

The Use of ^7Be , ^{137}Cs and ^{210}Pb in the Evaluation of the Contemporary and Medium Term Sediment Deposition on the Meric River Floodplains

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Introduction: As known, flood plains have increasing importance and give crucial outcomes for natural sciences [1-3]. The most important issues are floods related to the water management in Trans boundary River Meric and Arda, Tunca rivers that Turkey is downstream country. The most important process about grown and increased flood size is sediment accumulation in the river and the surrounding. soil conservation and sediment management is seen as a key component of river basin management. Hence, there is a need for a detailed study about the determination of contemporary and medium term sediment deposition on the Meriç River Floodplains by means of ^7Be , ^{137}Cs and ^{210}Pb .

Methods: Sediment bulk cores were collected systematically at 50 stations in the Meriç River flood plains during 2018. Furthermore, three bottom sediment cores were also taken from the flood plains (Fig.1). The core length is varied from 30 to 53 cm. The cores were sliced at 1-cm intervals for further analyses. Sediment subsamples were dried at 40-60 OC to constant weight, and water content was determined. The dried samples were powdered in a ball-mill for geochemical and radionuclide analysis. In this study, the quantitative determination of the ^7Be , ^{210}Pb and ^{137}Cs was carried out by HPGe gamma spectrometry.

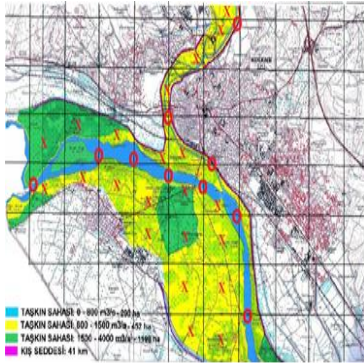


Fig. 1: Location of the sediment samples
All physical parameters were also clarified for the sedimentation mechanism. In order to investigate the

storage and remobilization of recently eroded sediment, bulk samples of river water (100-150 litres) were collected from the monitoring stations at Kirishane in Edirne. In this study, several reference cores were taken from undisturbed site adjacent to the study field for any excess ^7Be on the floodplains. In addition precipitation samples were also used for the direct measurements of ^7Be delivery to study area.

Results: The variations in the ^7Be and ^{137}Cs activity concentrations in the suspanse sediments were allowed for identifying inputs of recently eroded surface sediment to the river channel. ^7Be and ^{137}Cs concentrations were measured in the fifty bulk sediment samples. Cs-137 peaks were obtained in each cores. Be-7 concentrations in the rain water on the monthly basis were measured. In current studies, the vertical distributions of ^{210}Pb and ^{137}Cs were completed up to 15 cm depth for each core. Sediment dating will be realized when the all measurements of related radionuclides will completed. Furthermore, during the flow events, a meander bed on the flood plain will systematically cored (10m grid), and sediment cores analyzed for ^7Be for studying the non-permanent effects of floodplain features.

Discussion: On the floodplain, ^7Be provides a valuable means of documenting event scale sedimentation rates, again complementing the long-term data provided by ^{137}Cs and unsupported ^{210}Pb [4].

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