar (Lead Partner Coordinator): Welcome by the project coordinator and introduction into the project
13:40 – 13:50	Edith Haslinger (Leader, WP7 Training): Review of the agenda and goals for the day
13:50 – 14:00	Kata Dudas (Leader, WP5 Evaluation & IT Tool): Evaluation Protocol
14:00 – 14:20	Bese Pal (IT Tool Developer): Concepts and development of the SIMONA IT Tool
14:20 – 14:50	Bese Pal (IT Tool Developer): Application of the IT Tool
14:50 – 15:00	Discussion - moderators Paul Kinner and Edith Haslinger

Project co-funded by the European Union (ERDF, IPA and ENI)

Project co-funded by the European Union (ERDF, IPA and ENI)

SIMONA Evaluation protocol

3rd Training Event: Sediment Quality Evaluation and IT Tool Application
RO Baia Mare, 09th Nov. 2021

Katalin Mária DUDÁS

Hungarian University of Agriculture and Life Sciences, HU-MATE

Structure of the Evaluation Protocol

Interreg
Danube Transnational Programme
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SIMONA OUTPUT T3.1.

SEDIMENT QUALITY EVALUATION PROTOCOL FOR HAZARDOUS SUBSTANCES IN SURFACE WATERS

PART OF THE SEDIMENT-QUALITY INFORMATION, MONITORING AND ASSESSMENT SYSTEM (SIMONA)

THE MAIN AIM IS TO SUPPORT TRANSNATIONAL COOPERATION FOR JOINT DANUBE BASIN WATER MANAGEMENT

31/10/2021

Interreg
Danube Transnational Programme
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Project co-funded by the European Union (ERDF, IPA and ENI)

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Appendix 2: List of Priority Substances and Danube River Basin Specific Pollutants

Appendix 3: Annex I of the DIRECTIVE 2008/105/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 16 December 2008 on environmental quality standards in the field of water policy, amending and subsequently repealing Council Directives 82/176/EEC, 83/513/EEC, 84/156/EEC, 84/491/EEC, 86/280/EEC and amending Directive 2000/60/EC of the European Parliament and of the Council

Appendix 4a: QS bottom sediment and QS suspended sediment calculation excel tool
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Appendix 5: Normalisation by grain size distribution methodology description

Appendix 6a: Evaluation calculations by excel template;
Appendix 6b: Evaluation calculations descriptions.

Appendix 7: Factsheets for hazardous substances

The appendixes are downloadable from the SIMONA website: http://www.interreg-danube.eu/simona/

Project co-funded by the European Union (ERDF, IPA and ENI)

1. Purpose and 2. Scope of the Protocols

The purpose of the Protocol is **to give practical guidance for sediment quality monitoring data evaluation** in compliance with the **EU Water Framework Directive**, (EU WFD) (EC 2000), with focus on the **use for the Danube Basin Countries**.

Scope of the SIMONA sediment quality monitoring data evaluation:

- river sediment (sediment associated with the fluvial – flowing surface water – system);
- surveillance monitoring (regular monitoring for long-term changes);
- single monitoring site (sampling station);
- hazardous substances listed in the EU WFD Annex X and EQS directive (priority substances and priority hazardous substances); single substances (mixtures are not considered);
- monitoring data that is complete and have proper quality for the evaluation;
- evaluation is limited to the assessment of sediment quality according to the Water Framework Directive; (water and biota quality assessment is out of the scope);
- environmental quality standard (EQS) contamination limit values are available for surface water hazardous substances (HS) concentrations, (EQS dossiers are available);
- developing toxicity tests related to EQS values for sediment quality evaluation is outside of the scope.

3. Basic terms

- **Surface water**
- **River**
- **Body of surface water**
- **Fluvial sediment**
- **Sub-basin,** also called **catchment**.
- **Surveillance monitoring**
- **Monitoring site,** also called **sampling station**
- **Hazardous substances** (priority substances + priority hazardous substances + WFD Annex VIII)
- **Quality Standard** for any measured medium (i.e. water, suspended sediment, bottom sediment, overbank sediment, soil or biota) means the concentration of a particular pollutant or group of pollutants in measured medium which should not be exceeded in order to protect the relevant receptors connected to the measured medium.
- **Monitoring data is complete (no missing data)** and have proper quality

4. SOURCES AND PRESENTATION

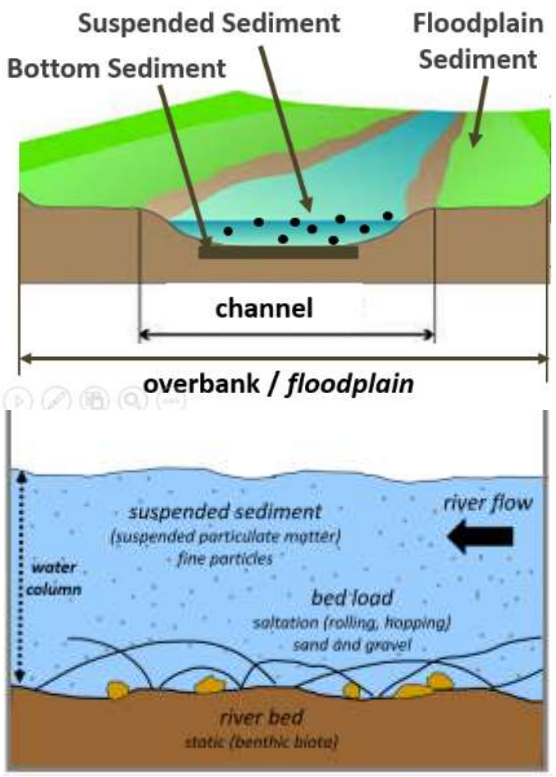
- EC 2018. Common Implementation Strategy for the Water Framework Directive (2000/60/EC): Guidance Document **No. 27** Technical Guidance for deriving **Environmental Quality Standards**. Luxembourg, Office for Official Publications of the European Communities. (Updated version 2018)

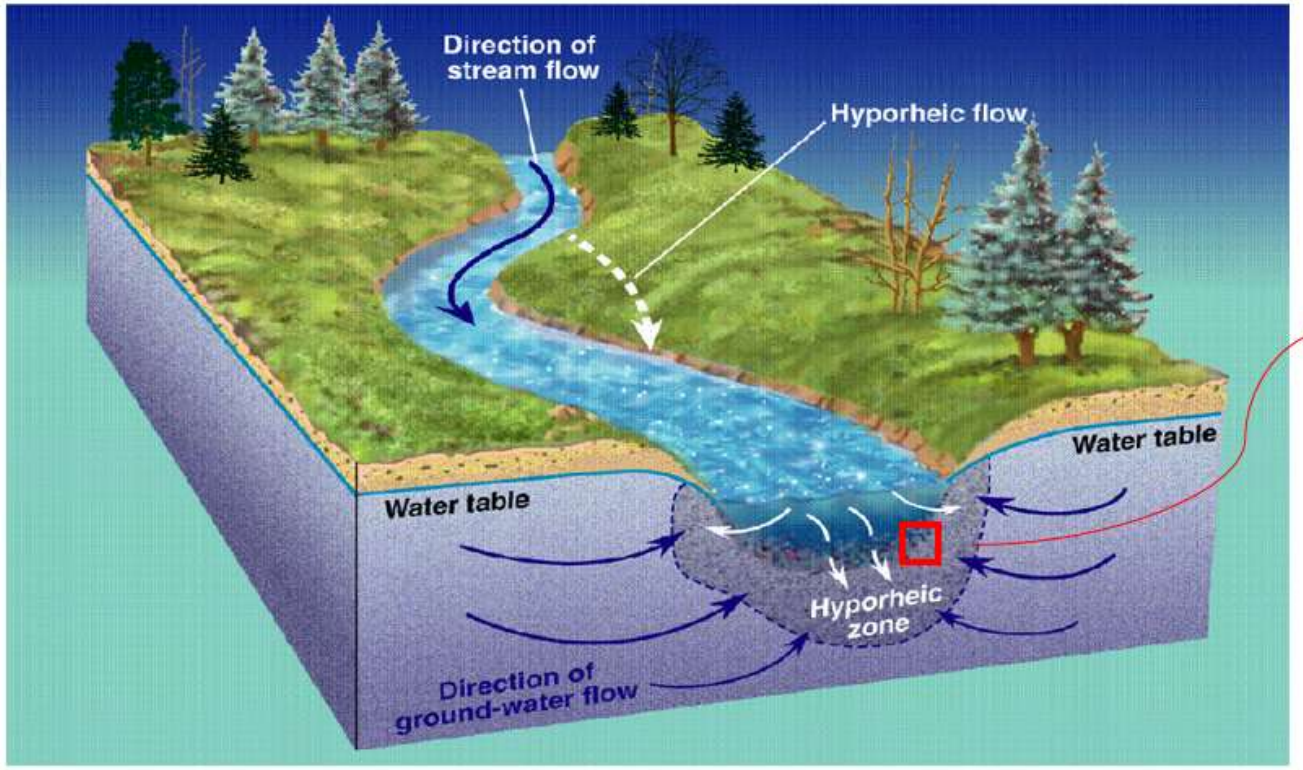
- Other primary sources are the following:
  - EC 2010. Common Implementation Strategy for the Water Framework Directive (2000/60/EC): Guidance Document **No. 25** Guidance on **chemical monitoring of sediment** and biota under the Water Framework Directive. Luxembourg: Office for Official Publications of the European Communities.
  - EC 2003. Common Implementation Strategy for the Water Framework Directive (2000/60/EC): Guidance Document **No. 7 Monitoring** under the Water Framework Directive. Luxembourg: Office for Official Publications of the European Communities.
  - EC 2009. Common Implementation Strategy for the Water Framework Directive (2000/60/EC): Guidance Document **No. 19** Guidance on **Surface Water Chemical Monitoring** under The Water Framework Directive Luxembourg: Office for Official Publications of the European Communities.

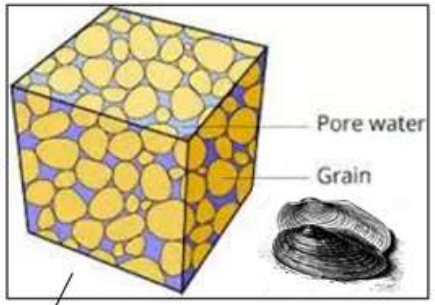
- The particular feature of this document is the harmonisation of the evaluation with the sampling methods (Šorša and The SIMONA Project Team, 2019) and laboratory methods (Čaić Janković, A., Šorša, A. and The SIMONA Project Team, 2019).

- Reviewed existing risk assessment metods which are based on ecotoxicological data, grain size distribution normalization methodologys.

5. UNDERSTANDING THE FLUVIAL SEDIMENT SYSTEM



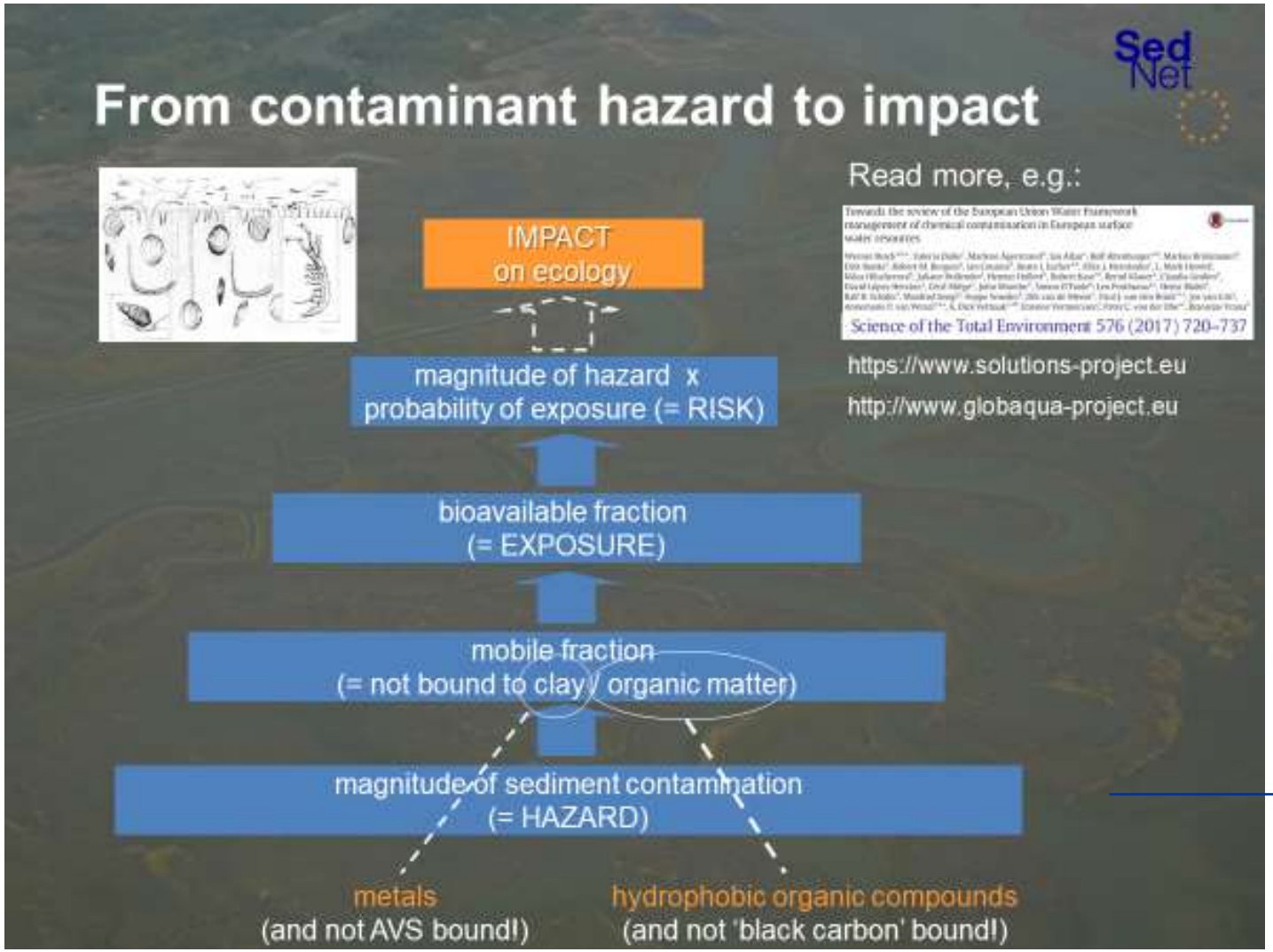




bottom sediment where benthic biota dwells

- What is exactly the 3 types of sediment?
- How to connect the surface water to the groundwater?
- What is bottom sediment where benthic biota dwells?
- Where should take surveillance monitoring samples (catchment scale aspect)?

6. UNDERSTANDING SEDIMENT QUALITY EVALUATION



The relationship of hazard, exposure and impact in the fluvial sediment system.

Source: Drafted CIS Guidance Document on Sediment, 2021

Can measure and evaluate in chemical monitoring.

7-8-9. SEDIMENT QUALITY EVALUATION

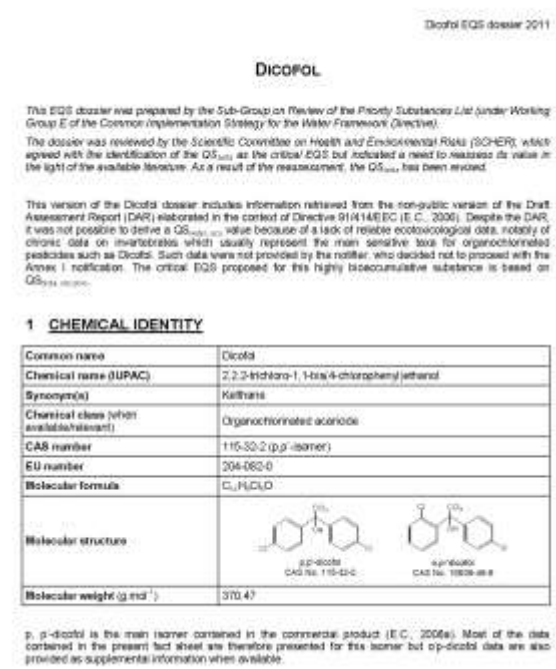
How to calculate local (site specific) Quality Standard values?

- Evaluation of overbank (floodplain) sediment quality (Section 7.)
- Evaluation of suspended sediment quality (Section 8.)
- Evaluation of bottom sediment quality (Section 9.)

1. Principal considerations
2. Principal evalutaion (with equations, how to get input values and predefined default values)
3. Recommendation for transnational monitoring

Appendix 4. Excel for make easier the calculations
IT tool collects and stores the calculated regional/local QS values.
Now the tool works with EU values and local values for test areas.

Appendix 4. Excel for calculations


Dicofol EQS dossier 2011

DICOFOL

This EQS dossier was prepared by the Sub-Group on Review of the Priority Substances List (under Working Group E of the Common Implementation Strategy for the Water Framework Directive).

The dossier was reviewed by the Scientific Committee on Health and Environmental Risks (SCHER), which agreed with the identification of the QS_{biota} as the critical EQS but indicated a need to reassess its value in the light of the available literature. As a result of the reassessment, the QS_{biota} has been revised.

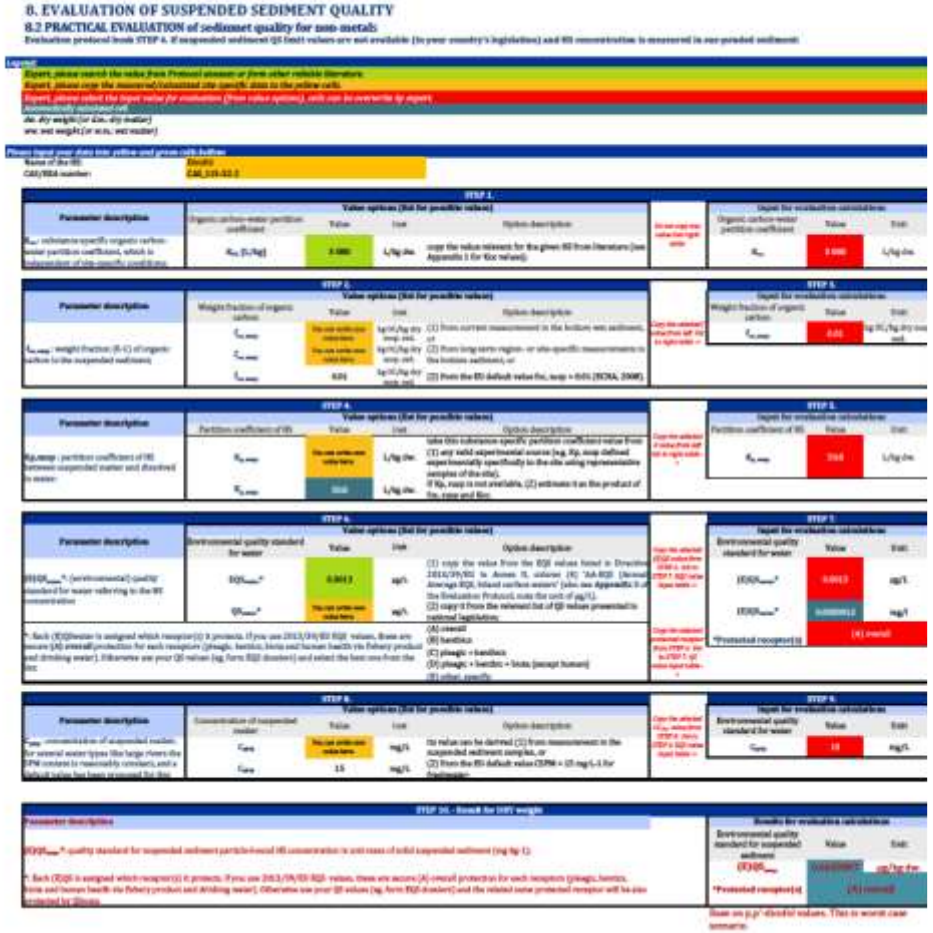
This version of the Dicofol dossier includes information retrieved from the non-public version of the Draft Assessment Report (DAR) elaborated in the context of Directive 91/414/EC (E.C., 2006). Despite the DAR, it was not possible to derive a $QS_{wat,ecosys}$ value because of a lack of reliable ecotoxicological data, notably of chronic data on invertebrates which usually represent the main sensitive taxa for organochlorinated pesticides such as Dicofol. Such data were not provided by the notifier, who decided not to proceed with the Annex I notification. The critical EQS proposed for this highly bioaccumulative substance is based on $QS_{biota, secpois}$.

1 CHEMICAL IDENTITY

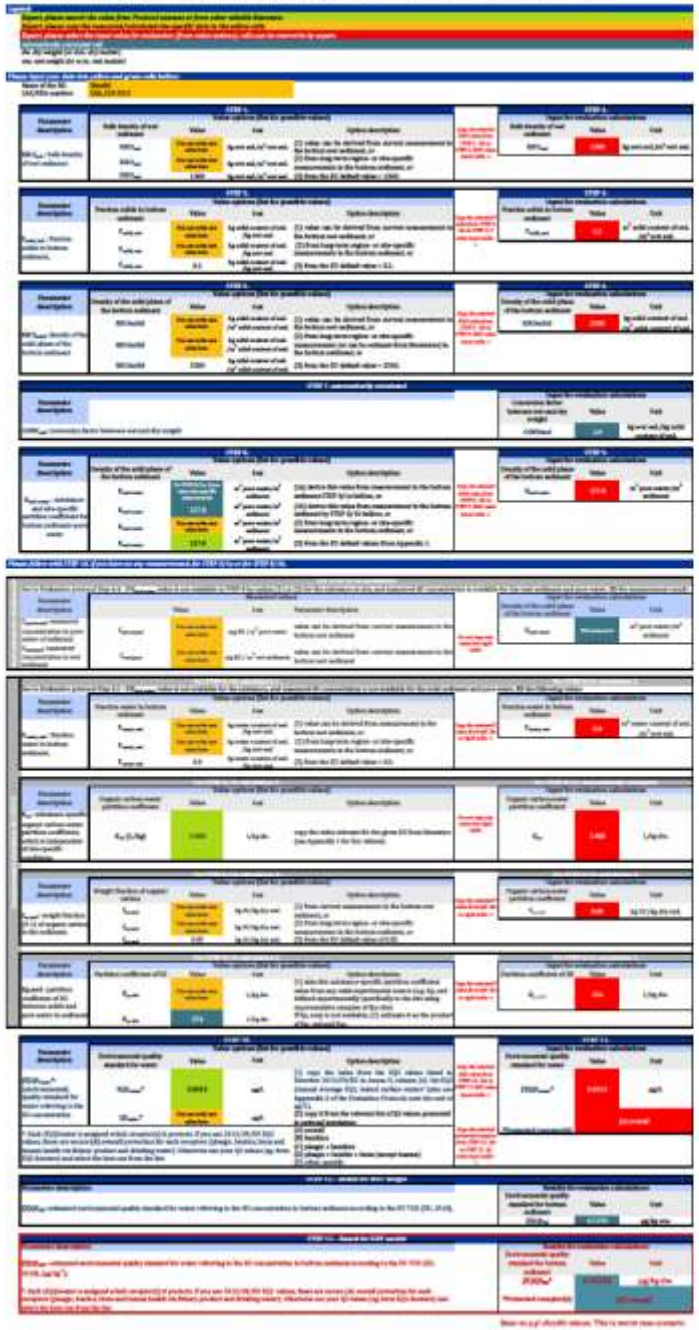
Common name	Dicofol
Chemical name (IUPAC)	2,2,2-trichloro-1,1-bis(4-chlorophenyl)ethanol
Synonym(s)	Kelthane
Chemical class (when available/relevant)	Organochlorinated acaricide
CAS number	115-32-2 (p,p'-isomer)
EU number	204-082-0
Molecular formula	$C_{14}H_9Cl_5O$
Molecular structure	p,p'-dicofol CAS No. 115-32-2 o,p'-dicofol CAS No. 10606-46-9
Molecular weight (g mol^{-1})	370.47

p, p'-dicofol is the main isomer contained in the commercial product (E.C., 2006a). Most of the data contained in the present fact sheet are therefore presented for this isomer but o,p-dicofol data are also provided as supplemental information when available.

EQS dossier -> Appendix 1-3.
+ monitoring site measurements
⇓ Appendix 4. -> Site specific QSs.


8. EVALUATION OF SUSPENDED SEDIMENT QUALITY

8.2 PRACTICAL EVALUATION of sediment quality for non-metals


9. EVALUATION OF BOTTOM SEDIMENT QUALITY

9.2 PRACTICAL EVALUATION of sediment quality for non-metals

Need to use by expert. SIMONA WP8 will deliver QS values for test areas and helps for Danube River Basin.

Tomorrow 10:30-10:50, The scientific approach of the SIMONA project: sediment quality monitoring under the EU Water Framework Directive (Gyozo Jordan)

Project co-funded by the European Union

Additional part of the Evaluation Protocol

10. Selection of hazardous substances for sediment quality evaluation

11. Trend assessment methodology for sediment quality

sediment quality trend assessment at a surveillance monitoring site has to consider the following:

- what is 'change' (in natural and anthropogenic HS),
- what is 'significant' change,
- what is trend,
- how to detect and characterise trend.

Appendix 5: Normalisation by grain size distribution methodology description
Appendix 6: Evaluation calculations by excel template = How SIMONA IT-tool risk assesment works

Tomorrow 12:15-12:30, Evaluation methods (SIMONA case) - Kata Dudas

Appendixes of the Evaluation Protocol

Appendix 1: Organic carbon – water partition coefficient (K_{OC}), sediment – water partition coefficient ($K_{sed\text{-}water}$) and octanol-water partition coefficient (K_{OW}) for the HSs listed in the EU EQS Directive. (Based on EQS dossiers.)

Appendix 2: List of Priority Substances and Danube River Basin Specific Pollutants

Appendix 3: **Annex I of the Directive 2008/105/EC** of the European Parliament and of the Council (EQS values)

1.
Appendix 4a: **QS bottom sediment and QS suspended sediment calculation excel tool**
(useful tool for deliver site-specific QS values)
Appendix 4b: **QS report template** (input for the SIMONA IT-tool)
Appendix 4c: **Collection of the existing and calculated QSs** (calculation details / reports are in the Factsheets: Annex 7.)

Appendix 5: **QS normalization** based on grain size distribution, methodology description (needed for general QSs)

2.
Appendix 6a: **Measured value and QS comparison calculations** by **excel** template
Appendix 6b: **Measured value and QS comparison calculations descriptions** (how IT-tool risk assessment works)

Appendix 7: **Factsheets** for hazardous substances
(QS reports with used EQS dossiers and filled excel calculations, collection of used input values)

Tomorrow 12:15-12:30, Evaluation methods (SIMONA case) - Kata Dudás

SIMONA Protocols & SIMONA IT tool

Sampling protocol

- How, where, when to take samples
- *Templates: Site observation sheet & Sampling event minutes*

Laboratory protocol

- How to analyse samples
- *Laboratory results template (WISE compatible)*

Evaluation protocol

- How to deliver QSs, and how to comparise measured value with QSs
- *Templates: EU/regional/local QS value calculation & Comparison measured value with QSs*

QS = quality standard
= limit value

SIMONA IT-tool

- Store: site observations, sampling minutes, laboratory results, delivered QS values
- Calculate risks and status of sediment quality
- Visualize the results in maps, create reports for WISE and create exports for Water managers

Thank you for your attention

For more details on evaluation methods and see you tomorrow at

10:30 – 10:50 on The scientific approach of the SIMONA project: sediment quality monitoring under the EU Water Framework Directive (Gyozo Jordan)

and 12:15 - 12:30 on Evaluation methods (SIMONA case) - Kata Dudas

GEONARDO

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SIMONA

SIMONA IT Tool

Final Conference, 9 November 2021

Bese Pál, Geonardo

Concepts and development of the IT Tool

- Purpose of the IT tool
- Concept and general considerations
- Phases the IT tool supports
- Main user stories
- Testing results
- Upcoming release
- Legal framework

Purpose of the IT tool

The SIMONA-Tool is a web application for

- supporting surveillance monitoring
- collecting, analysing sediment sample data,
- running risk evaluation and
- generating sediment quality reports.

Concept and general considerations

- WISE-5 spatial data
- WISE-6 reporting via Eionet CDR
- Eionet synchronisation
- CAS / EEA support

Phases the IT tool supports

- Field observation phase
- Laboratory analysis phase
- Monitoring phase
- Reporting phase

GEONARDO

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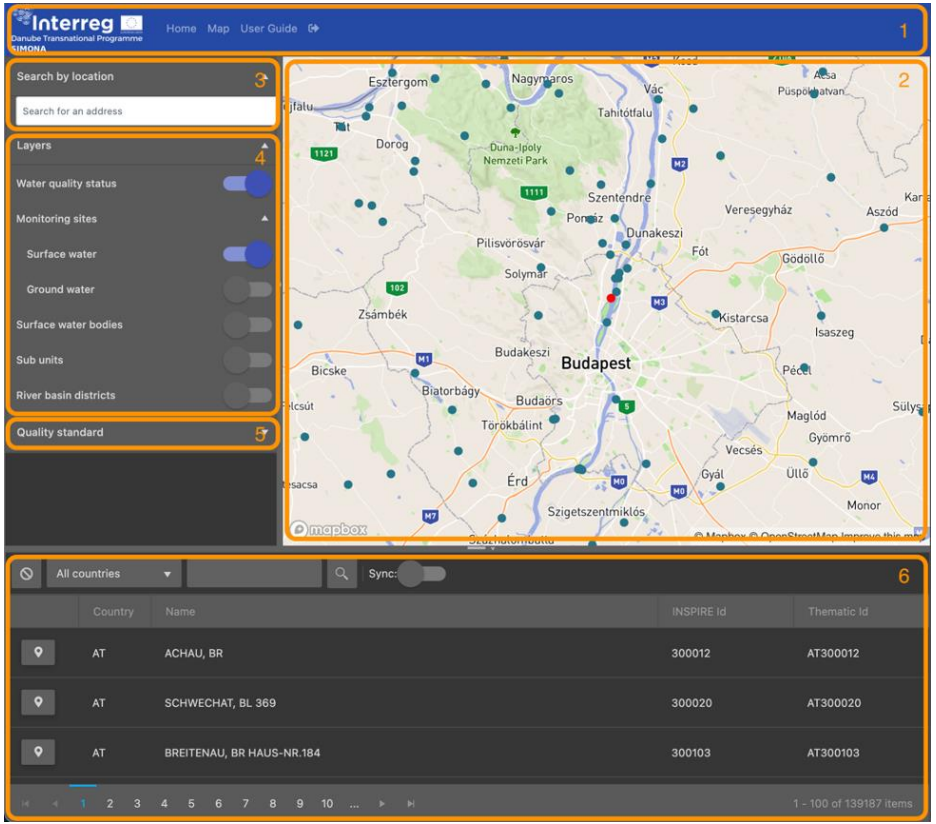
Main user stories

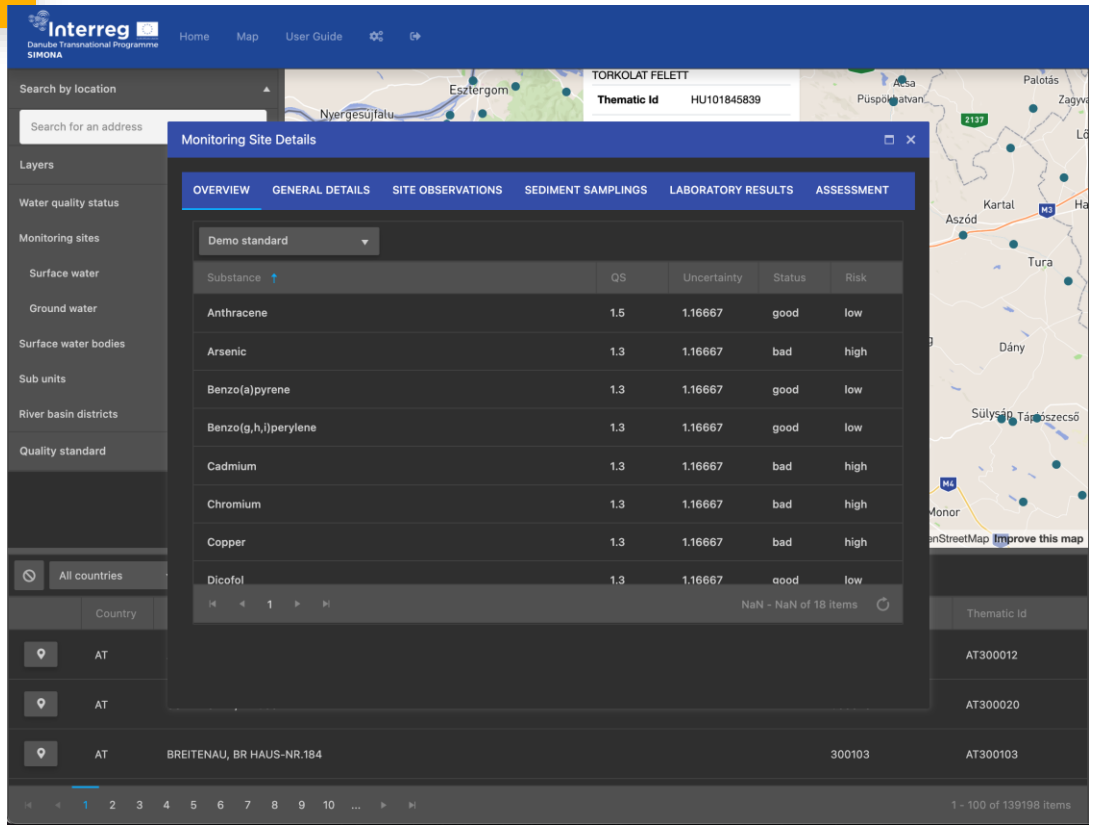
Browsing publicly available data

- Geolocation service for navigating by address
- Searchable database of registered monitoring sites
- Features on the map are associated to a popup
- Sediment quality status layer



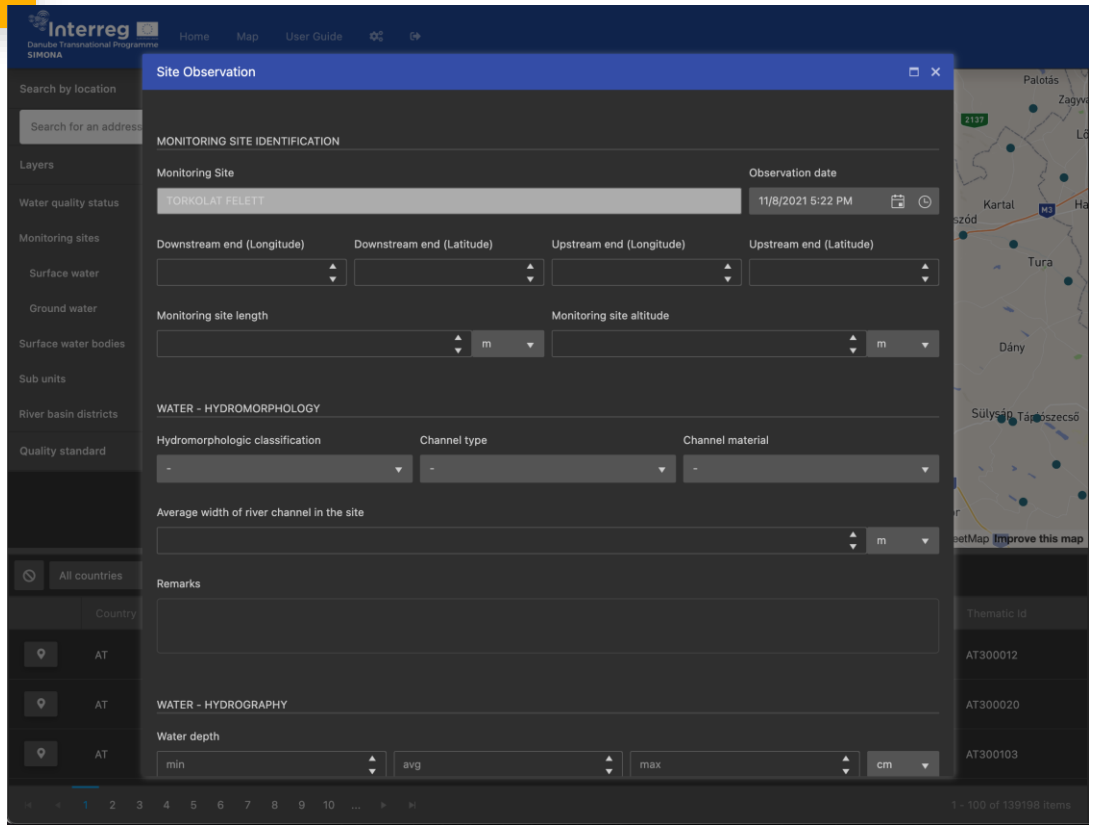
Monitoring site details

- Risk evaluation results
- General geographic details
- Monitoring site observations
- Sediment samplings
- Laboratory results
- Assessments



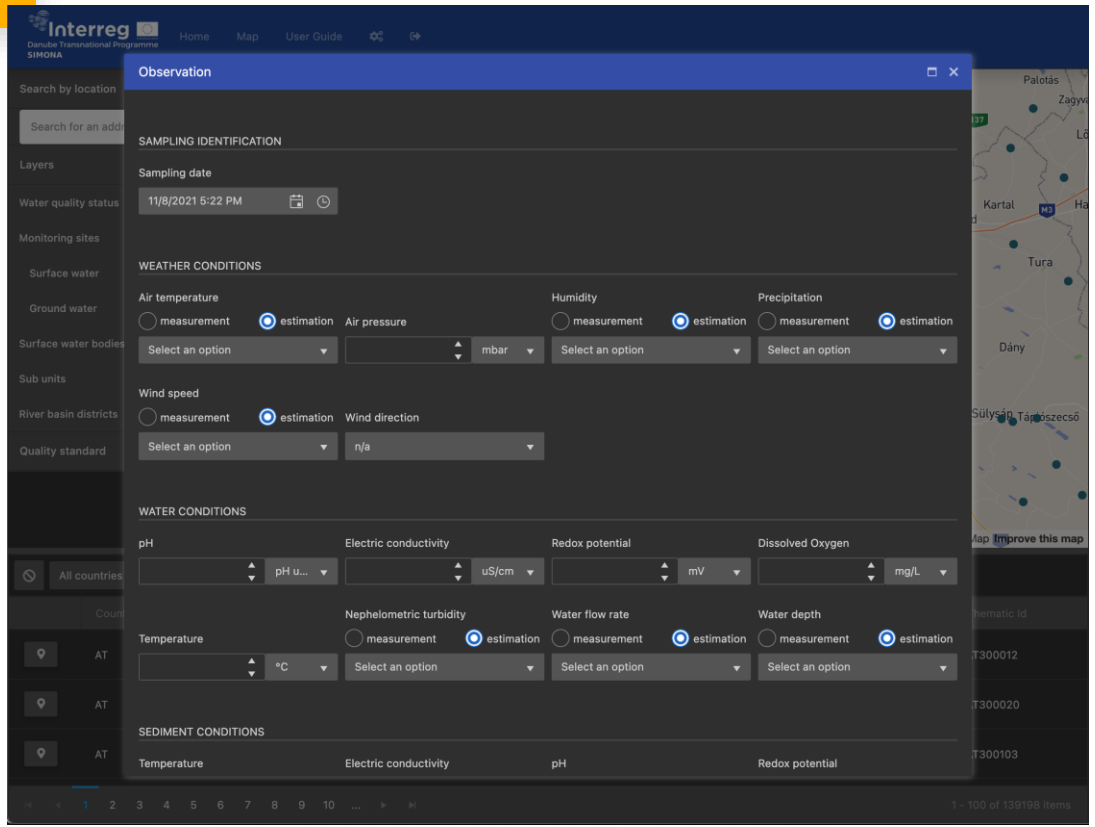
Recording site observation

- On-site field observation
- Site identification supported by the GIS database
- Min/avg/max inputs for observed parameters



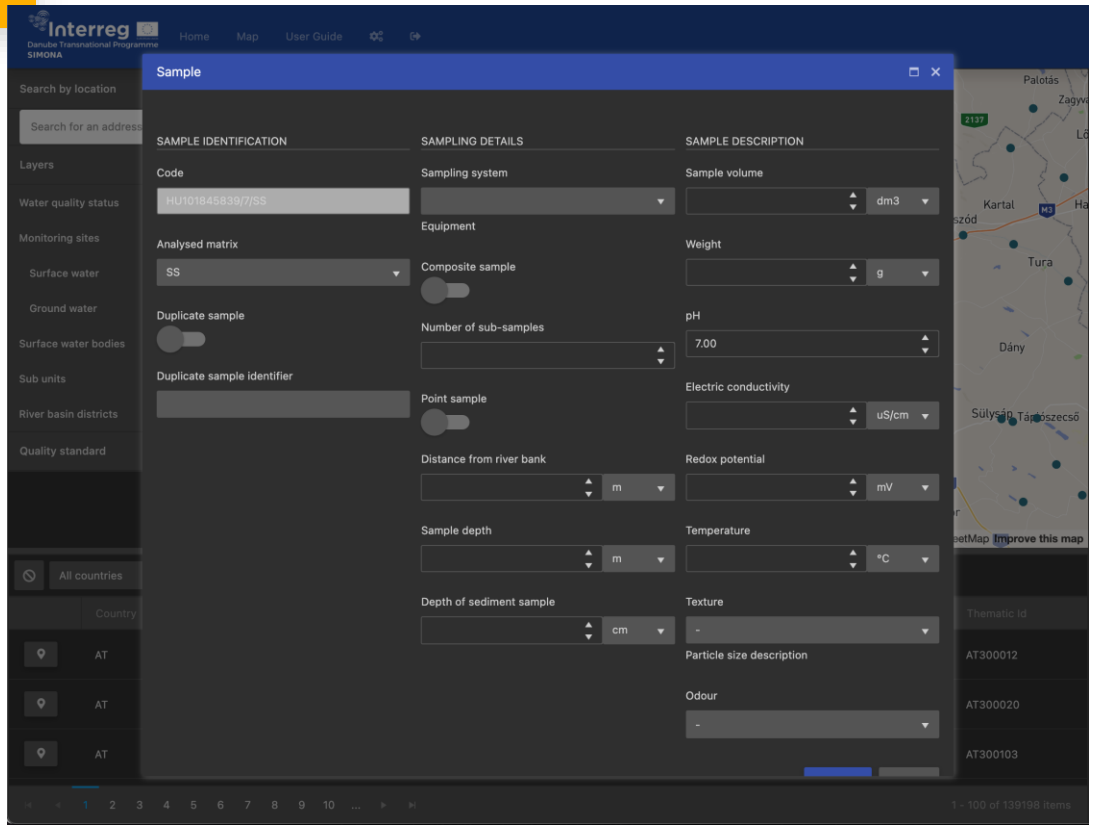
Submitting sediment sample data

- Sediment sampling data linked to a monitoring site
- Measured and estimated values under:
  - Weather conditions
  - Water conditions
  - Sediment conditions



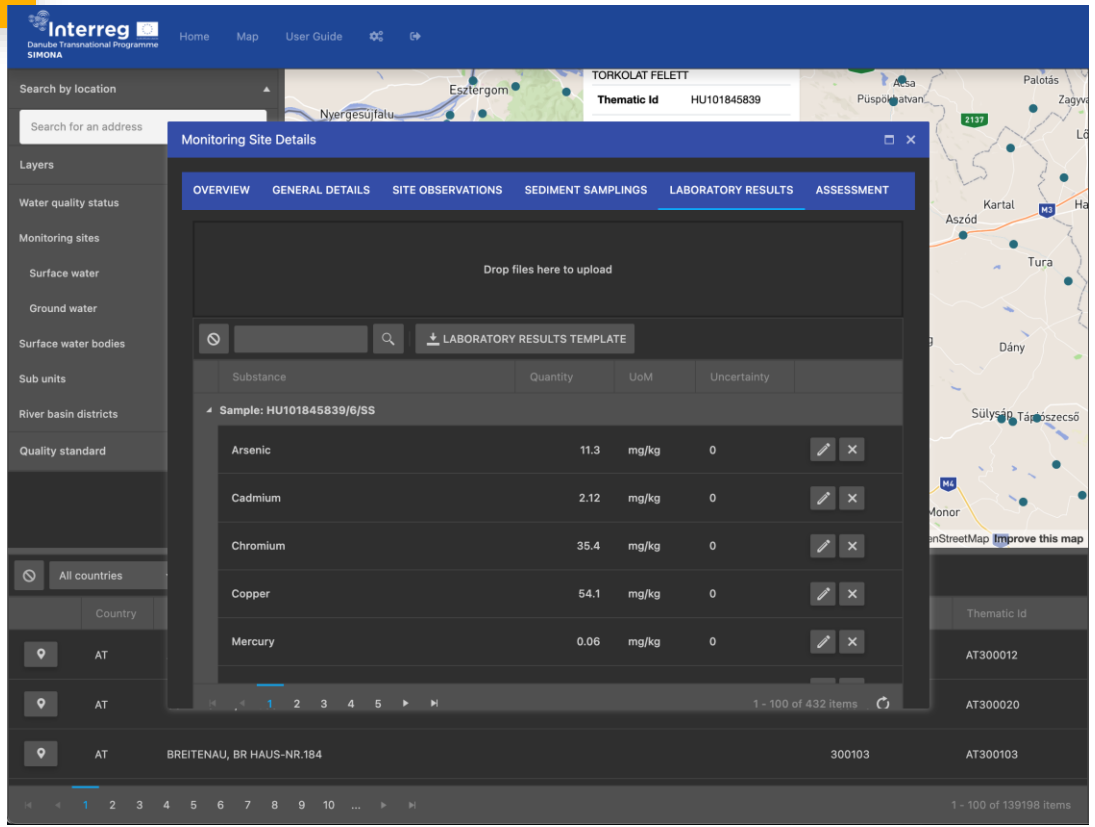
Submitting sediment sample data

- Sediment sample data linked to a specific sampling
- Internal sample identification
- Unit of measure conversion
- Arbitrary number of samples



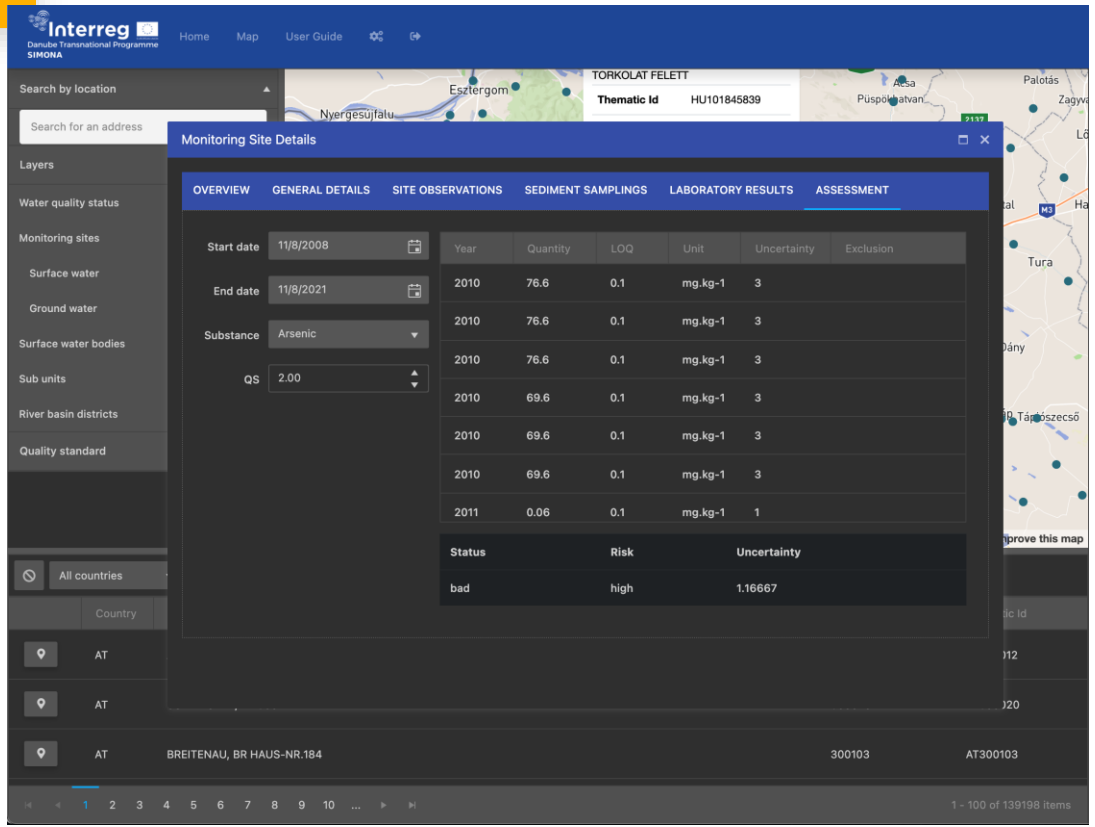
Uploading laboratory results

- Downloadable template
- Drag-n-drop spreadsheet upload
- Laboratory results are linked to stored sediment samples



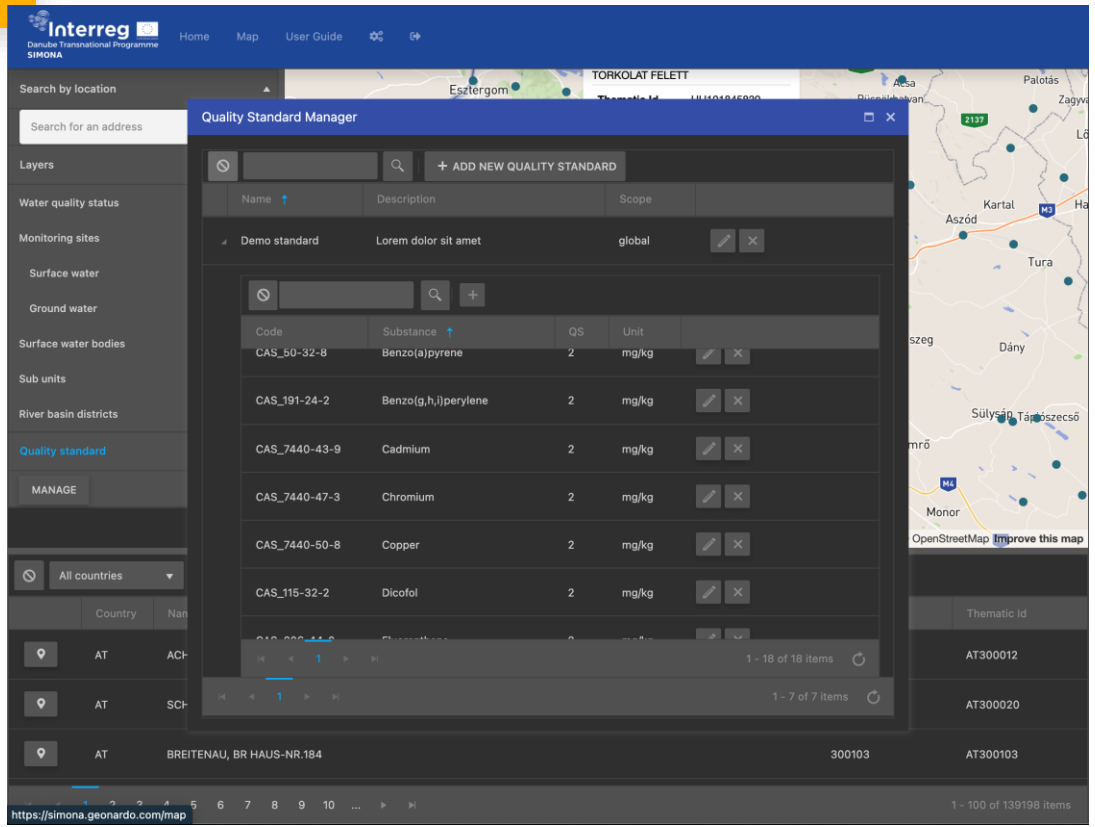
Data analysis

- Status and risk classification
- Uncertainty assessment



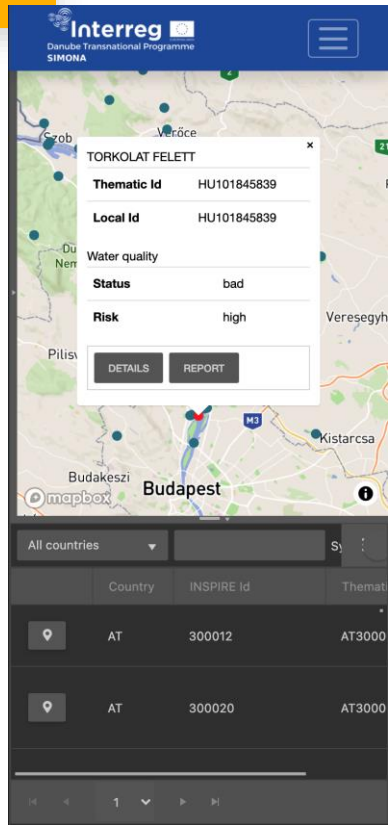
Managing quality standards

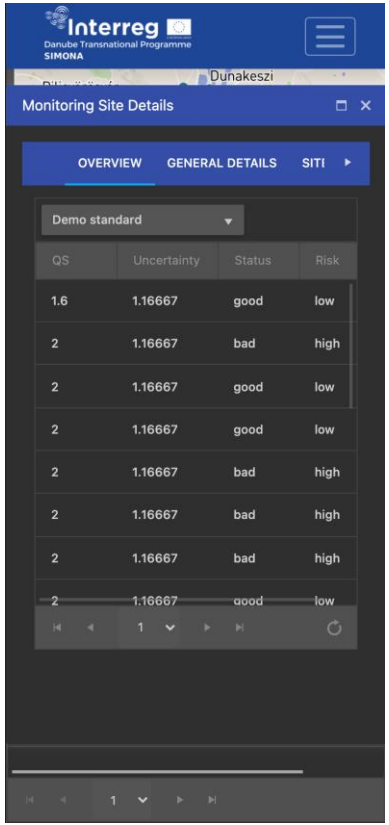
- Quality standard manager is available for region managers, national contacts and researchers
- Setting up QS values for each substances

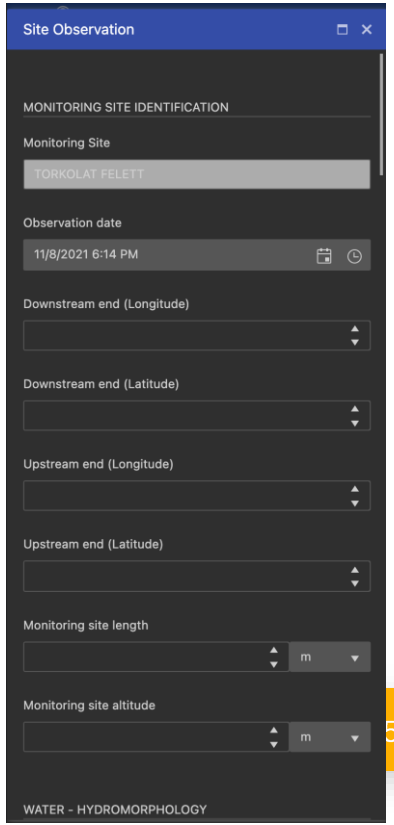


Adaptive layout

- Panels automatically collapse on small devices
- Navigation bars are scrollable
- Forms' layout adapt to the screen size

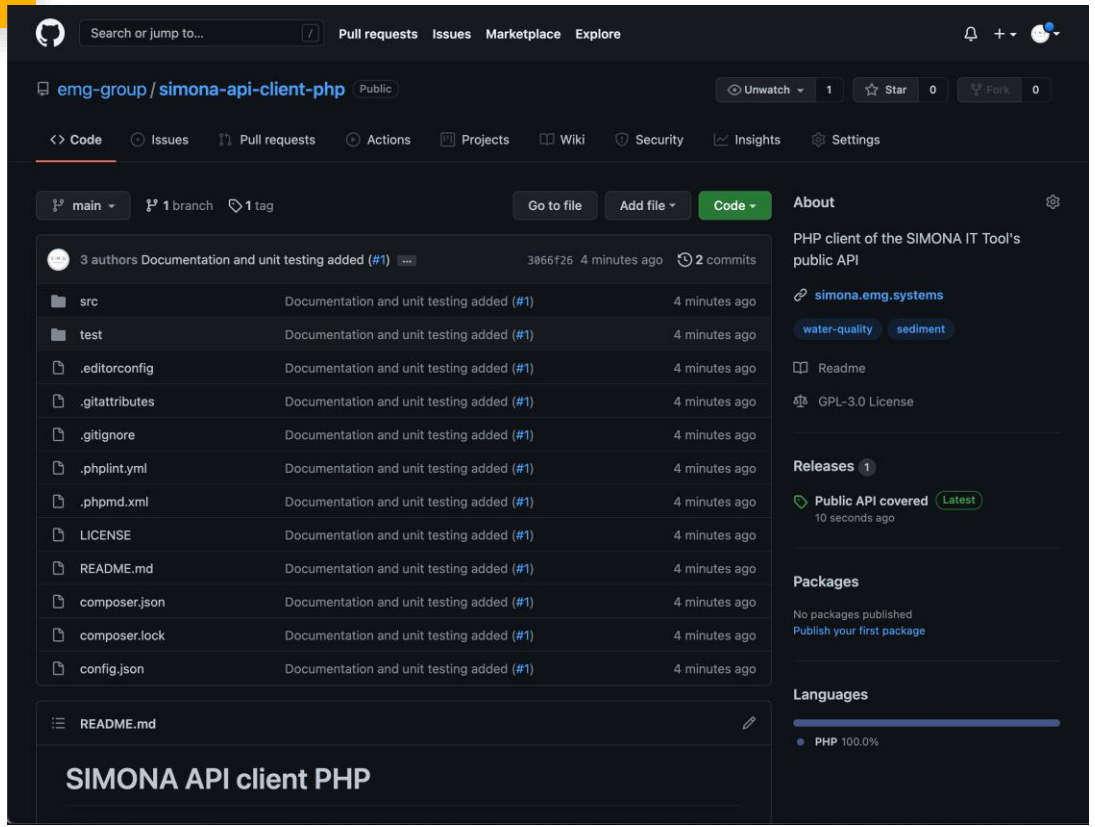






API Client

- Listing monitoring sites
- Accessing sediment quality status information



Beta testing results

- Requests related to user friendliness
- Feedbacks on usability
- User interface improvements
- Single bug was reported (user session)

Upcoming release

- Enhanced quality standard manager is under development
- Fine-tuned user interface

Ongoing activities

- SIMONA case studies will be set up in the system
- The online user manual will be updated
- User accounts will be set up

Legal framework

- Owner of the tool: MATE
- IP rights hold by GEO: nJinn
- Open source: no
- Openly available: yes