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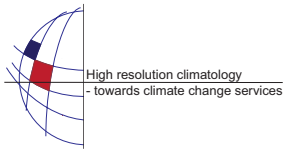

Geostatistical interpolation of individual average monthly temperature supported by MODIS MOD11C3 product

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The increased availability of satellite products of high spatial and temporal resolution together with developing user support, encourages the climatologists to use this data in research and practice.
Since climatologists are mainly interested in monthly or even annual averages or aggregates, this high temporal resolution and hence, large amount of data, can be challenging for the less experienced users. Even if the attempt is made to aggregate e. g. the 15' (temporal) MODIS LST (land surface temperature) to daily temperature average, the development of the algorithm is not straight forward and should be done by the experts.
Recent development of many temporary aggregated products on daily, several days or even monthly scale substantially decrease the amount of satellite data that needs to be processed and rise the possibility for development of various climatological applications.
Here the attempt is presented in incorporating the MODIS satellite MOD11C3 product (Wan, 2009), that is monthly CMG (climate modelling 0.05 degree latitude/longitude grids) LST, as predictor in geostatistical interpolation of climatological data in Croatia. While in previous applications, e. g. in Climate Atlas of Croatia (Zaninović et al. 2008), the static predictors as digital elevation model, distance to the sea, latitude and longitude were used for the interpolation of monthly, seasonal and annual 30-years averages (reference climatology), here the monthly MOD11C3 is used to support the interpolation of the individual monthly average in the regression kriging framework.
We believe that this can be a valuable show case of incorporating the remote sensed data for climatological application, especially in the areas that are under-sampled by conventional observations.

Zaninović K, Gajić-Čapka M, Perčec Tadić M et al (2008) Klimatski atlas Hrvatske / Climate atlas of Croatia 1961-1990, 1971-2000. Meteorological and Hydrological Service of Croatia, Zagreb, pp 200.

Wan Z, 2009: Collection-5 MODIS Land Surface Temperature Products Users' Guide, ICESS, University of California, Santa Barbara, pp 30.