Co-UDlabs

Building Collaborative Urban Drainage research Labs communities

Key findings from Co-UDlabs research and where to access them

JRA1 / WP 6

Smart sensing and monitoring in urban drainage

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Jean-Luc BERTRAND-KRAJEWSKI

INSA INSTITUT NATIONAL DES SCIENCES APPLIQUÉES LYON

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Building Collaborative Urban Drainage research Labs communities

JRA1 / WP 6
Smart sensing and monitoring in urban drainage

Partners involved :

EAWAG (CH)

Univ. of Sheffield (UK)

Univ. of A Coruña (ES)

Deltares (NL)

INSA Lyon (FR)

Work Package 6 – Smart sensing and monitoring in urban drainage

- **Urban drainage systems are key infrastructures in cities, but knowledge about their functioning remains poor due to insufficient and low-quality monitoring**
- **Three main tasks in WP 6:**
  - **Task 6.1:** identify and evaluate new sensors and technologies for hydrology and hydraulics, pollutant load monitoring, and UD underground asset inspection
  - **Task 6.2**: define and evaluate new methods and tools to improve evidence base for reliable and validated urban drainage monitoring data
  - **Task 6.3**: define and evaluate new methods to analyze and interpret urban drainage space and distributed data

Work Package 6 – Smart sensing and monitoring in urban drainage

- **Task 6.1: Evaluation of sensor and new data sources for hydraulics, pollutant load monitoring and asset inspection (Lead: EAWAG)**

  - The 8 selected technologies (among a first list of 55) were distributed to WP6 partners for testing (Deltares, EAWAG, INSA, UDC, and USFD)
  - Satisfactory to non-satisfactory results

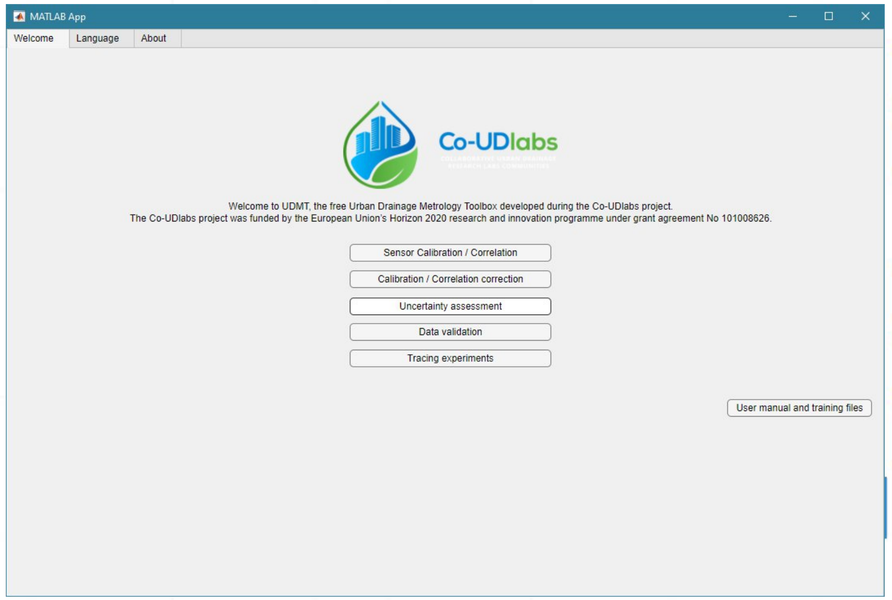
MORE INFO IN A FEW MINUTES

#	Sensor name and manufacturer	Description	Testing leader	Completion
6	Coliform (Proteus Instruments)	Fluorescence-based total coliforms and E. coli concentration measurement	University of Sheffield	100%
7	LPICM (in-house, EAWAG)	Ultra-low power sensor for the measurement of conductivity, including LoRaWanN transmission	EAWAG	80%
12	DischargeKeeper (Photrack)	Camera for image-based flow measurement	University of A Coruna	100%
24	ISA (Go-Systemelektronik)	UV-visible spectrophotometer for multi-parameter measurement	EAWAG	75%
27	MV.X. (Headwall Photonics)/ Pollutionkeeper (Photrack)	Hyperspectral imaging system for non-contact multi-parameter measurement	EAWAG	90%
31	PAH (Aquams)	Fluorescence-based PAH concentration measurement	INSA	100%
33	Pipe mapping FSB (in-house, Deltares)	Low-cost platform equipped with IMUS and top view LIDAR	Deltares	40%
43	Lidar Sediment Mapping (in-house, INSA)	Lidar for sediment mapping	INSA	60%

Work Package 6 – Smart sensing and monitoring in urban drainage

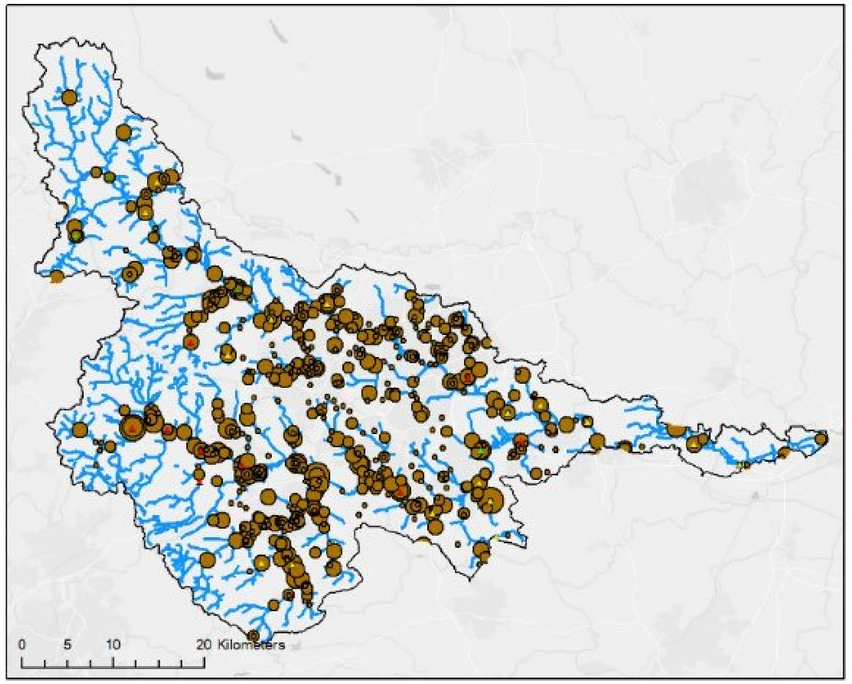
- **Task 6.2: Smart methods and tools to improve the evidence base for reliable and validated monitoring data (Lead: INSA)**

  - Task 6.2 dealt with the development of the UDMT Matlab free software tool for
    - 1. Sensor calibration / correlation
      2. Calibration / correlation correction
      3. Uncertainty assessment
      4. Data validation
      5. Tracing experiments
    - The UDMT webapp is available at coudlabs.alisonen.com
      - UDMT .exe versions have been also developed
      - Detailed user manual, with examples (online available data sets)
      - Current version 2024b, final one 2025a planned for April 2025
  - Several presentations, webinars and training courses organised since 2022 :
    feedback used for debugging and improving



Work Package 6 – Smart sensing and monitoring in urban drainage

- **Task 6.3: Space distributed monitoring and data interpretation (Lead: USFD)**
  - Analysis of spatially distributed urban drainage large data sets
  - CSO data collection, regulation and performance in several European countries
  - Open CSO data available in England and Wales
  - Correlation analyses
  - Comparison between CSOs and SuDS (data collection, regulation and performance)
  - Lessons for the future



MORE INFO IN A FEW MINUTES

Where and when to find the WP6 outcomes ? 1/2

Where?

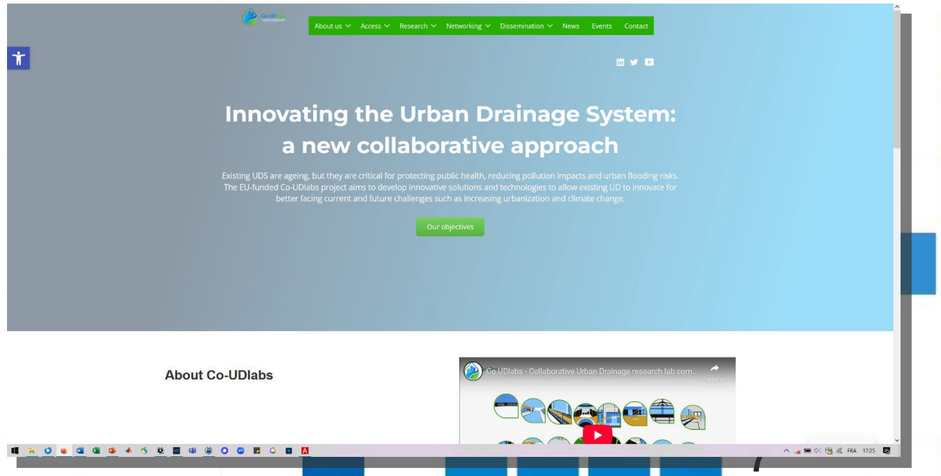
- on Co-UDlabs website at https://co-udlabs.eu/dissemination/deliverables/
  - Deliverables D6.1, D6.2 : sensors testing
  - Deliverable D6.3 : UDMT user manual
  - Deliverable D6.4 : Space distributed monitoring and data interpretation

- on Co-UDlabs website at https://co-udlabs.eu/dissemination/publications/
  - all publications

- On Co-Udlabs website at https://co-udlabs.eu/research/tools-and-outputs/
  - the UDMT software

When?

- By end of the project in May 2025



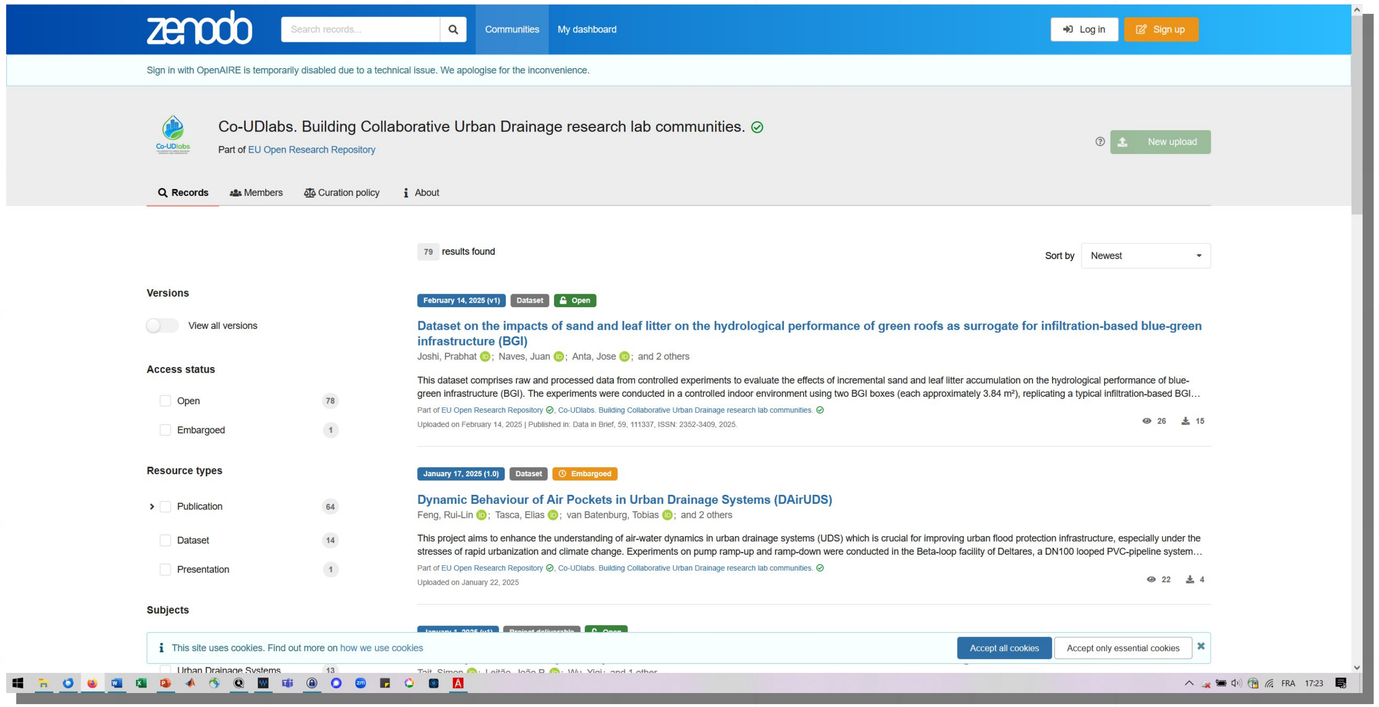
Where and when to find the WP6 outcomes ? 2/2

Where?

- on Zenodo at https://zenodo.org/communities/coudlabs
  - all Deliverables, publications, reports, etc.
  - data sets
  - UDMT source codes

When?

- By end of the project in May 2025



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COLLABORATIVE URBAN DRAINAGE
RESEARCH LABS COMMUNITIES

THANK YOU !

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AALBORG UNIVERSITY

euronovia

Deltares

INSA INSTITUT NATIONAL DES SCIENCES APPLIQUÉES LYON

graie

IKT

eawag aquatic research

The University Of Sheffield.

UNIVERSIDADE DA CORUÑA