Hydrological Open Air Laboratory (HOAL)
Petzenkirchen Catchment, Austria

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Location

- Centered around 48.1544N, 15.1515E
- 64 ha
Site description

- High density network 50 stations
- Automated logging
- SM Measurement
  - Depths: 0.05, 0.20, 0.60 m
  - Capacitance sensors EC-5 and 5TE (Decagon Devices Inc., Pullman, WA)
  - Yearly calibration (gravimetric and TDR)

The ZigBee network mesh topology

- Long-distance data transmission (e.g. via GSM modem)
- External data (e.g. precipitation)
- Communication between Router and Coordinator (distance max. 4 km)
- Communication between End device and Router (distance max. 100 m)

ZigBee Router  ZigBee Coordinator
External device, e.g. rainfall gauge

Above ground

ZigBee End Device

Below ground
Site description

- Additional measurements
  - Electric conductivity (at locations of SM sampling with 5TE)
  - Soil temperature (at locations SM sampling with 5TE)
- Meteorological measurements
  - Electric conductivity (at locations with 5TE)
  - Air temperature, precipitation, water table (at various locations in catchment)
  - ET (planned)
- Metadata
  - 600 soil samples from the catchment, based on a 50 m grid
  - Land cover
  - Vegetation state
Project support and research focus

- Long term cooperation between Vienna UT and the Federal Agency for Water Management (BAW)
  - Key research catchment for hydrological research
  - Vienna Doctoral Program on Water Resources, approved until 2021
  - SM sensors will be installed in the course of 2011

- General focus IPF
  - Soil moisture from scatterometers and SAR

- Use of SMAP data
  - Comparison with other soil moisture products (ASCAT)
  - Data assimilation in local/regional hydrological model
Issues

- Extensive automated quality control according to International Soil Moisture Network (ISMN) procedure, NRT availability
- Visual QC ~3 monthly, similar data latency
- Availability through ISMN