

WaterPondi Research Project

WP 2 - Geochemical outline of urban waters

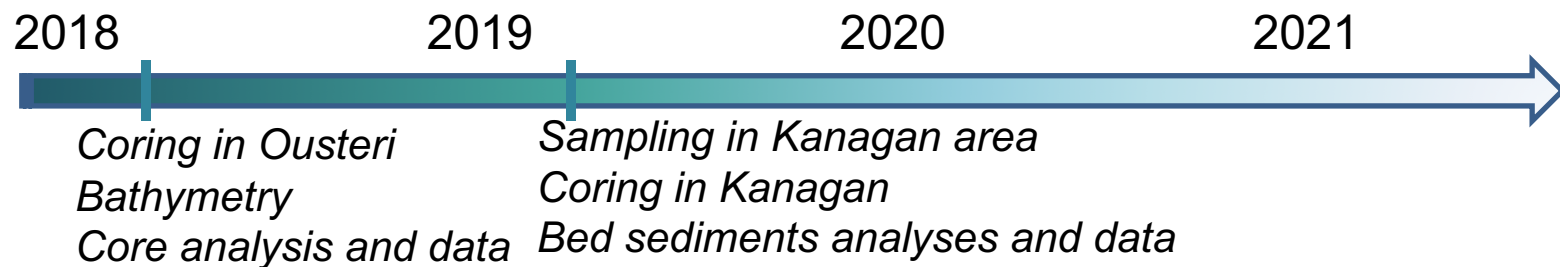
GéoHydrosystèmes continentaux Research team – University of tours

Presentation – UTours- 16 October 2019

Aims of the WP2

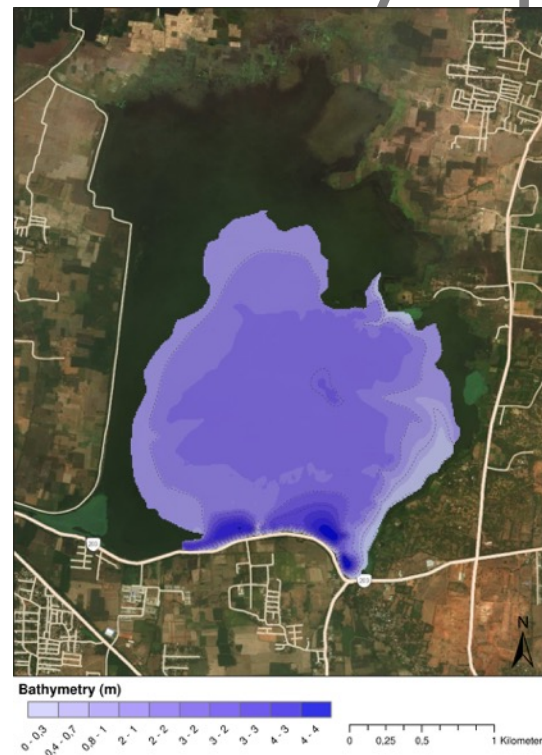
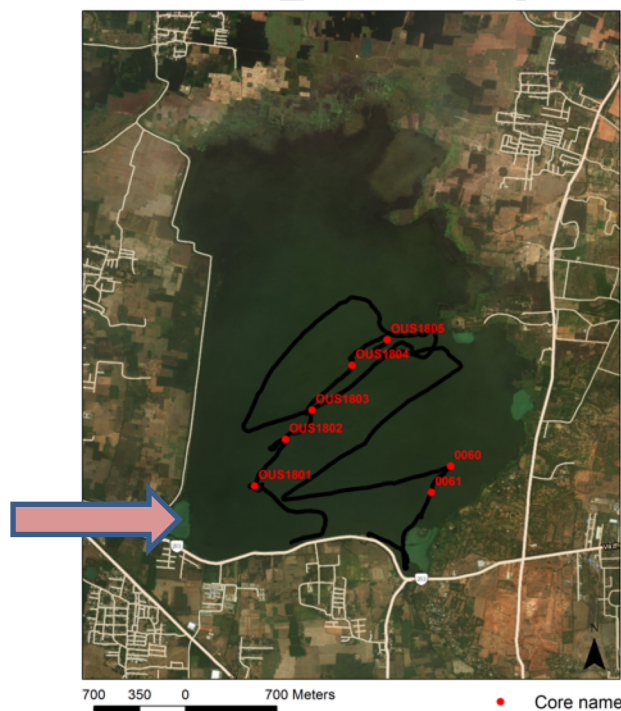
Geochemical outline of urban waters

- **Quality of waters / quality of sediments**
- **Aims of WP2 : Understanding sediment quality and origins (silting) over a gradient of urbanization**
 - Silting dynamics in an rural watershed //WP3
 - Contaminant screening to identify urban tracers discriminating rural from urban inputs
 - To confront contaminant distribution to socio-economic characteristics //WP1

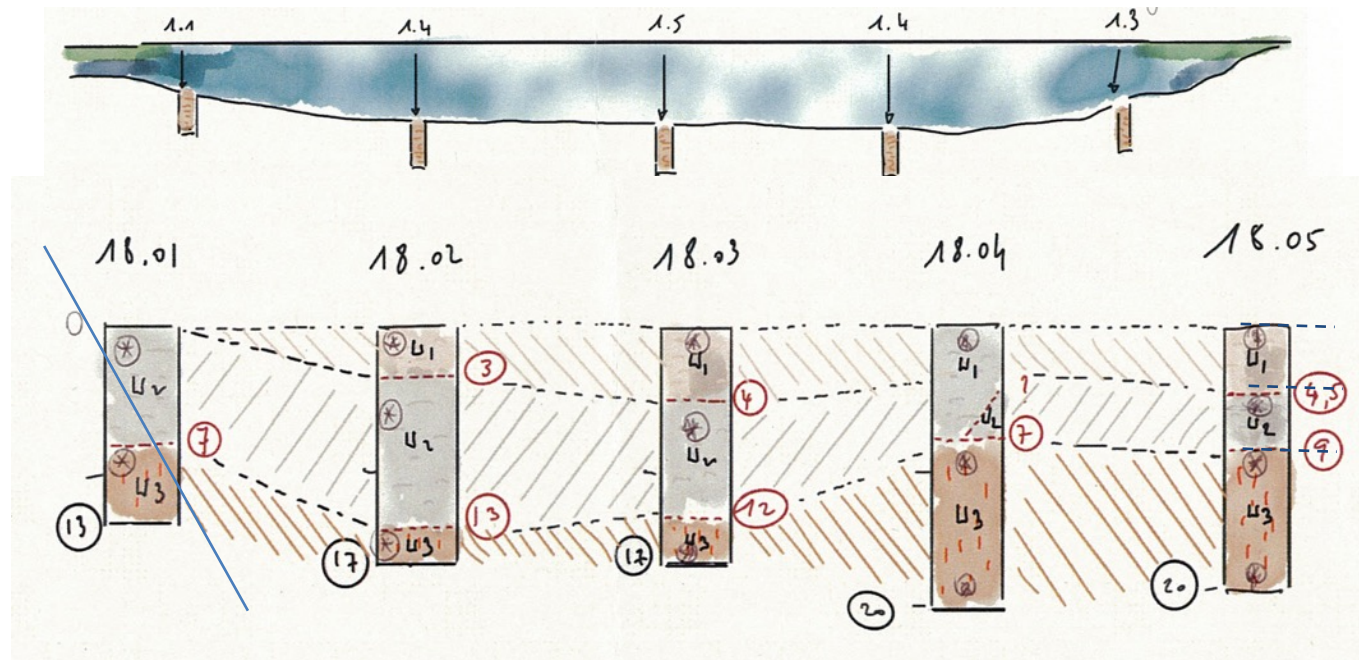


1- Silting dynamics in a rural area : Ousteri basin

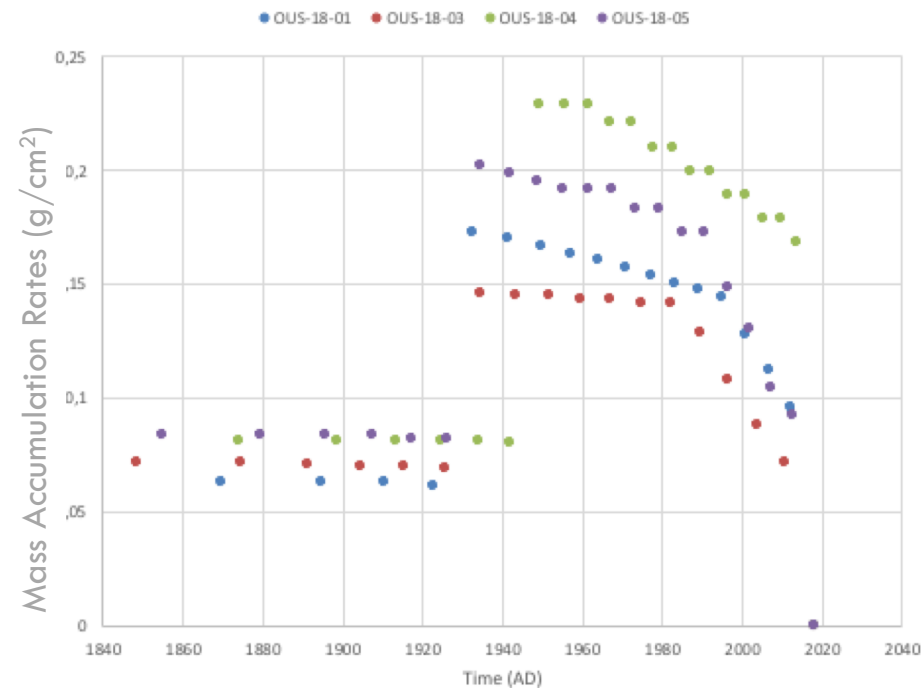
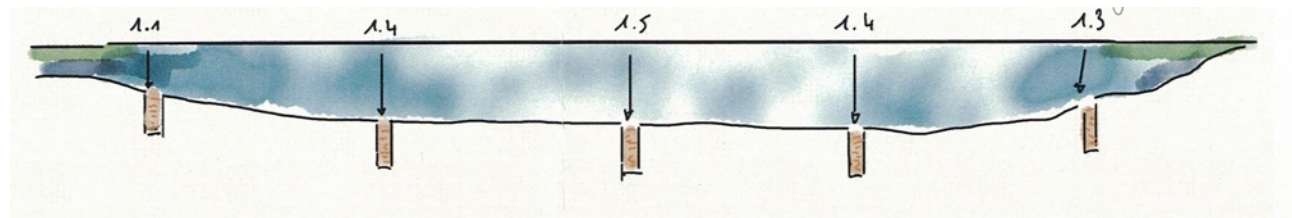
- Silting mechanisms ?
- Origins of particles ? Quality of particles ?



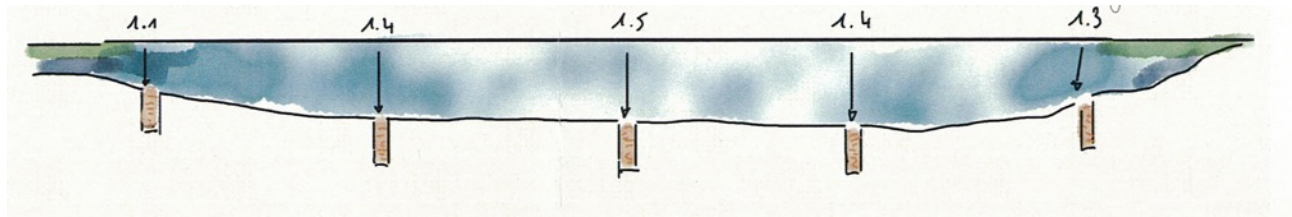
1- Silting dynamics in a rural area : Ousteri basin



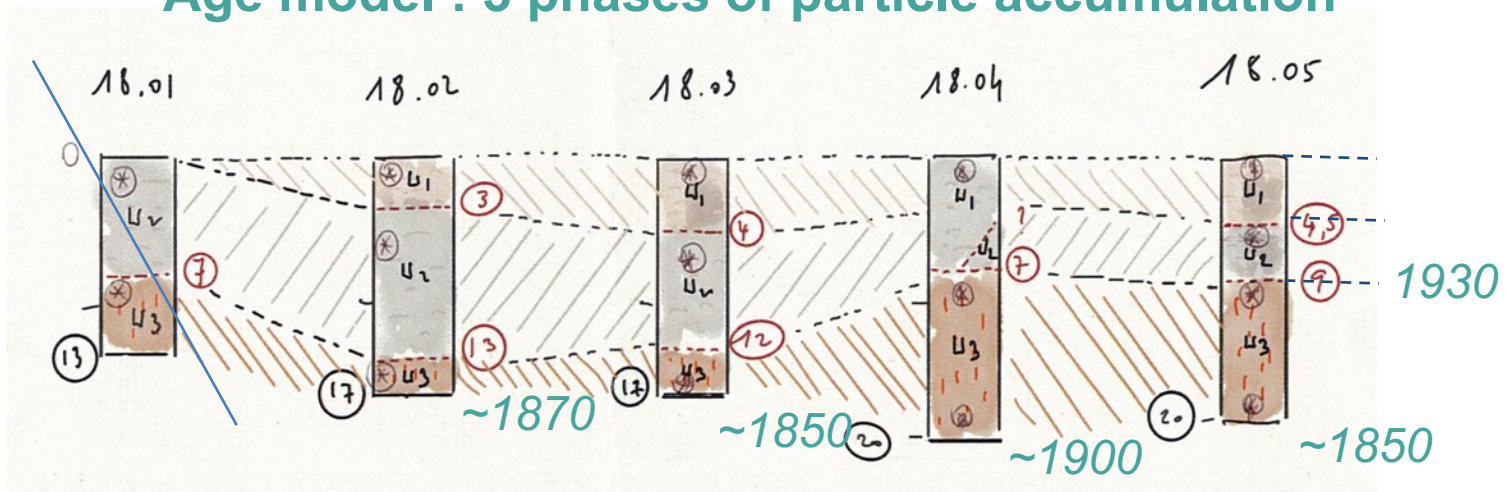
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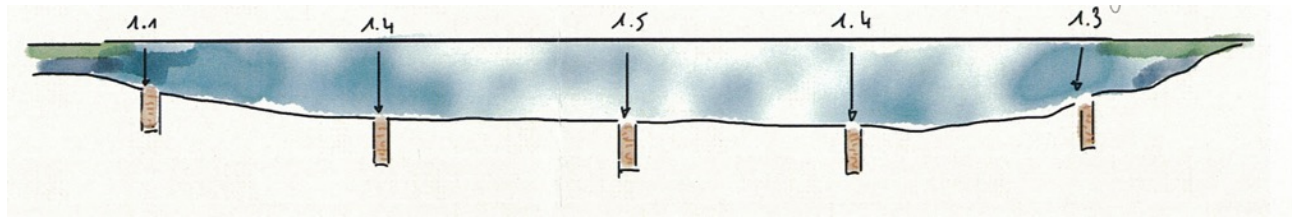


Age model : 3 phases of particle accumulation

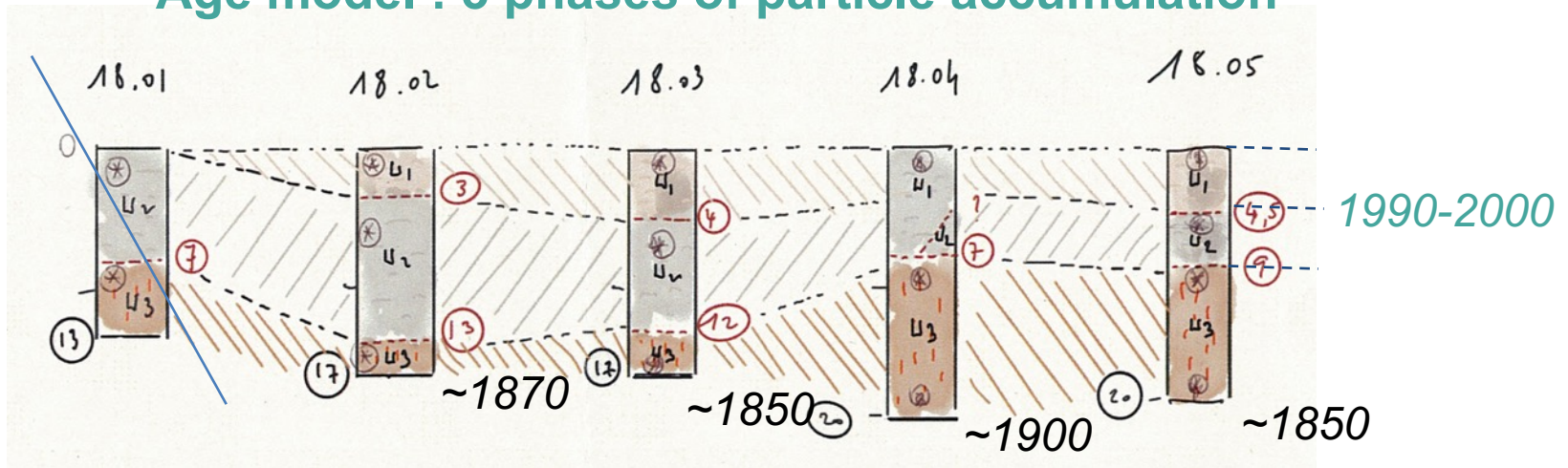


1st stage <1900- 1930s : low sedimentation rate

1- Silting dynamics in a rural area : Ousteri basin

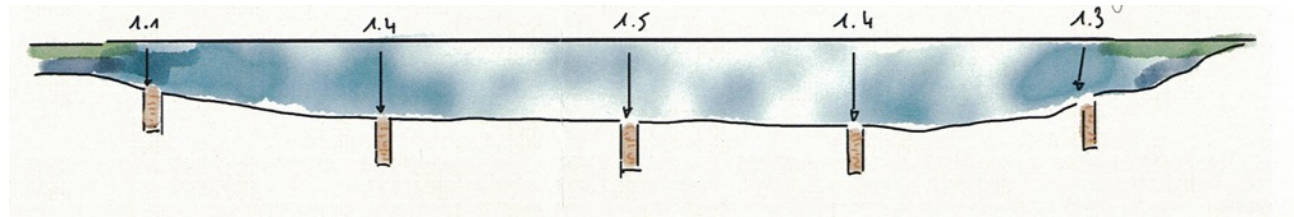


Age model : 3 phases of particle accumulation

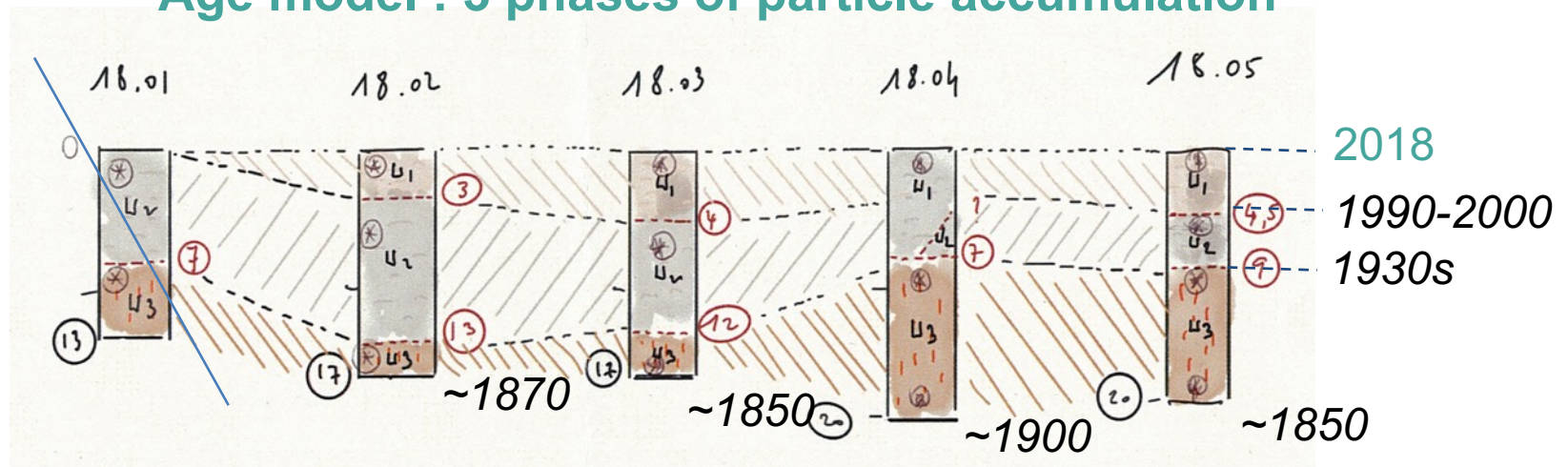


1930s- early 2000s : particle accumulation increase
land-use changes ? Date of Gingee r. canal ?

1- Silting dynamics in a rural area : Ousteri basin



Age model : 3 phases of particle accumulation



From the late 2000s : decrease of sedimentation rate
sand exploitation in Gingee river ?

1- Silting dynamics in a rural area : Ousteri basin

Main points

- **Understanding the silting process**
 - Origins of particles : from the main SW canal, coming from the Gingee river + watershed + authigenic OM
 - 3 phases of particle accumulation
 - The latest one (very low input) as the canal is quite disconnected ?
- **Any metallic contamination according to mineralogy of Ousteri sediments**

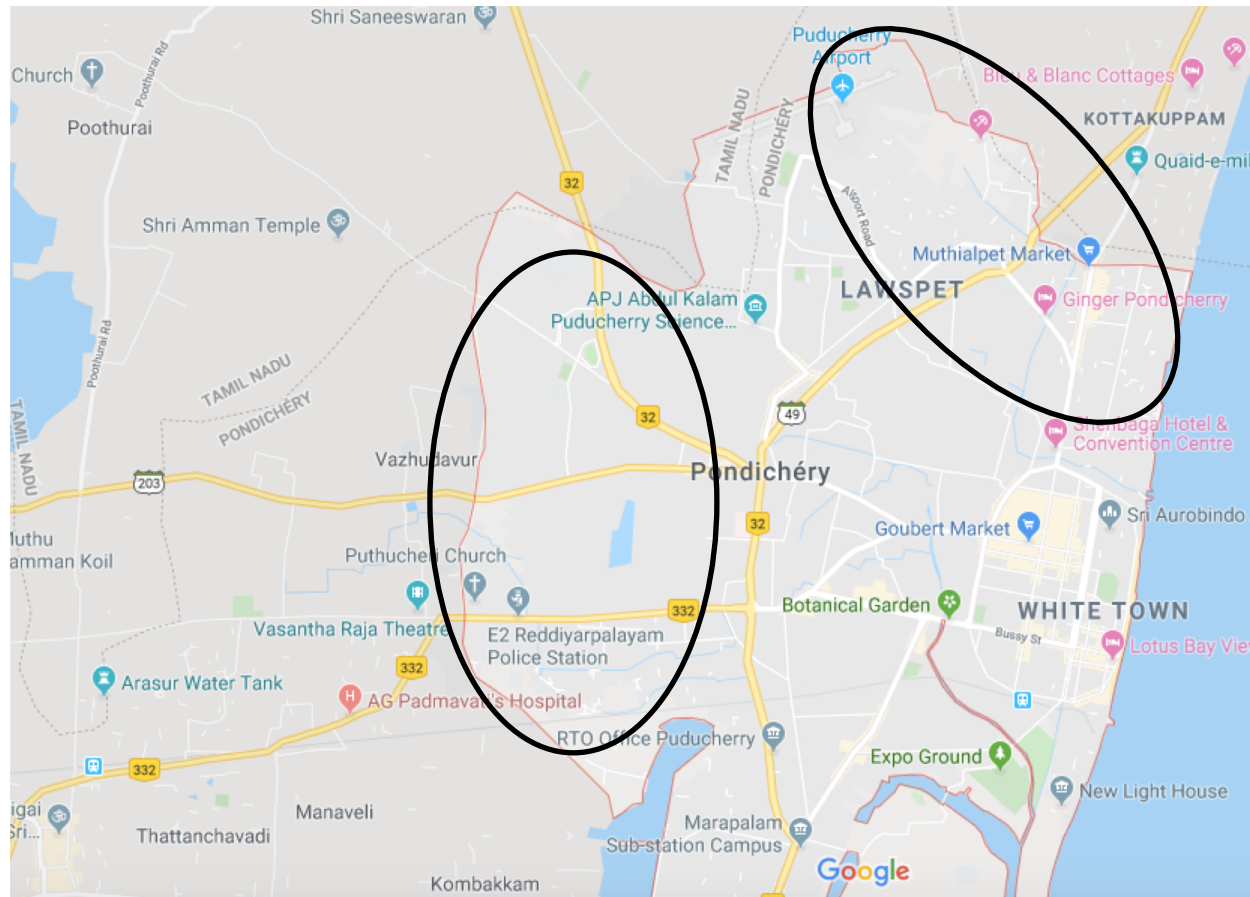
1- Silting dynamics in a rural area : Ousteri basin

Perspectives

- **Understanding the silting process**
 - Origins of particles : from the main SW canal, coming from the Gingee river + watershed + authigenic OM
 - 3 phases of particle accumulation // **land-use evolution (WP3 satellite images ? WP4 investigations ?)**
 - The latest one (very low input) as the canal is quite disconnected ? **Gingee river rehabilitation to have overflow in the canal ?**
- **No contamination according to mineralogy of Ousteri sediments**

2- Quality of sediments in a urban gradient

- Identification of 2 sampling zones defined according socio-economic proxies (WP1)



2- Quality of sediments in a urban gradient



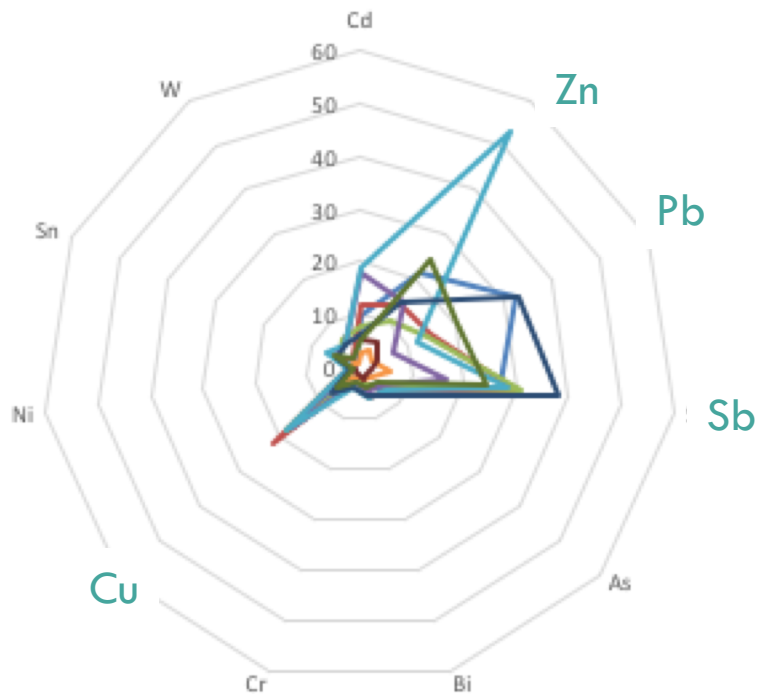
2- Quality of sediments in a urban gradient



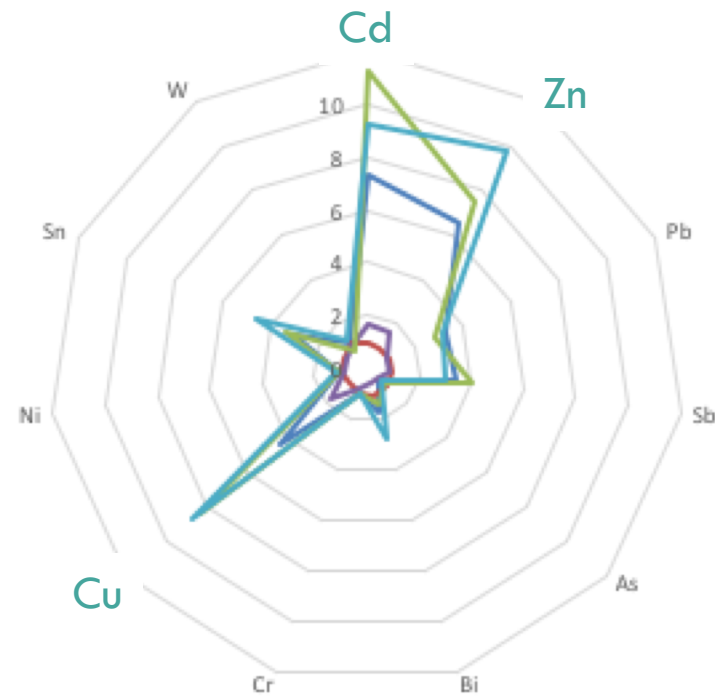
2- Quality of sediments in a urban gradient

Element enrichment factors, all stations

Kanagan area



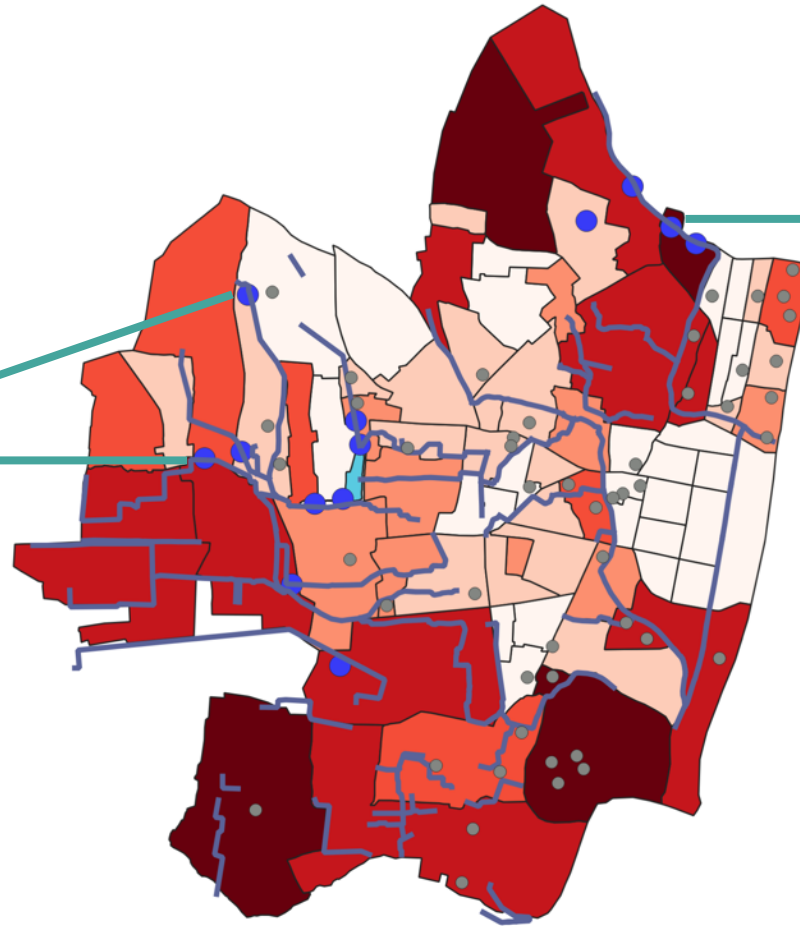
Airport basin



Sedimentary Pollution Index = $\frac{\sum \alpha EF(X)}{\sum \alpha}$
 $\alpha=1$ for Cr+Zn, 2 for Ni+Cr, 5 for Pb and 300 for Cd

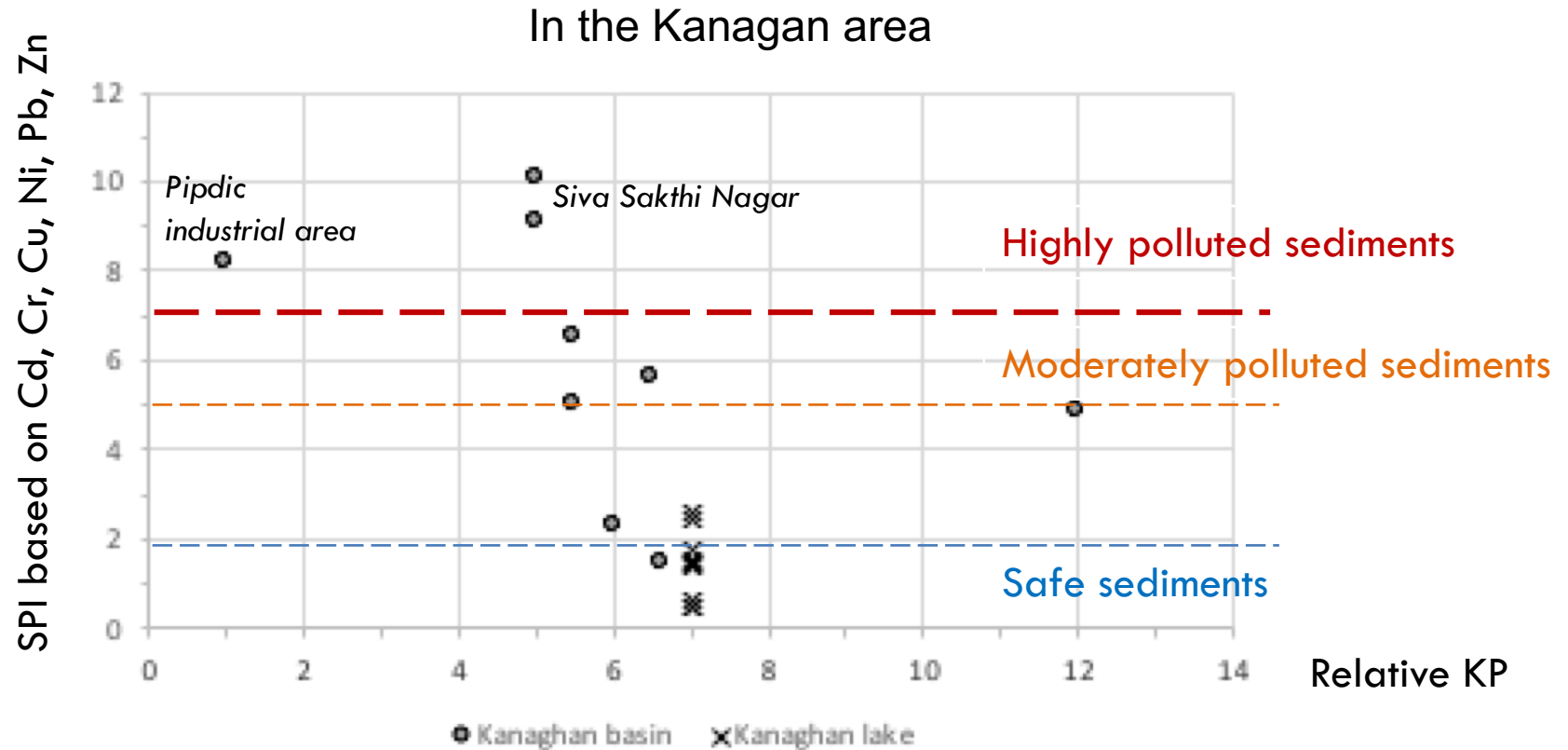
2- Quality of sediments in a urban gradient

Kanagan area
Enrichment at some
points for As, Cd,
Cu, Pb, Sb, Sn, W,



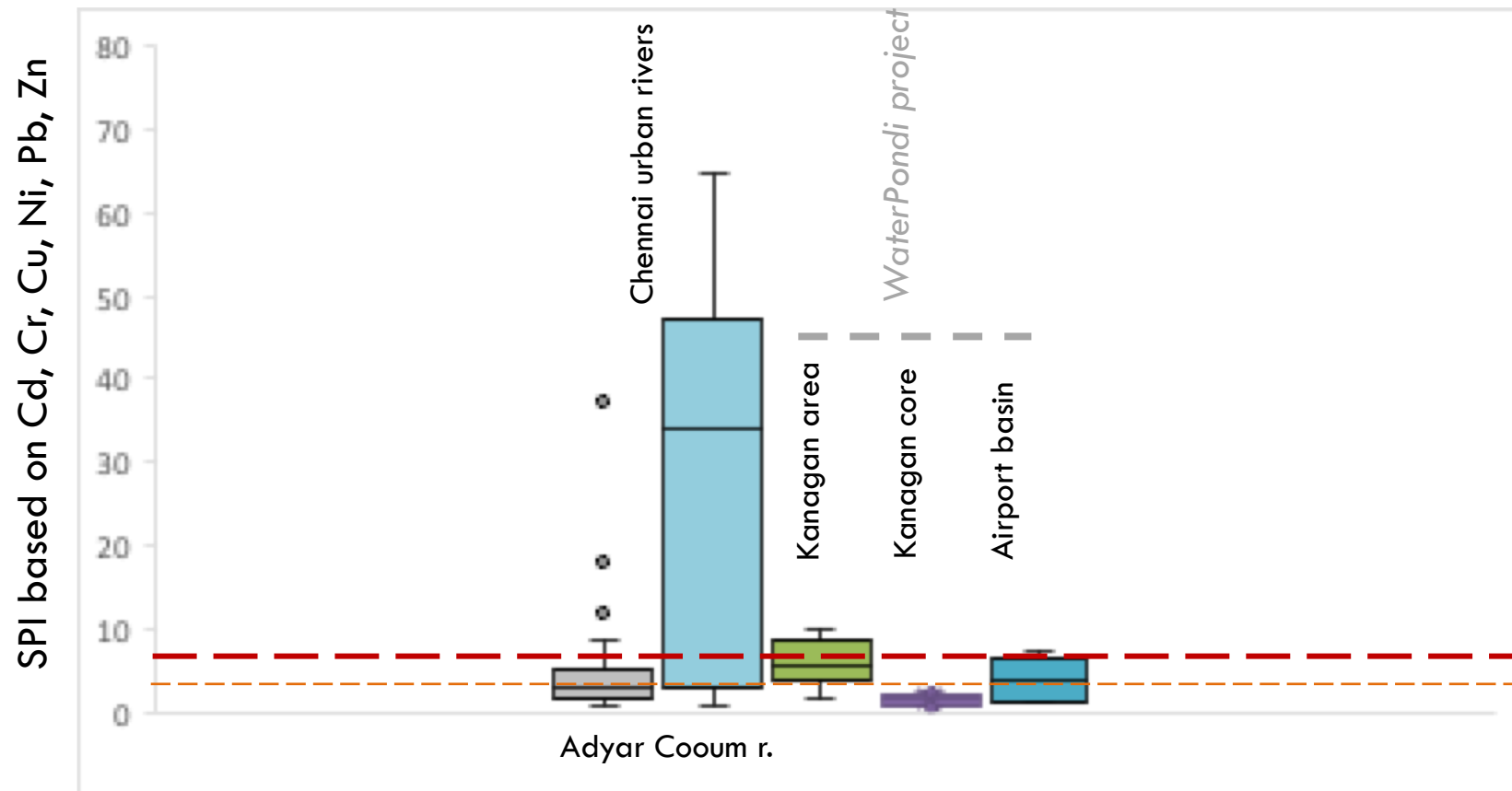
Airport basin
Enrichment at
some points for
Cd, Cu, Pb, Sb,
Zn

2- Quality of sediments in a urban gradient



In the airport basin, SPI < 5 except one around 7

2- Quality of sediments in a urban gradient



2- Quality of sediments in a urban gradient

Main points - Perspectives

-Enrichment from station to station for Cd, Cu, Sb, Pb, Zn

Waiting for Ag, Hg, TOC

Screening for organic compounds

-Patchy spatial distribution and not a linear gradient

Role of socio-economic features ?

-Moderately polluted sediments according to a multi-element indicator

Create adapted indicator / any reference world-wide

Other proxies ? Other sampling ?

