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Introduction

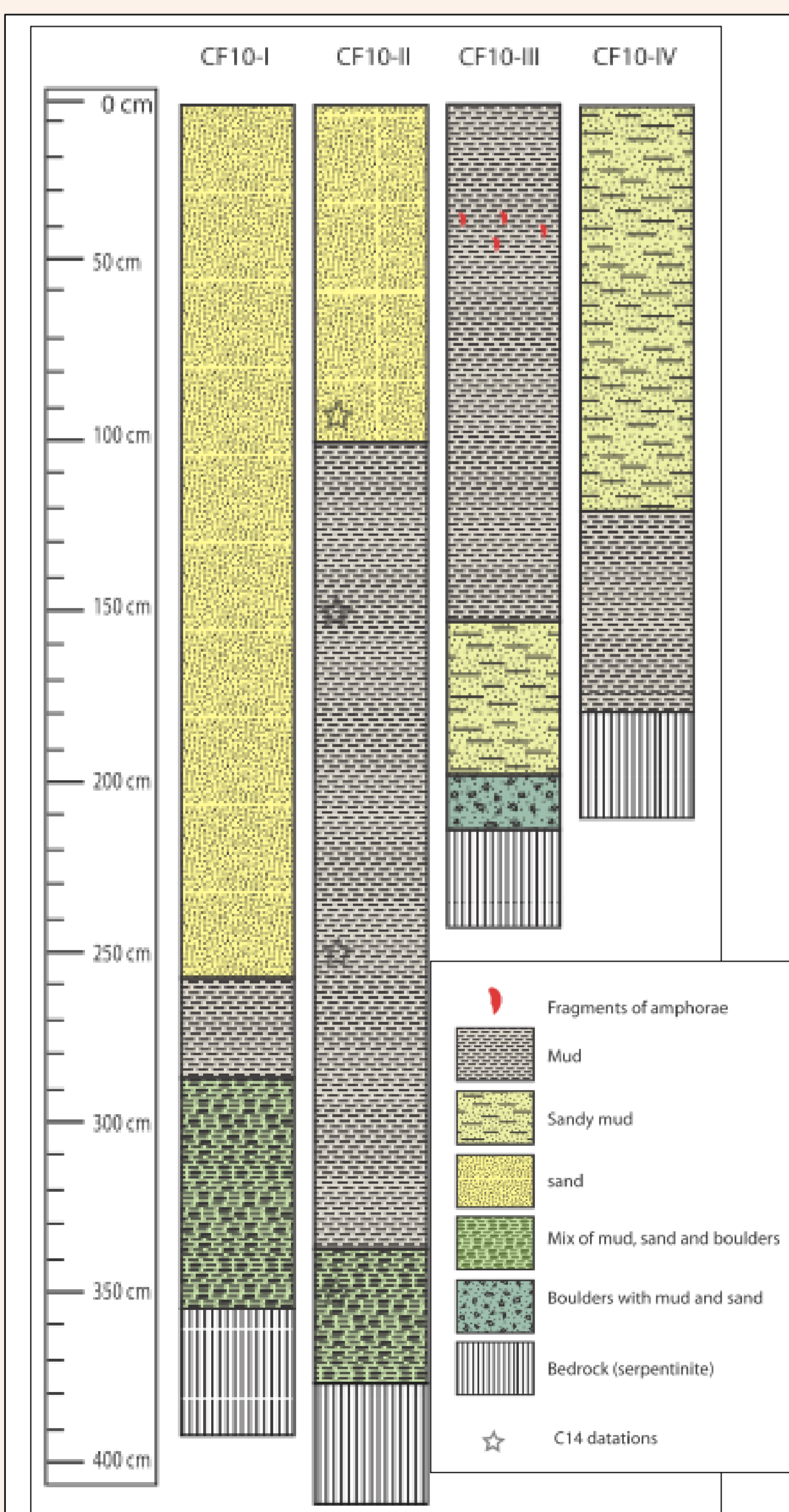
The Mediterranean coasts have been characterised by intense maritime commercial exchanges since Antiquity. Archeological researches reveal that Cape Corsica (France) may have been an ancient Roman harbour. The purpose of this study is first to highlight an anthropogenic contamination due to Roman and modern activities using trace element concentration. Second we aim to identify the contamination sources through Pb isotope composition.



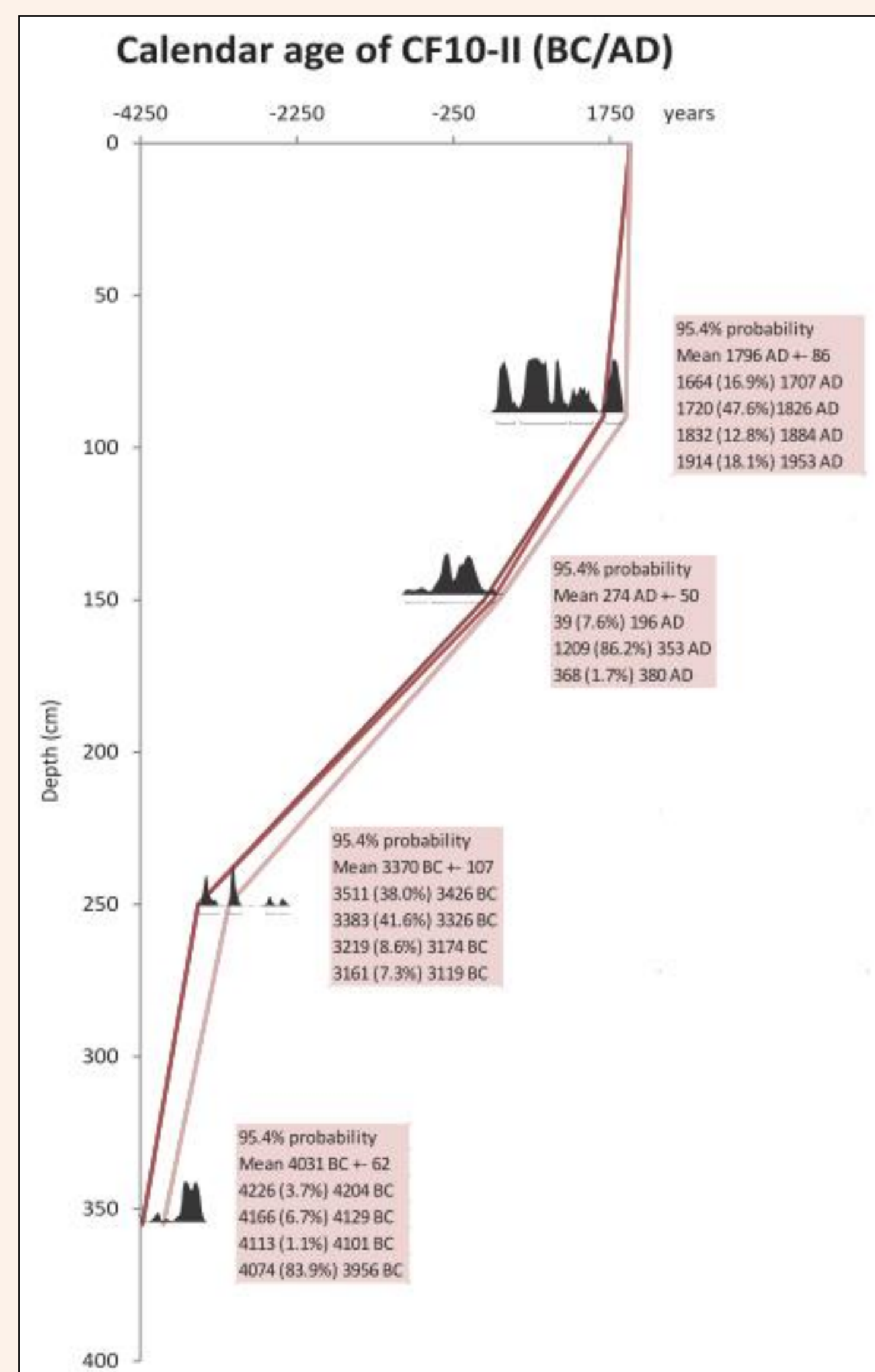
Four cores were collected (sample resolution 10 or 20 cm).



Material



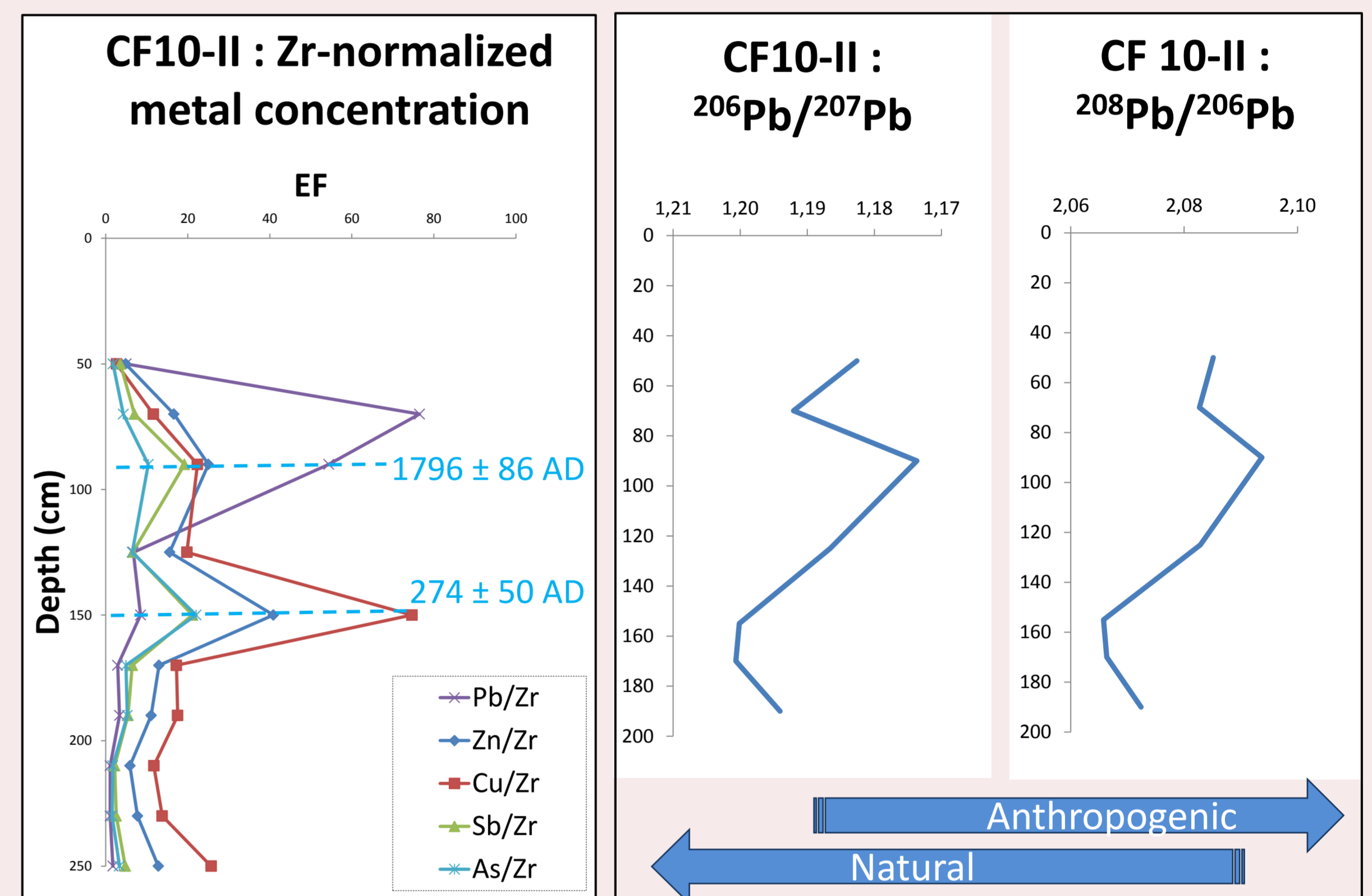
This study is based on sedimentological (mineralogy, fossil assemblages, C/N ratio, organic content) and geochemical (trace element concentration, Pb isotope composition) analysis.



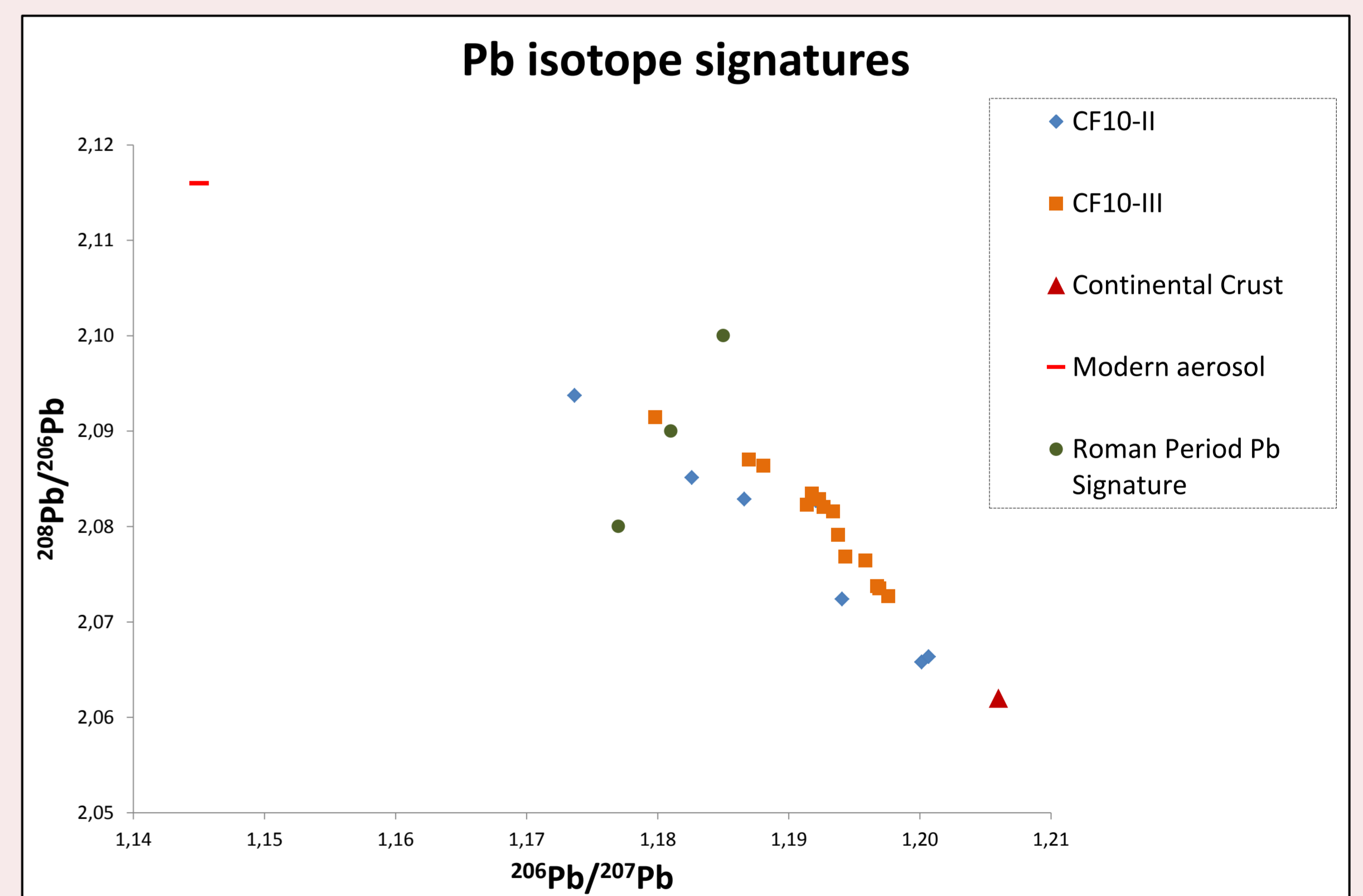
Radiocarbon ages performed on macroremains in coastal sediments from Cala Francese (cores CF10-II and CF10-III) allow the localisation of the Roman Period in the sedimentary columns.

Results

- In core CF 10-II, two major shifts of trace element concentration (such as Pb, Cu, Zn, As and Sb) have been measured at 60-80 and 140-160 cm, corresponding respectively to the Industrial Revolution and to the Roman Period. The same tendency is observed in core CF10-III. In this core, the Roman Period is localised between 80 and 140 cm.
- A major shift in Pb isotopic composition is observed in both core at 140 cm in CF10-II and 60 cm in CF10-III, with a decrease of $^{206}\text{Pb}/^{207}\text{Pb}$ ratio and an increase of $^{208}\text{Pb}/^{206}\text{Pb}$ ratio.



- All the Pb isotope signatures suggest a mixing between two sources, one natural (erosion of the bedrock) and one anthropogenic (industry). Concerning the Roman period, because of the low Pb concentration, it is not possible to assess the impact of a previous activity.



Conclusion

Such significant changes in trace metal content and in Pb isotopic signature of sediments is consistent with Human perturbations of the environment during the Industrial period. Trace metal content and archeological discoveries (opidum, pottery shards,...) assess of a Roman occupation of the Cala Francese. Even if the Pb was widely used during this period (roman lead pipes, jewelry,...), the human activity did not get an impact on the Pb concentration (and thus on the Pb isotope signature) showing that the Cala Francese was maybe not a major economical center.

The Pb isotopic signatures measured in Cala Francese are in the same range as those located in other sites of Cape Corsica, indicating a regional contamination. Further investigations are in progress in order to define the extend and the sources of those contaminations.

