



Co-UDlabs

Cooperation of Universities and Laboratories

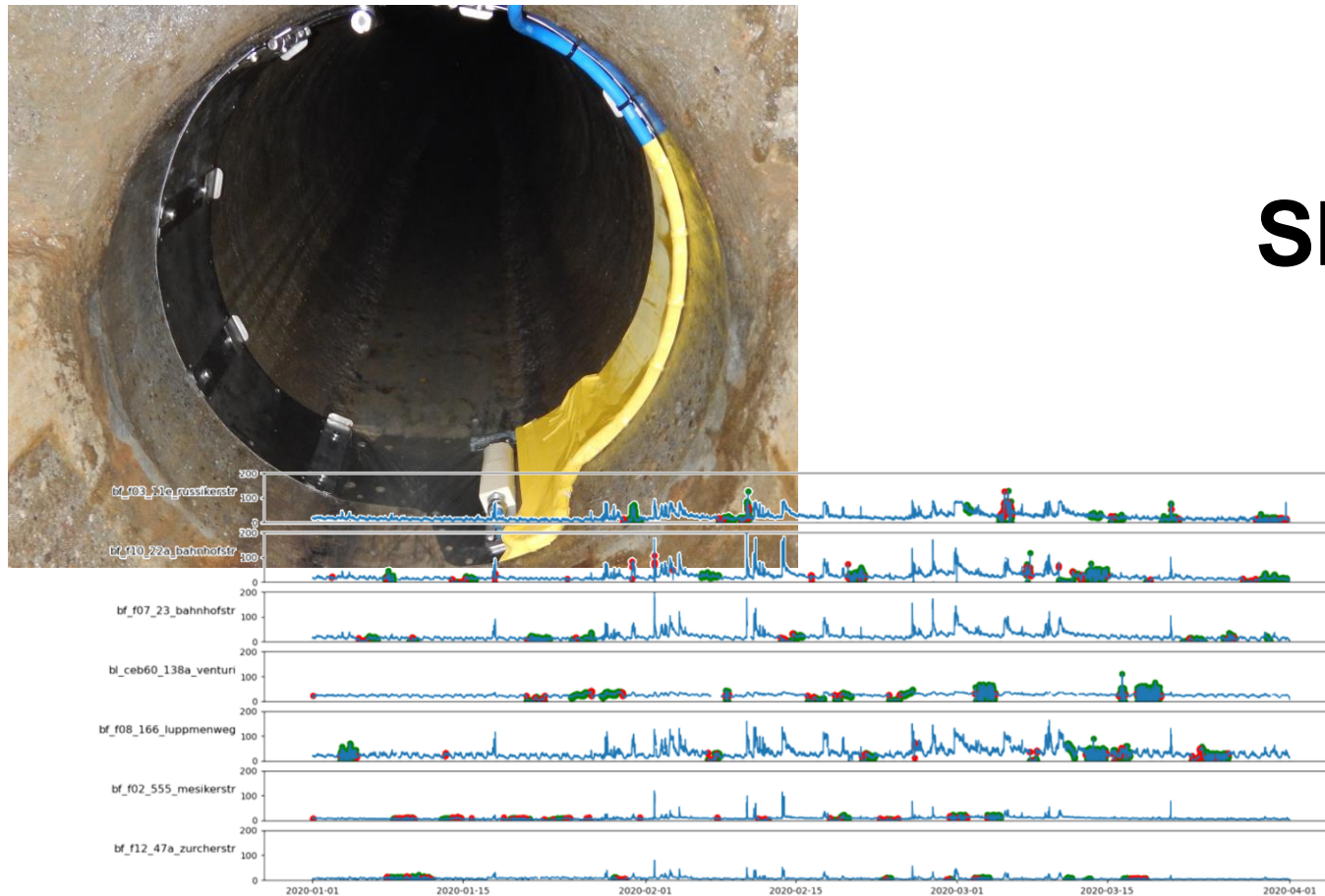
Eawag

Swiss Federal Institute of Aquatic  
Science and Technology

**eawag**  
aquatic research ooo

# Workshop Sharing Flow and water level data

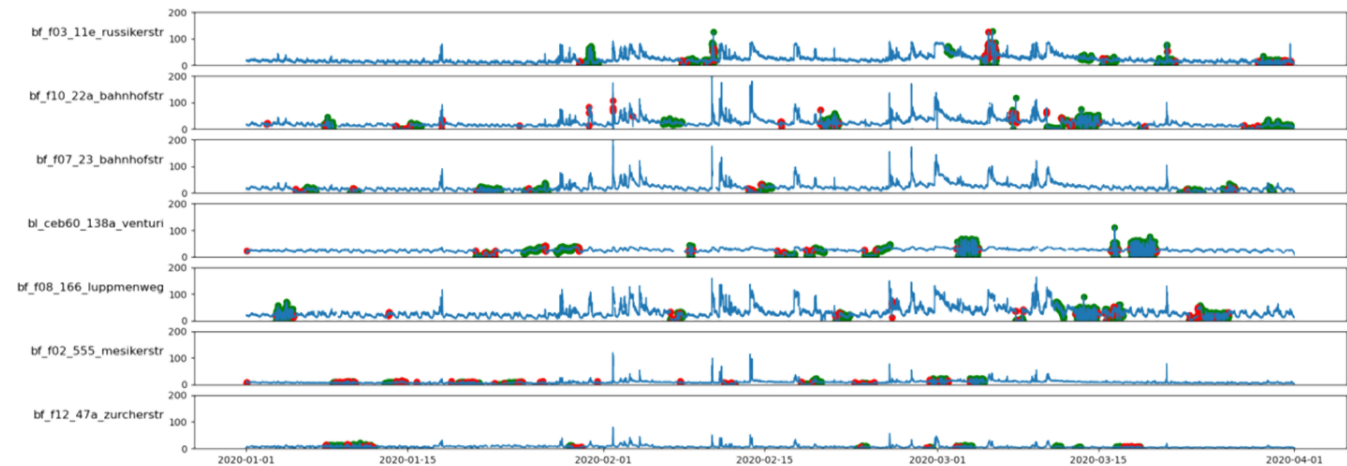
*Jörg Rieckermann (Eawag)*



Science that matters

# Why?

- Re-use data
- Use case: Machine learning
  - Anomaly detection
  - Data-driven rainfall-runoff modeling?
    - Catchment attributes
    - Rainfall
    - ...



# GWSW (The Urban Water Data Dictionary, NL)

data.gwswnl/?menu\_item=classes&item=.../def/1.6.1/Basis/Debietmeter

GWSW Species Compound Collections

Species

- Thing (partial model Basic)
- Activity
- Physical object
  - Connection
  - Equipment
    - Electrical box
      - Main post
      - Air injection unit
    - Measuring instrument
      - Flow meter
      - Pressure gauge
      - Quality sensor
      - Overflow meter
      - Level tube
      - Rain gauge
      - Water level meter
      - Pigging installation
    - Building
    - Construction part
    - Cable
    - Pipe
    - Surface water
    - Put
    - System
    - System
  - Information carrier
  - Feature
  - Life form
  - Matter
  - Room
  - Topological element

Flow meter

Description

Name	Flow meter
URI	Flow meter
Definition	An instrument that measures the (discharge) capacity of the volume flow.
Date start/change	2007-10-23 / 2022-05-03 / 2024-04-22
Has representation	Sym_Debietmeter [max=1]
Function	Measuring capacity of the volume flow
	+Measure (function)
	+Measure, regulate, check and maintain
Has characteristic	+Equipment orientation [max=1]
	+Start date [max=1]
	+End date [max=1]
	+Measuring point [max=1]
	+Theoretical lifespan [max=1]
Is export of	+Manufacturer [inverse]
	+Supplier [inverse]
Is input of	+Owner [inverse]
	+Data Manager [inverse]
	+Sewerage manager [inverse]
Has part	+Sensor [min=0]
Is part of	+Measuring device [inverse]
	+Control device [inverse]
	+System [inverse]
Has connection	+Electrical box [max=1]
	+Frequency converter [max=1]
	+Main post [max=1]
	+PLC [max=1]
Has supertype	Measuring instrument

Model details

Has scope	Cof_BAS
Author start	Finy Teitsma (Orange Forest)
Author adjustment	Wouter van Riel, Johan Post

debiet

Text "flow rate" - Number found: 11

Found in names:

- Flow ratemeter
- Lateralflow rate
- Lateralflow rateDWA
- Lateralflow rateHWA
- Dischargesflow rate
- Overflowsflow rate
- Arranging theflow rateto utilise the storage capacity of the upstream
- Sym\_Flow ratemeter

Found in distinguishing features:

- Pass: gwswnl:Function= Restrictflow rate
- Sewer pipe: gwswnl:Function = Regulating theflow rateto utilise the s

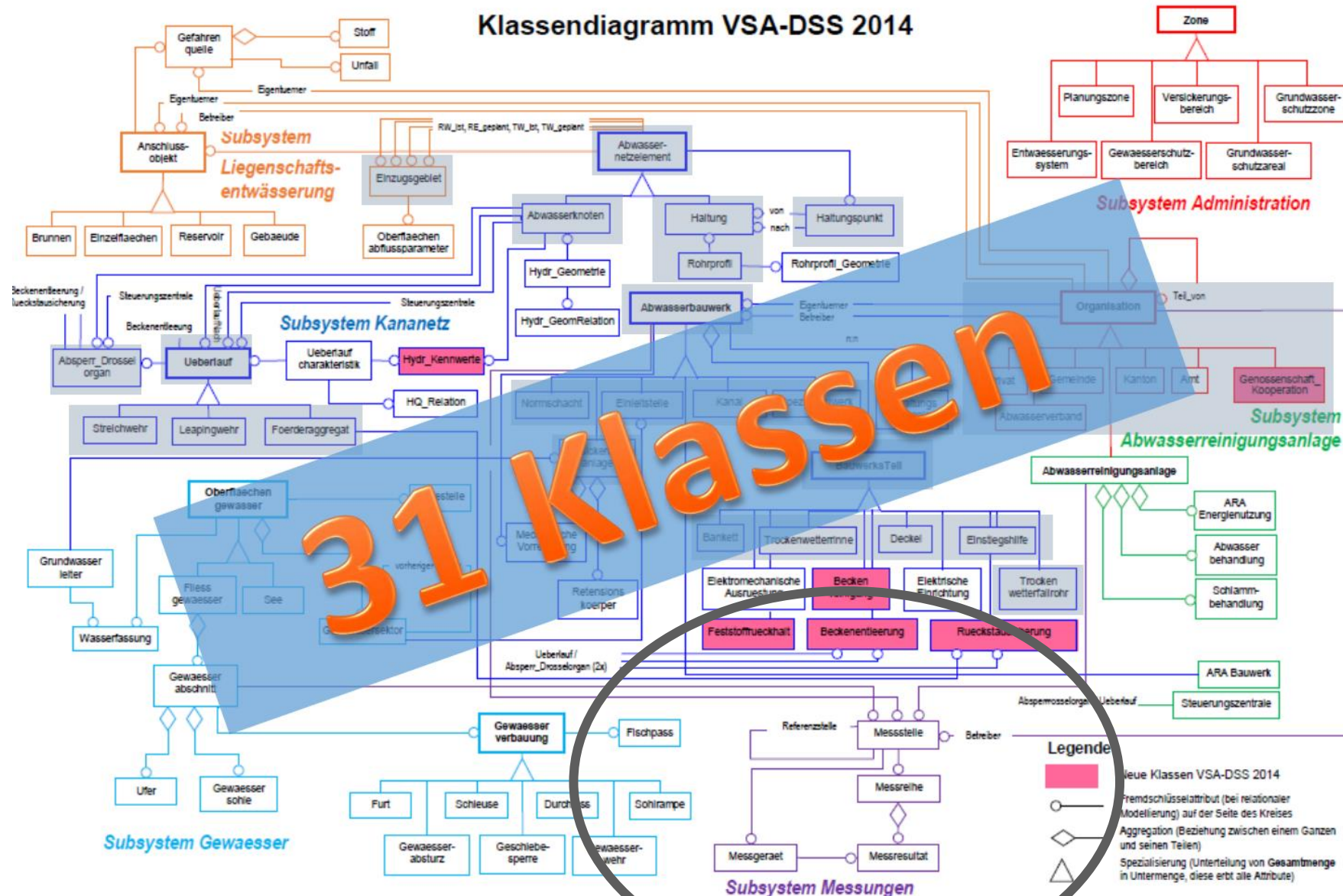
<https://data.gwswnl/>

# GWSW (The Urban Water Data Dictionary, NL)

[illegible]

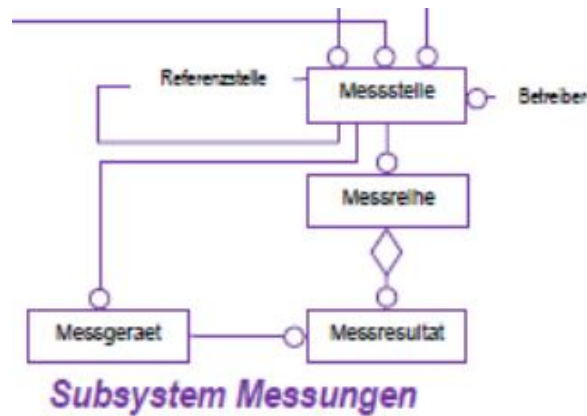
<https://data.gws.w.nl/>

# VSA-DSS (data structure Urban drainage, CH)





# VSA-DSS (data structure Urban drainage, CH)



- `Messreihe` = the time series container.
- `Messart = Durchfluss` = defines what is being measured.
- `Messgeraet_Durchfluss` = the physical instrument generating the data.
- `Messstelle` = the spatial context (where).
- `Messresultat` = the individual value entries in the series.

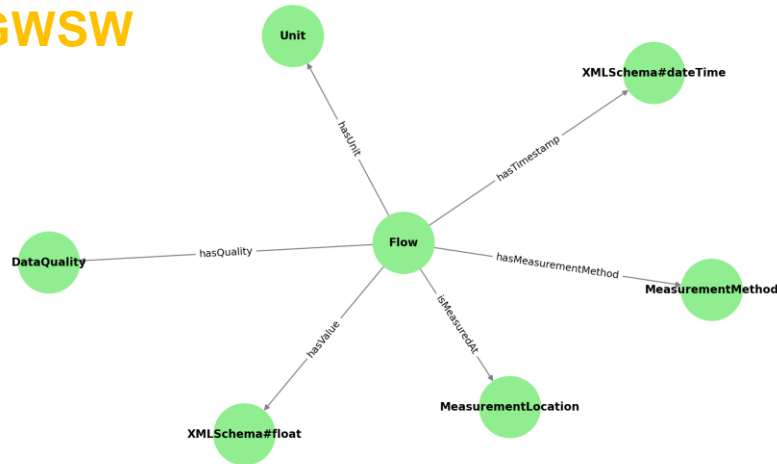
[https://www.vsa.ch/models/2020\\_1/VSA\\_DSS\\_2020\\_1\\_2\\_d\\_LV95-20231018.ili](https://www.vsa.ch/models/2020_1/VSA_DSS_2020_1_2_d_LV95-20231018.ili)

*German, French, Italian*

# Current status: common attributes

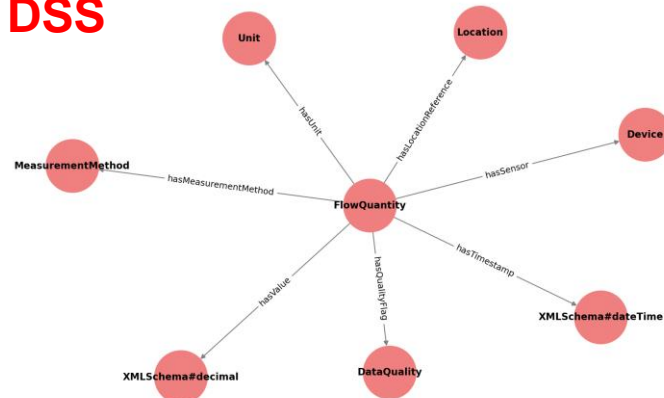
GWSW

Flow Data RDF Graph (English Labels)



VSA DSS

VSA-DSS Flow Data RDF Graph (English Labels)



Concept	GWSW	VSA-DSS
Measurement Value	debiet	Wert (in Messresultat)
Unit of Measurement	debietEenheid	Dimension (in Messreihe) / Einheit (implicit in Wert)
Timestamp	(in Meetgegevens)	Zeit (in Messresultat)
Measuring Point	meetpunt	Messstelle
Measurement Type	debietType	Messart (Durchfluss)
Equipment Orientation	equipmentOrientation	Art (in Messgeraet) + orientation inferred
Start Date	startdatum	-
End Date	einddatum	-
Theoretical Lifespan	theoretischeLevensduur	-
Device Type	(Debietmeter class)	Art (in Messgeraet)
Manufacturer	(not in Debietmeter)	Fabrikat (in Messgeraet)
Serial Number	(not in Debietmeter)	Seriennummer (in Messgeraet)
Measurement Series	-	Messreihe with Art + Dimension
Location Coordinates	(in Meetpunt)	Lage (in Messstelle)
Purpose of Measurement	(not specified)	Zweck (in Messstelle)
Hydraulic Structure	(not specified)	Staukoerper (in Messstelle)
Diameter	implicit	implicit
Slope	implicit	implicit
Hydr. Roughness	implicit	implicit