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Non-destructive monitoring of river embankments using GPR

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Non-destructive investigations and controls of civil structures are improving day by day, however the scientific literature reports only a few documented cases of Ground Penetrating Radar (GPR) applications to the detection of voids and discontinuities in hydraulic defense structures such as river embankments and levee systems. GPR can assist decision making in a number of fields by enhancing our knowledge of subsurface features. We applied successfully GPR to the monitoring of river levees for the detectioning of animal burrows in river levees, which may trigger levee failures by piping. The manageability and the non-invasivity of GPR have resulted to be particularly suitable for this application. First because GPR is an extensive investigation method that enables one to rapidly cover a wide area, locating voids that are difficult and costly to locate using other intrusive methods. Second, GPR returns detailed information about the possible presence of voids and discontinuities within river embankments.