



# New methods for chemical monitoring under the WFD



# Laboratory based portable instruments

## PASTEL UV – SECOMAM

**Principle** : UV spectrophotometer

**Parameters** : SPM, COD, BOD, TOC, NO<sub>3</sub>

**Characteristics** :

On site (need sampling)

Direct measurement (no sample treatment)

Response time : 5 minutes

Cost of the instrument: 6700 €

**Application** : evaluation of a point source pollution plume,  
selection of representative sites, investigative monitoring

## Example of Results :

Rezekne downstream  
4.10.2005

SPM 54 mg/l

COD 10.2 mg/l

BOD 4.1 mg/l

TOC 2.9 mg/l

NO3 12.9 mg/l



# Laboratory based portable instruments

## Kit Spectroquant – MERCK

**Principle** : Colorimetry, spectrophotometer

**Parameters** : NH<sub>4</sub>, NO<sub>3</sub>, PO<sub>4</sub>

### **Characteristics** :

On site (need sampling)

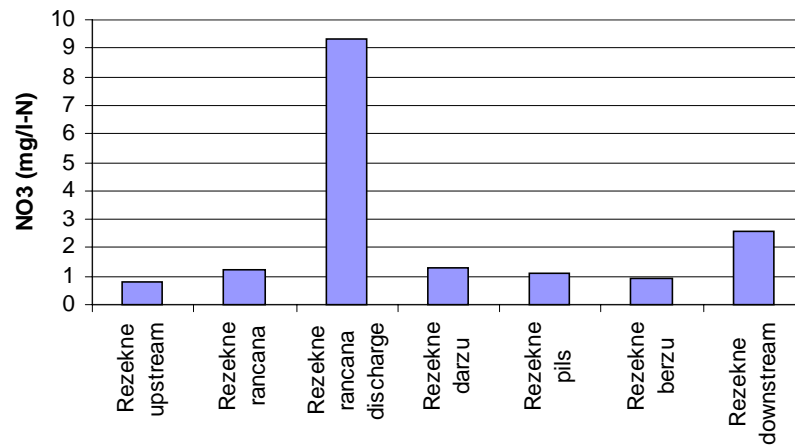
Chemical reaction (colour)

Response time : 10 - 20 minutes

Cost of the instrument: 2000 - 3000 €

Cost of the kits (for 25 analysis) : 85 €

**Application** : evaluation of a point source pollution plume,  
selection of representative sites, investigative monitoring



# Laboratory based portable instruments

## SPE electrodes – PalmSens

**Principle** : Voltametry (SWASV) using disposable screen printed electrodes – University of Florence

**Parameters** : Zn, Cu, Cd, Pb

### **Characteristics** :

On site (need sampling)

Indirect measurement (need calibration or standard addition method)

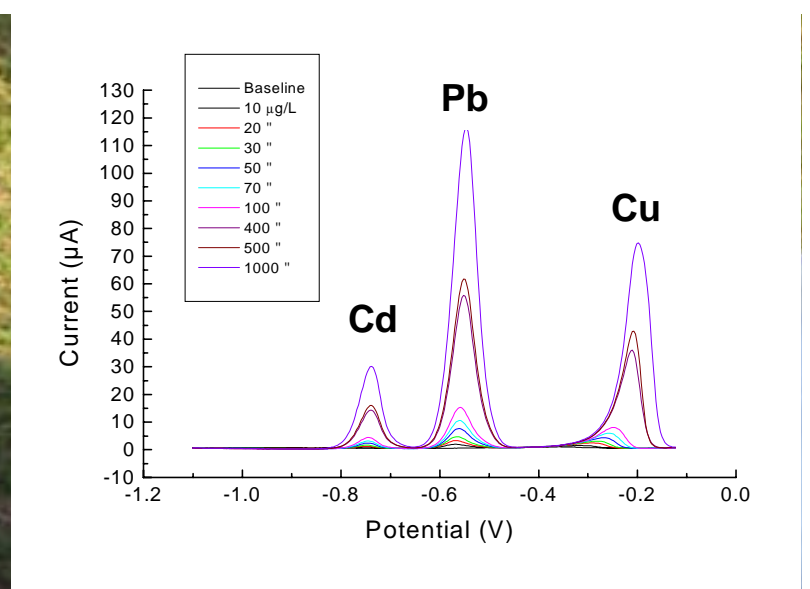
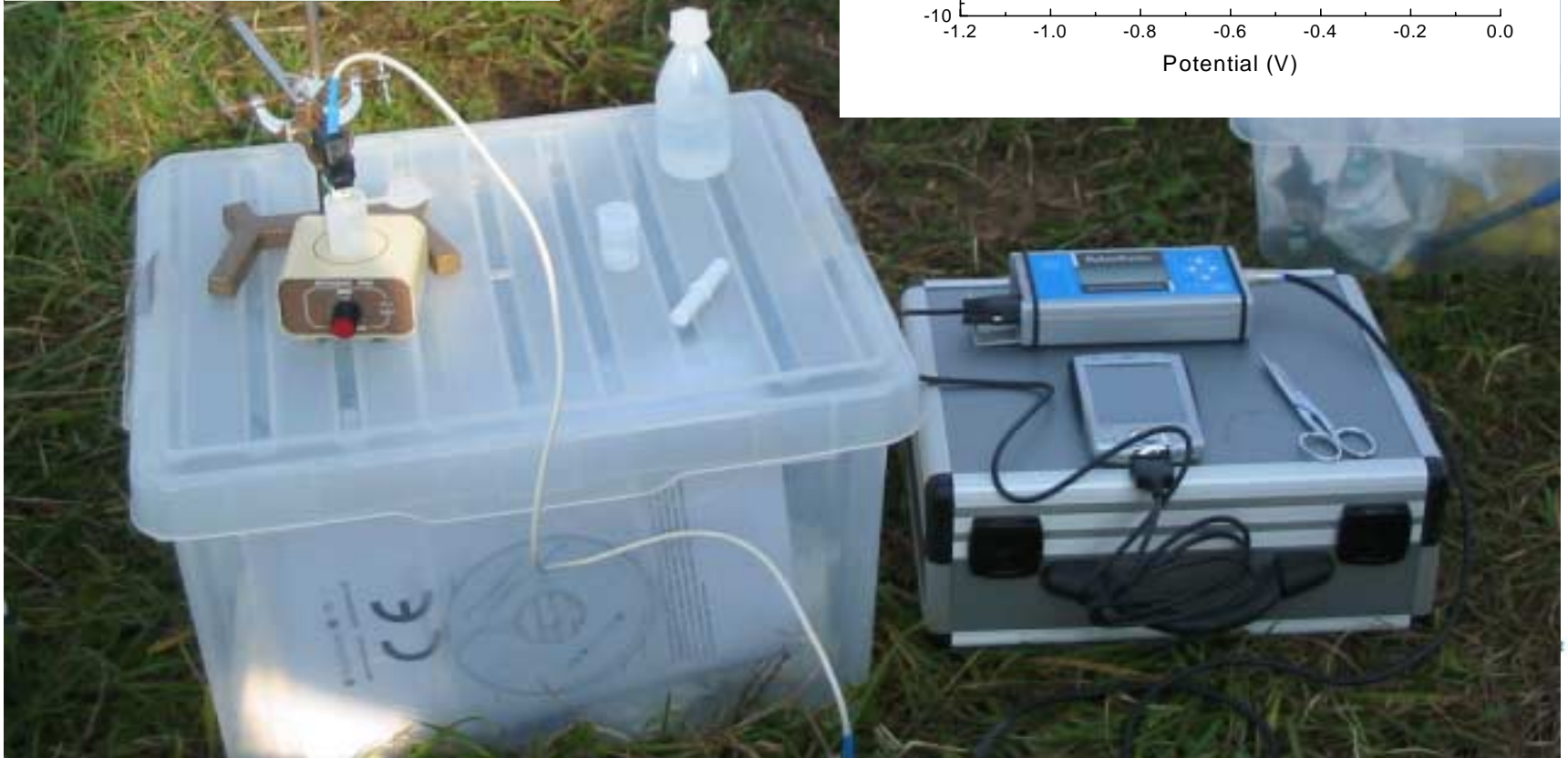
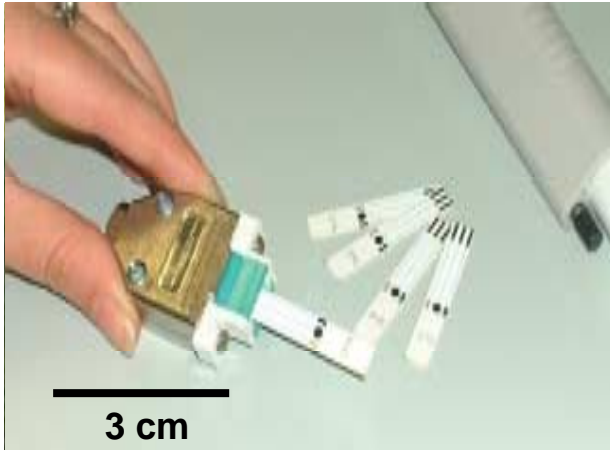
Response time for screening mode : 15 minutes

Response time for quantification : 30 - 40 minutes

Cost of the instrument: 3000 €

Cost of the disposable electrodes : < 1 €

**Application** : evaluation of a point source pollution plume, selection of representative sites, investigative monitoring



# (Multiparameter) probes

## YSI Multiparameter probe 6900

**Principle** : electrochemical or optical sensors

**Parameters** : Depth, T, Conductivity, Dissolved oxygen, pH, redox, Nitrate, Ammonium, Chloride, Turbidity

### **Characteristics** :

In situ (no sampling), short / long term deployment

Direct, simultaneous and continuous measurement (no sample treatment)

Response time : 10 minutes

Calibration time for all parameters : 1 hour

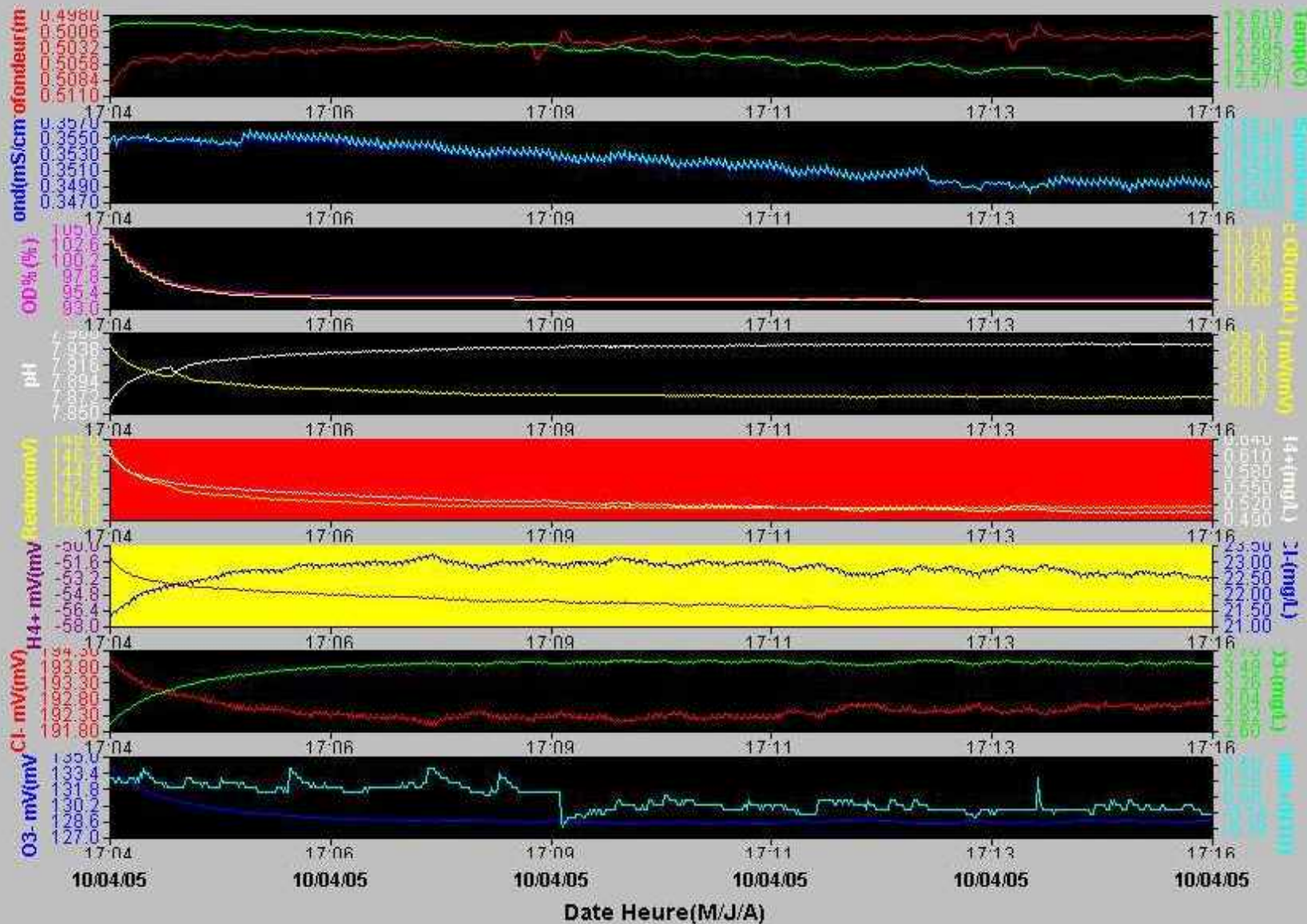
Cost of the instrument: 6000 €

Cost of the electrodes : 200 – 1300 €

**Application** : *in situ*, on site, spatial variability (depth profiles), temporal variability (continuous measurements), surveillance and operational monitoring



# REZ7.DAT



# PASSIVE SAMPLERS

## CHEMCATCHER – University of Portsmouth / Chalmers

**Principle** : adsorption of pollutants on a specific phase (membrane, sorbant etc.) ,

**Parameters** : metals

### **Characteristics** :

In situ (no sampling), short / long term deployment

Indirect measurement (extraction + lab analysis)

Deployment / retrieval time : 30 minutes

Response time : lab delay

Cost of the passive sampler : not sold yet

Cost of extraction + analysis in the lab to be added

**Application** : *in situ*, bioavailability, short term (less than a day) and long term (weeks) monitoring, surveillance monitoring, trends

# PASSIVE SAMPLERS

## DGT – University of Lancaster

**Principle** : diffusion / adsorption of pollutants on a specific phase (membrane, sorbant etc.) ,

**Parameters** : metals, phosphorus

### **Characteristics** :

In situ (no sampling), short / long term deployment

Undirect (extraction + lab analysis)

Deployment / retrieval time : 30 minutes

Response time : lab delay

Cost of the passive sampler : 15 €

Cost of extraction + analysis in the lab to be added

**Application** : *in situ*, bioavailability, short term (less than a day) and long term (weeks) monitoring, surveillance monitoring, trends

