

Extreme Climate Indices in Observations, Reanalyses and Model Forecasts

Ekaterina Kruglova, Irina Kulikova, Dmitriy Kiktev, Valentina Khan, and Oleg Petrenko
Hydrometcentre of Russia, ROSHYDROMET, Moscow, Russian Federation (kruglova@mecom.ru)

A set of the WMO ETCCDI climate indices was calculated using R package ‘climdex.pcic’ for 236 station time series for the territory of CIS. Besides, ERA-Interim reanalysis was used to provide the corresponding global context for these assessments. Changes in different temperature indices including cold spells and heat waves were evaluated for the stations over two periods: 1961–1985 and 1986–2010. The temperature indices indicate strong warming with increase in frequency of warm events (e.g., warm nights, warm summer days and heat waves) and decrease in frequency of cold events (e.g., ice days, frost days, and the cold spell duration index) over most of Northern Eurasia. The strongest warming is detected in the number of frost days and the growing season length. Boxplot analysis of the indices distributions confirms the significant climate changes for the two periods of interest.

A subset of retrospective and real-time forecasts from the S2S project database was used to assess the performance of heat waves and cold spells forecasts on subseasonal time scales employing the EFI (extreme forecast index) and the SOT (shift of tales) metrics. Preliminary results of these assessments are presented.