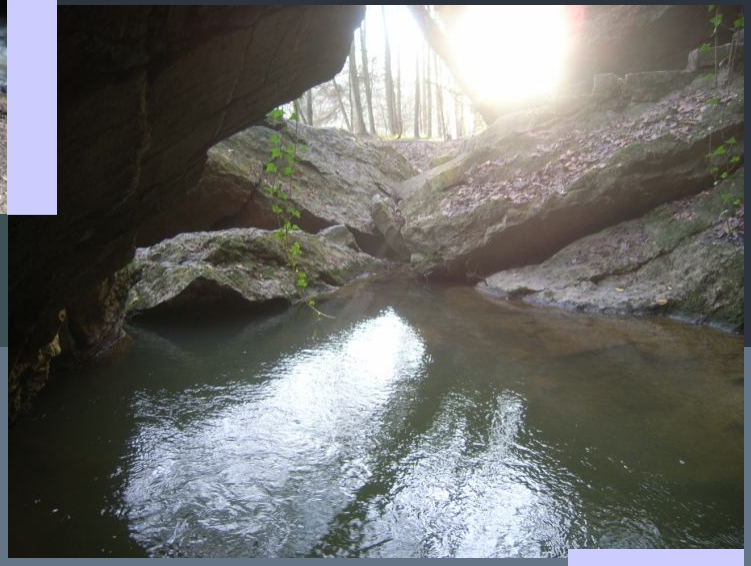
Ministère de la Région wallonne
Direction générale des Ressources naturelles et de l 'Environnement
Direction des Eaux souterraines

The carboniferous limestones aquifer between Flanders, France and Wallonia

Ph. Meus

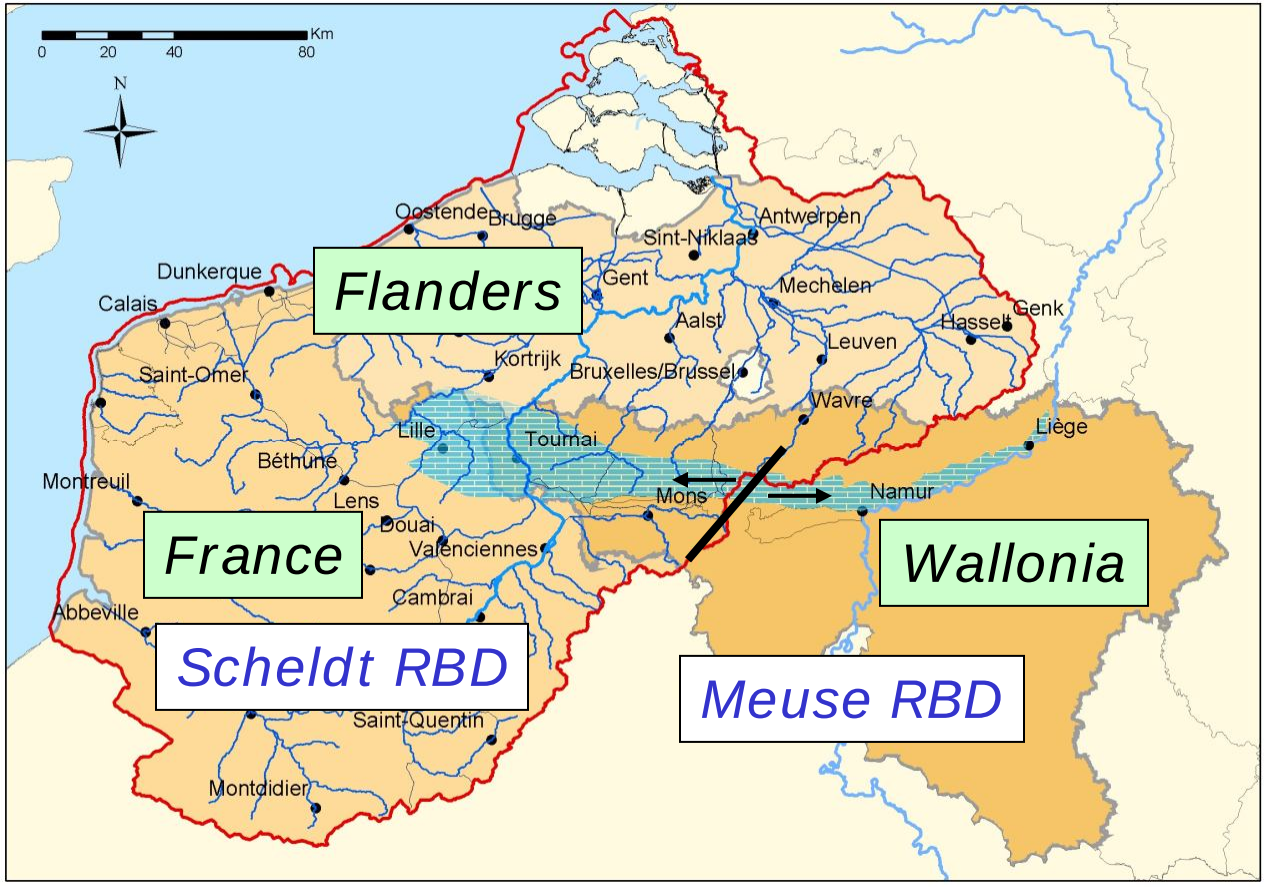


UNESCO, Paris
29-30 mai 2007

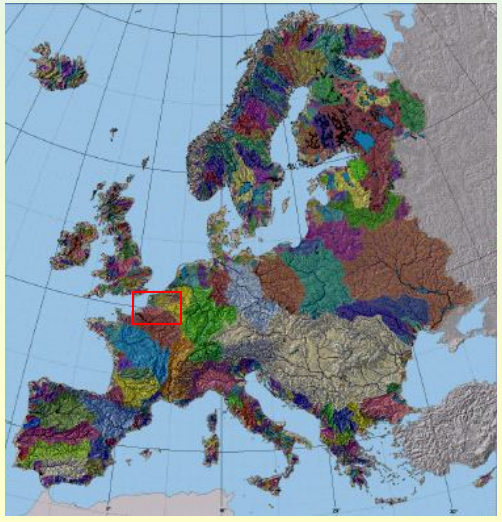
Content

- situation
- history: from natural to anthropogenic
- the « awakening »
- since the WFD…
- how it works, do we know?
- the lifeblood of management

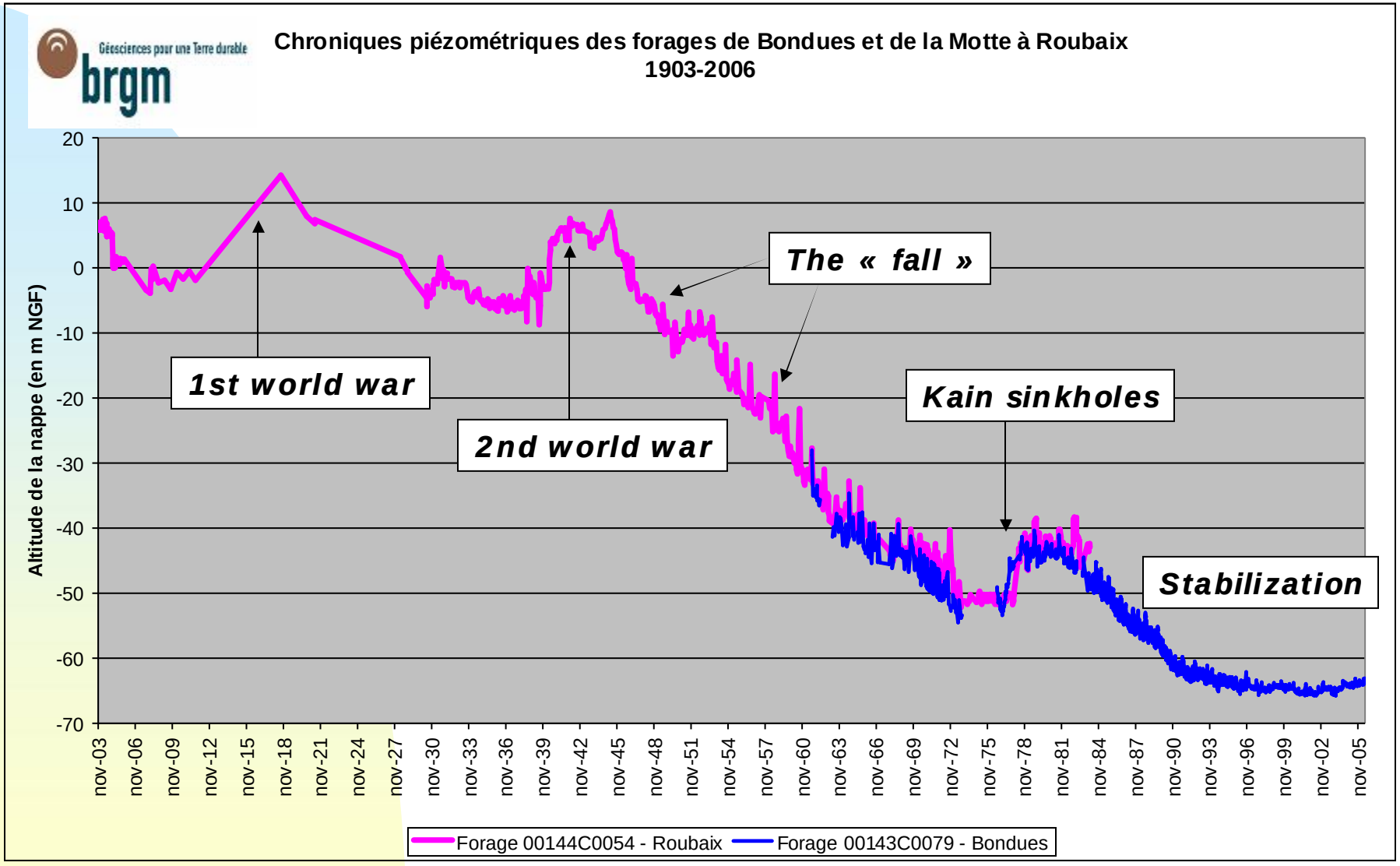
Extension and sharing of the aquifer



Data: DGRNE- ISC

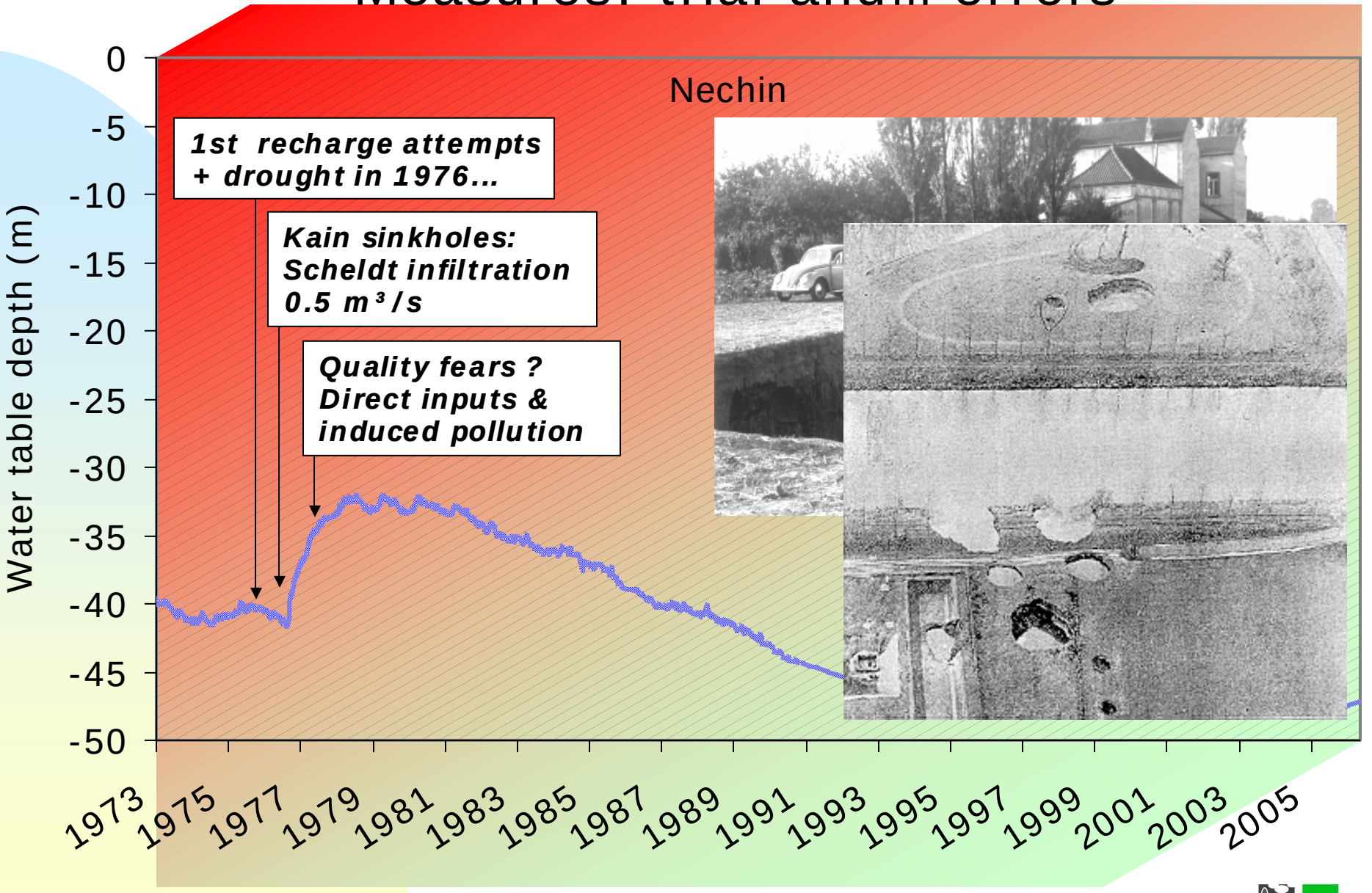


History of overexploitation

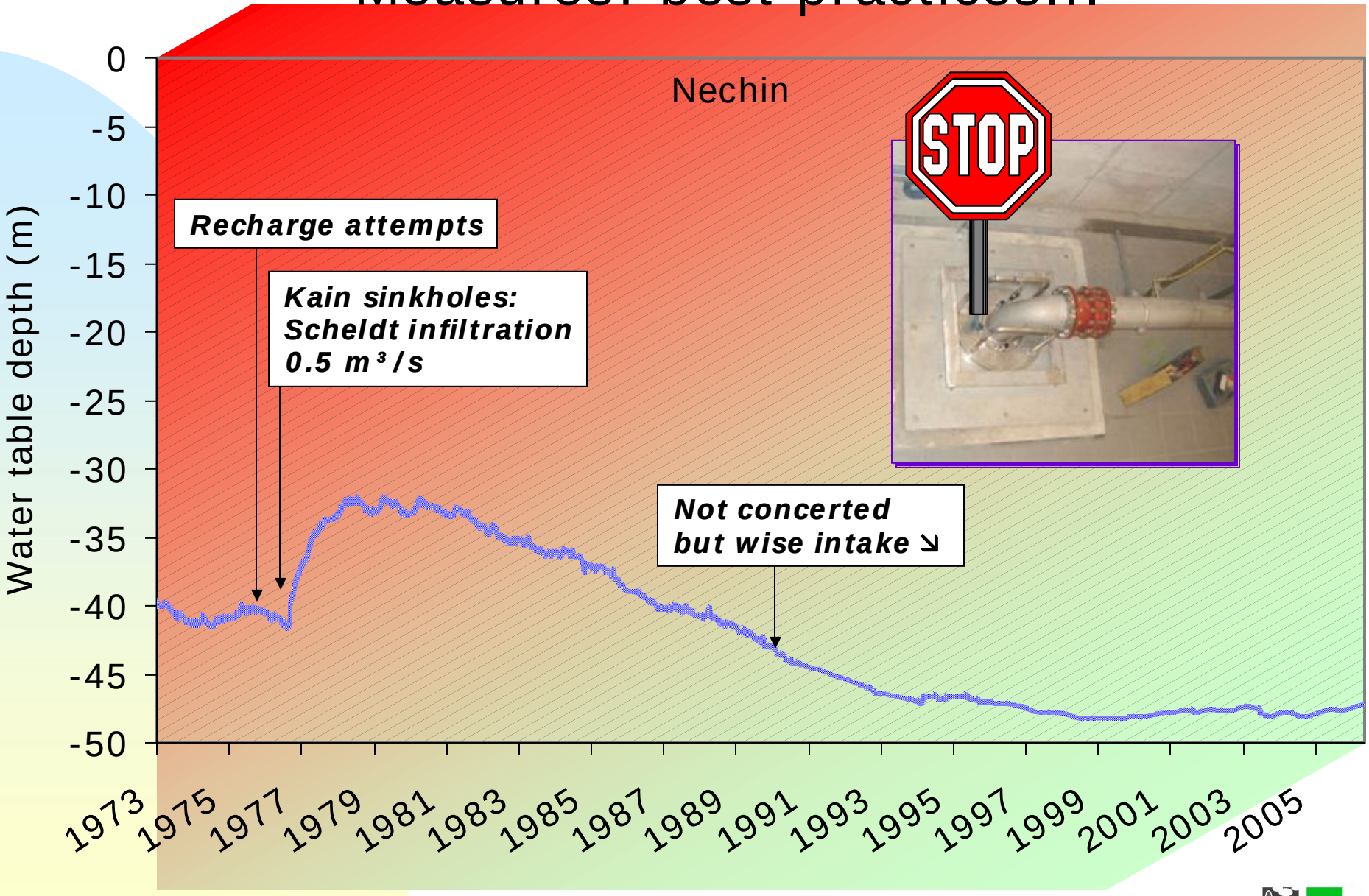


-> piezometry = resources health indicator

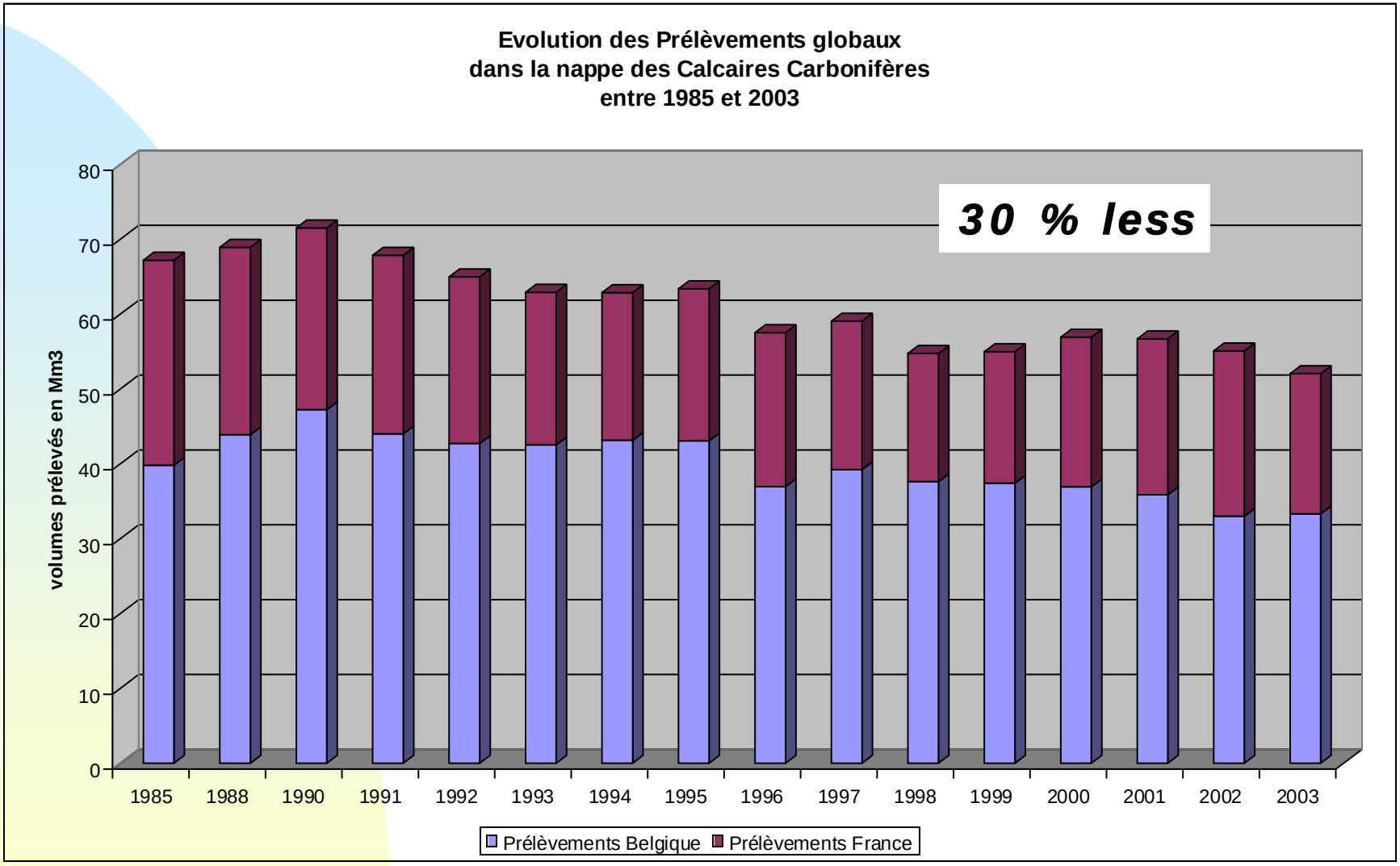
Measures: trial and... errors



Measures: best practices...

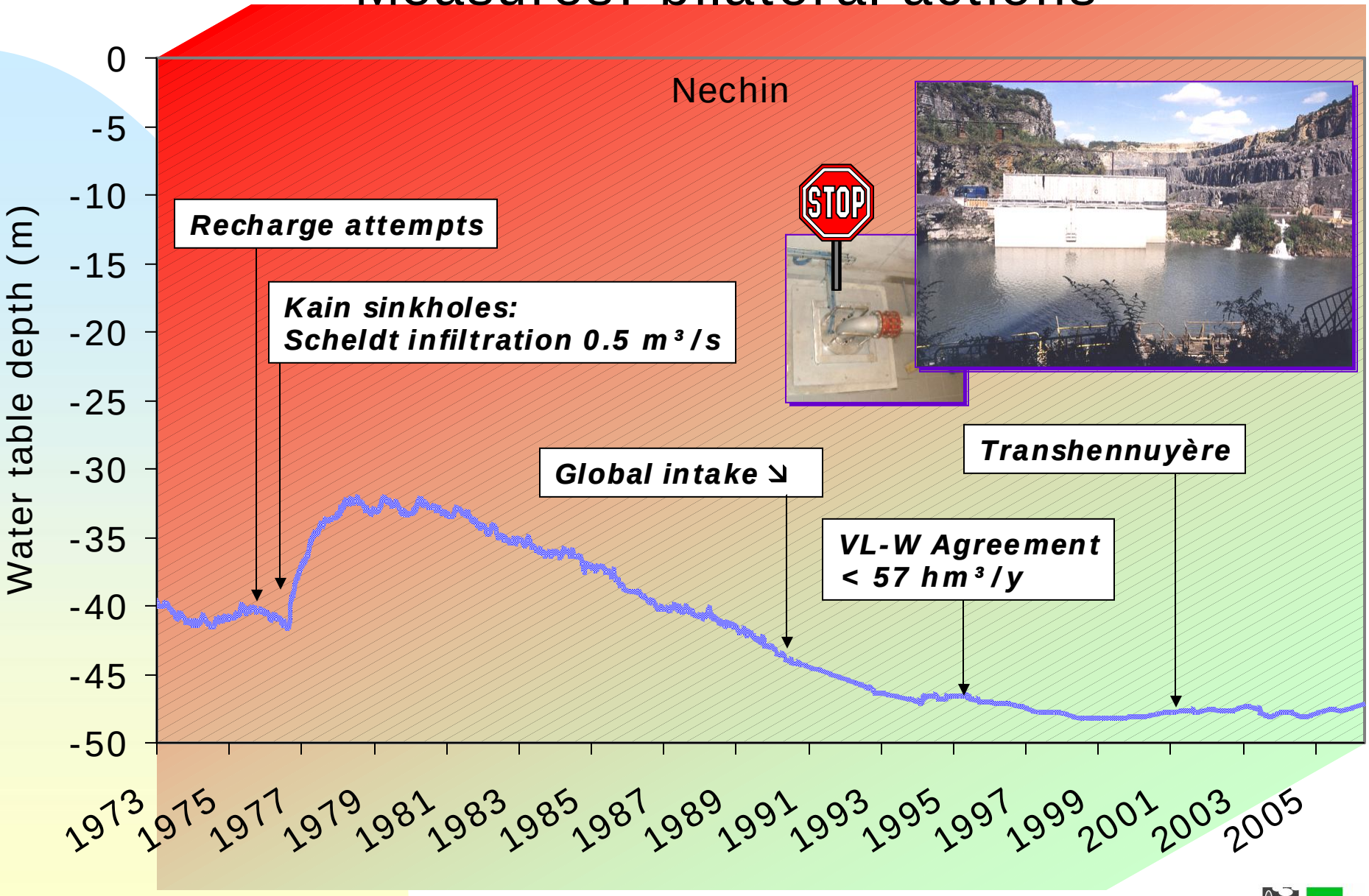


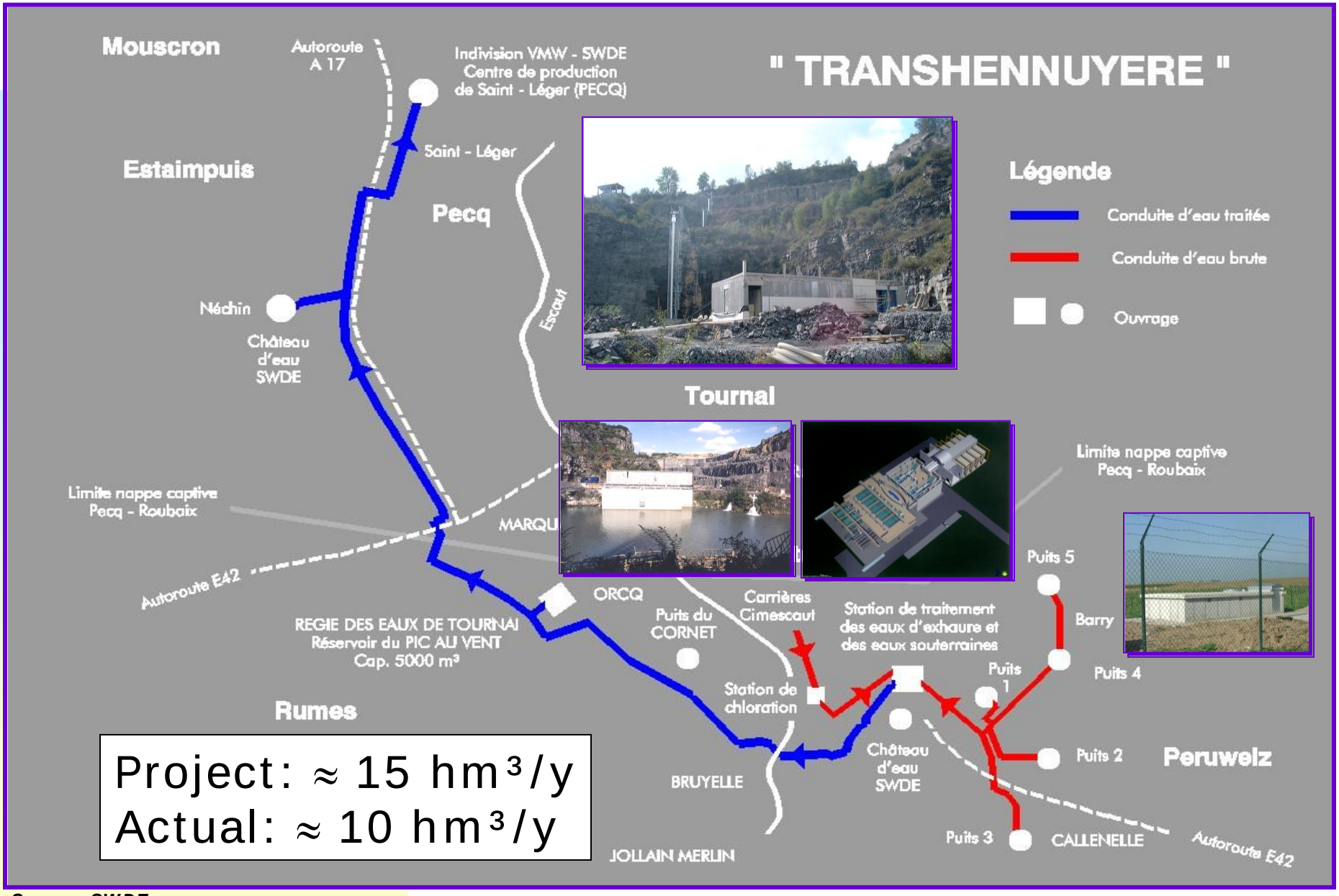
Measures: intakes reduction



Data: DGRNE-FPMs-BRGM

Measures: bilateral actions

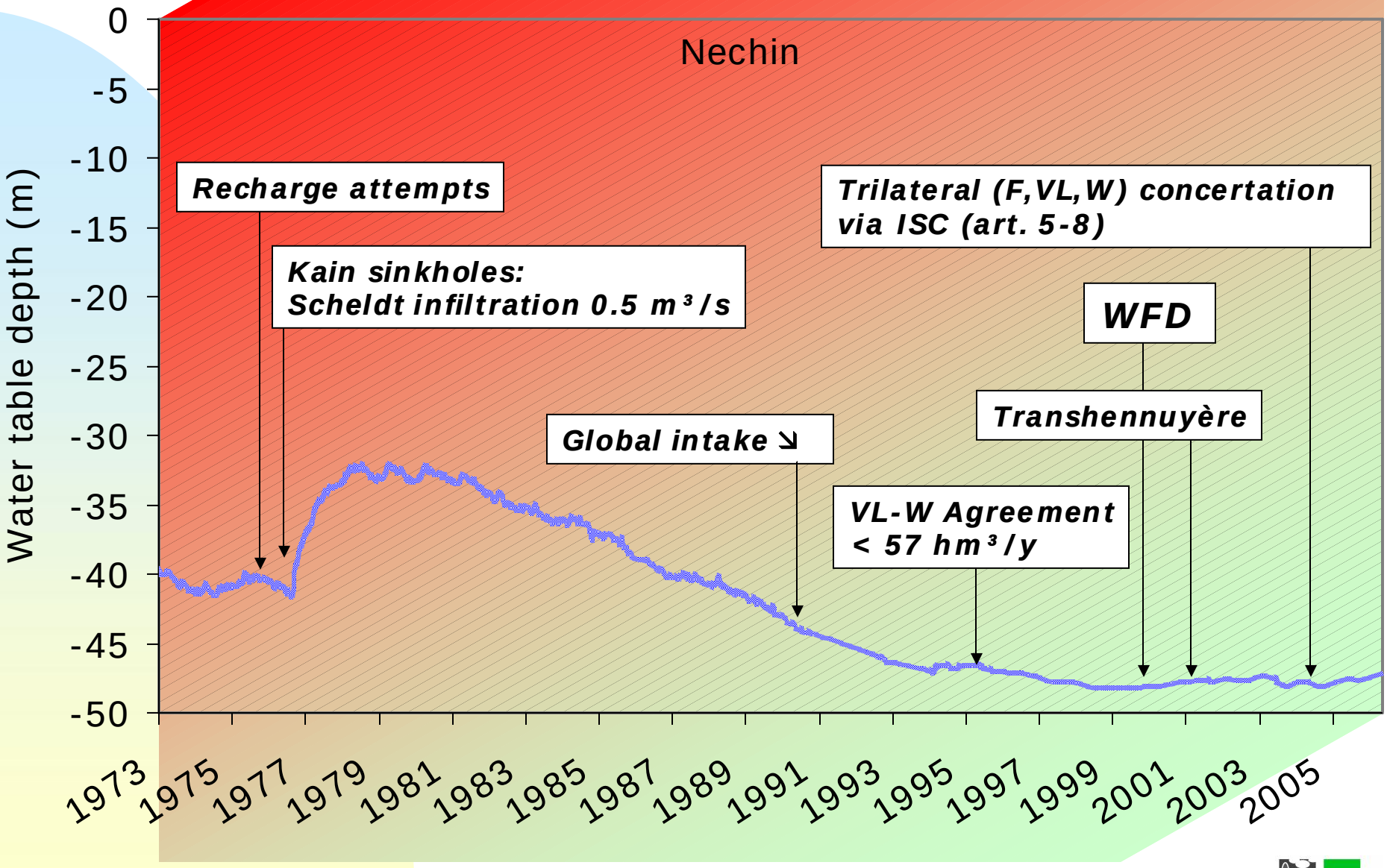




Project: ≈ 15 hm³/y
Actual: ≈ 10 hm³/y

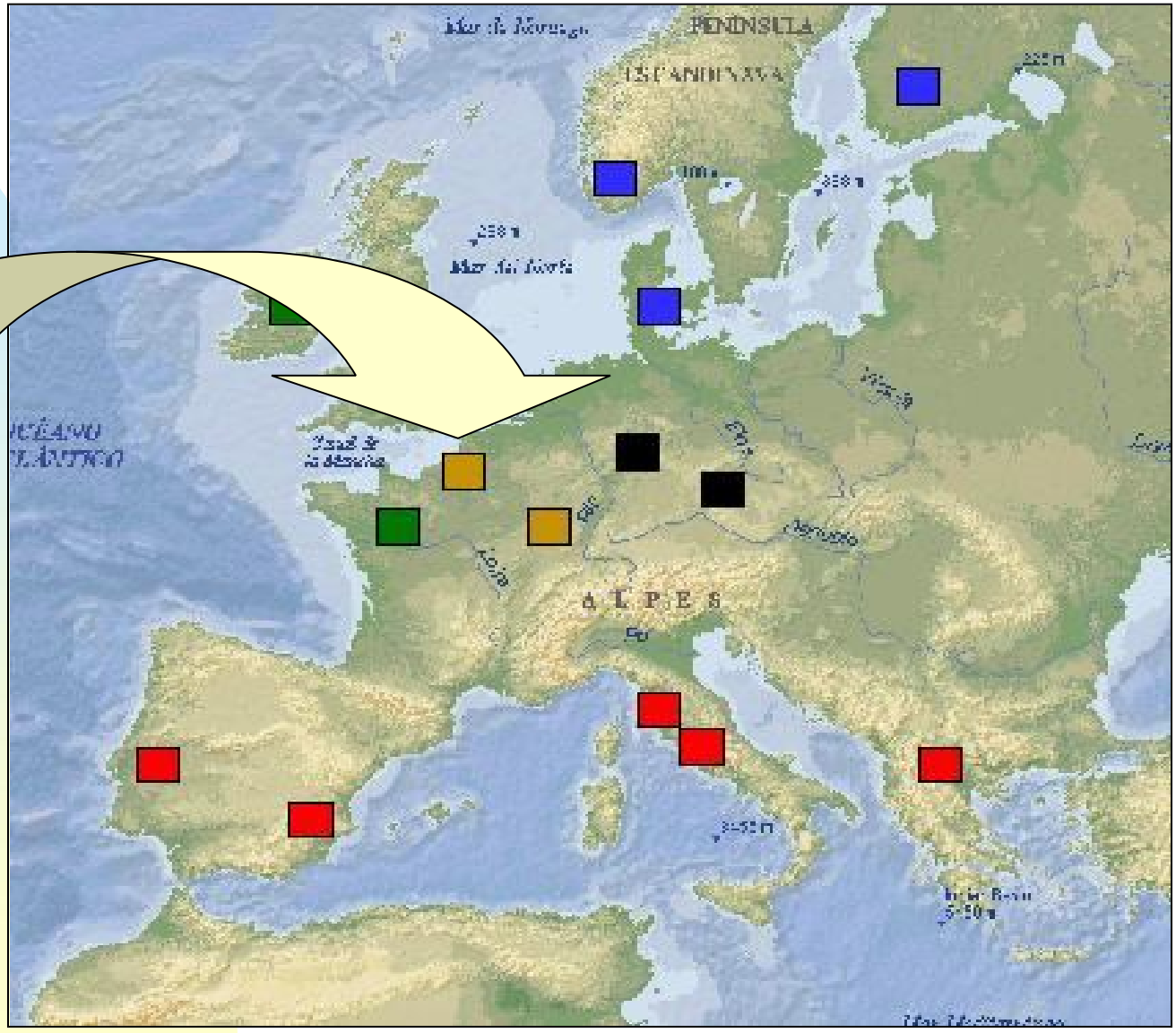
Source: SWDE

WFD era begin = a stimulation

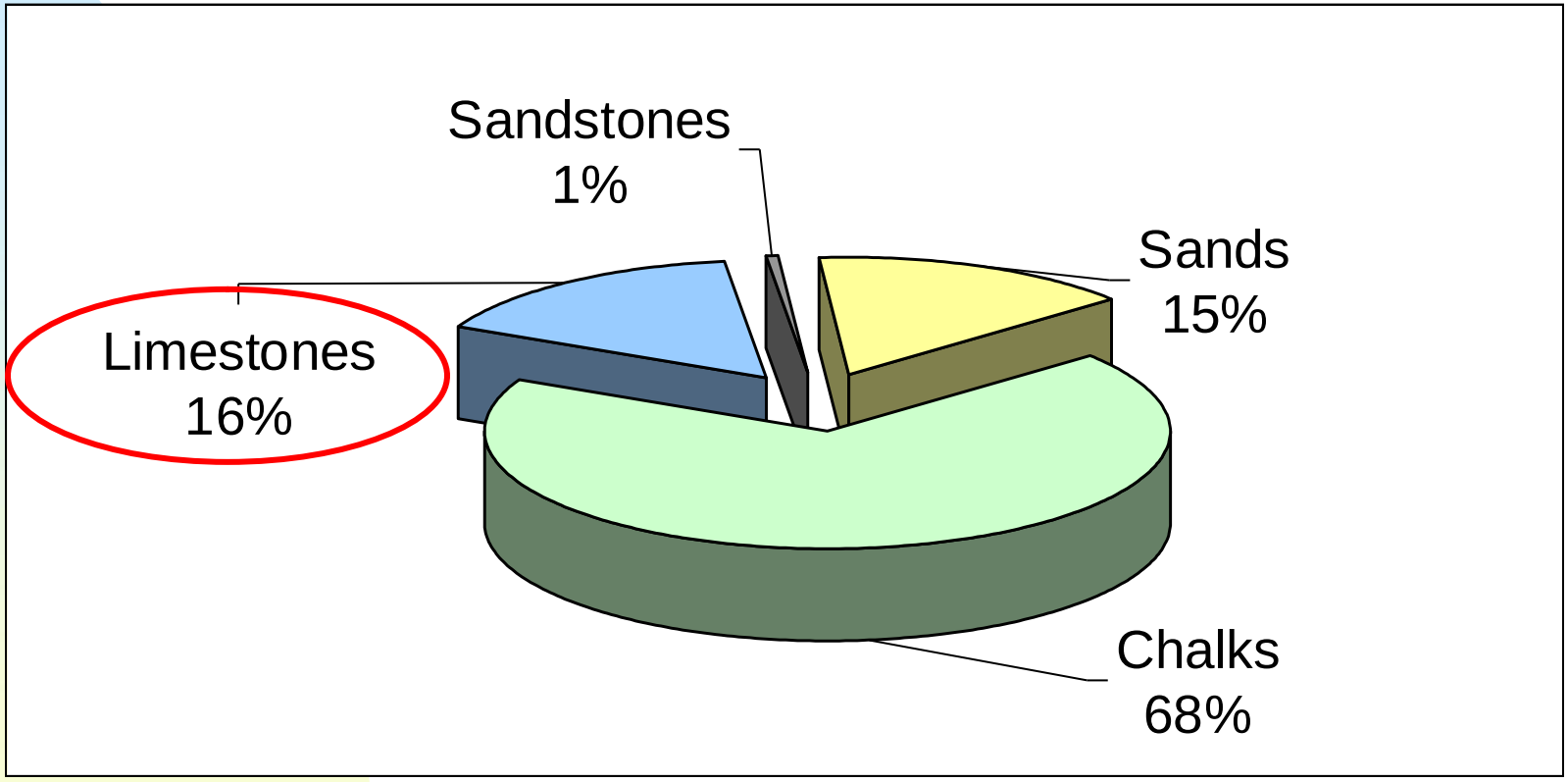


Scheldt RBD transboundary + international = PRB

CIS PRBs

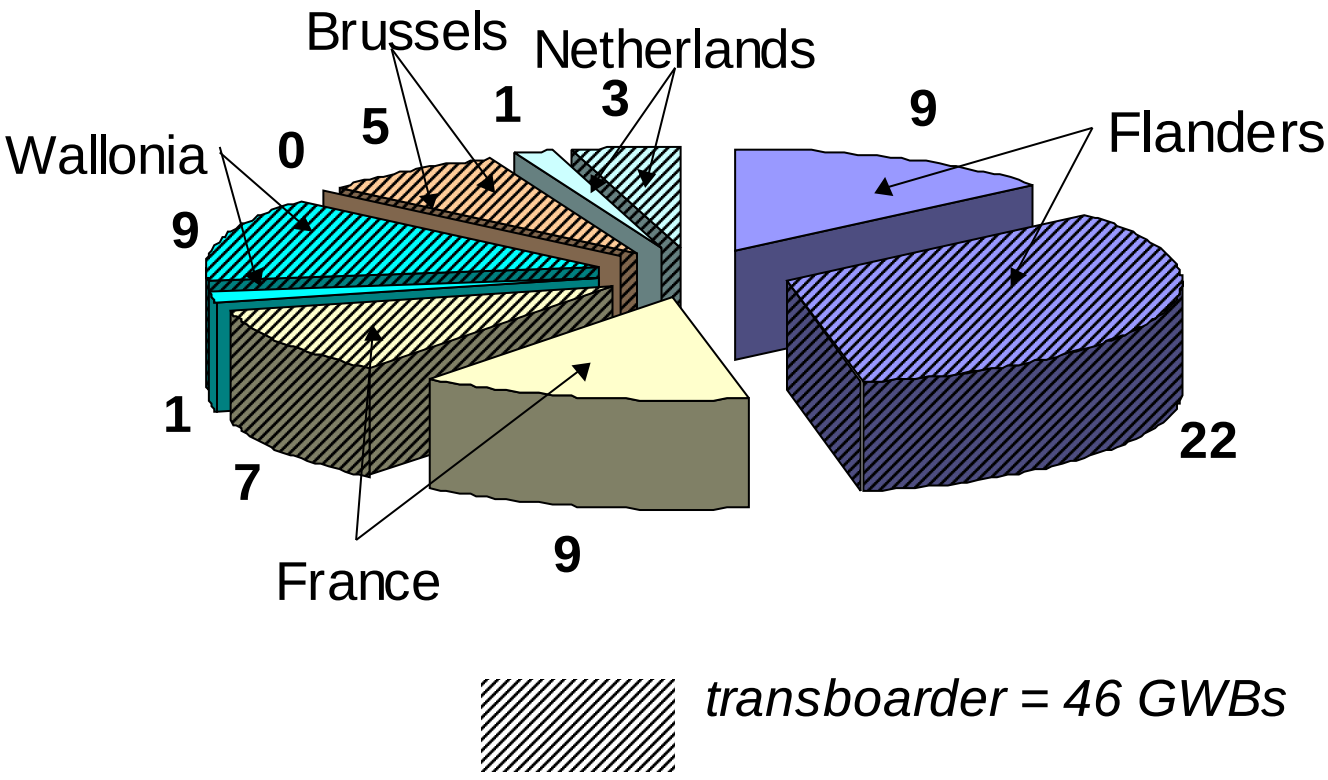


Carboniferous limestones aquifer as a major resource for DW in the Scheldt RBD



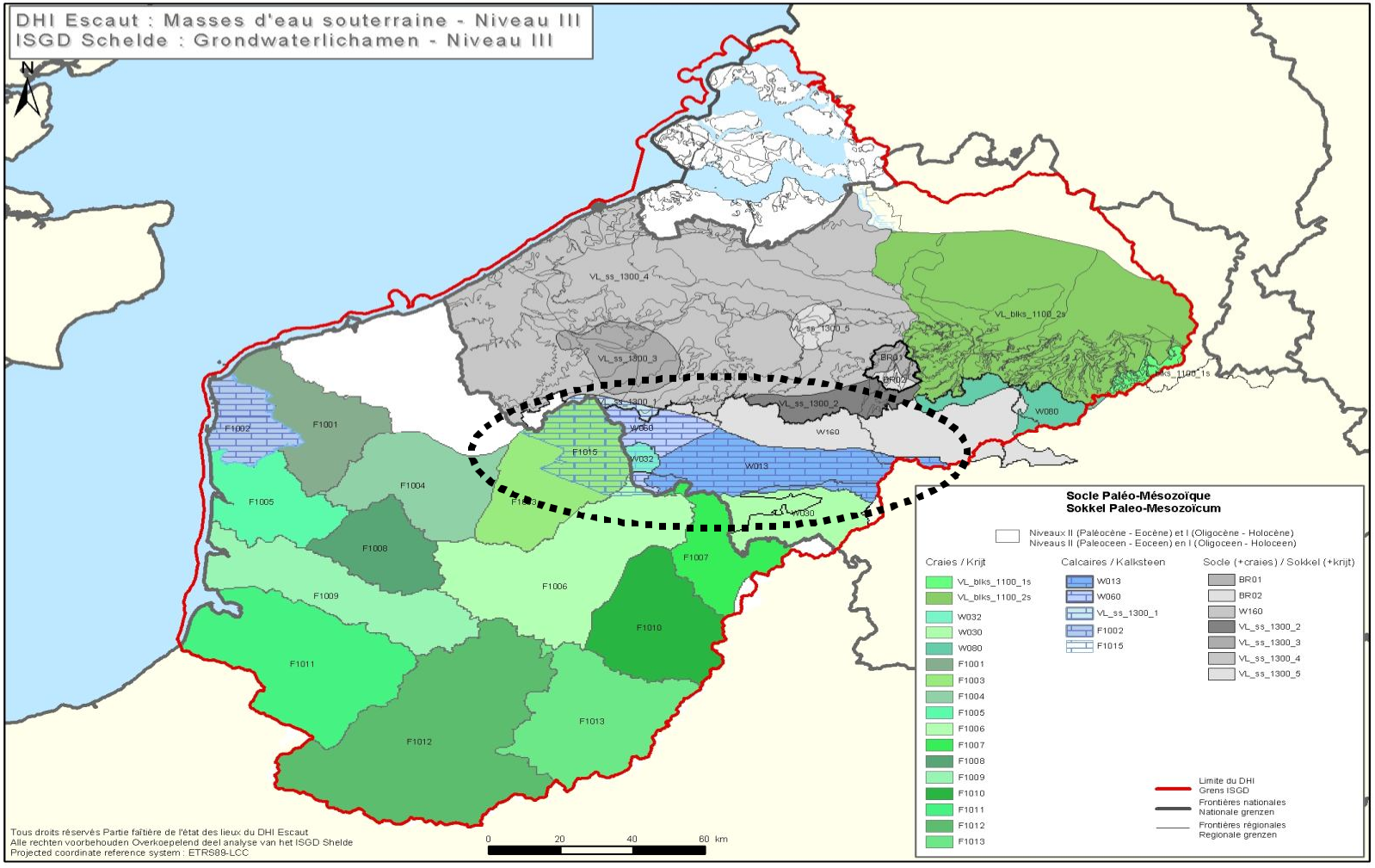
Data: DGRNE- ISC

Management units are Groundwater Bodies GWBs -> 66 units for whole district



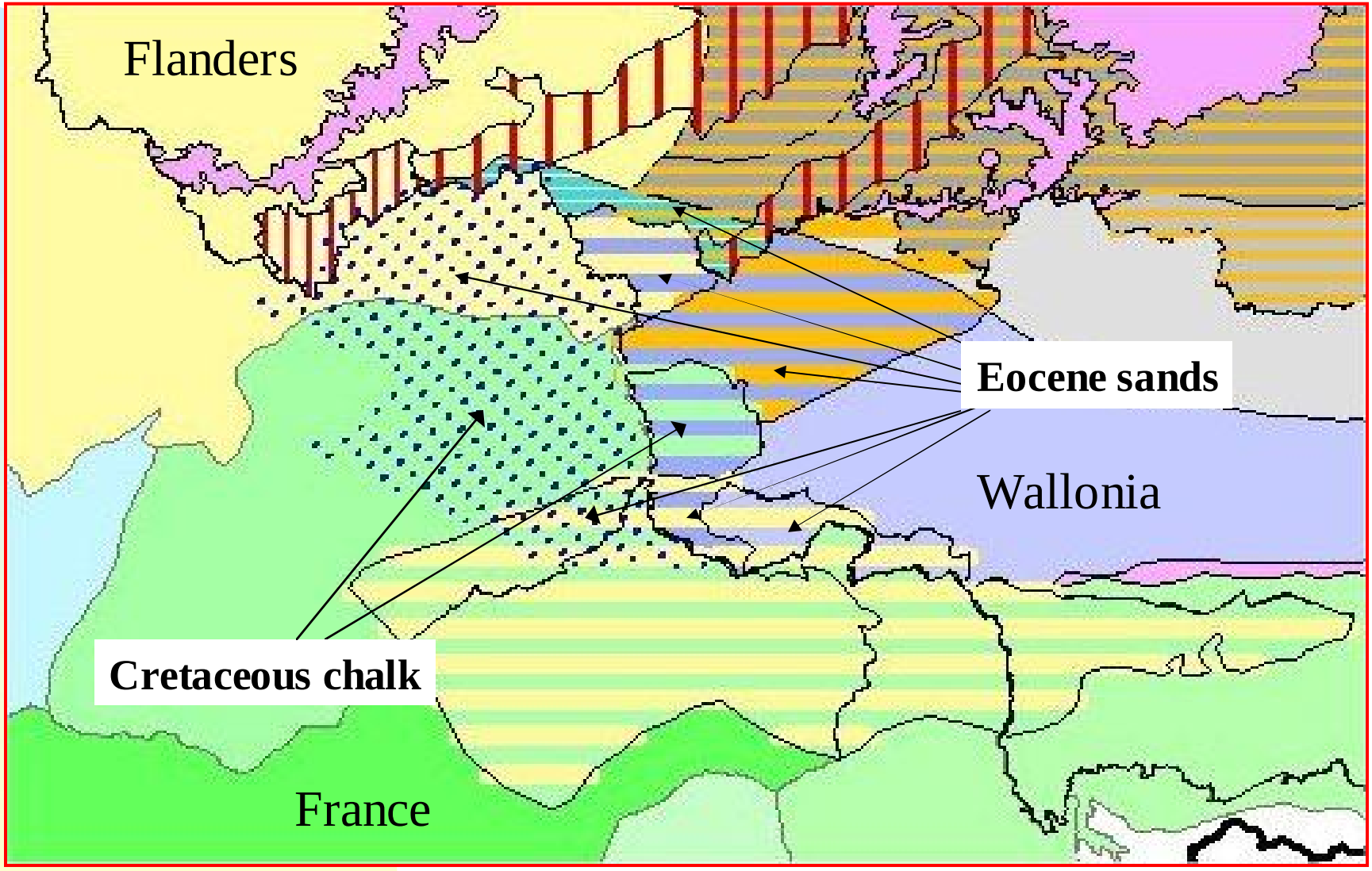
Data: DGRNE- ISC

Carboniferous limestones aquifer shared between 4 GWbs in the Scheldt district



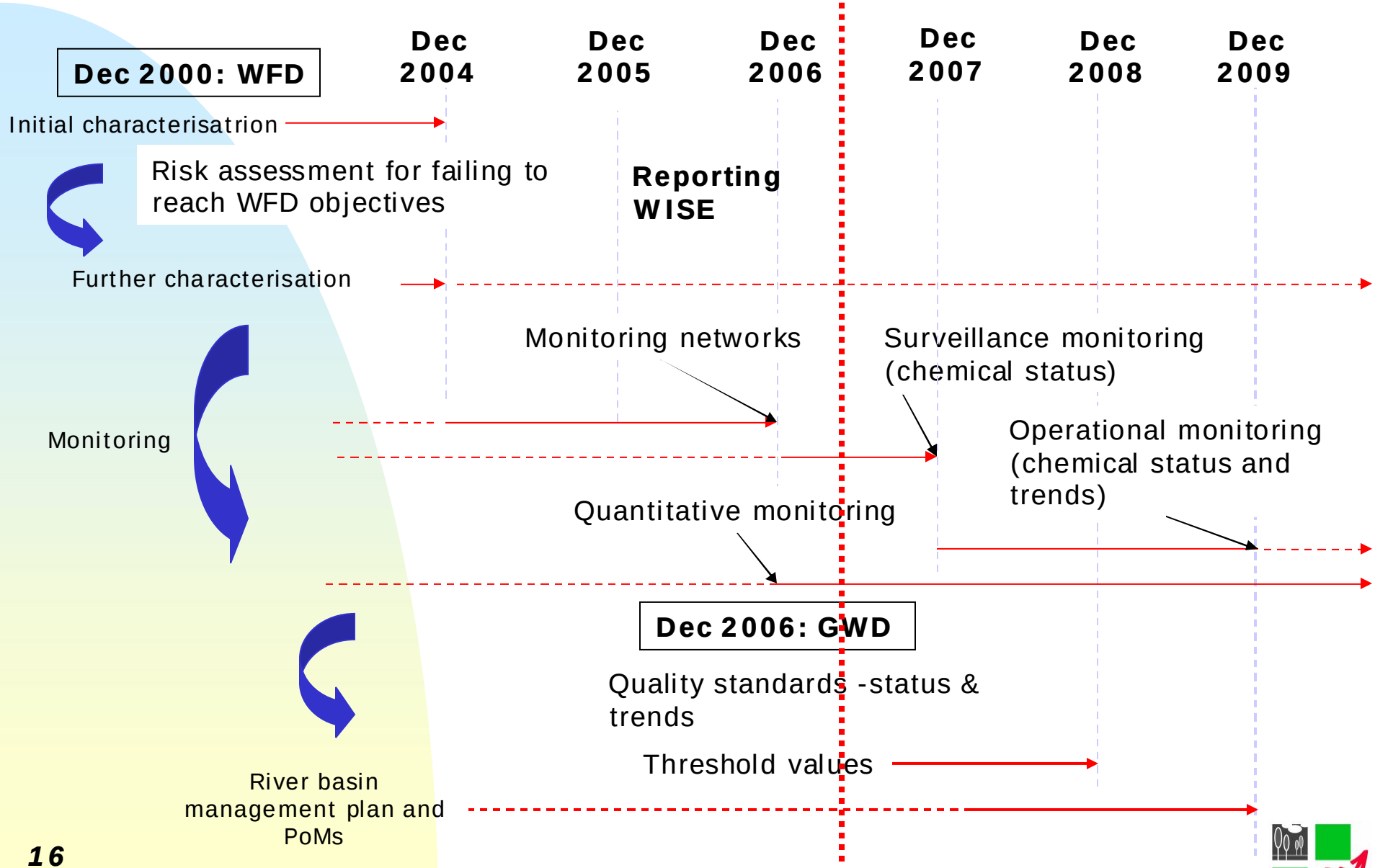
Data: DGRNE- ISC

Covering GWBs also concerned

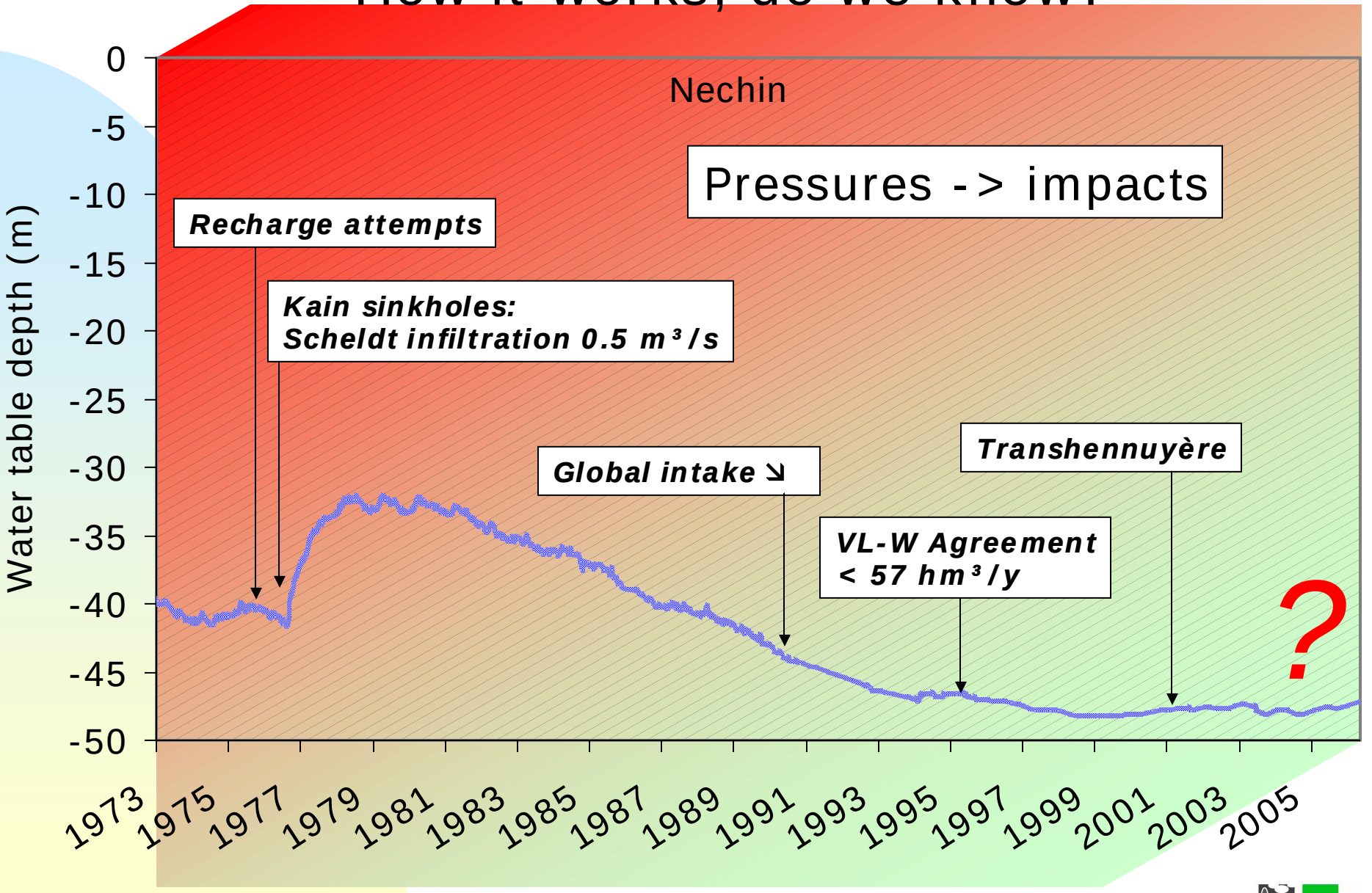


Data: DGRNE- ISC

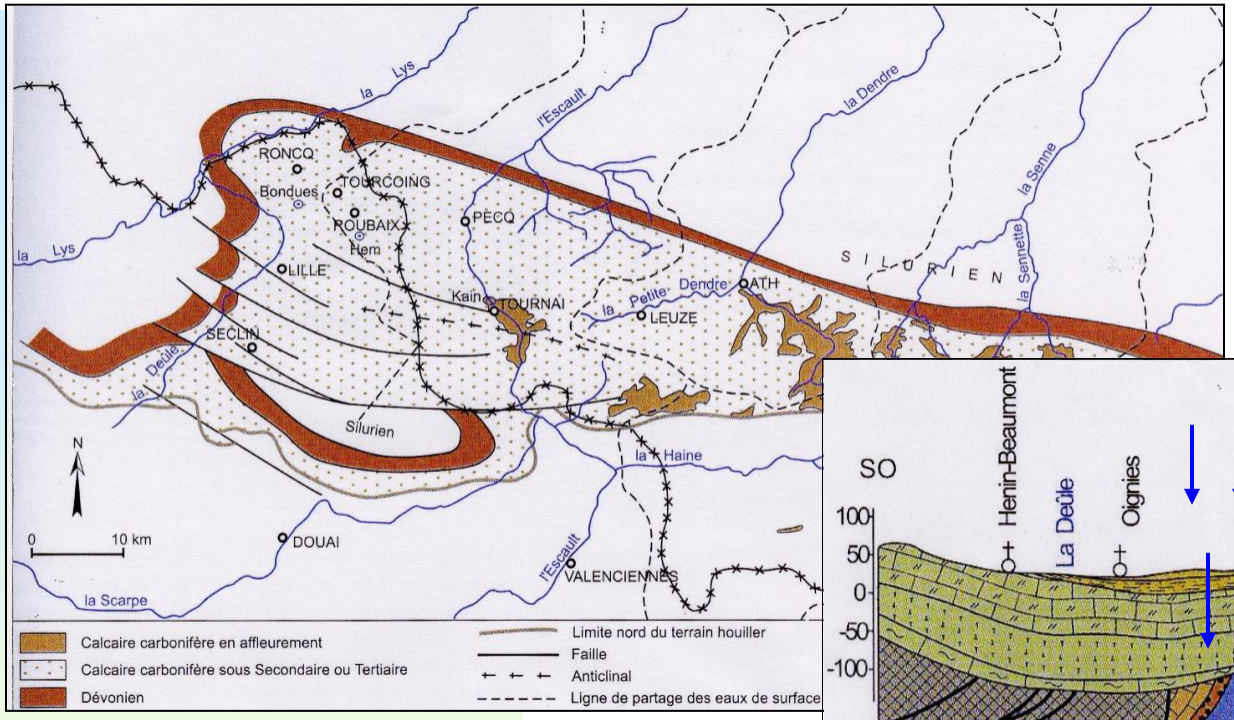
WFD implementation board



How it works, do we know?

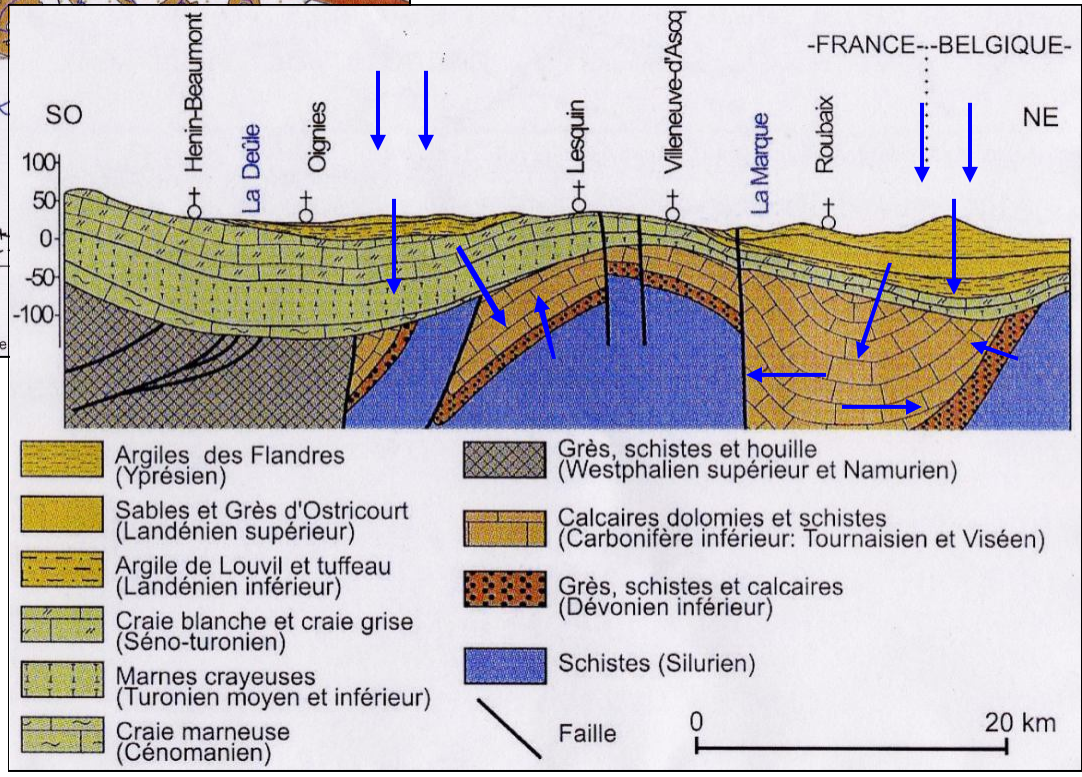


A complex heterogeneous reservoir

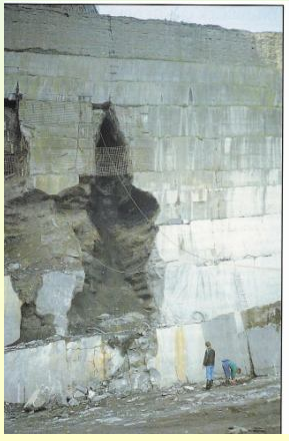


After Youssof, 1973

P = 600-700 mm
Effective ≈ 200 mm
But recharge?

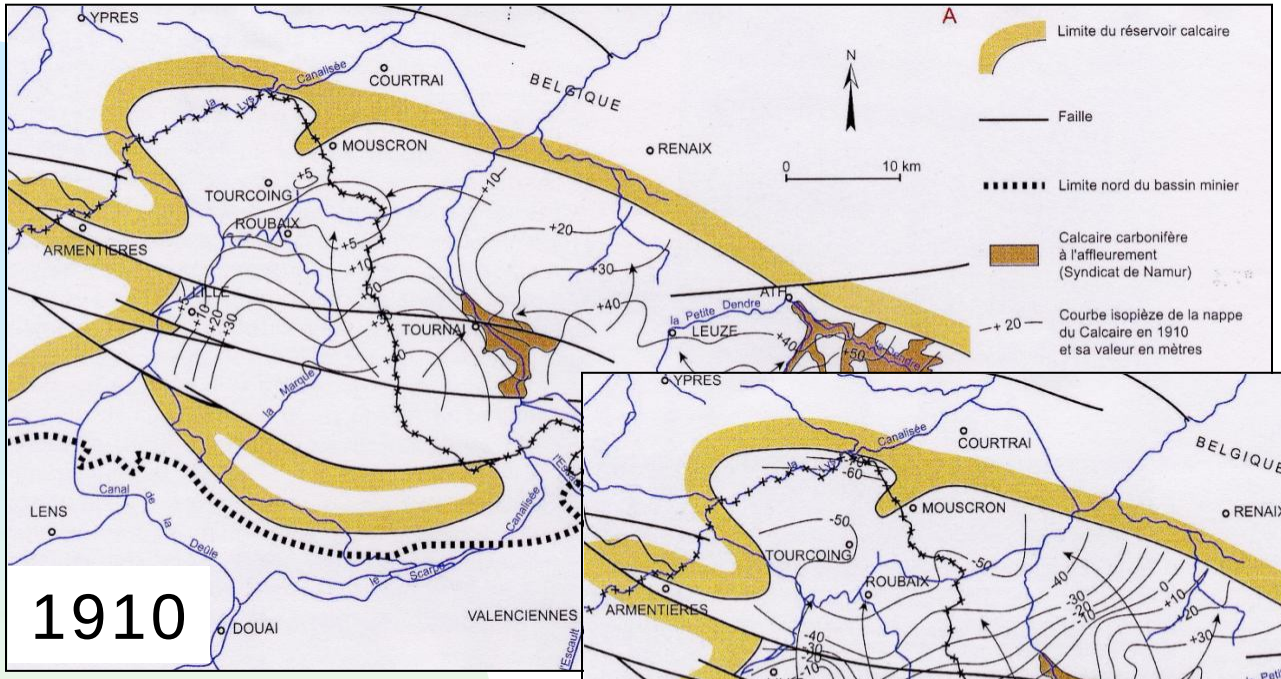


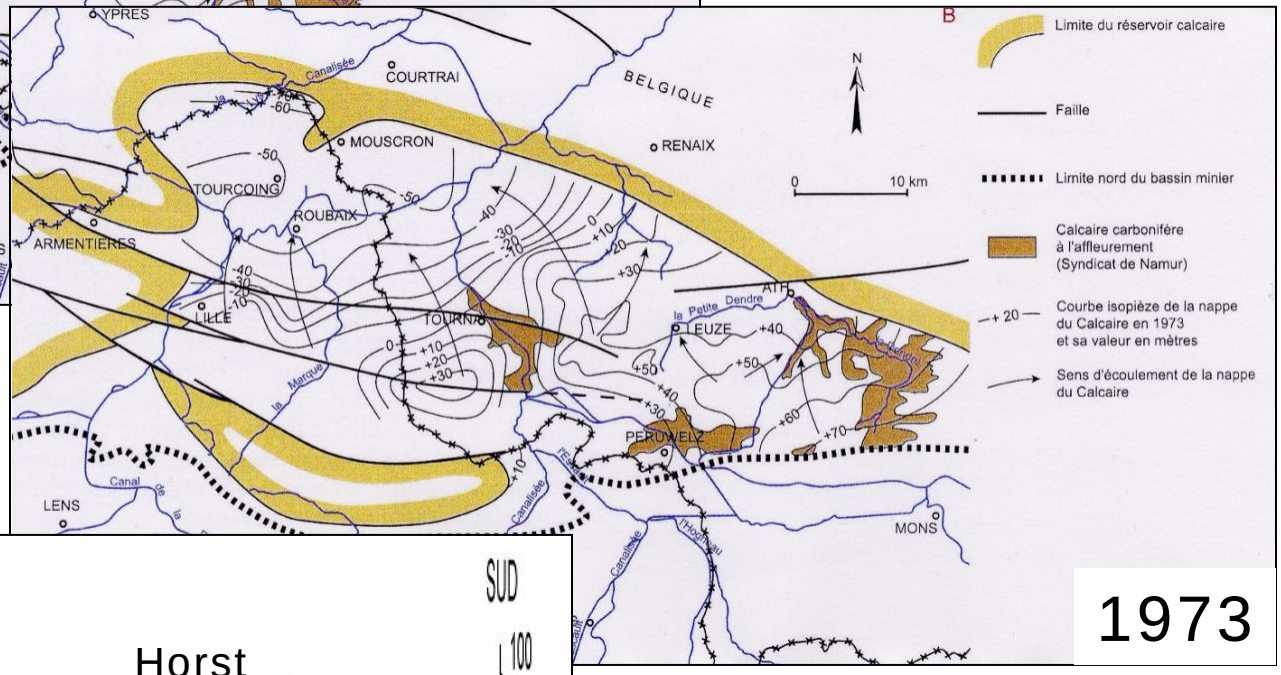
After J. Beckelynck et al., 1983



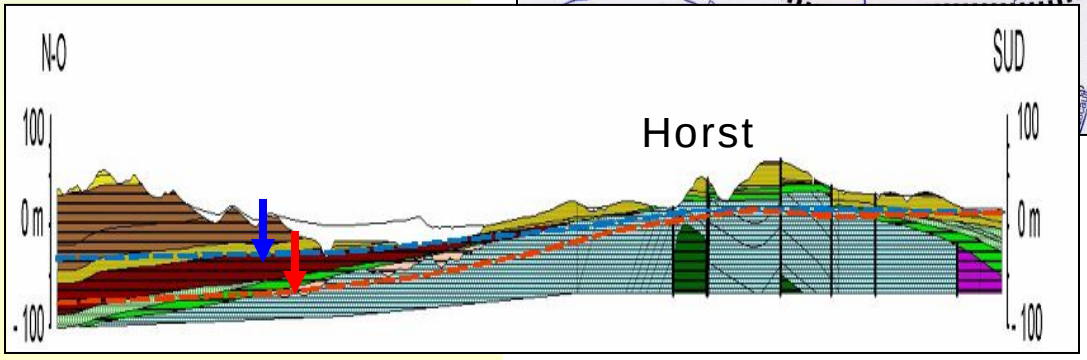
With unpredictable role of karstic flows…

With « capricious » water table…



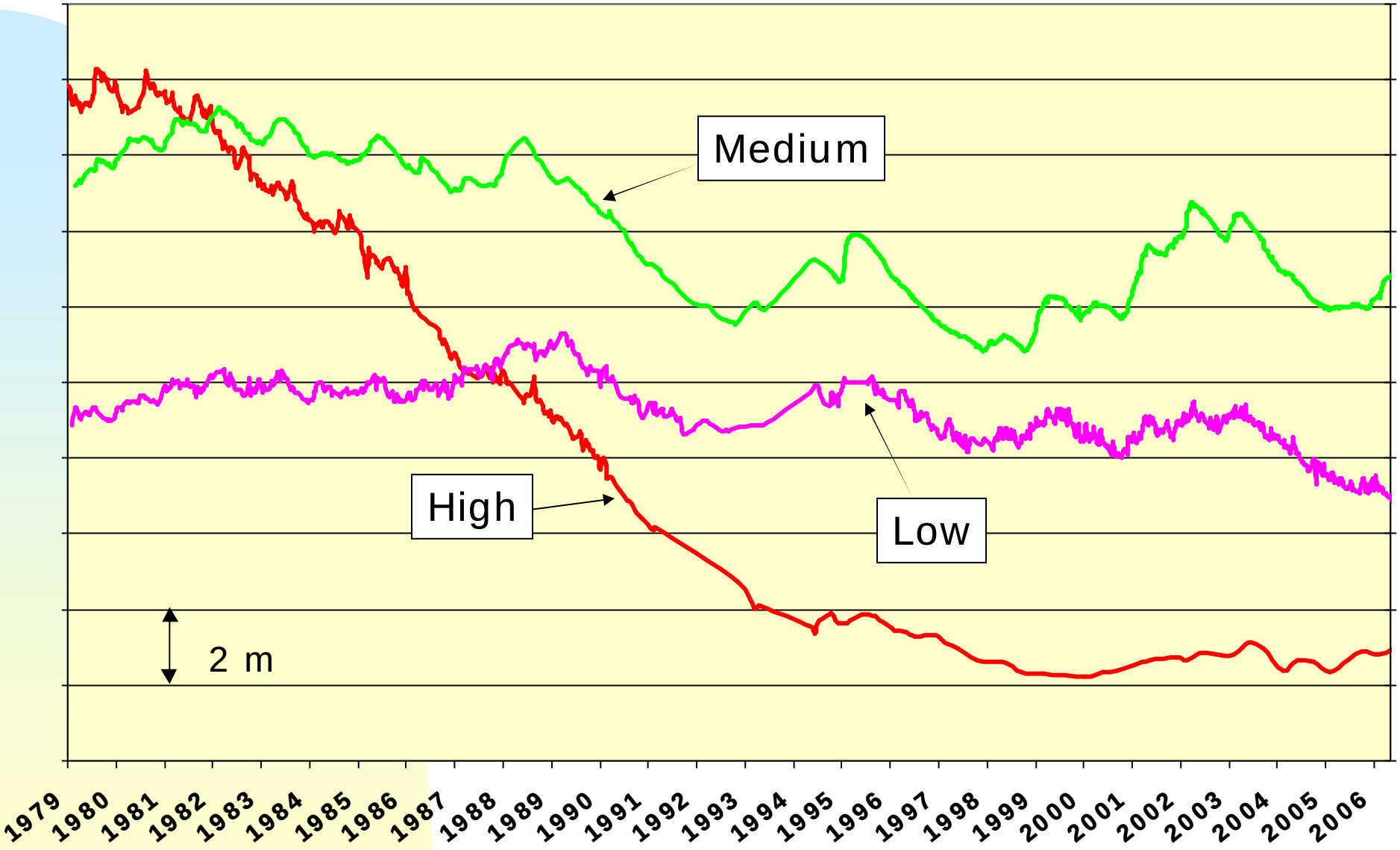


After J. Beckelynck et al., 1983

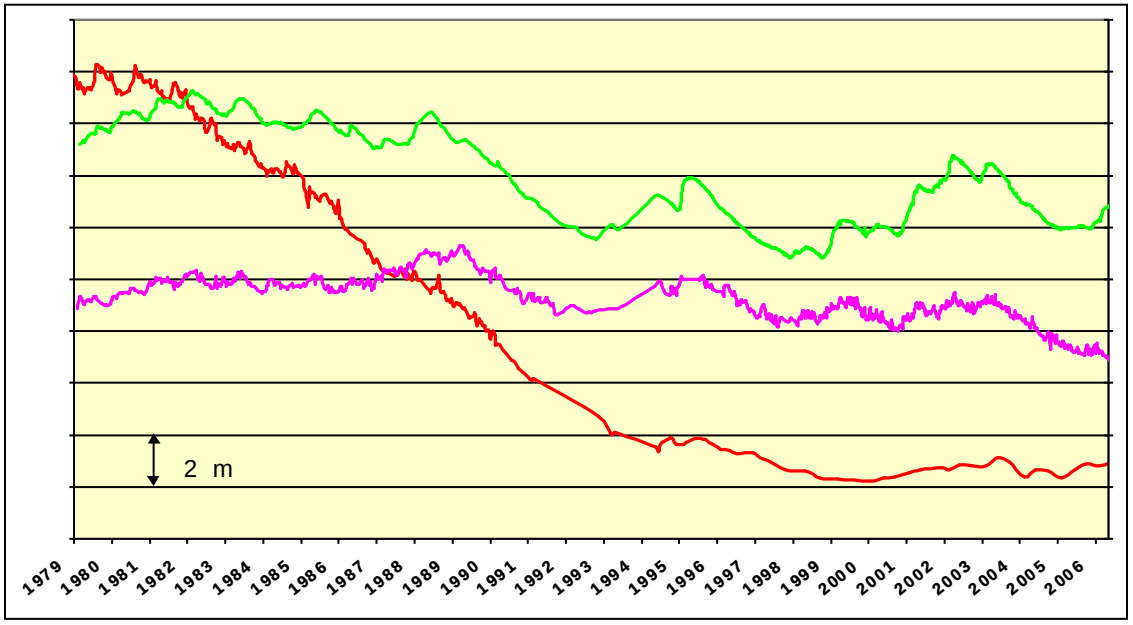


Source: FPMs-BRGM

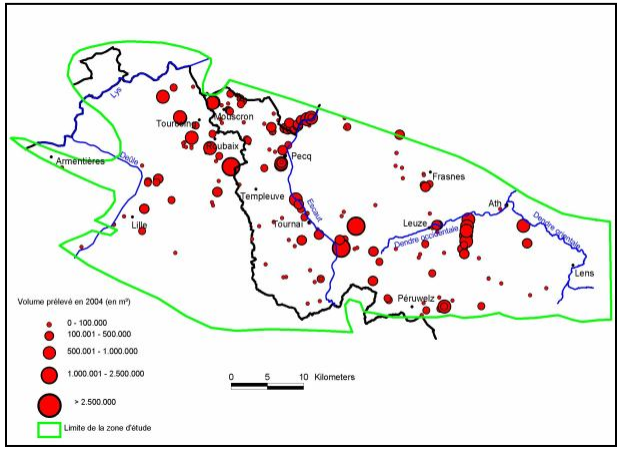
Piezometric time series responses



Local piezometry/recharge depends on:

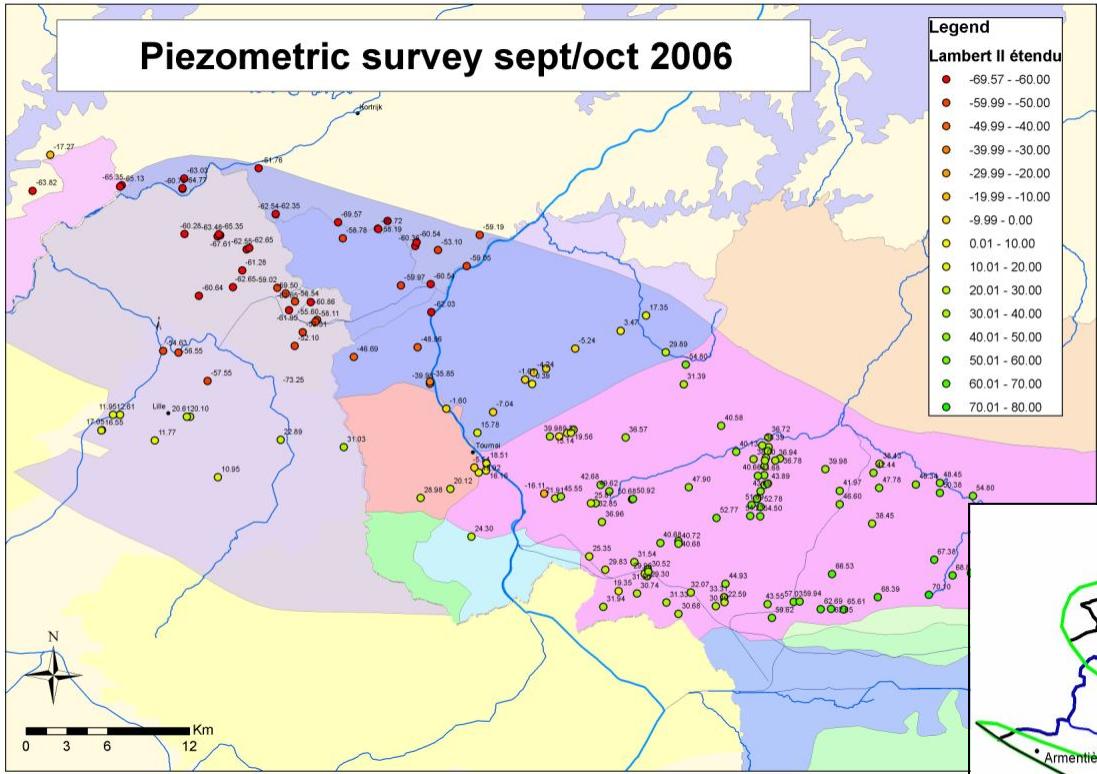


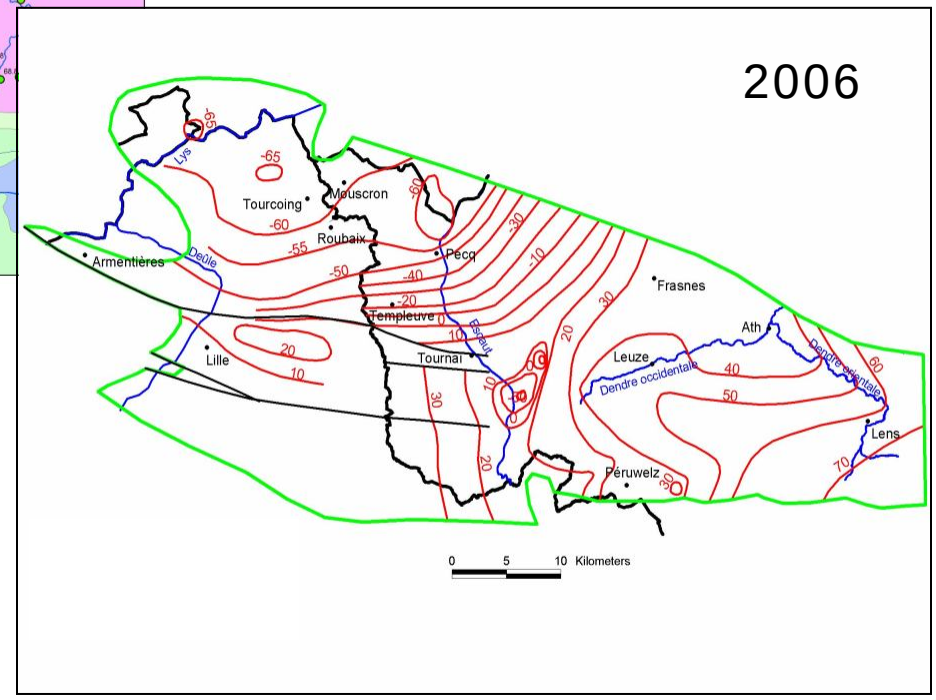
- climate
- cover
- confinement
- depth
- hydraulic conductivity and storage in surroundings
- distance to karst conduits
- sinkholes/distance from Scheldt
- distance/yield of catchments

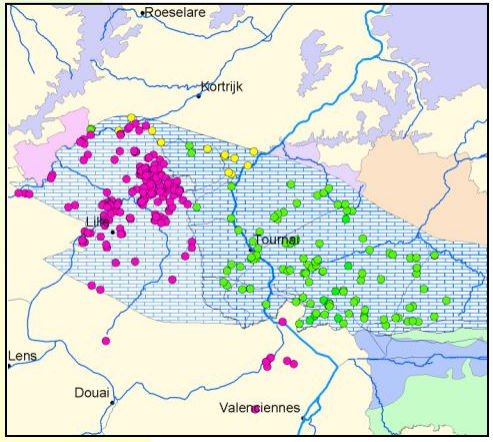


...and any variation in time!

Monitoring coordination







Data: DGRNE- ISC- FPMs- BRGM

And coordinating soon…

- further characterisation of reservoir structure and functioning (space/time scales, flows, chemical impacts, hydrogeological methods…)
- definition of quantitative status:

  → requires a space/time approach with a good definition of compliance points, space averaging and trend rules (several attempts using time series decomposition, annual statistics…)
- monitoring networks (recharge, water table, intakes, chemistry…)
- measures (short/long term)

For a better tuning of our transboundary resources...

Thanks for attention!