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# Partial renewal of technical installation, measurement technology, occupational safety



1.9.2016 O. Overney

# Examples of measuring stations
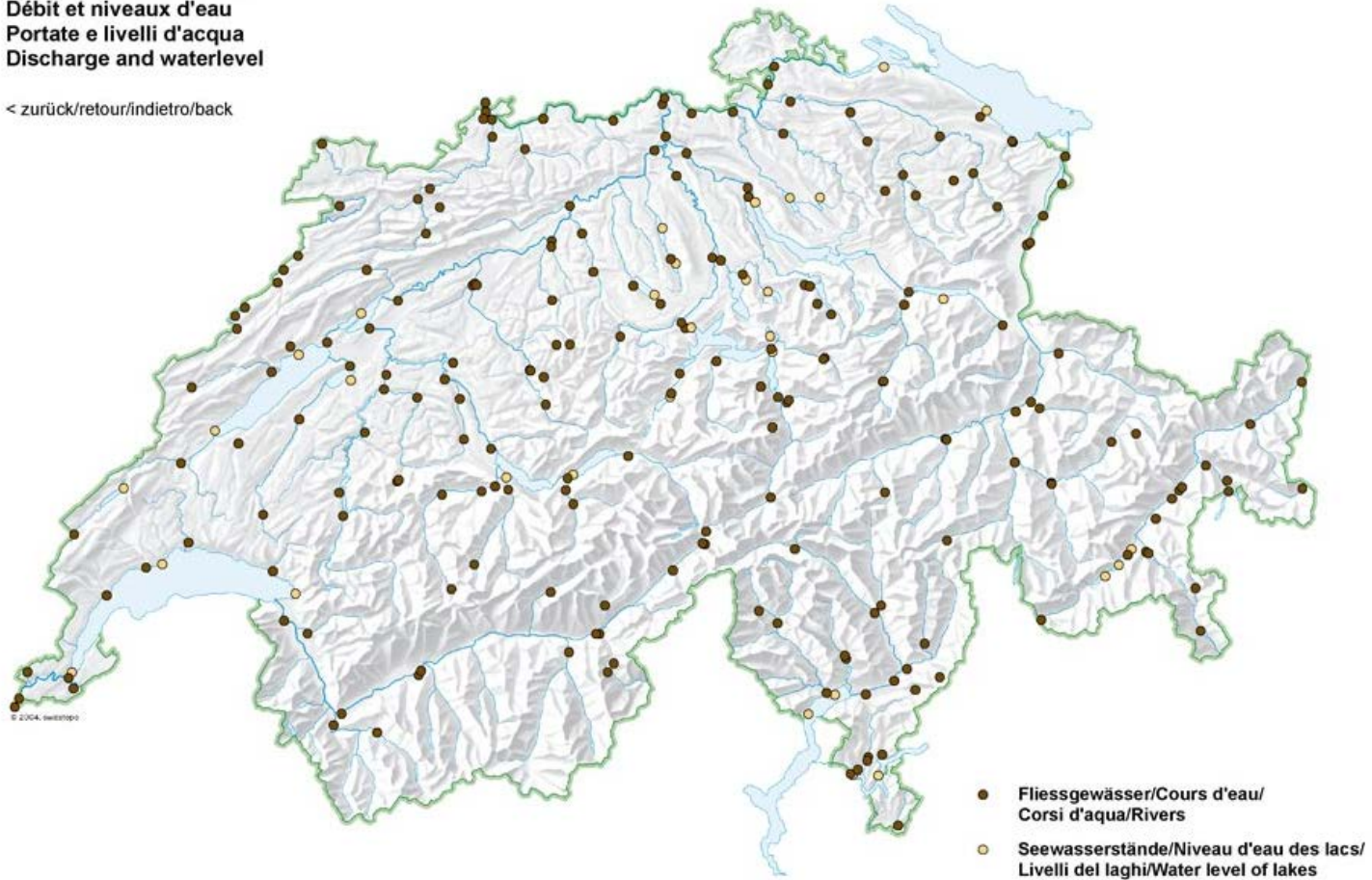
# Measurement conditions

# National main networks:
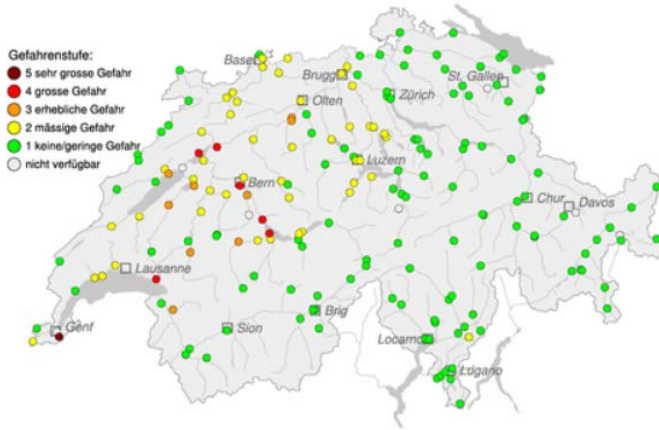Water levels and discharge (247 stations)



Abfluss und Wasserstände
Débit et niveaux d'eau
Portate e livelli d'acqua
Discharge and waterlevel
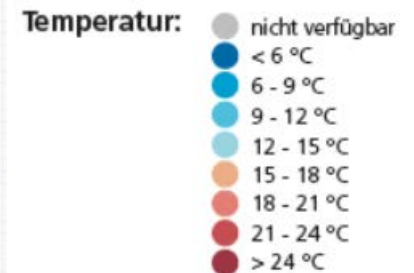
< zurück/retour/indietro/back

Fliessgewässer/Cours d'eau/
Corsi d'aqua/Rivers

Seewasserstände/Niveau d'eau des lacs/
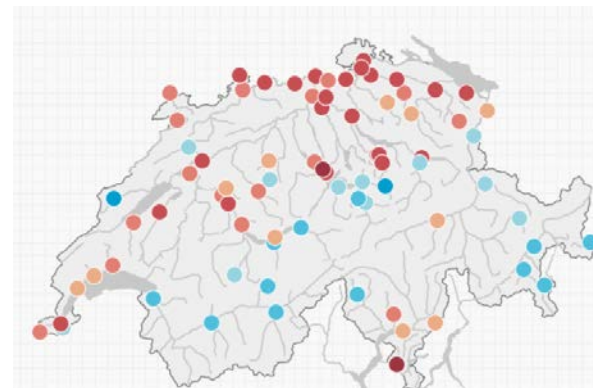Livelli del laghi/Water level of lakes

# Example: flood in May 2015





# and heat wave in summer 2015

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Federal Department of the Environment,
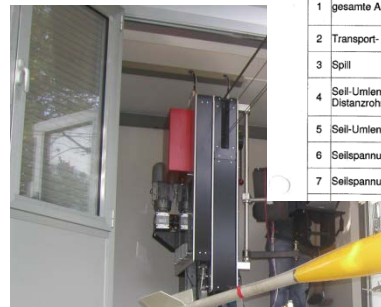Transport, Energy and Communications DETEC

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# INSIGHTS - Infrastructure: station Töss-Neftenbach passage of fish

# INSIGHTS - Infrastructure: construction, maintenance, revision and inspection

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# INSIGHTS – measuring discharge

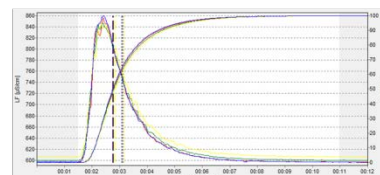- Flow velocity measurements with hydrometric currentmeter
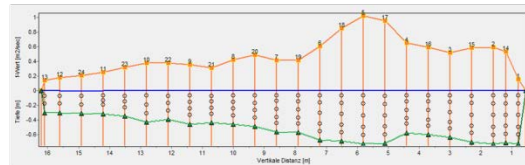


- ADCP (Acousic Doppler Current Profiler)



- Tracer method (dilution gauging)
    - constant injection
    - slug injection

- Surface flow velocity measurements
    - by radar speed meter
    - by floating bodies



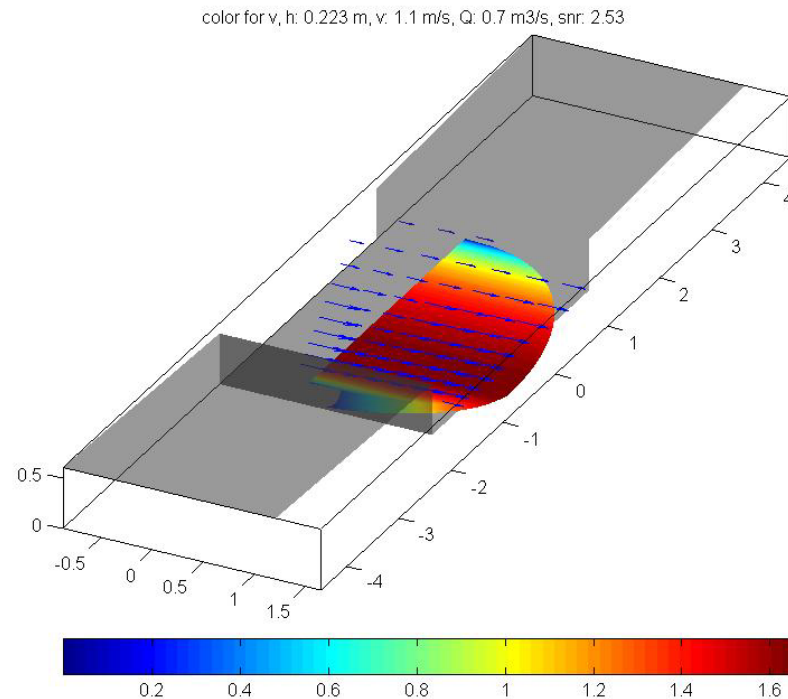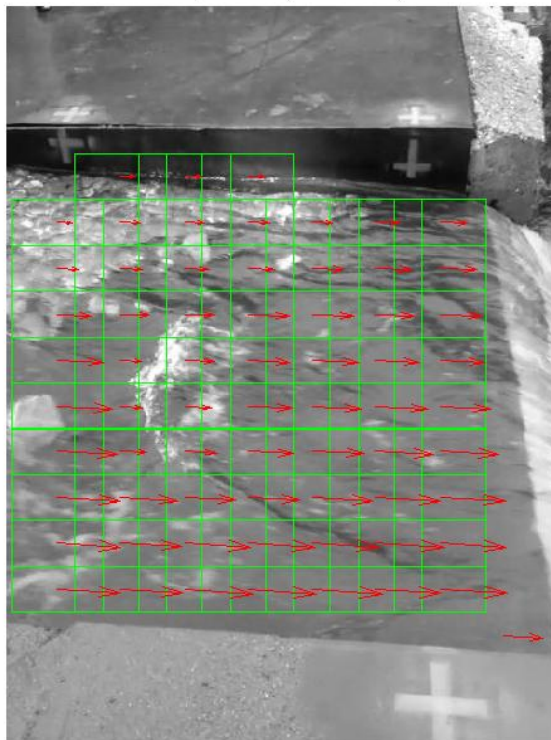Fluorescent tracer measurement (uranin 10%)

Salt dilution measurement (conductivity)

# INSIGHTS - Methodology: image-based discharge determination



h: 0.223 m, v: 1.1 m/s, Q: 0.7 m3/s, snr: 2.53



color for v, h: 0.223 m, v: 1.1 m/s, Q: 0.7 m3/s, snr: 2.53

More information:
robert.lukes@bafu.admin.ch
http://www.photrack.ch/streamflow.html

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# Standardisation of technical installations in measuring stations I

# Renewal of measuring stations



- Around 300 stations (target: until the end of 2017; current state on 1.9.2016: 31 renewed stations)
- Remote maintenance and monitoring
- Components meet industrial standards with increased requirements
- Standardized electrical cabinets with modular structure
- Redundant communication
- Autonomous power supply for 48h

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# Safety at work : hazards
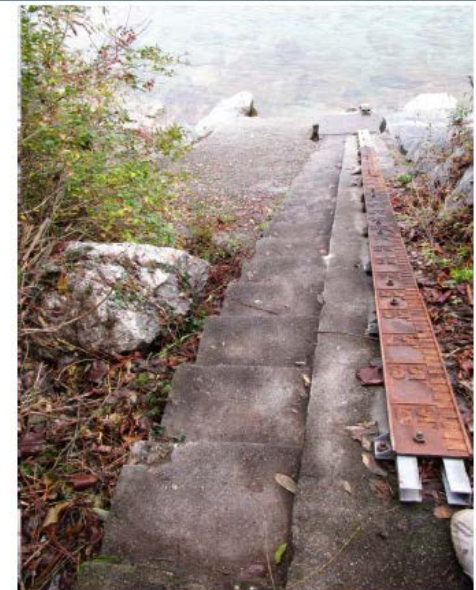
# Safety at work : object-based measures vs. personal protective equipment