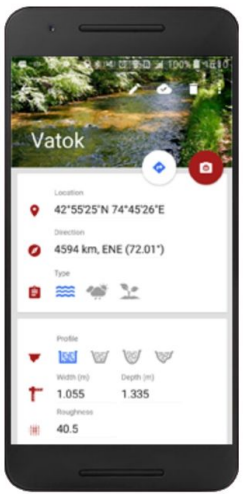
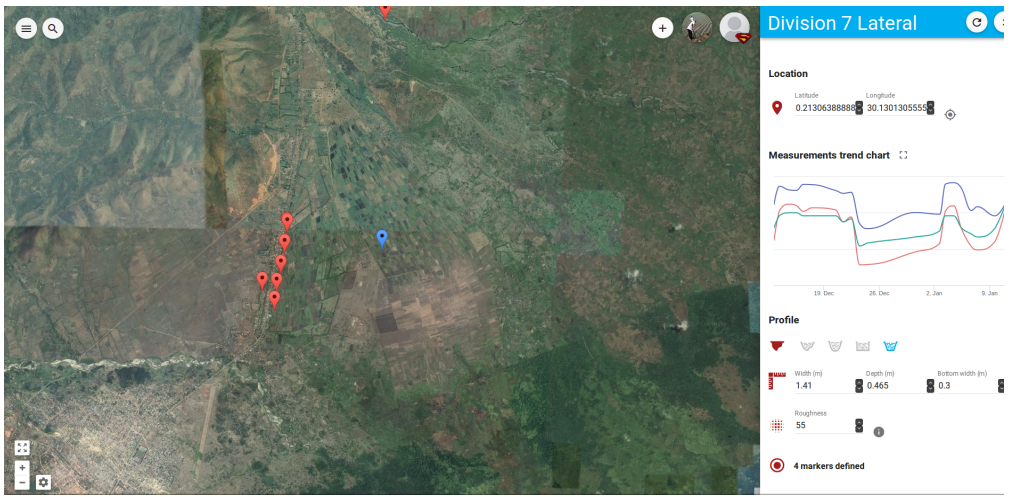
DiSCHaRGE

Measurement - Acquisition - Management



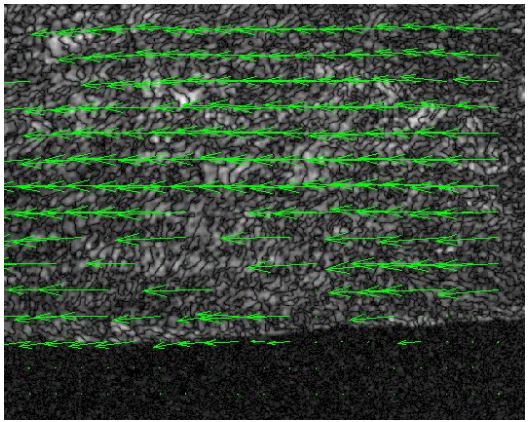


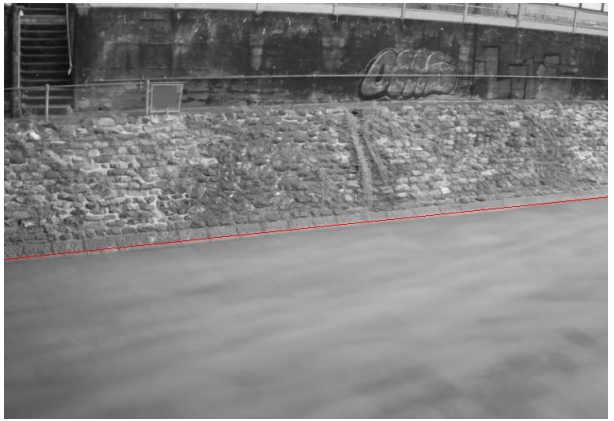
pena@photrack.ch https://discharge.ch

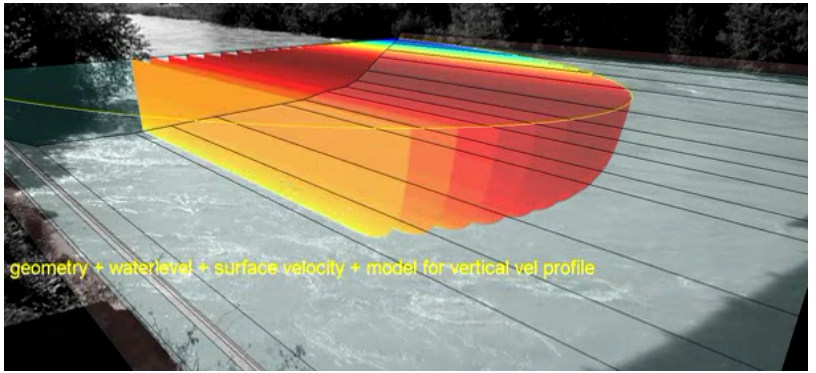
DischargeApp

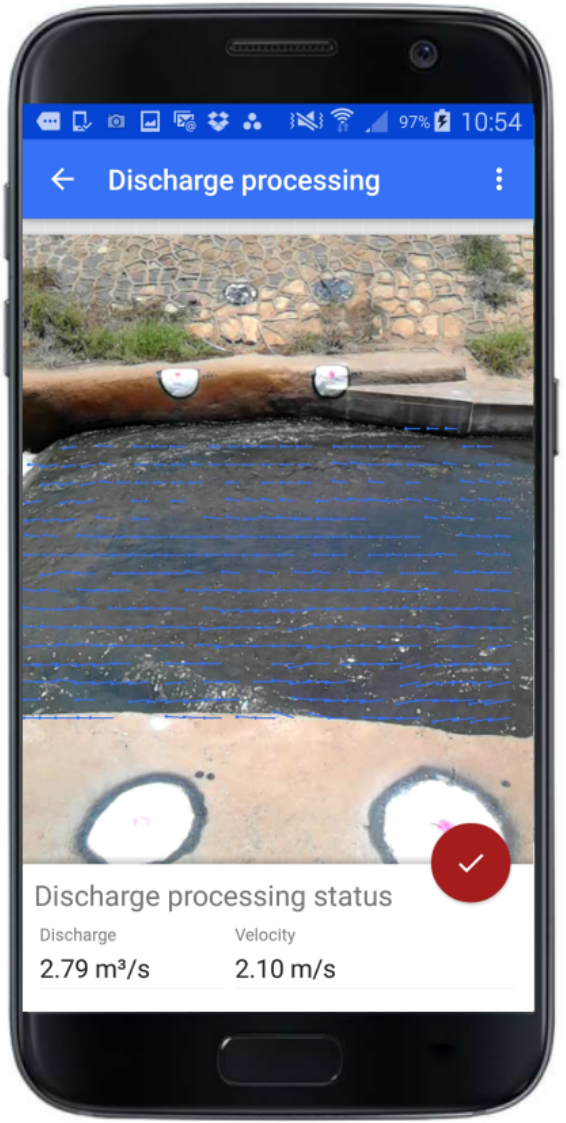
- IWRM, requires data
  - Matching water supply with demand in time and space (SWRM)
  - Water allocation
  - Inter-agency coordination
- Data scarcity ->Traditional methods have failed
  - Too expensive
  - Difficult to install and maintain
  - Do not scale

Discharge Technology



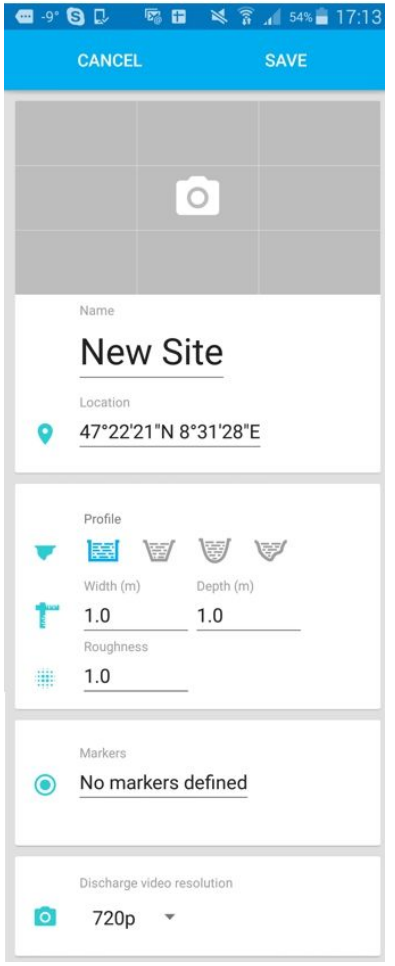


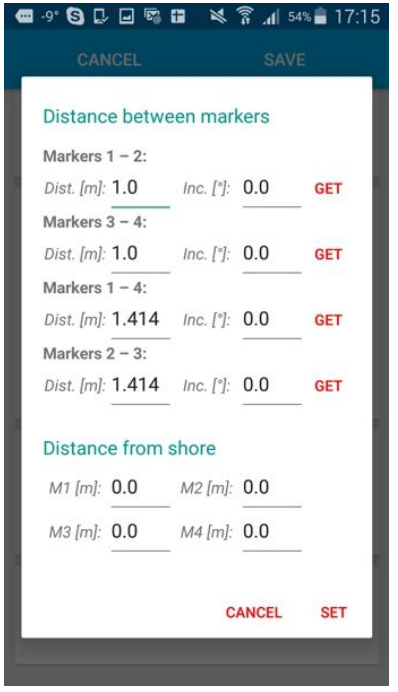


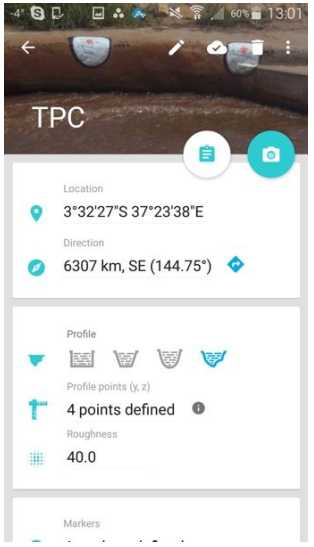


DischargeApp

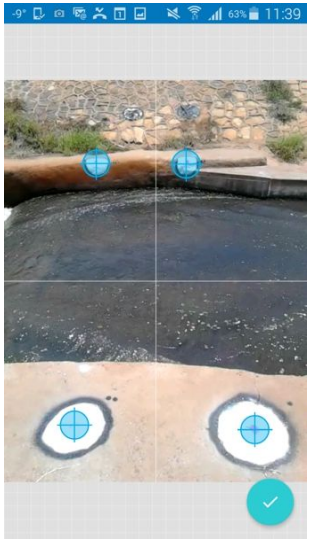
- Fast, easy, non-contact measurements
- On-site evaluation
- Vandalism free
- Error free data transmission
- Evidence based measurement

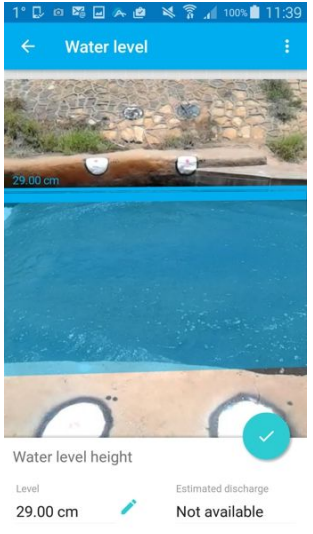

-9° 54% 17:13
CANCEL
SAVE
Name
New Site
Location
47°22'21"N 8°31'28"E
Profile
Width (m)
Depth (m)
1.0
1.0
Roughness
1.0
Markers
No markers defined
Discharge video resolution
720p

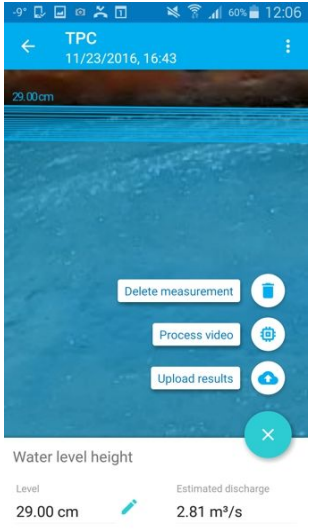

-9° 54% 17:15
CANCEL
SAVE
Distance between markers
Markers 1 – 2:
Dist. [m]: 1.0
Inc. [°]: 0.0
GET
Markers 3 – 4:
Dist. [m]: 1.0
Inc. [°]: 0.0
GET
Markers 1 – 4:
Dist. [m]: 1.414
Inc. [°]: 0.0
GET
Markers 2 – 3:
Dist. [m]: 1.414
Inc. [°]: 0.0
GET
Distance from shore
M1 [m]: 0.0
M2 [m]: 0.0
M3 [m]: 0.0
M4 [m]: 0.0
CANCEL
SET


TPC
Location
3°32'27"S 37°23'38"E
Direction
6307 km, SE (144.75°)
Profile
Profile points (y, z)
4 points defined
Roughness
40.0
Markers

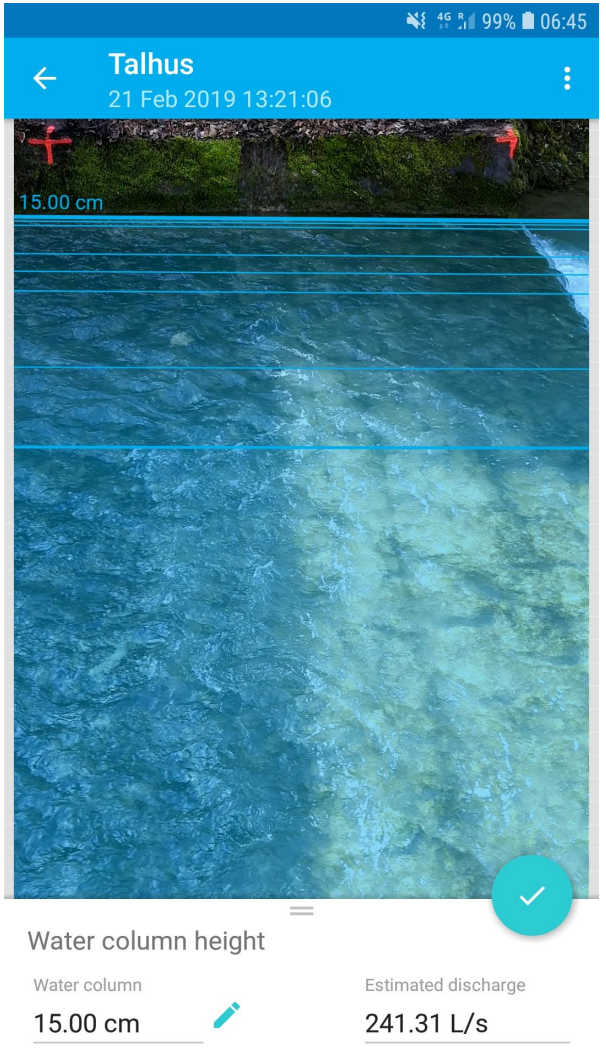

TPC
Recording video, please wait...

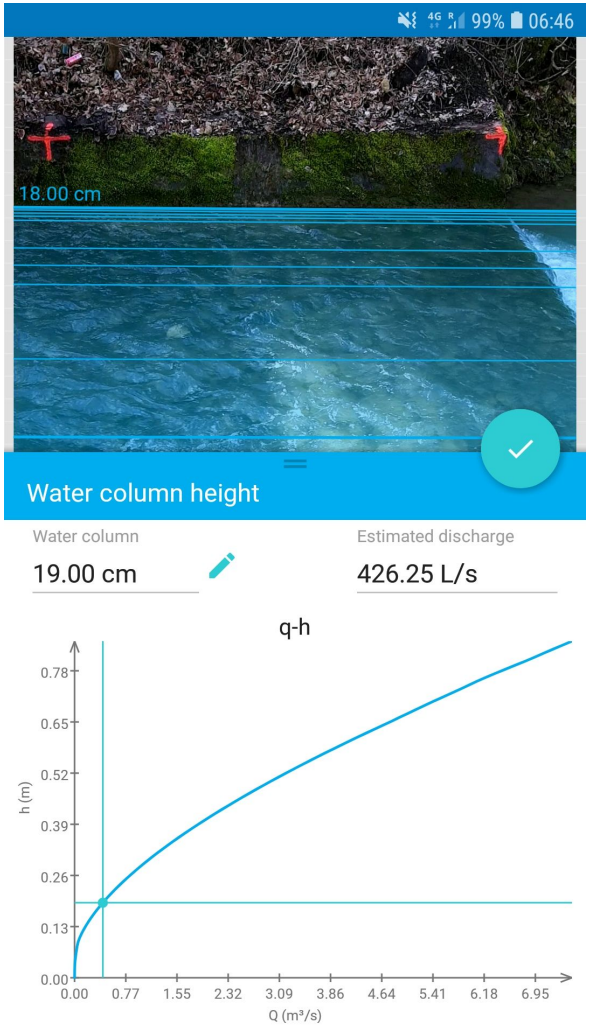



Water level
29.00 cm
Water level height
Level
29.00 cm
Estimated discharge
Not available


TPC
11/23/2016, 16:43
29.00 cm
Delete measurement
Process video
Upload results
Water level height
Level
29.00 cm
Estimated discharge
2.81 m³/s


Saving screenshot...
TPC
11/23/2016, 16:43
Measurement was successfully uploaded to the cloud.
Level
32.00 cm
Velocity
2.09 m/s
Discharge
3.11 m³/s


99% 06:45
Talhus
21 Feb 2019 13:21:06
15.00 cm
Water column height
Water column
15.00 cm
Estimated discharge
241.31 L/s


99% 06:46
18.00 cm
Water column height
Water column
19.00 cm
Estimated discharge
426.25 L/s
q-h
h (m)
0.78
0.65
0.52
0.39
0.26
0.13
0.00
0.00
0.77
1.55
2.32
3.09
3.86
4.64
5.41
6.18
6.95
Q (m³/s)

Non-regular cross-sections

Non-regular cross-sections

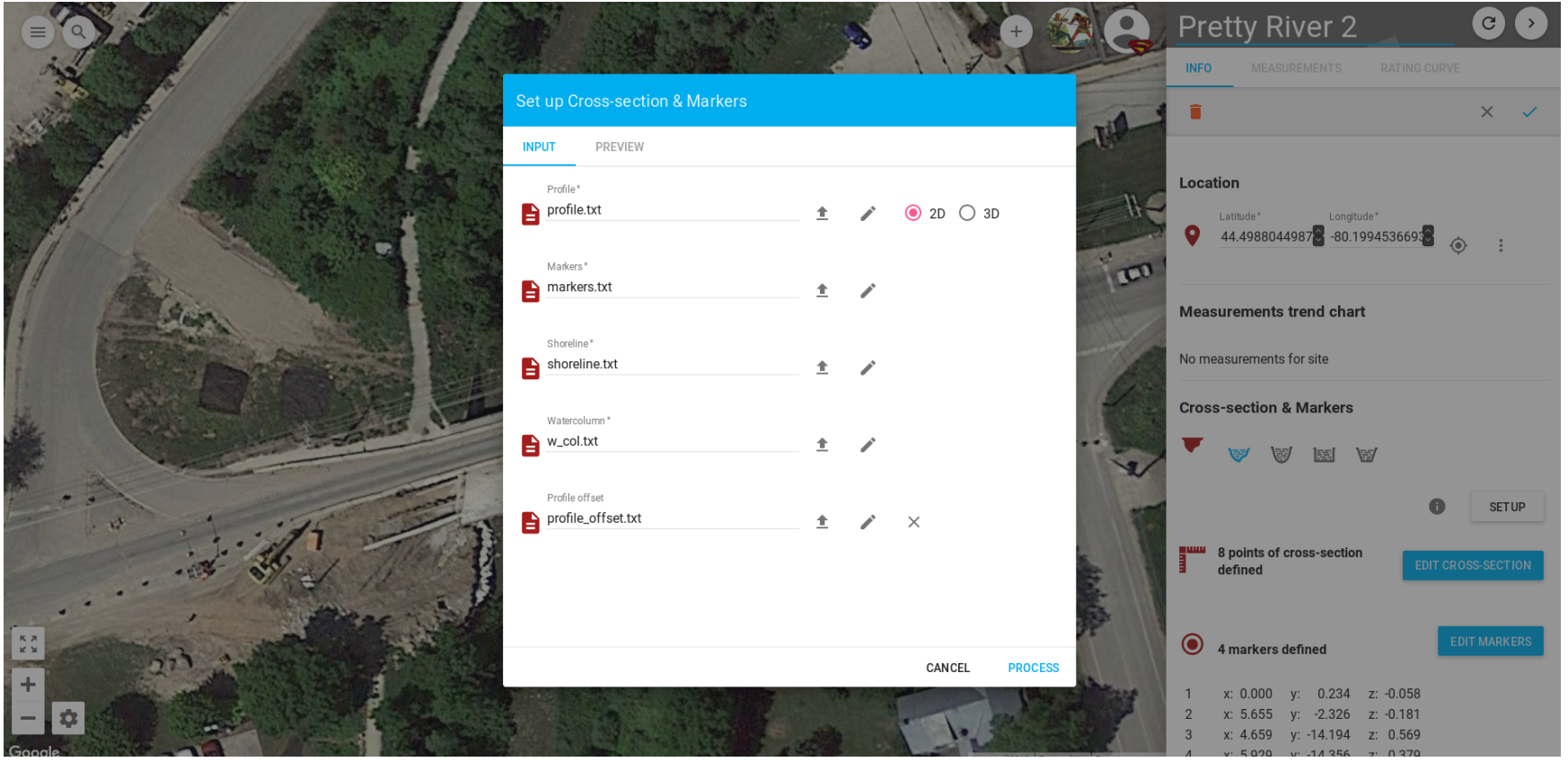




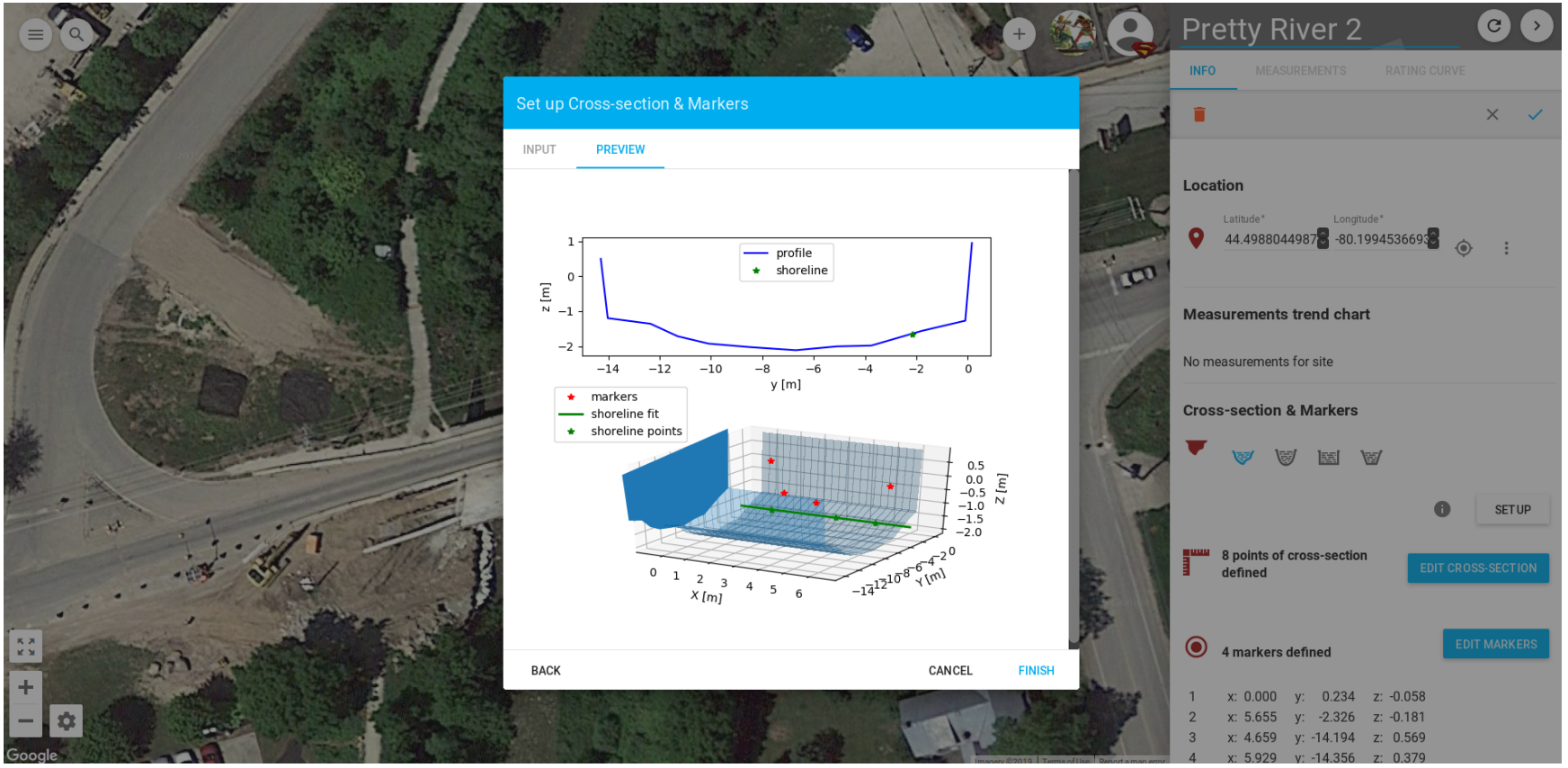


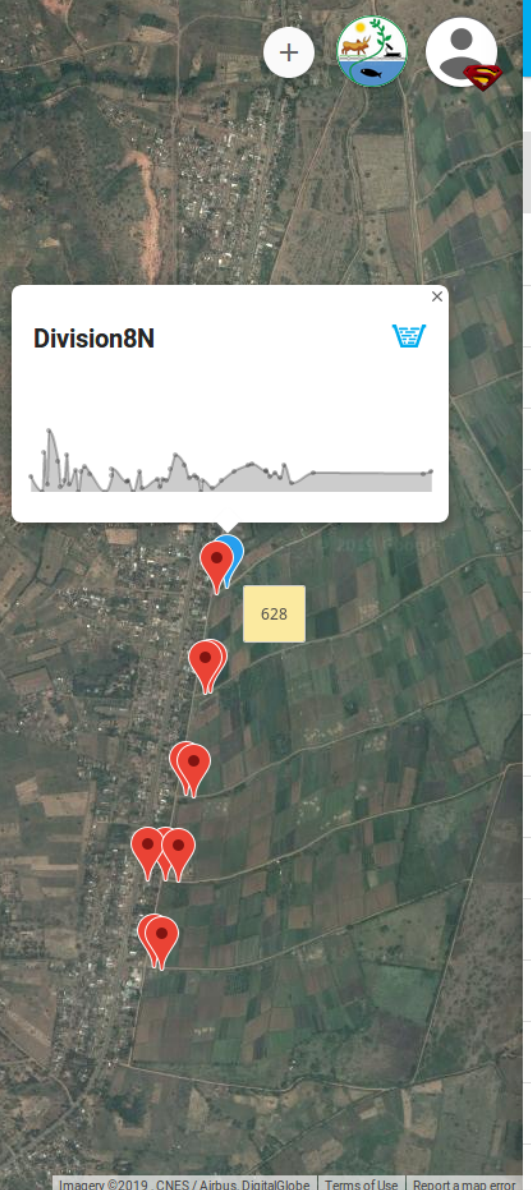


Non-regular cross-sections



Non-regular cross-sections





Division8N

INFO | MEASUREMENTS | RATING CURVE

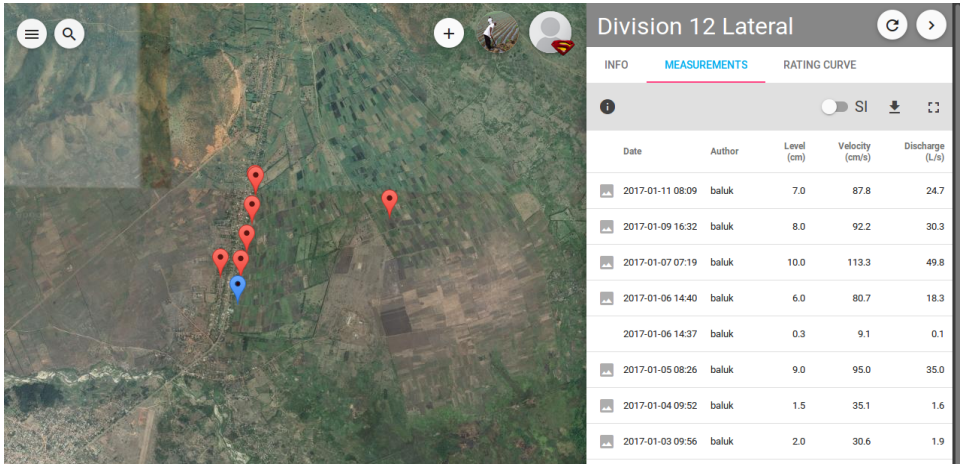
SI

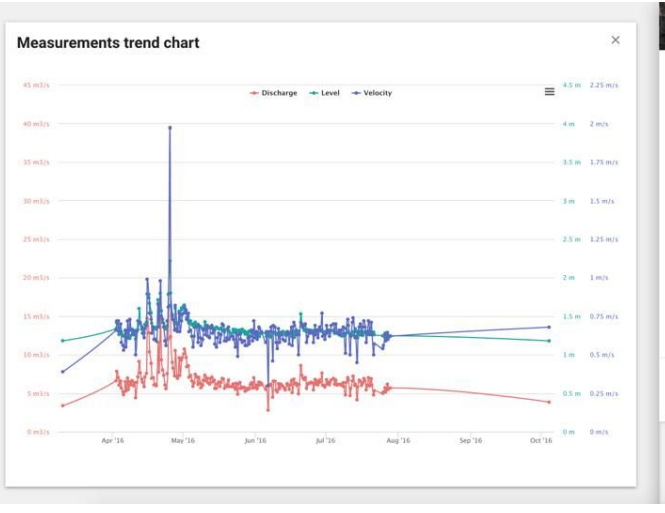
Date	Author	Level (cm)	Velocity (cm/s)	Discharge (L/s)
2018-05-18 16:45	baluk	30.0	40.9	65.5
2018-05-15 06:42	baluk	22.0	53.0	57.6
2018-03-27 17:27	baluk	22.0	58.6	60.1
2018-03-17 15:51	baluk	15.0	41.7	27.2
2018-03-14 11:09	baluk	25.0	61.6	84.5
2018-03-12 16:16	baluk	16.5	52.2	43.1
2018-03-10 06:09	baluk	18.5	67.5	60.0
2018-03-08 06:59	baluk	17.0	58.4	49.1
2018-03-06 09:02	baluk	26.0	43.3	66.5
2018-03-06 09:00	baluk	22.0	53.0	64.9
2018-02-28 10:29	baluk	24.0	62.7	86.9
2018-02-26 16:52	baluk	23.5	66.2	84.3
2018-02-20 08:06	baluk	20.0	66.3	65.1
2018-02-14 16:08	baluk	14.5	47.7	34.7
2018-02-10 16:08	baluk	8.0	36.2	12.5

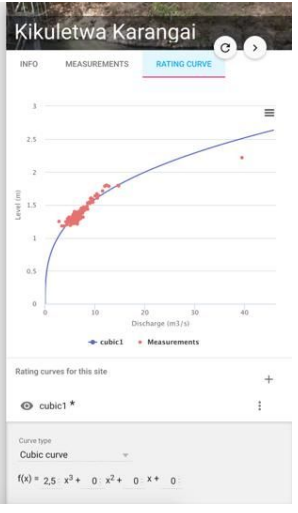
DischargeWeb

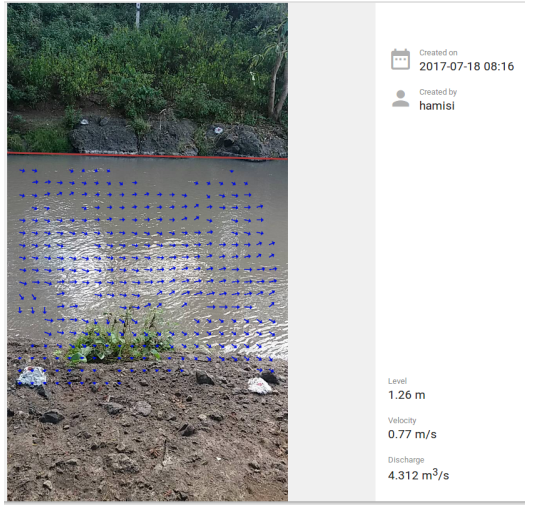
- Site configuration
- Users permissions
- Organization management
- Data visualization
- Stage-discharge relations
- Validation
- Data export


SMS
GPRS
WiFi
Discharge
Cloud Platform
Database


Division 12 Lateral
INFO
MEASUREMENTS
RATING CURVE
SI
Date
Author
Level (cm)
Velocity (cm/s)
Discharge (L/s)
2017-01-11 08:09 baluk 7.0 87.8 24.7
2017-01-09 16:32 baluk 8.0 92.2 30.3
2017-01-07 07:19 baluk 10.0 113.3 49.8
2017-01-06 14:40 baluk 6.0 80.7 18.3
2017-01-06 14:37 baluk 0.3 9.1 0.1
2017-01-05 08:26 baluk 9.0 95.0 35.0
2017-01-04 09:52 baluk 1.5 35.1 1.6
2017-01-03 09:56 baluk 2.0 30.6 1.9

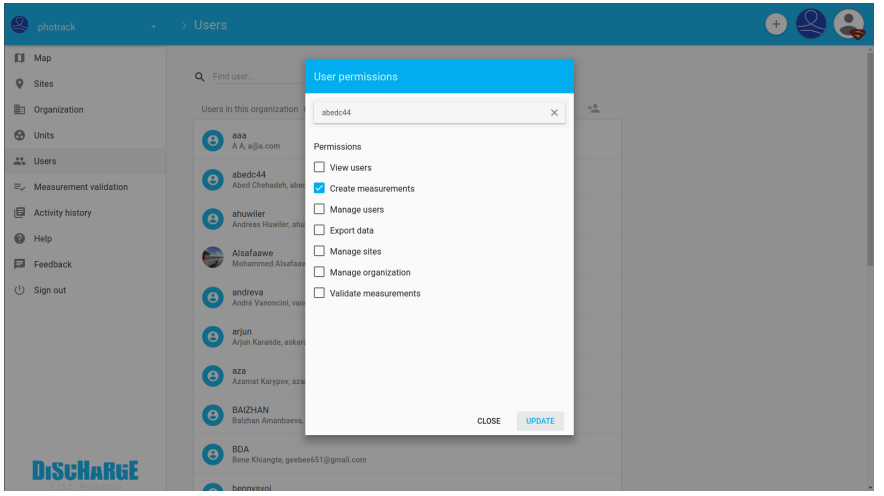

Measurements trend chart
Discharge
Level
Velocity


Kikuletwa Karangai
INFO
MEASUREMENTS
RATING CURVE
Discharge (m3/s)
cubic1
Measurements
Rating curves for this site
cubic1 *
Curve type
Cubic curve

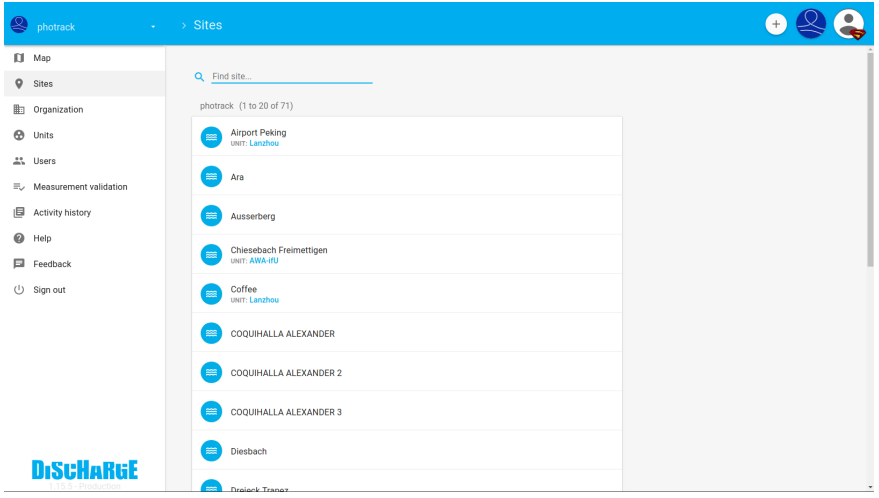

Created on
2017-07-18 08:16
Created by
hamisi
Level
1.26 m
Velocity
0.77 m/s
Discharge
4.312 m3/s

Organizations

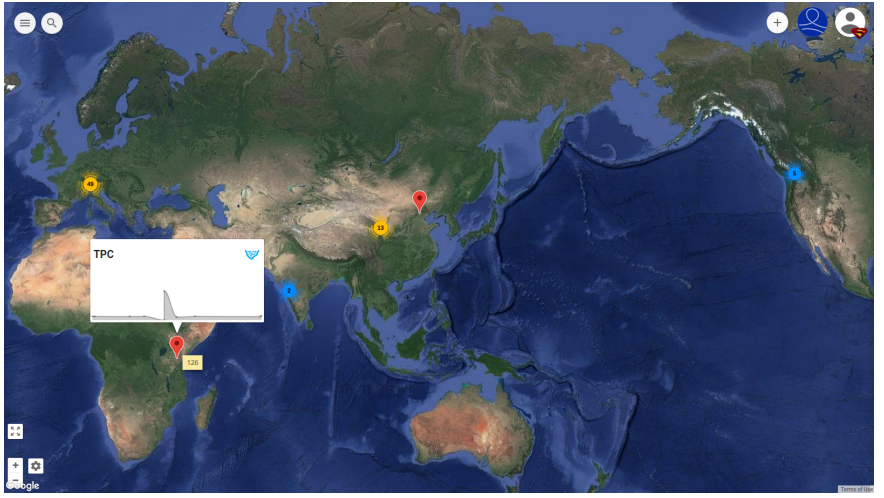
Users



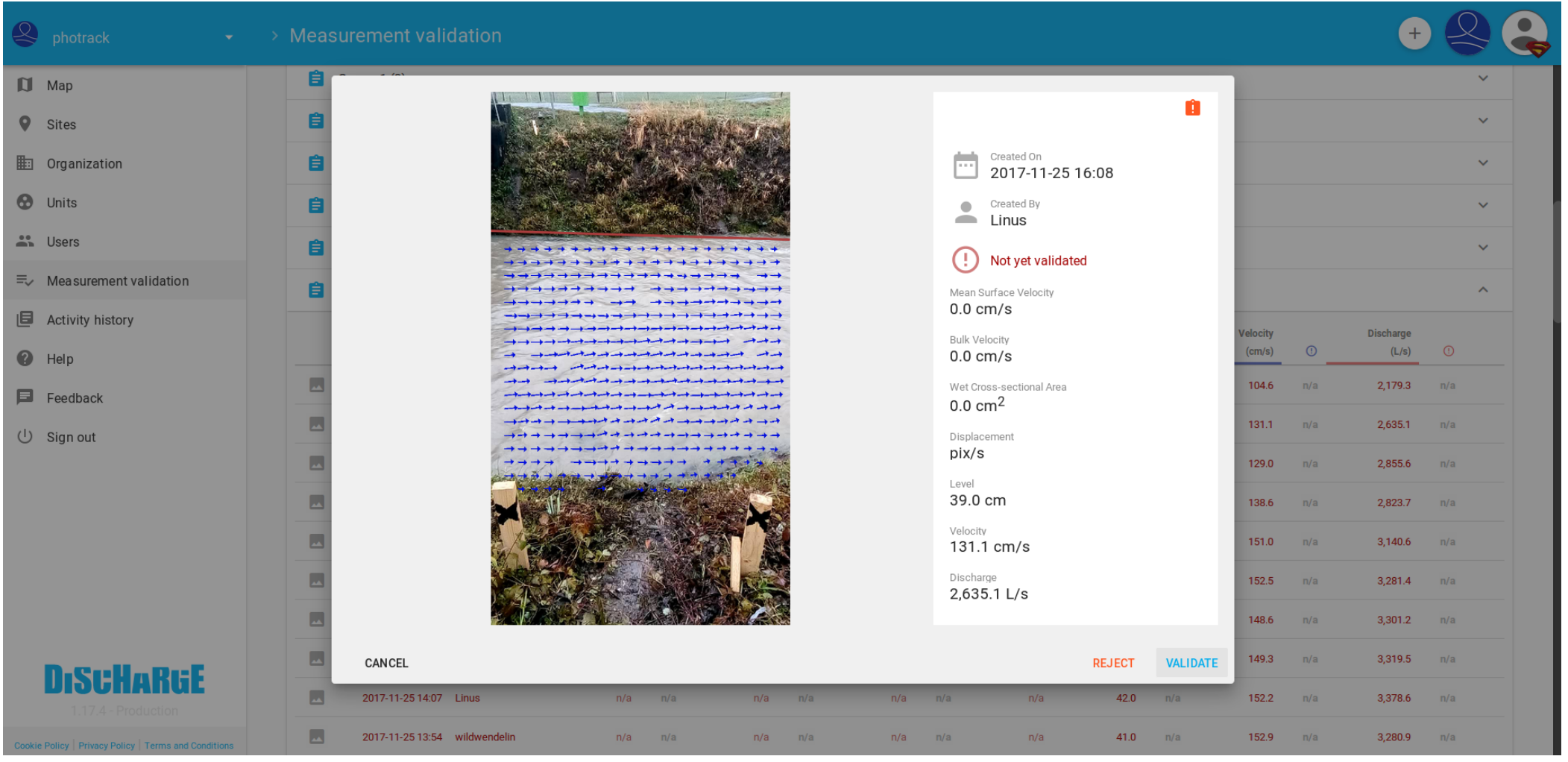
Sites

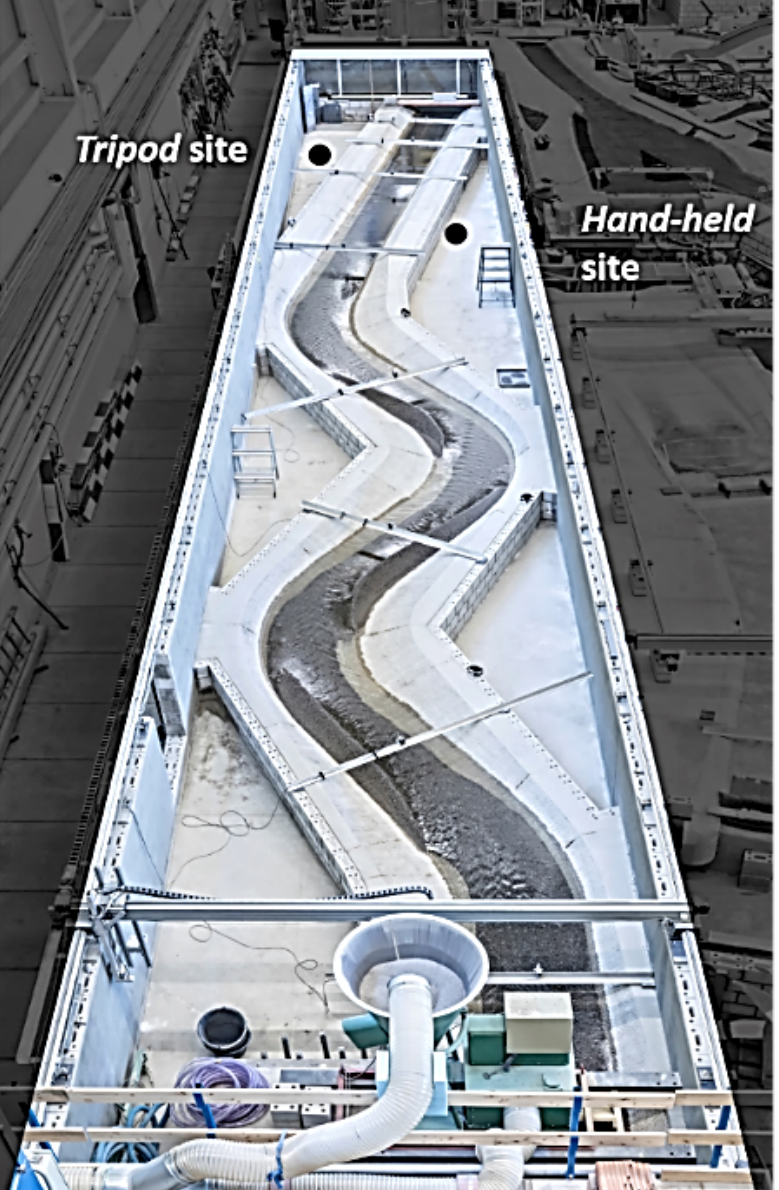


Sites



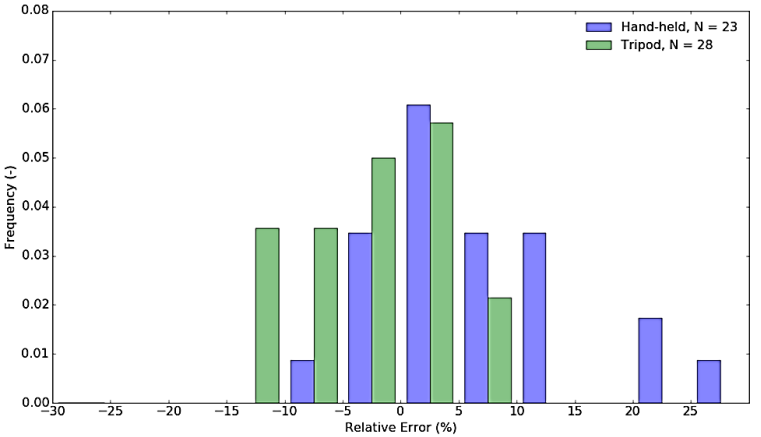
Data validation





Accuracy

- Controlled volumetric flow rates from 20 l/s up to 120l/s. ETH Zürich
- 80% of the measurements within 20% of relative error



Sample sites

- Irrigation canals
- Intakes
- Small to medium-sized rivers

DISCHARGE IN STATS

REGISTERED USERS:
1858

ACTIVE ORGANIZATIONS:
385

MEASUREMENT SITES:
1074

DischargeApp MEASUREMENTS:
18788

DischargeKeeper MEASUREMENTS:
556566

▶ Countries where the app is downloaded:

FREE

Our FREE plan gives you the opportunity to explore the Discharge technology. Once you are familiarized with Discharge you may want to upgrade to a more suitable plan, which will give you even more options to manage and analyse your collected data.

FREE

START FREE

FREE

standard channel profiles

5 sites

100 measurements

rating curve options

BASIC

BASIC is a modest beginner plan that offers 100 measurements per year for maximum 5 sites that may have any non-standard cross sectional profiles. All of this will be accommodated in your own Discharge organization.

CHF500

*billed annually

GO BASIC

BASIC

standard channel profiles

5 sites

100 measurements

rating curve options

non-standard cross sectional profiles

data export

PROFESSIONAL

PROFESSIONAL is offering additional features such as privacy and the option to validate your data following the four eyes principle.

CHF2000

*billed annually

GO PROFESSIONAL

PROFESSIONAL

standard channel profiles

20 sites

1000 measurements

rating curve options

non-standard cross sectional profiles

data export

organization can be private

data validation

PREMIUM

Diamond is offering everything but in larger quantity. In addition diamond adds to the measured values accuracy estimations - i.e. diamond is the solution every true professional would want.

CHF10000

*billed annually

GO PREMIUM

PREMIUM

standard channel profiles

100 sites

5000 measurements

rating curve options

non-standard cross sectional profiles

data export

organization can be private

data validation

data accuracy estimations

FREE

Our FREE plan gives you the opportunity to explore the Discharge technology. Once you are familiarized with Discharge you may want to upgrade to a more suitable plan, which will give you even more options to manage and analyse your collected data.

FREE

START FREE

FREE

standard channel profiles

5 sites

100 measurements

rating curve options

BASIC

BASIC is a modest beginner plan that offers 100 measurements per year for maximum 5 sites that may have any non-standard cross sectional profiles. All of this will be accommodated in your own Discharge organization.

CHF10

*billed annually

GO BASIC

BASIC

standard channel profiles

5 sites

100 measurements

rating curve options

non-standard cross sectional profiles

data export

PROFESSIONAL

PROFESSIONAL is offering additional features such as privacy and the option to validate your data following the four eyes principle.

CHF40

*billed annually

GO PROFESSIONAL

PROFESSIONAL

standard channel profiles

20 sites

1000 measurements

rating curve options

non-standard cross sectional profiles

data export

organization can be private

data validation

PREMIUM

Diamond is offering everything but in larger quantity. In addition diamond adds to the measured values accuracy estimations - i.e. diamond is the solution every true professional would want.

CHF200

*billed annually

GO PREMIUM

PREMIUM

standard channel profiles

100 sites

5000 measurements

rating curve options

non-standard cross sectional profiles

data export

organization can be private

data validation

data accuracy estimations

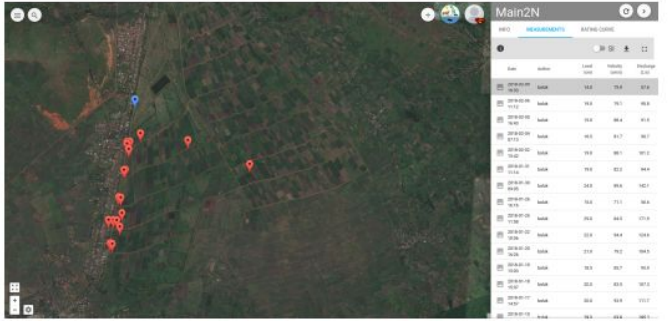
Why DApp?

DischargeApp

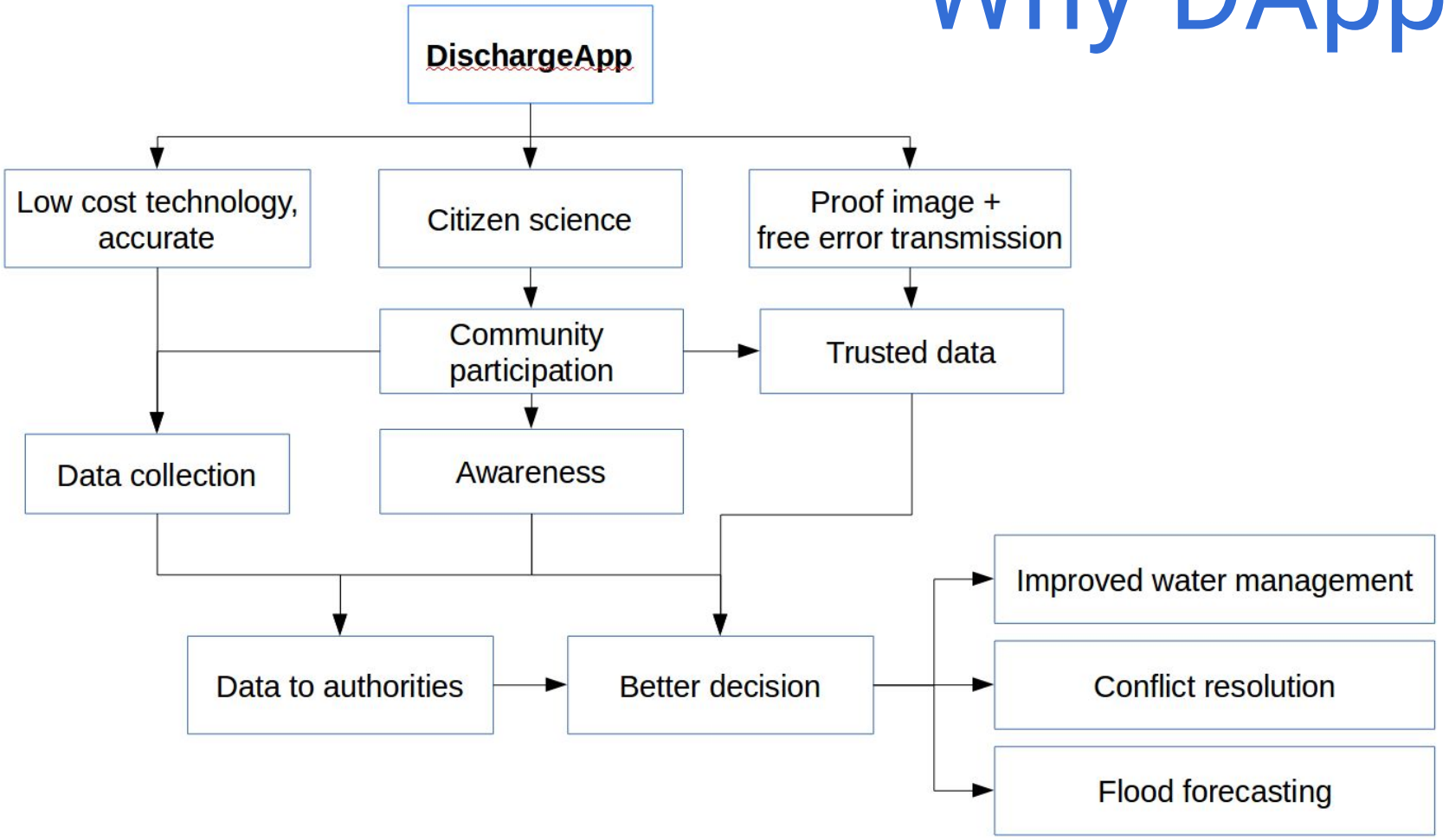
- Low cost technology, accurate
- Citizen science
- Proof image + free error transmission

Setting-up a site

Performing a measurement



Why DApp?


DischargeApp
Low cost technology, accurate
Citizen science
Proof image + free error transmission
Community participation
Trusted data
Data collection
Awareness
Data to authorities
Better decision
Improved water management
Conflict resolution
Flood forecasting

Users & uses

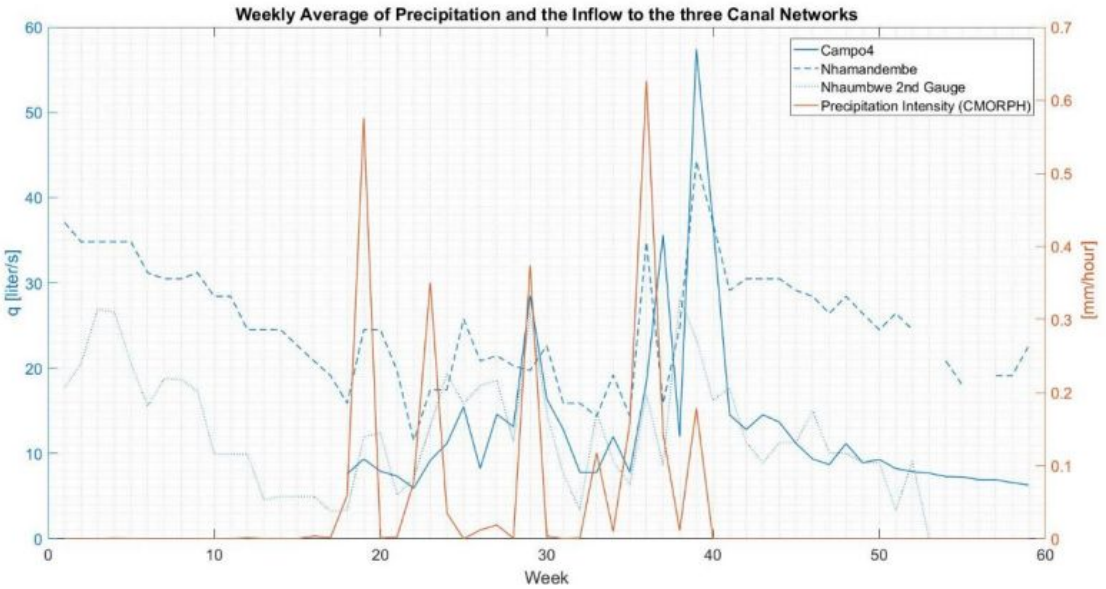
- Management and monitoring
  - Gauging for water management
  - Scheduling of water deliveries and permits compliance monitoring
  - Keeping records of water consumption
  - Reduction of conflicts trough transparency
- Administration
  - Accounting
  - Calculation of water charges
  - Water use efficiency
  - Planning / controlling maintenance activities

Field applications

- iMoMo project. Incubated by SDC, 2012-2017.
  - Foster innovation on low-cost, high-tech, non-traditional, people centered observations and monitoring
  - Modernization of the pathway from observation to decision-support
- Field application by Hydrosolutions

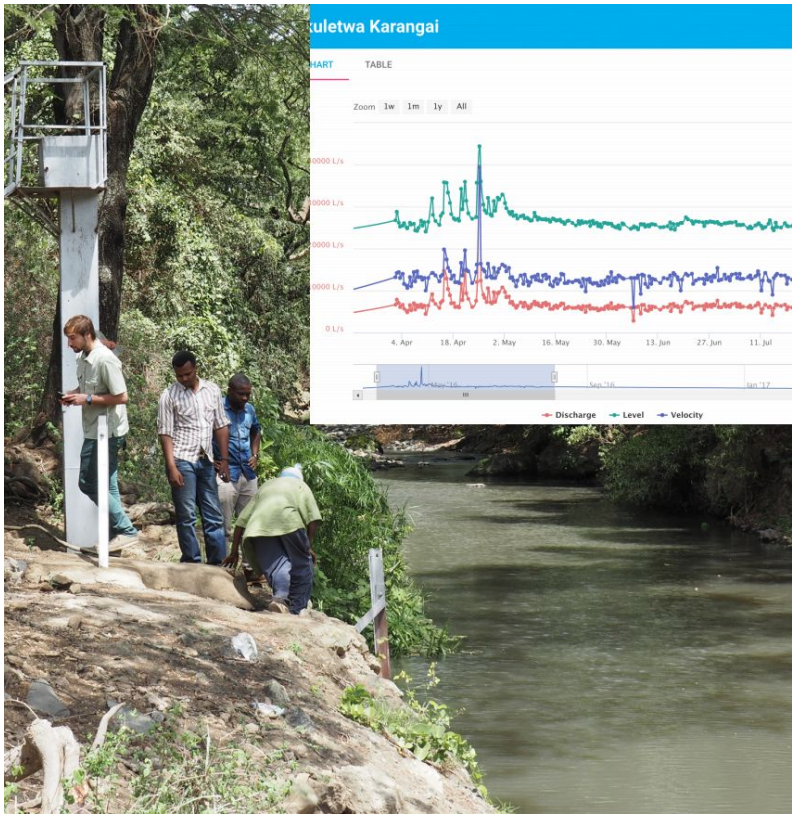
Field applications

- Measuring field-scale water availability for irrigation efficiency improvements. Mozambique.



Field applications

- Measuring field-scale water availability for irrigation efficiency improvements. Mozambique.
- Official river guaging for operational purposes, including water balance. Tanzania

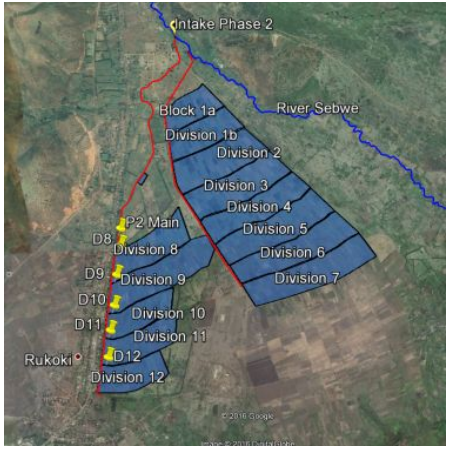


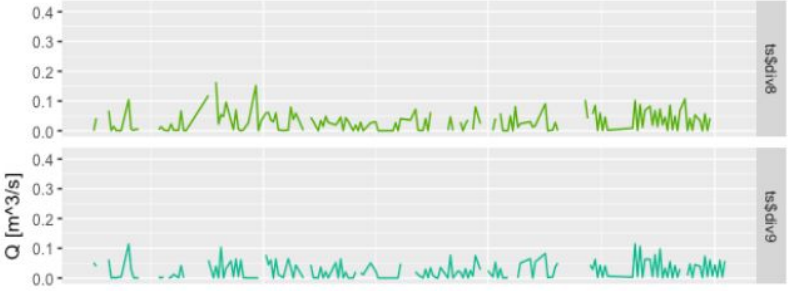
Field applications

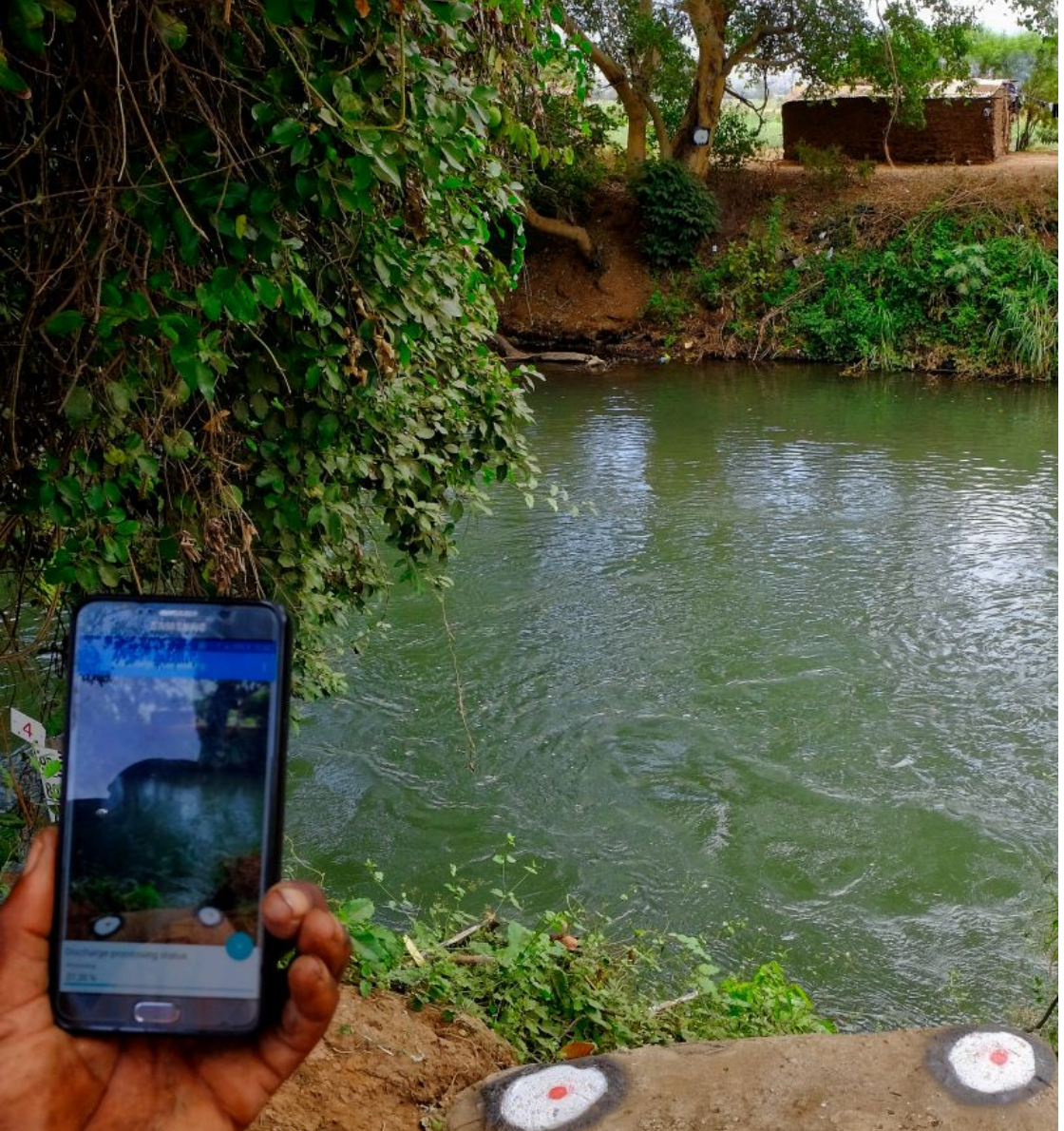
- Measuring field-scale water availability for irrigation efficiency improvements. Mozambique.
- Official river guaging for operational purposes, including water balance. Tanzania
- Measuring intake flows into large irrigation schemes for compliance monitoring. Tanzania

Field applications

- Measuring field-scale water availability for irrigation efficiency improvements. Mozambique.
- Official river guaging for operational purposes, including water balance. Tanzania
- Measuring intake flows into large irrigation schemes for compliance monitoring. Tanzania
- Quantifying benefits of non-traditional canal monitoring. Uganda.







Value proposition

- Fast non-contact discharge measurements
- On-site evaluation
- Vandalism free
- Error free data transmission
- Evidence-base measurement
- Crowd-sourced data

Workflow / Field learnings

Community Info / Site ID / Mapping

Site Instrumentation / Calibration

Collection Protocol / Contracts & Cap. Building

Data Collection

QA / QC

DiSCHaRGE

Thank you for your attention!

VISIT discharge.ch

GET IT ON Google Play

pena@photrack.ch https://discharge.ch