



Flood prediction in endoreic basins

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Endoreic basins are defined as those whose runoff do not discharge into the sea but converges toward natural sinks and flows or infiltrates into the underground. Such a situation is quite common in semiarid area of southeastern Italy (Puglia region) characterized by a classic karstic morphology, quite flat with low depressions. In such environment also the hydrographic network is ephemeral, but whenever intense rainfall events cover large areas and rainfall intensity exceeds the infiltration capacity of sinks and swallow holes, significant volumes of runoff are produced and stored causing floods and risks for people and goods. Most of this sinks are often outlet of small independent basins individuated by weak crests. Whenever, after intense rainfall events, water storage exceeds the minimum level of such crests the basin becomes contributing to another basin and, then, also very large areas become contributing, in cascade, toward most depress areas. Basins of hundred of square kilometres may become contributing with very high risk of flooding. In such a situation flood prediction may be assessed only by referring to storage models whose behaviour is strictly dependent on the absorption capacity of the soil in the overall basin and in the natural sinks. In such cases traditional methods for the individuation of critical rainfall duration lacks of applicability and the worst rainfall condition for a fixed return time should be searched accounting for geomorphology and soil hydraulic behaviour.