



Extreme Hot Events over central Europe in 2018: an assessment using LST-CDR from SEVIRI-MSG

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Extreme hot events are increasing in frequency and intensity worldwide, with special emphasis on the high number of events which occurred during the last decade. Europe was particularly affected by unprecedented mega heat waves during the last decades, namely the events that have struck Western Europe in 2003 and Eastern Europe in 2010. Despite their intense impacts, heatwaves are usually of short duration, lasting in the order of a few days to a few weeks. Therefore, monitoring and assessment strategies of extreme hot events is imperative to further investigate their link with atmospheric conditions, especially within the framework of future warming scenarios and risk assessment.

The year of 2018 was reported as an unusually hot year, with record breaking temperatures in many parts of Europe during spring and summer, which were associated to severe and unusual wildfires and significant crop losses in central and northern Europe.

In this study we analyse the temperature extremes over Europe and their vegetation impacts during 2018 using Land Surface Temperature (LST) and Fraction Vegetation Cover (FVC) retrieved from SEVIRI/Meteosat available through LSA-SAF (<http://lsa-saf.eumetsat.int>). LST monthly means and anomalies were computed, considering the diurnal cycle of reprocessed Land Surface Temperature (LST), for the period between 2004-2015 with the LST CDR and for 2016 to present with the operational LST dataset. Monthly means and anomalies were also computed using FVC. ECMWF ERA-Interim skin temperature was also used for the period from 1980 to 2018 and monthly means and anomalies were computed for the extended period and for a sub-period simultaneous with LST dataset.

The results exhibit strong spatial patterns of monthly LST anomalies during spring and summer of 2018 over central and north Europe. Over a particularly large region, breaking LST records with respect to last 15 years, persist for more than 4 months. ECMWF ERA-Interim skin temperatures corroborate the exceptional heat extremes observed over central and northern Europe during 2018, highlighting the ability and usefulness of the LST-CDR for climate variability and extremes assessment.

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