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Development of a risk database for the establishment of invasive mosquito species under impacts of climate change

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Climate models suggest changes in future temperature and precipitation rates, the main climatic parameters that are related to the suitability of a region for the establishment and seasonal abundance of the Invasive Mosquito Species (IMS). In this work the future potentiality of IMS spread and establishment over Greece and Italy is assessed following four steps. In the first step current Spatial Risk Databases for the establishment of IMS over Greece and Italy are developed using the meteorological parameters from the ECA&D project. In the second step changes in the climatic parameters in 2050's are estimated using the NASA GISS GCM ModelE under the IPCC-A1B emissions scenarios. In the third step, the mesoscale meteorological model WRF is used, to simulate the changes in the meteorological fields caused by climate change in a finer grid size using dynamical regional downscaling. Finally, in the fourth step the estimated changes in the meteorological parameters from step three are combined with the observation data from step one in order to estimate the future level of the climatic parameters of interest. The final product is spatial distribution maps presenting the future suitability of a region for the establishment and seasonal abundance of the IMS over Greece and Italy.

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