

# ENIGMA HOBE sites

- Land surface processes: Unsaturated zone – recharge – soil moisture
  - Meadow, agricultural, and forest sites
- Groundwater-surface water interactions
  - GW-stream and GW-lagoon

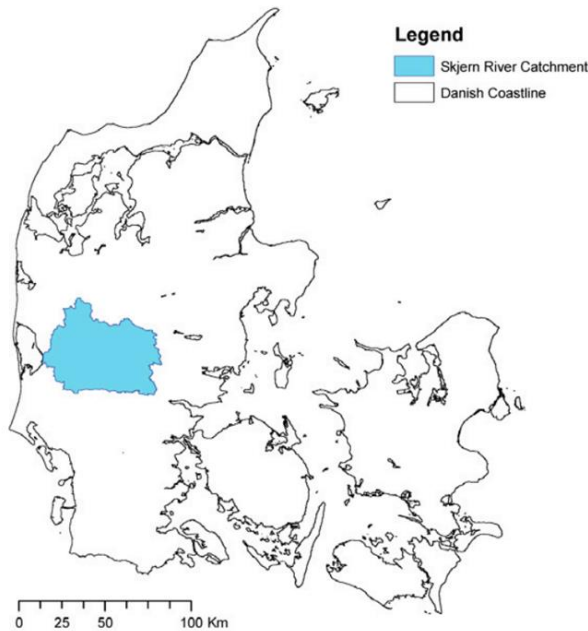
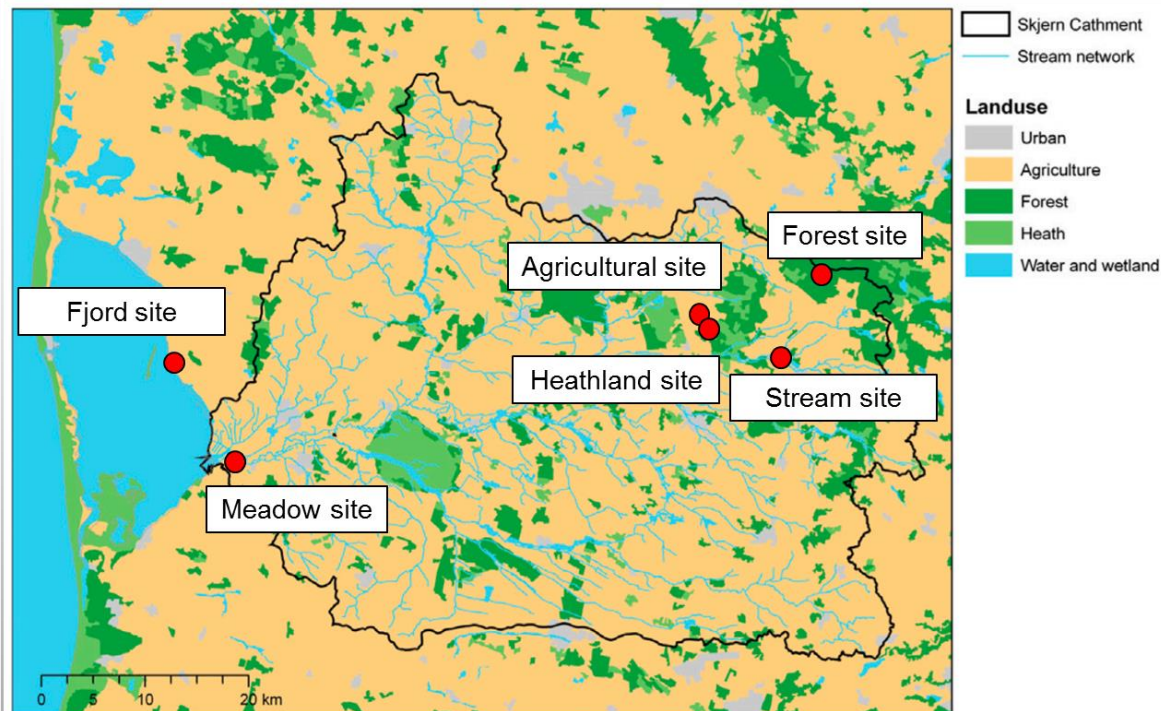


Fig. 1. Map of Denmark and location of the hydrological observatory Skjern catchment.



# Soil moisture – cosmic ray - GPR

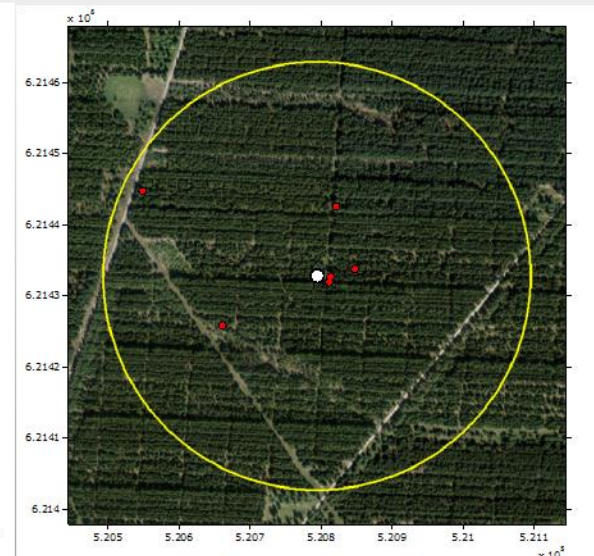
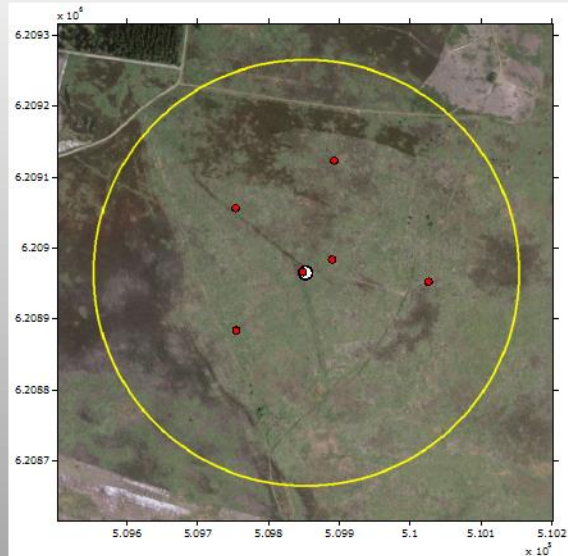
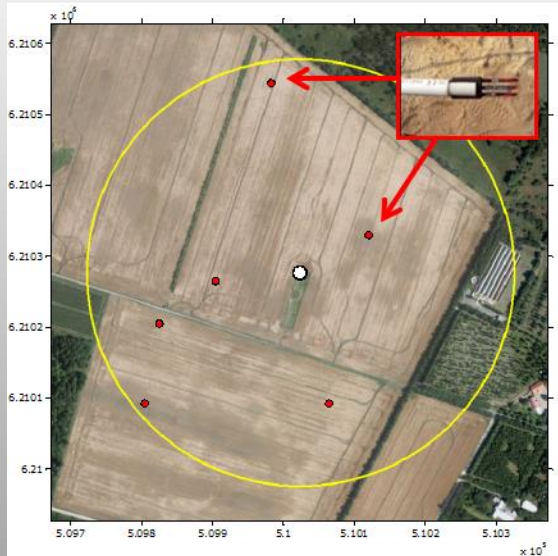
## Agriculture



## Heathland



## Forest



# Soil moisture – cosmic ray - GPR

Soil moisture is measured using:

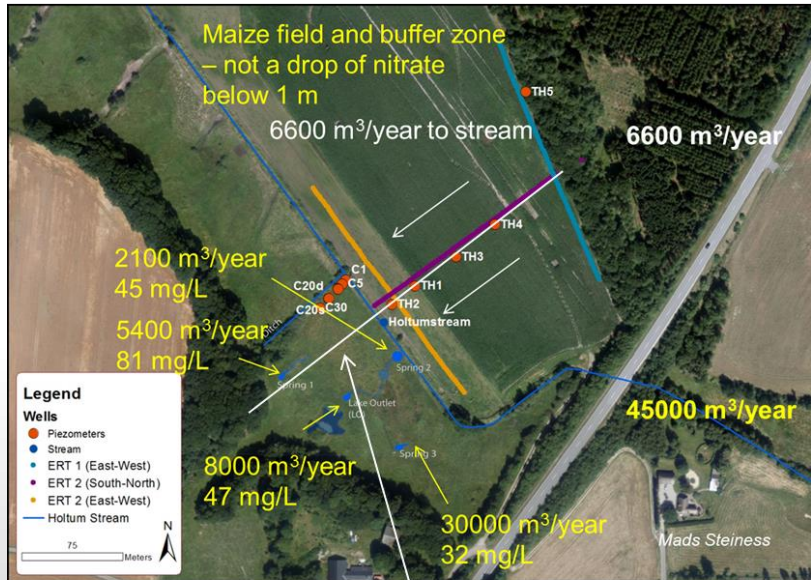
- a. Six 5TE- probes
- b. Bare and moderated cosmic-ray neutron probes (measure different neutron energies).

Additional measurement at the agricultural and forest sites:

- d. Precipitation
- e. Actual evapotranspiration (Eddy-flux)
- f. Weather type, solar radiation, wind speed, wind direction, air and soil temp., relative humidity, soil heat flux.



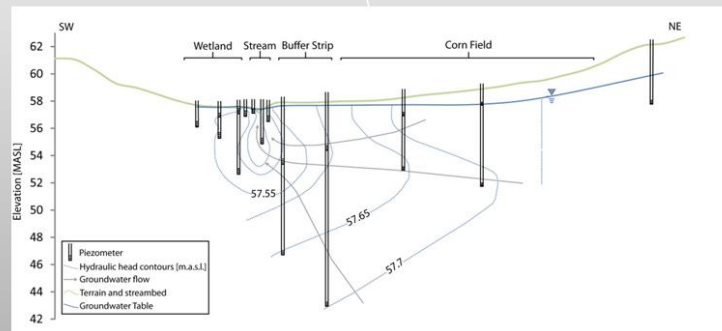
# Evi2



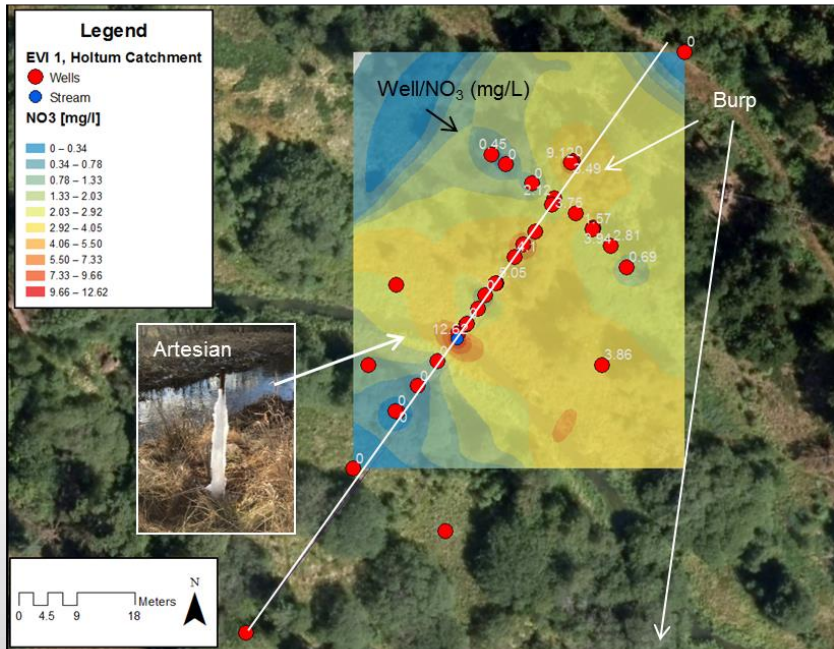
## EVI2 (Agri/buffer/wetland)

Maize field, buffer strip, small wetland, Diffuse discharge from north, springs with upwelling in south, sandy, anaerobic, little nitrate below field, lots of nitrate in springs

- 10 wells
- ERT, slug tests (K)
- Heads
- Water stable isotopes
- EC, water quality, nitrate
- Stream bed temperature
- Spring fluxes



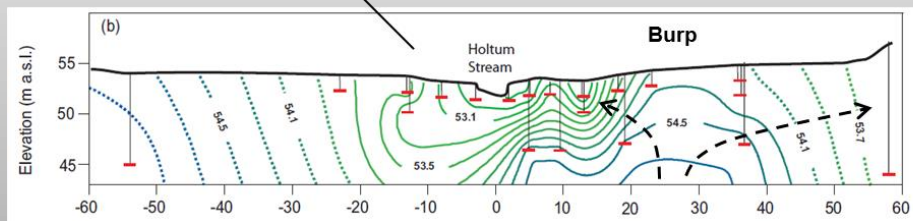
# Evi 1



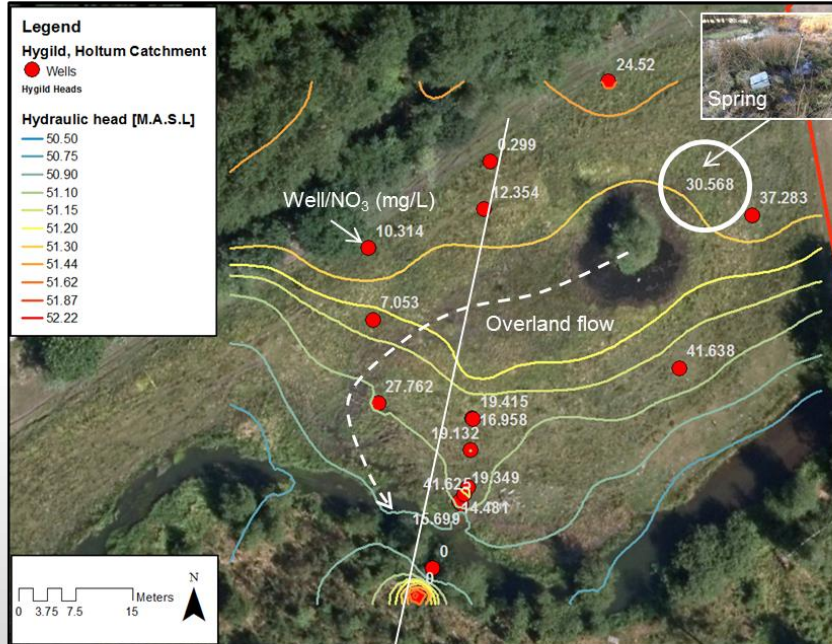
## EVI1 (wetland)

Small wetland draining nearby fields. Highly artesian, “burp” with upwelling to the north. Sandy, aerobic and Anaerobic, some nitrate

- 24 wells
- ERT, slug tests (K)
- Heads, time series
- Water stable isotopes
- EC, water quality, nitrate
- Stream bed temperature



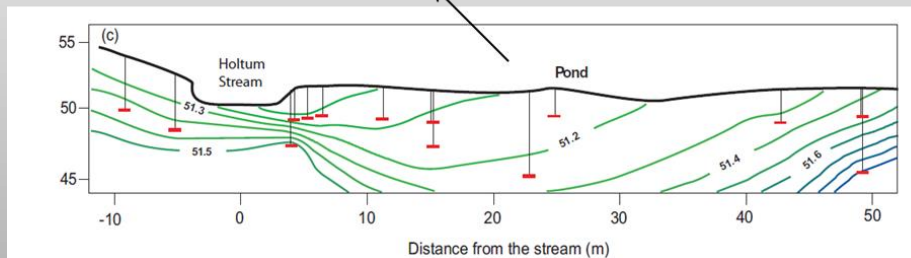
# Hygild – outlet of Holtum catchment



## Hygild (wetland)

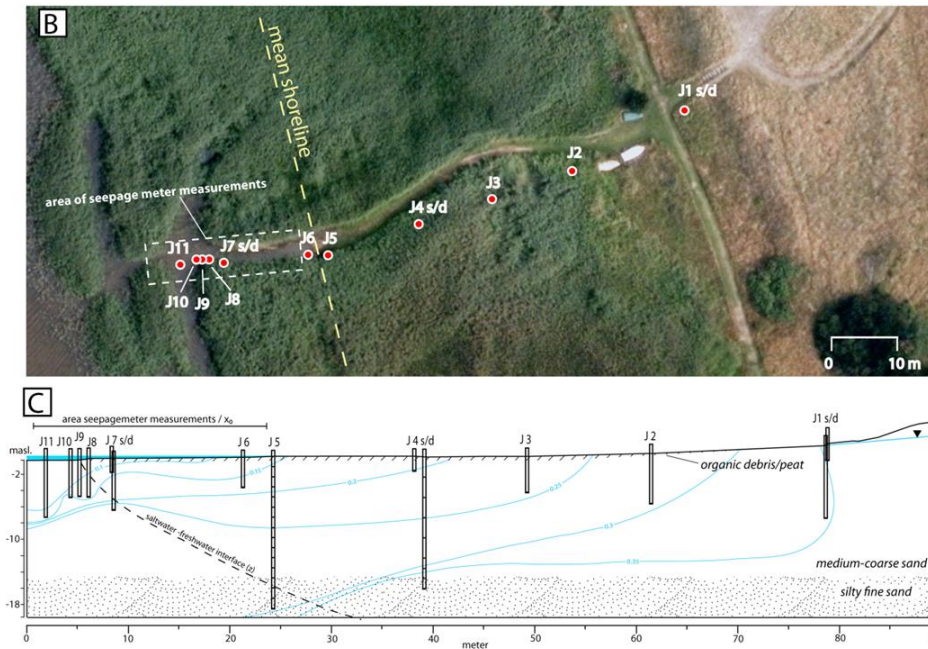
Small wetland draining nearby fields. Upwelling with pond and overland flow. Sandy, aerobic, high nitrate concentrations.

- 17 wells
- ERT, slug tests (K)
- Heads, time series
- Water stable isotopes
- EC, water quality, nitrate
- CFC apparent ages
- Stream bed temperature





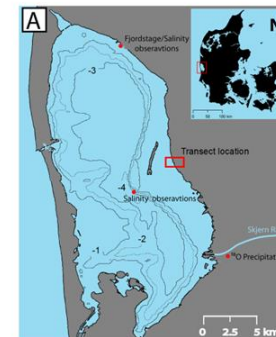
# Lagoon



## Ringkøbing Fjord

Coastal lagoon near summer houses, brackish, sandy, anaerobic, some nitrate

- 17 wells
- ERT, slug tests (K)
- Heads, time series
- Water stable isotopes
- EC, water quality, nitrate
- Lagoon bed temperature
- Seepage





Always local interest

