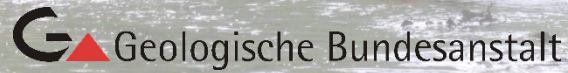


Sampling of stream bed sediments

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Introduction

1. Choice of sampling sites
2. Sampling equipment
3. Sampling procedure
4. Sample preparation in the field
5. Sampling documentation

Past experiences:

- Austrian Standard (ÖNORM G 1031) for geochemical sampling (1979)
- Geochemical Atlas of Austria (1989) (Bohemian Massif and Central Alps)
http://opac.geologie.ac.at/ais312/dokumente/AL0028_Gesamt.pdf
(29,690 stream sediment samples)
- FOREGS (Salminen et al., 1998)
http://tupa.gtk.fi/julkaisu/opas/op_047.pdf
(19 floodplain, 12 humus, 18 topsoil, 15 subsoil, 20 stream sediment and 20 stream water samples in Austria)
- Geochemical Atlas of Austria (2015)
http://opac.geologie.ac.at/ais312/dokumente/AL0028_Gesamt.pdf
(36,162 stream sediment samples)

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GEOCHEMISCHER ATLAS VON ÖSTERREICH – BUNDESWEITE
BACH- UND FLUSSEDIMENTGEOCHEMIE (1978-2010)

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A. SCHEDL &
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(Hrsg.)



Geologische Bundesanstalt

1. Choice of sampling sites

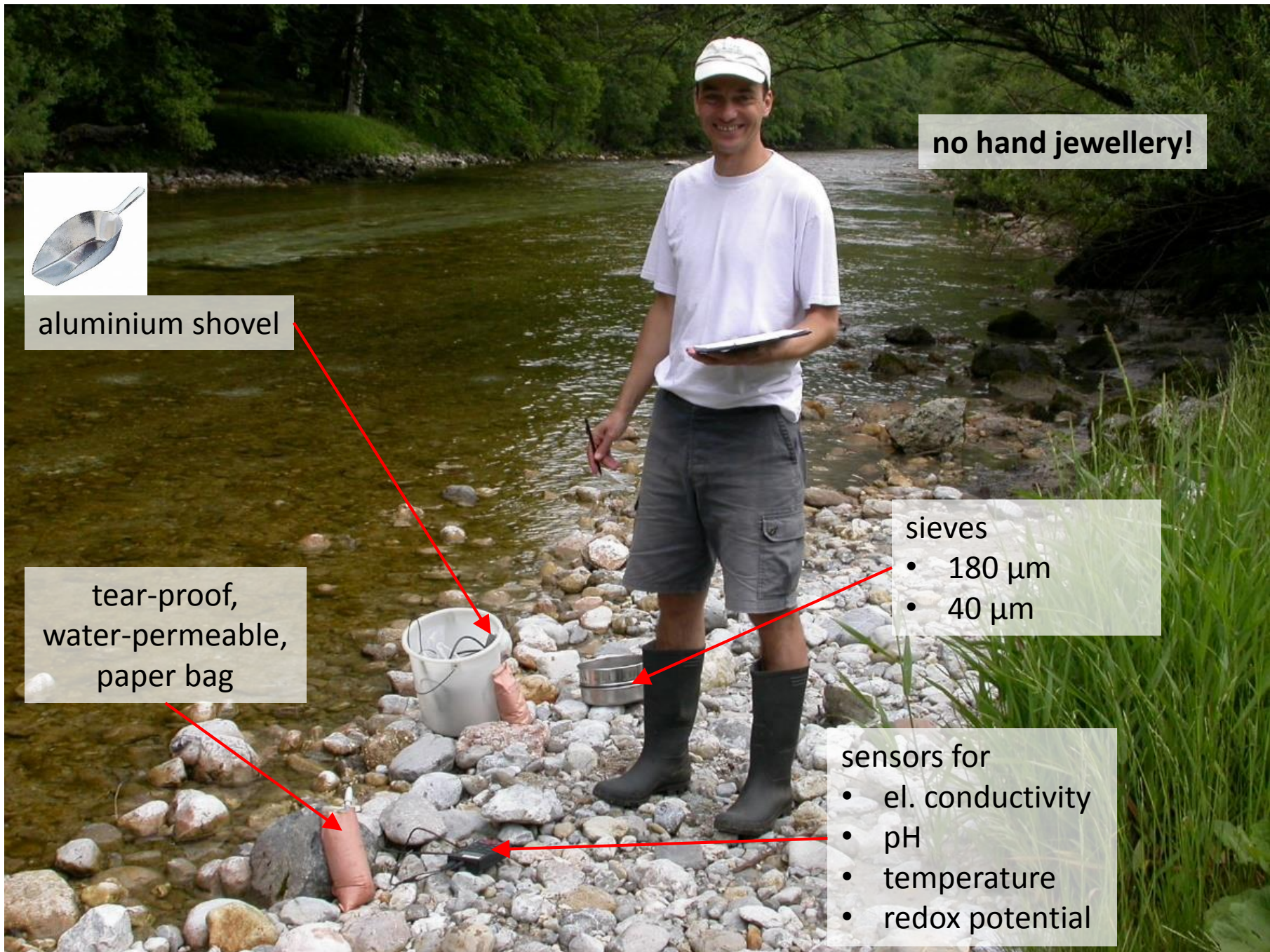
- for mineral exploration in alpine regions
- for environmental monitoring in populated / industrial regions

Possible problems

- boulders
 - river construction
 - agriculture
 - large, deep rivers
 - slope failures
- adapt sampling sites



2. Sampling equipment



aluminium shovel

no hand jewellery!

tear-proof,
water-permeable,
paper bag

sieves

- 180 μm
- 40 μm

sensors for

- el. conductivity
- pH
- temperature
- redox potential

3. Sampling procedure

- 1 – 1.5 kg of **active** sediment (fine- to medium grained bed load material transported by running water)
- if necessary collect material over a stretch of 50 m up-/downstream of sampling point
- 2 grain size fractions:
 - sand/silt (180 μm)
 - silt/clay (40 μm)
- if necessary wet sieving
- in situ measurements of
 - air temperature
 - in stream water: temperature, electrical conductivity, pH, Eh
 - in sediment (in bag before decanting): temperature, el. conductivity, pH, Eh (comparison allows to test if sediment is active)
- **not** during / after heavy rain events or high floods!
- duplicate sampling for quality control every 50th sample

4. Sample preparation in the field

- dewatering in dry storage rooms

in the field lab / at home:

- weighing of total sample
- drying in oven at $< 110^{\circ}\text{C}$ \rightarrow water content (Austrian Standard ÖNORM B 4410)
- sieving $< 180\ \mu\text{m}$ (German Standard DIN 4188)
- weighing of samples after drying & sieving

5. Sampling documentation

- **General data:** person, sample number, location (name of village / area on topographical map), coordinates, coordinate system, altitude, date & time, weather, name of river, reasons for sampling site adaptation, duplicate sample for quality control (y/n)
- **Outcrop description:** sketch, photo, dry river bed (y/n), river constructions, dams, influence of industrial /residential sites, traffic routes, mining activities, waste, sewage etc.
- **Sample description:** grain size fraction, in-situ measurements, measurement devices, visible iron or manganese oxide precipitations
- **Description of in situ sample preparation:** drying, weighing, sieving; total sample weight, water content, sample weight after drying and sieving