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## Spatial interpolation and analyses of reference evapotranspiration and its temporal trends in Changjiang (Yangtze River) Catchment, China

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Regional hydrological analyses and inferences rely on accurate estimations of spatial variability of hydrological and meteorological measurements and estimates. In this study, the spatial variability of Penman-Monteith reference evapotranspiration,  $ET_{ref}$ , temporal trends in  $ET_{ref}$  as well as the meteorological variables used in computing  $ET_{ref}$  at 115 meteorological stations in the Changjiang catchment were studied by interpolating these site data into a grid of  $0.25 \times 0.25$  degrees in latitude and longitude. Among commonly used interpolation methods, Ordinary Kriging was chosen because it showed the best and the most robust performance in cross validation. Regional maps of mean annual and seasonal  $ET_{ref}$ , long term temporal trends of  $ET_{ref}$  and the meteorological variables were made by displaying the Kriging generated grid data in a GIS environment. These regional maps provide a reasonable way to fill in the gaps between discrete spatial data, and help to reveal that the large spatial variation of decreasing trends of  $ET_{ref}$  over last decades is highly correlated to the decreasing trends of solar radiation and wind speed in the catchment. It is also seen from this study that inappropriate interpolation methods are not able to capture the spatial variability of a studied variable and may lead to unreliable inferences especially for small regions.