



Flood risk under different dam operation strategies

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The need of addressing “residual flood risk” due to the erection of structural devices such as levee systems and dams has fostered actions aimed at increasing the awareness of flood risk. These structures have lowered the risk perception in areas originally at risk inducing a false sense of safety. As a result these structures contribute to an underestimation of the “residual risk”. As dam operations are driven by different necessities such as dealing with drought and flood events, we analyze the effect of different dam operations on the flood profile, peak and volume. Specifically, we aim at understanding the flood risk at sites where a dam has contributed to alter the original hydrological variability of floods. The knowledge of the effect of different management strategies is of utmost importance to enhance non-structural flood protection measures such as early warning systems. The case study is the Valfabbrica dam located in Umbria, central Italy. This dam aims at mitigating floods occurring at the Chiascio River, one of the main tributaries of Tiber River and at providing water supply for irrigation purposes. The understanding of different scenarios generated by the dam operations offers an unique support to flood mitigation strategies managed by the Civil Protection. Results can lead to draw interesting remarks for a wide number of case studies.