



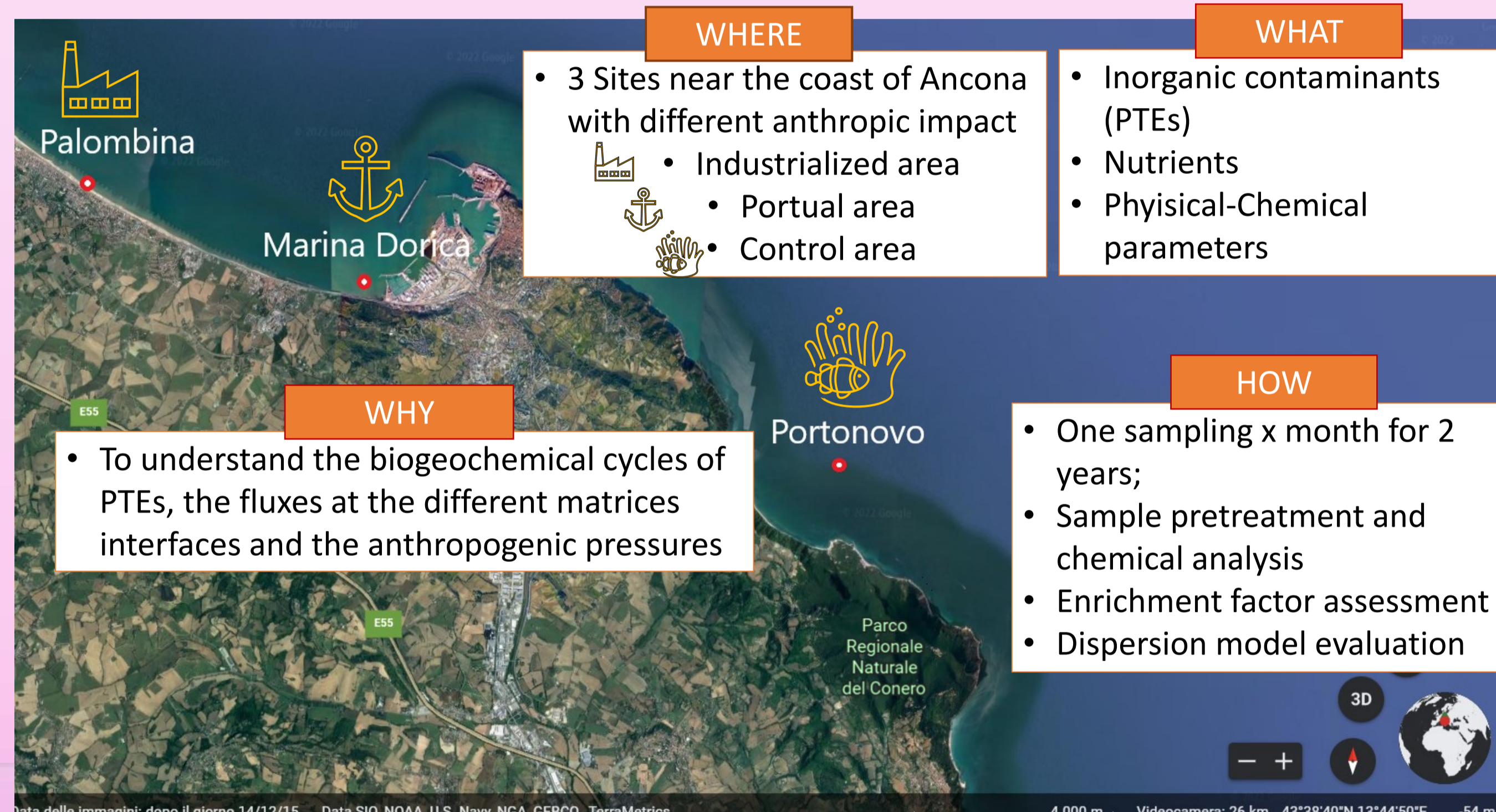
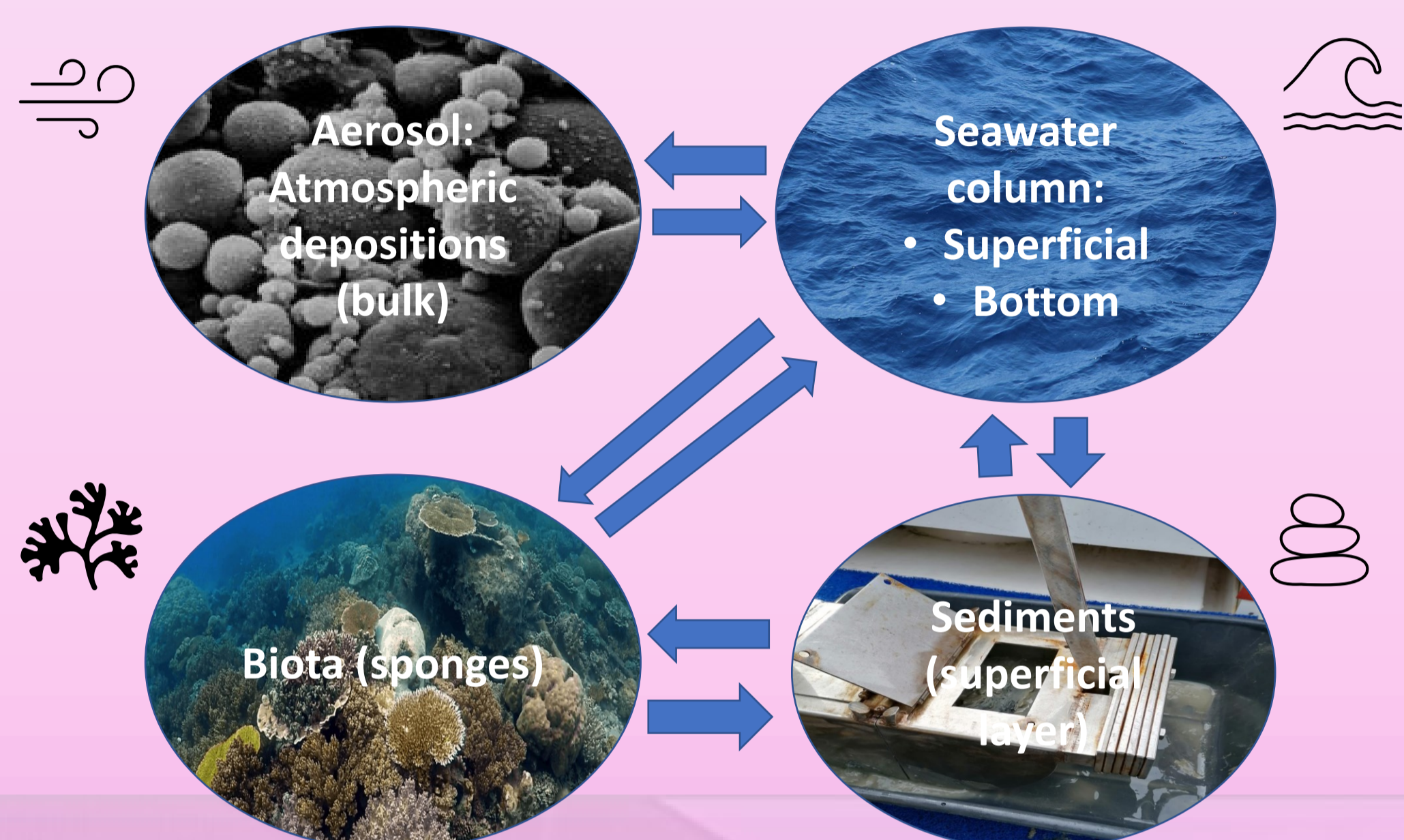
Corso di Dottorato di Ricerca in Scienze della Vita e dell'Ambiente - Ciclo XXXVII

Biogeochemical cycling of contaminants in marine waters

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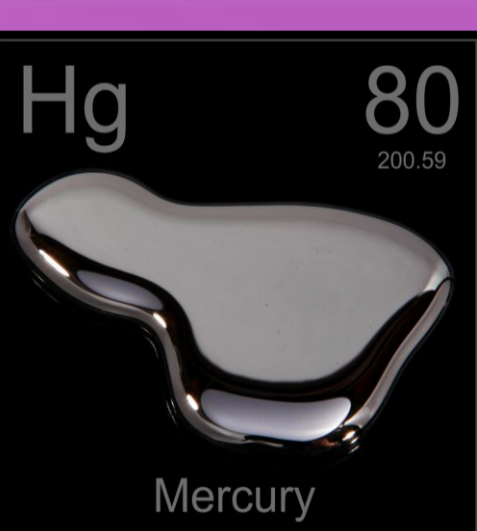
Target samples



Task	First year (2021-2022)										Second Year (2022-2023)										Third Year (2023-2024)														
	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9
Literature analysis	[Yellow bar]										[Yellow bar]										[Yellow bar]														
Inorganic sample collection	[Yellow bar]										[Yellow bar]										[Yellow bar]														
Biological sample collection	[Green bar]										[Green bar]										[Green bar]														
Sediment analysis setup	[Green bar]										[Green bar]										[Green bar]														
Metal determination in samples	[Orange bar]										[Orange bar]										[Orange bar]														
Quality control	[Orange bar]										[Orange bar]										[Orange bar]														
Data chemometric treatment	[Orange bar]										[Orange bar]										[Orange bar]														
Dispersion model of contaminants in seawater	[Blue bar]										[Blue bar]										[Blue bar]														
Source apportionment for atmospheric depositions and sediments	[Blue bar]										[Blue bar]										[Blue bar]														
Air-mass backtrajectories analysis	[Blue bar]										[Blue bar]										[Blue bar]														
Paper publications	[Blue bar]										[Blue bar]										[Blue bar]														
Thesis redaption	[Blue bar]										[Blue bar]										[Blue bar]														

Actually done:

- ✓ Literature analysis
- ✓ Sampling methodology assesment
- ✓ Sediments digestion and Certified Reference Material analysis
- ✓ Seawater and depositions analysis setup

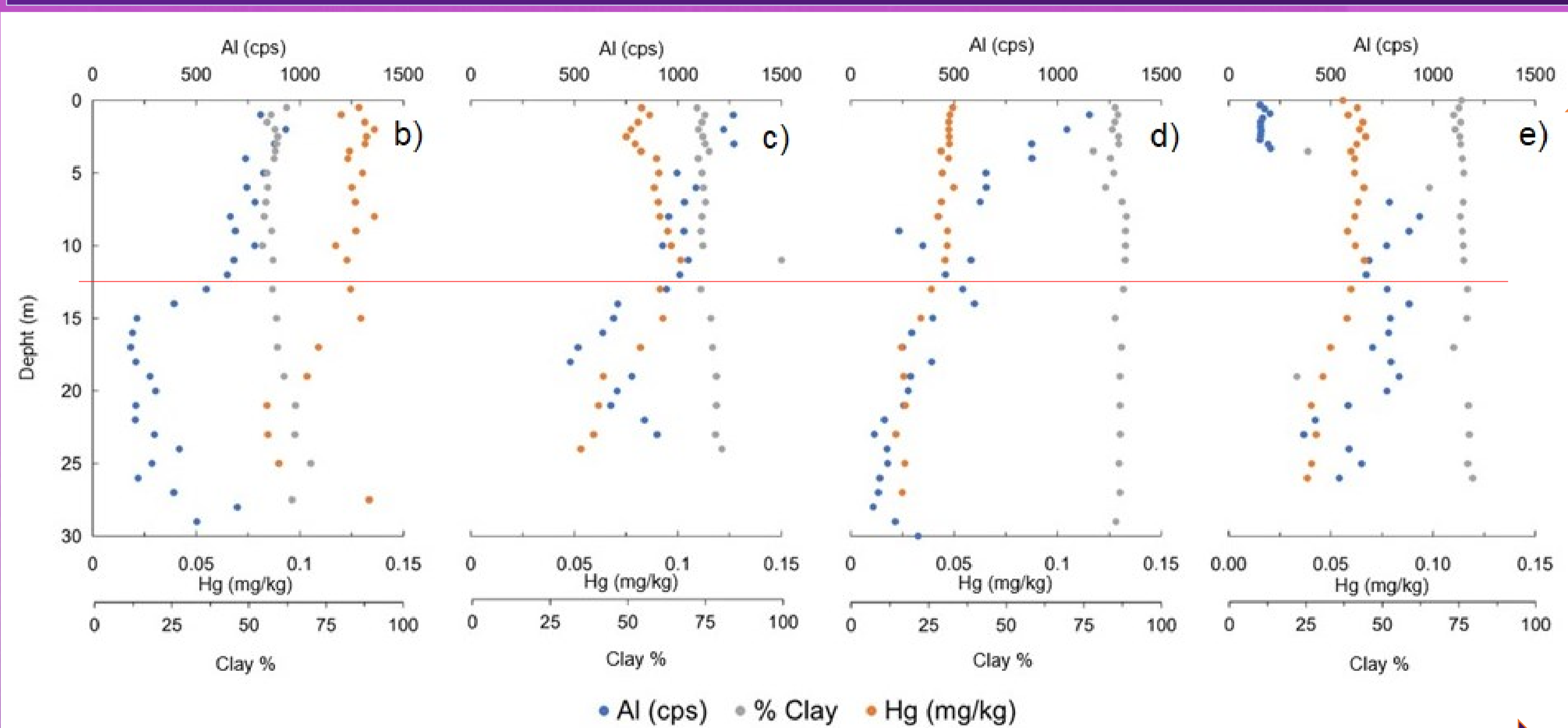


Priority pollutant in Water Framework Directive (2013/39/EC)

High toxicity
Bioaccumulation

Preliminary study in Adriatic Sea sediment cores

sampling stations and vertical profiles of Hg (mg/kg), Al (cps) and Clay% in b) ST23, c) ST28, d) ST40, e) ST42



Conclusions

- Hg concentrations below the limit of 0.3mg/kg included in WFD 2013/39/EC.
- During the last 10 years Al content increased, due to the recent large-scale river and coastal anthropization and also decreasing rainfalls which affect the riverine outflows and marine sediment dispersal.

4 North – South Hg content gradient, anthropogenic sources from north.

Future perspectives:

- Metals determinations in samples
- Placement of bulk collectors for atmospheric depositions in Palombina and Portonovo areas
- Marine organisms (sponges) collection
- First dispersion model setup

Congresses participation

- 14-16 June 2022: Poster presentation for International symposium on mediterranean coastal monitoring, Livorno;
- 20-23 June 2022: Oral presentation at «XIX Congresso Nazionale della Divisione di Chimica dell'Ambiente e dei Beni Culturali»