



Flood predictions using the parallel version of distributed numerical physical rainfall-runoff model TOPKAPI

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The original numerical code TOPKAPI-IMMS of the distributed rainfall-runoff model TOPKAPI (Todini et al, 1996-2014) is developed and implemented in Ukraine. The parallel version of the code has been developed recently to be used on multiprocessors systems – multicore/processors PC and clusters. Algorithm is based on binary-tree decomposition of the watershed for the balancing of the amount of computation for all processors/cores. Message passing interface (MPI) protocol is used as a parallel computing framework. The numerical efficiency of the parallelization algorithms is demonstrated for the case studies for the flood predictions of the mountain watersheds of the Ukrainian Carpathian regions. The modeling results is compared with the predictions based on the lumped parameters models.