



*CLIMATE CHANGE AND RUSSIAN FORESTS:
IMPACTS, VULNERABILITY AND ADAPTATION NEEDS*

*Online awareness raising workshop
30 March 2021*

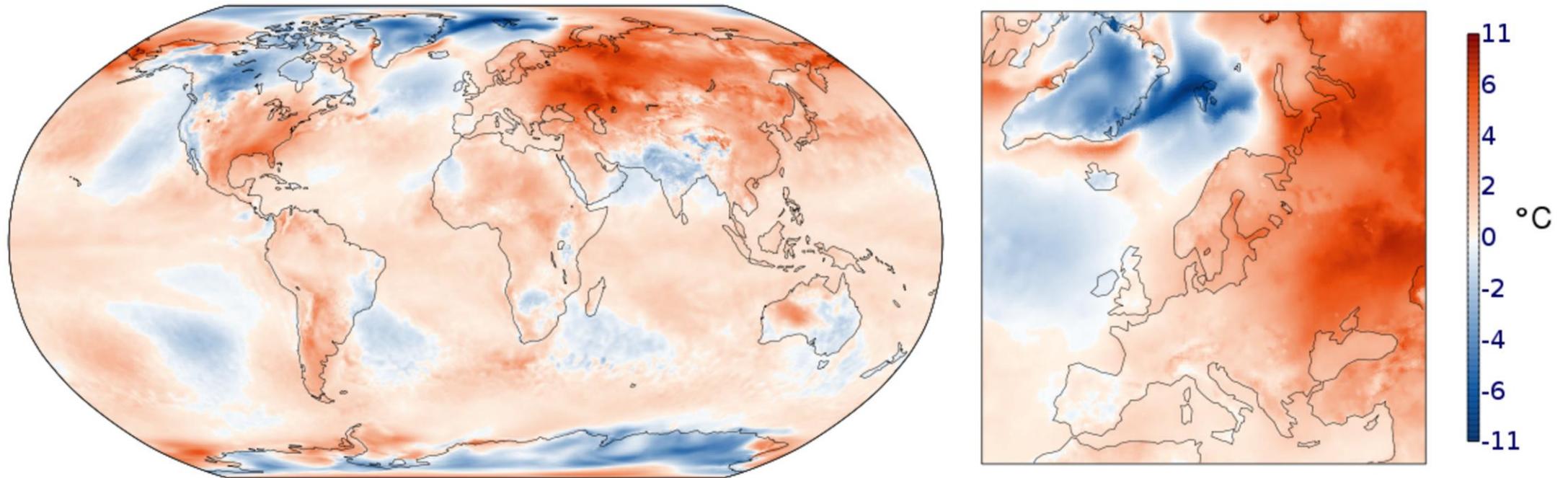
Climate Change in Russia: past –present and future

Riccardo Valentini, Dmitry Zamolodchikov, Christopher Reyer, Sergio Noce, Monia Santini, Marcus Lindner

Climate change in northern latitude

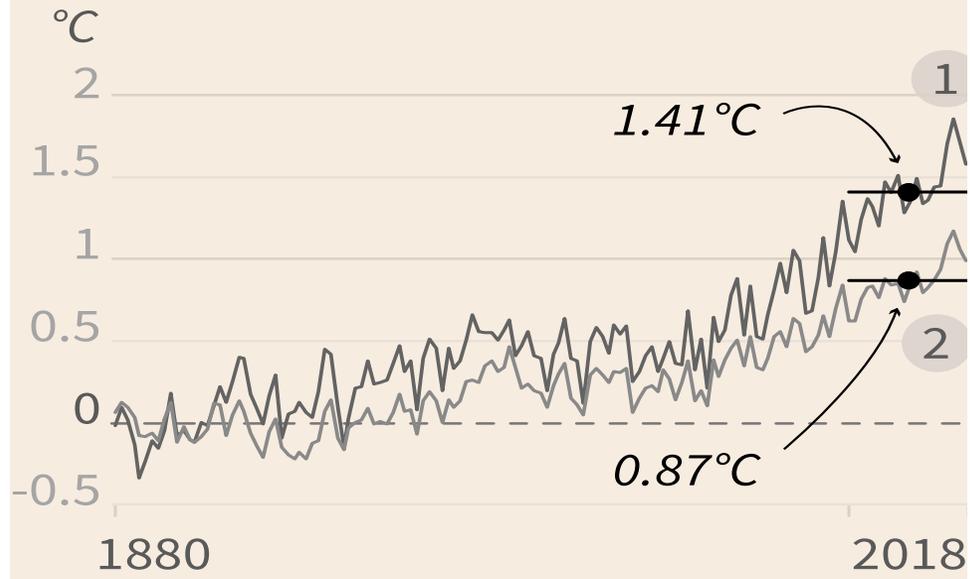
An increasing threat

Surface air temperature anomaly for March 2020 relative to 1981-2010



Climate change over land

- 1 Global warming over land
- 2 Global mean warming



Observed warming in Russian Federation

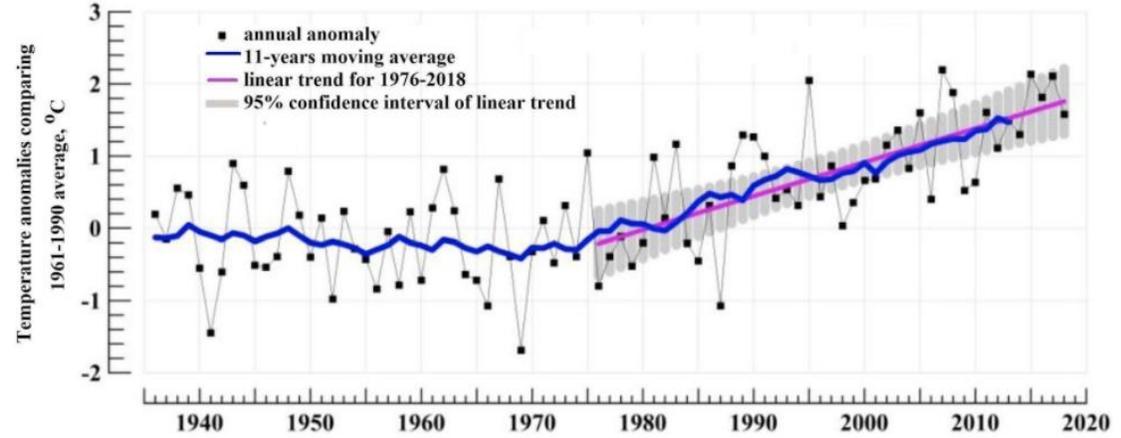


Figure 3.1.1 Mean annual temperature anomalies in Russia, calculated as deviations from the 1961-1990 average (Report on climate features, 2019).

Increasing warming per decade

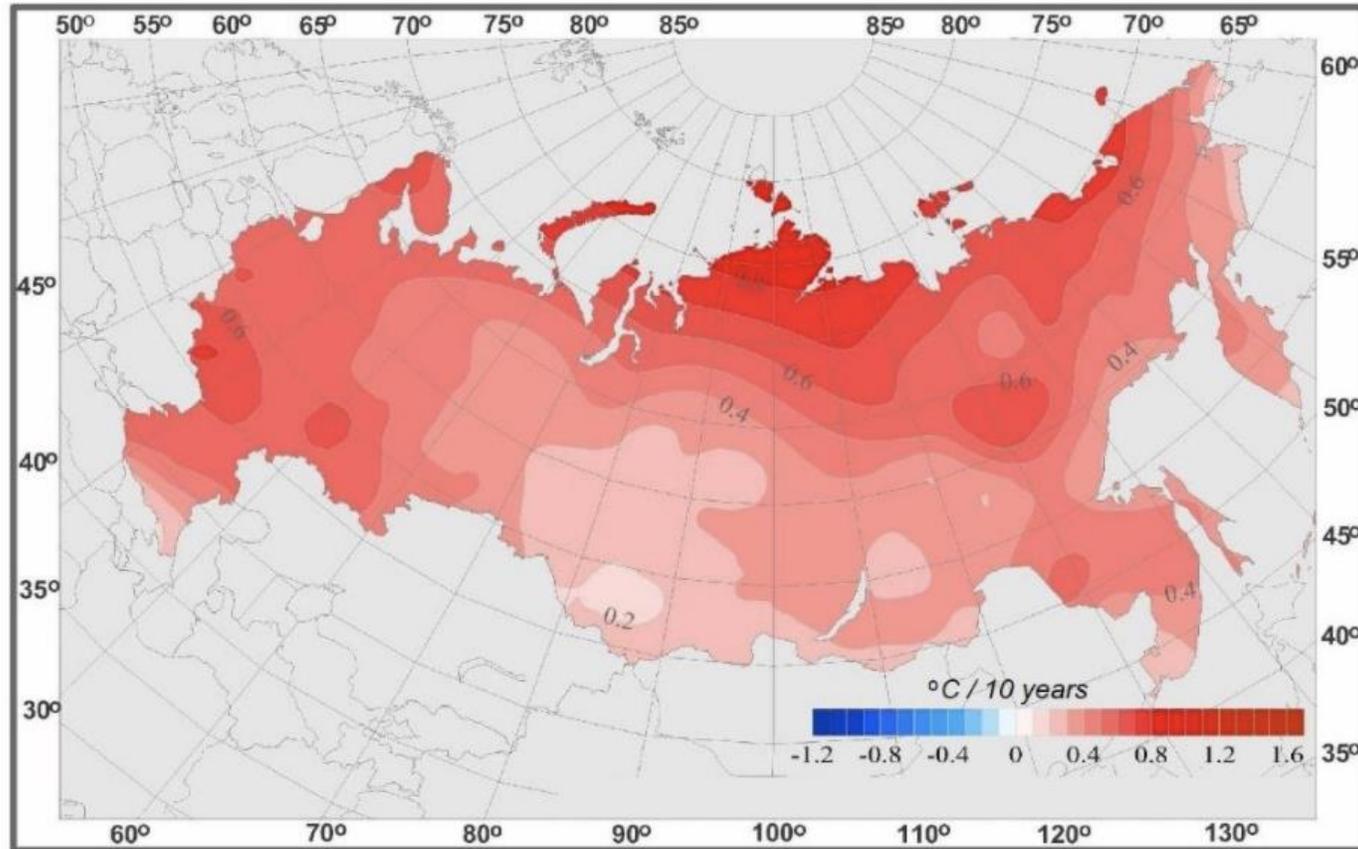


Figure 3.1.2 Trends of annual temperatures for 1976-2013 in Russian territory (change in temperature over the 42-year period, expressed as degree / 10 years) (Roshydromet, 2014).

Enhanced hydrological cycle

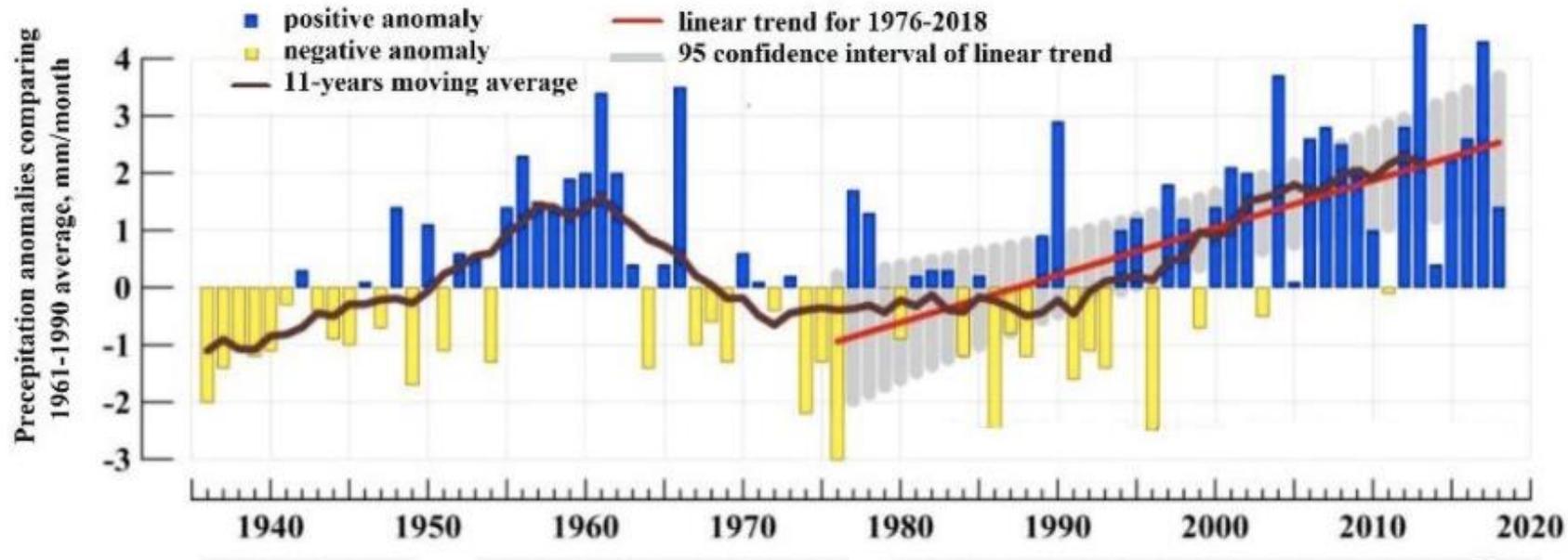
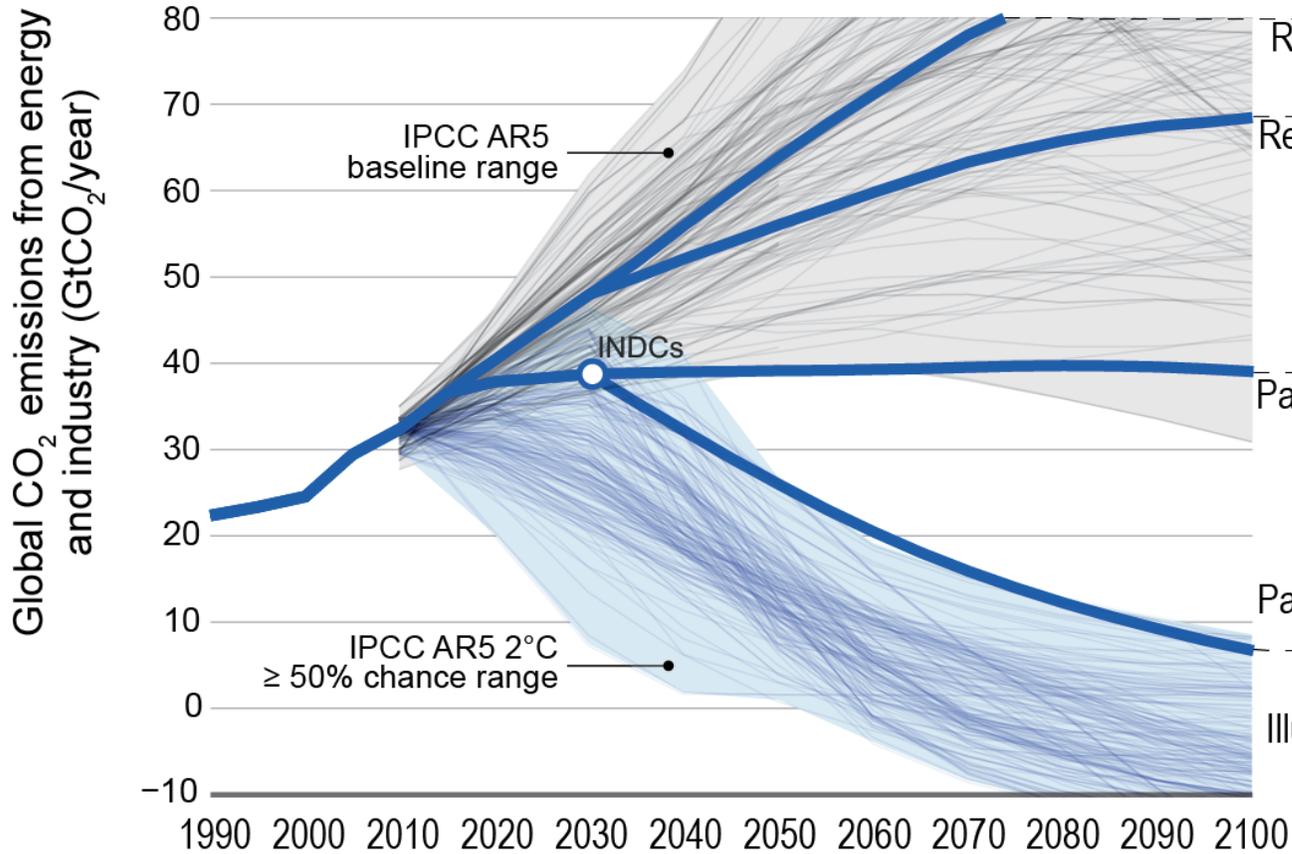


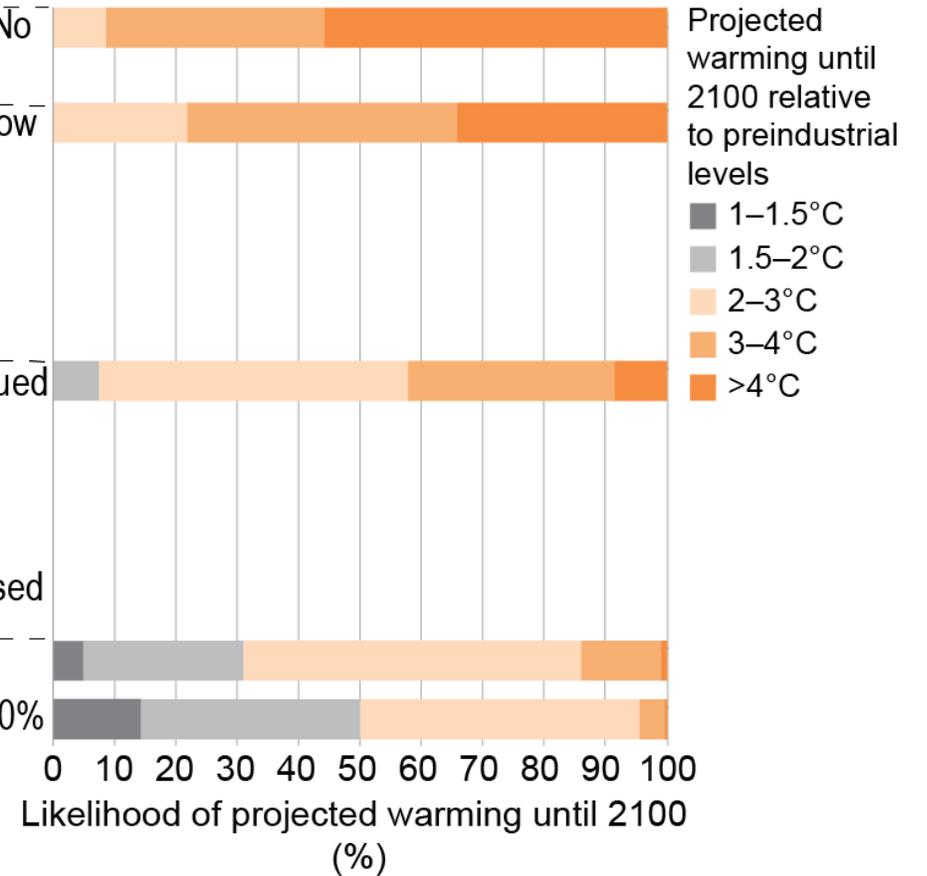
Figure 3.1.3 Precipitation anomalies from 1937 to 2018 relative to the mean annual precipitation of 1961-1990 in Russia (Report on climate features, 2019)

The future of Climate – the need of negative emissions

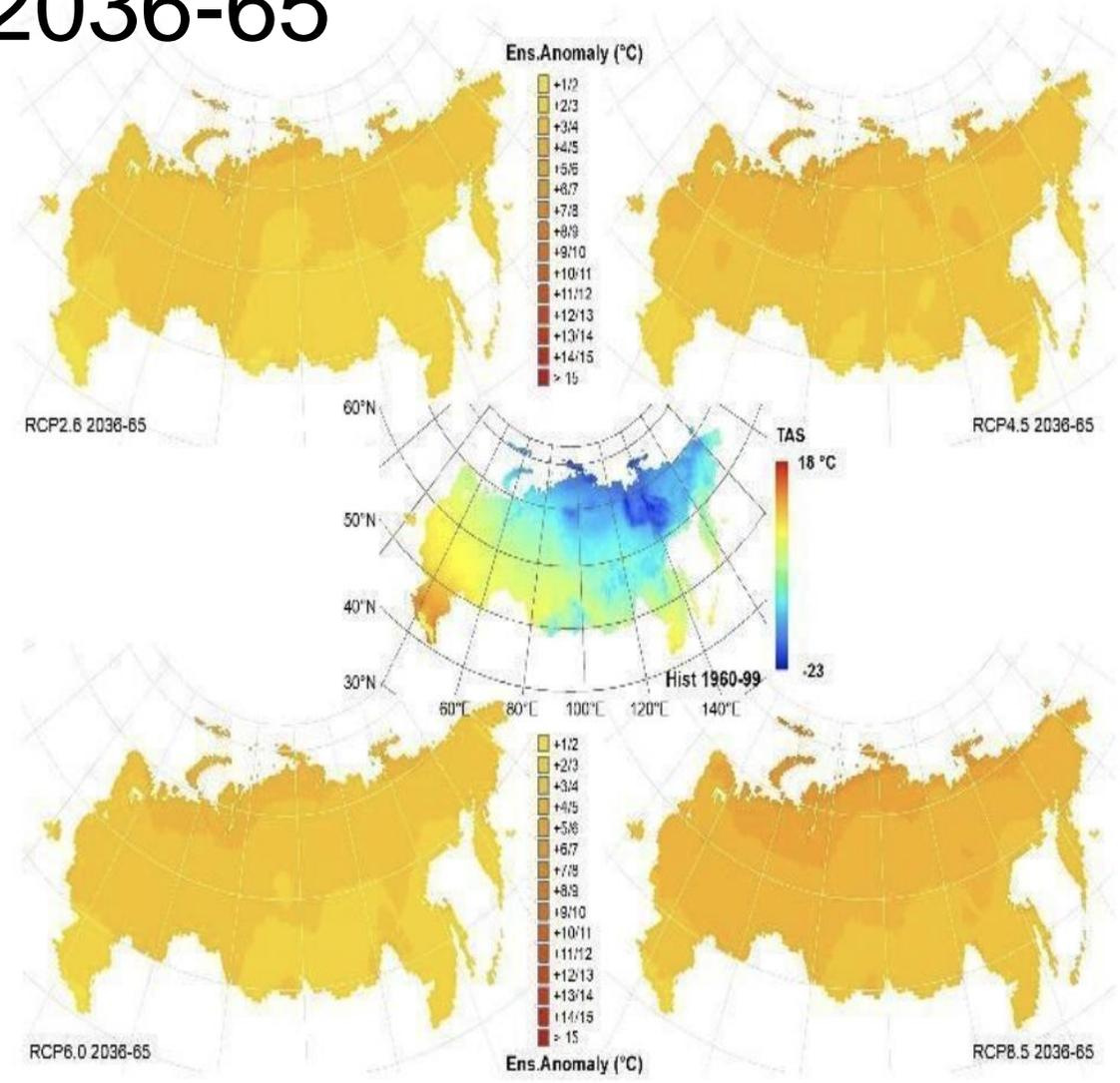
(a) Emissions pathways



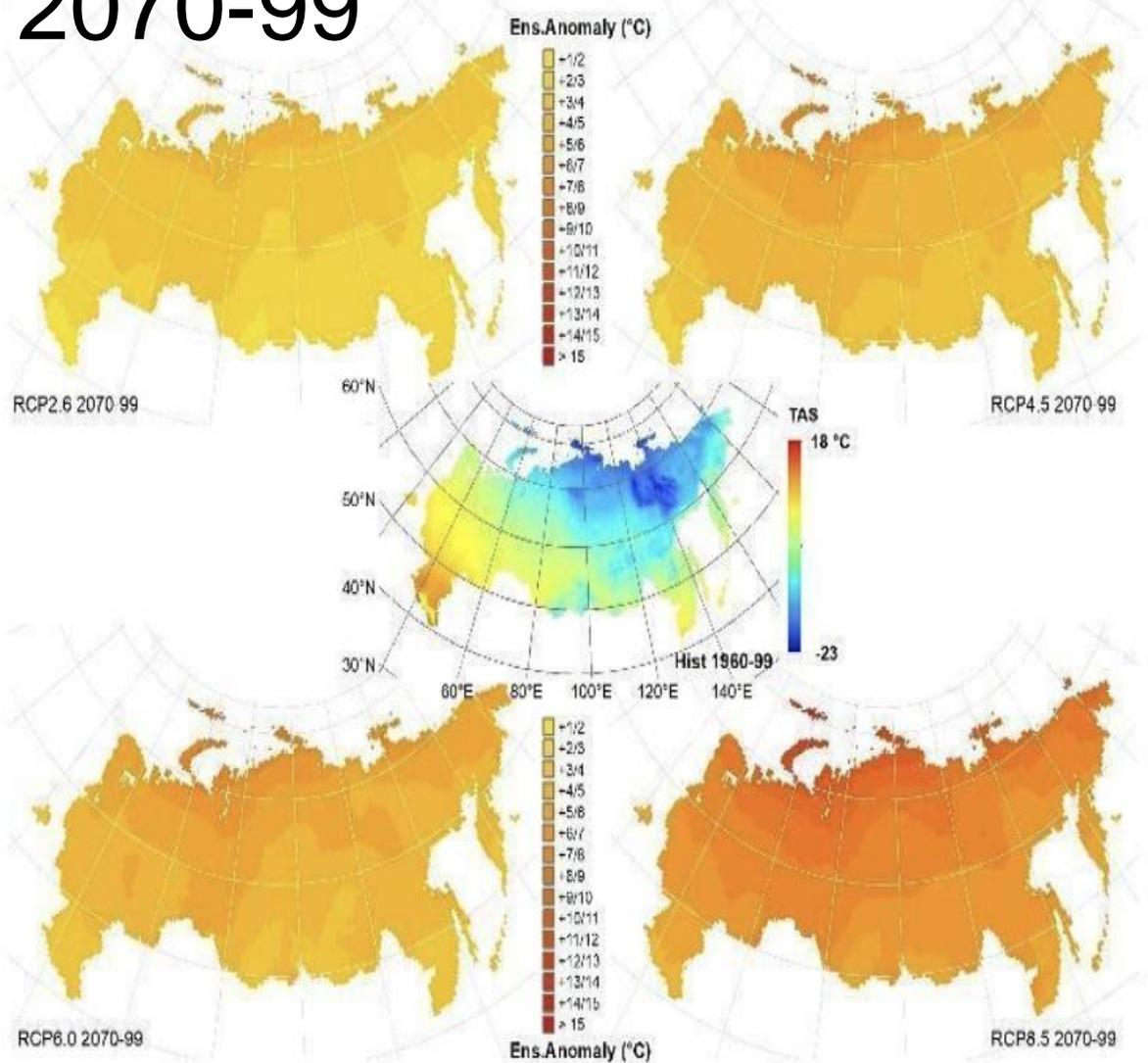
(b) Temperature probabilities



2036-65

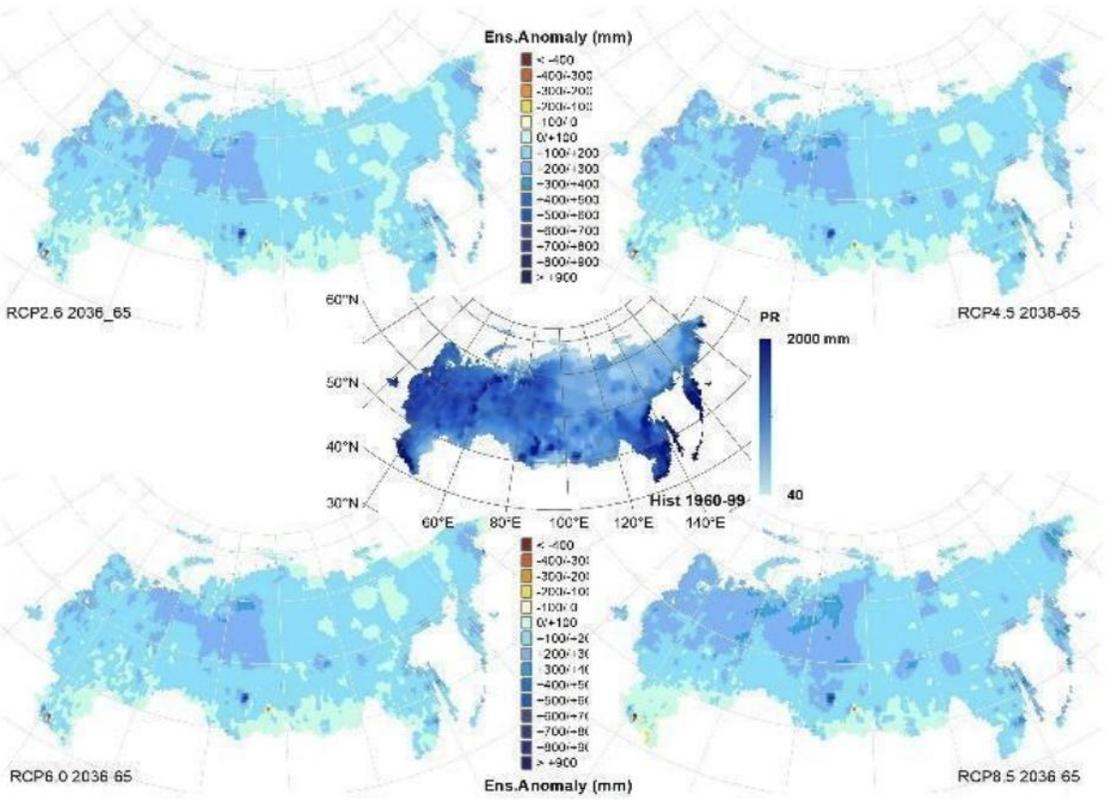


2070-99

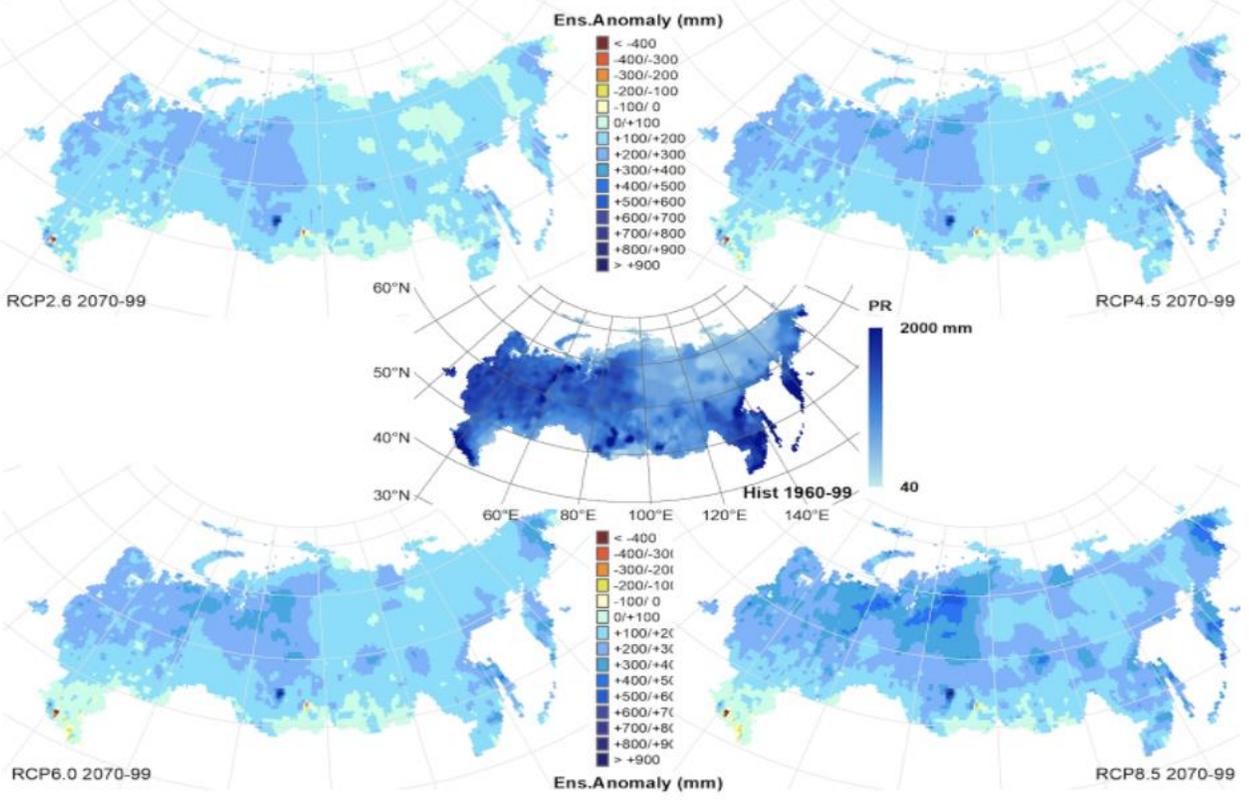


Temperature Anomaly

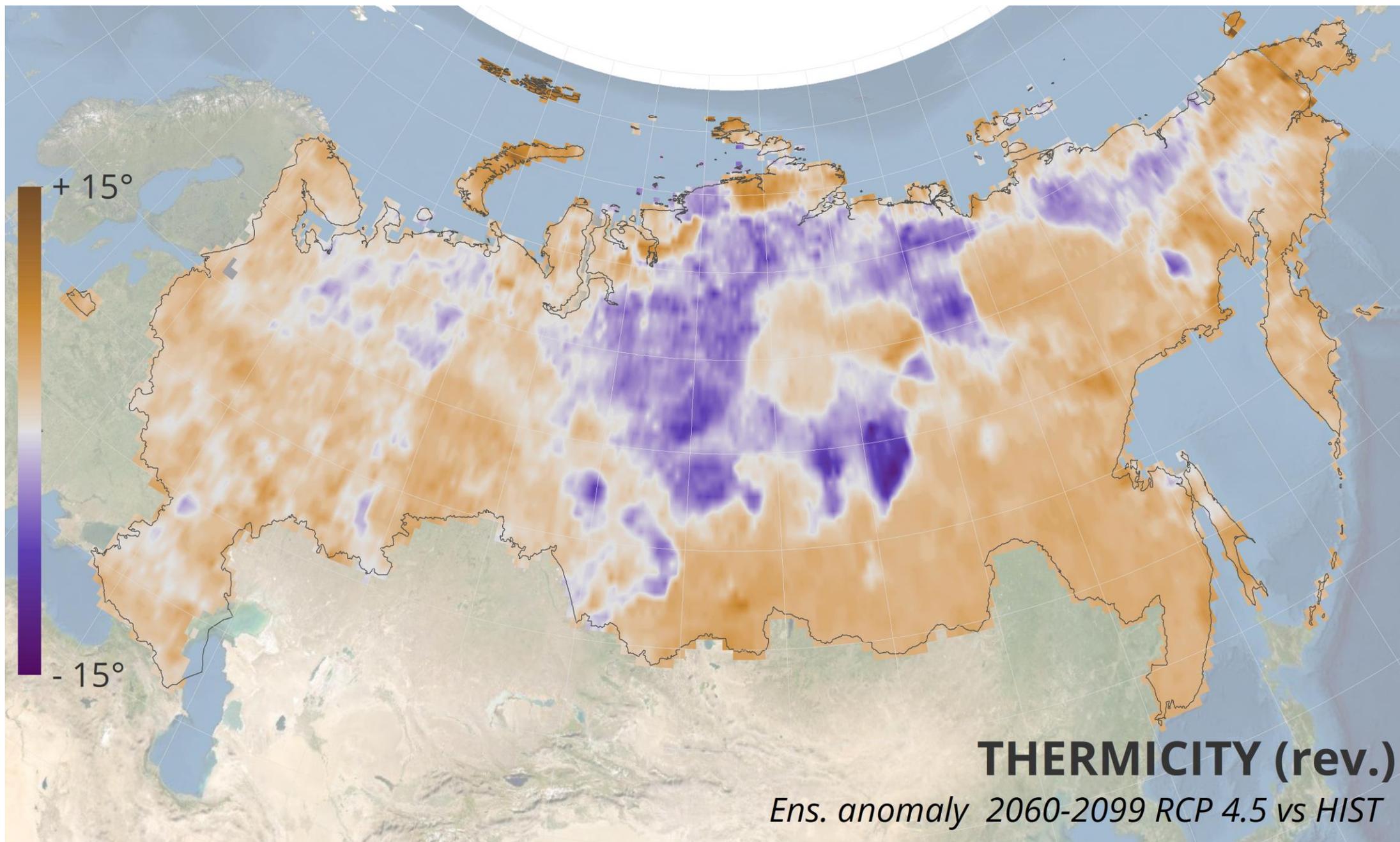
2036-65

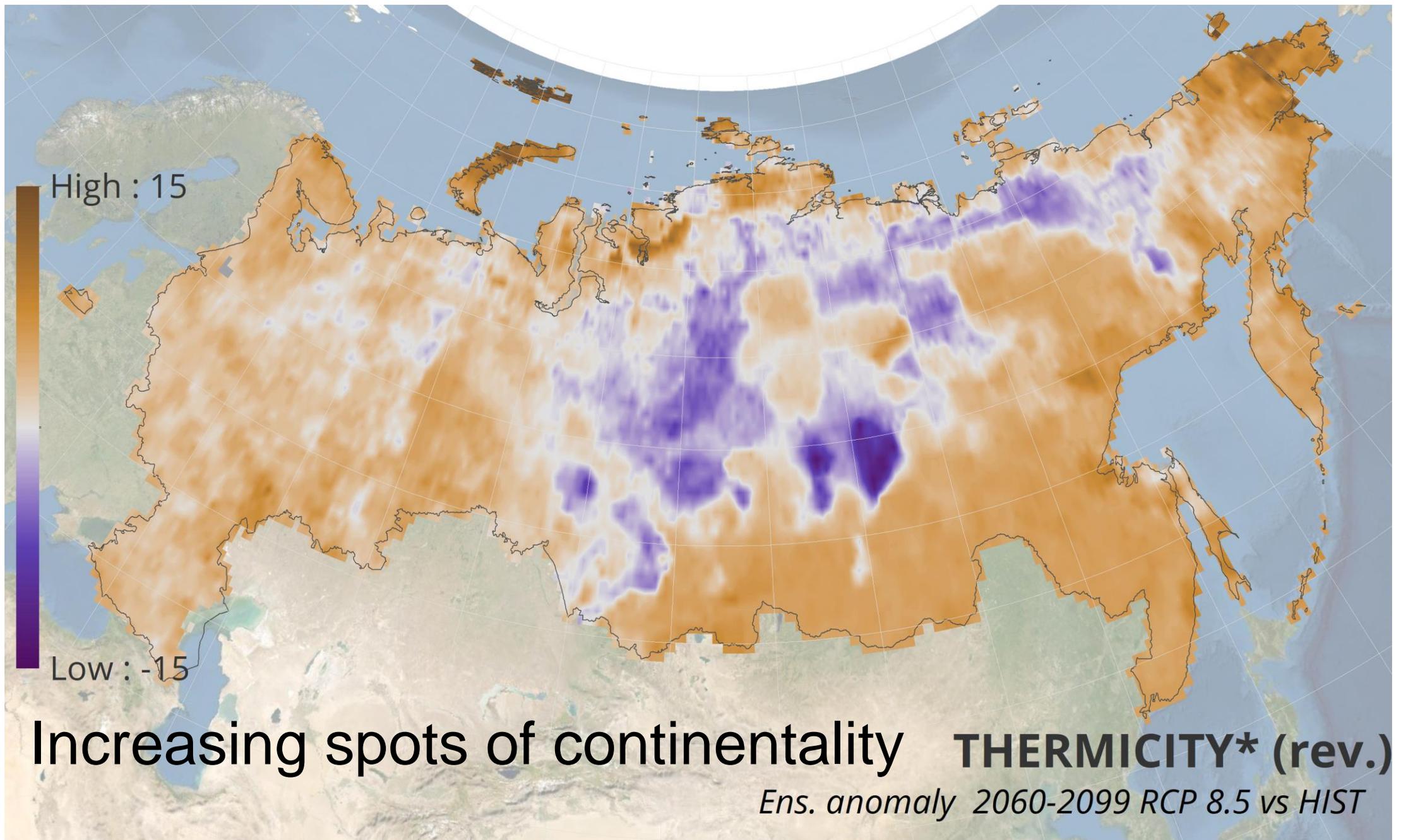


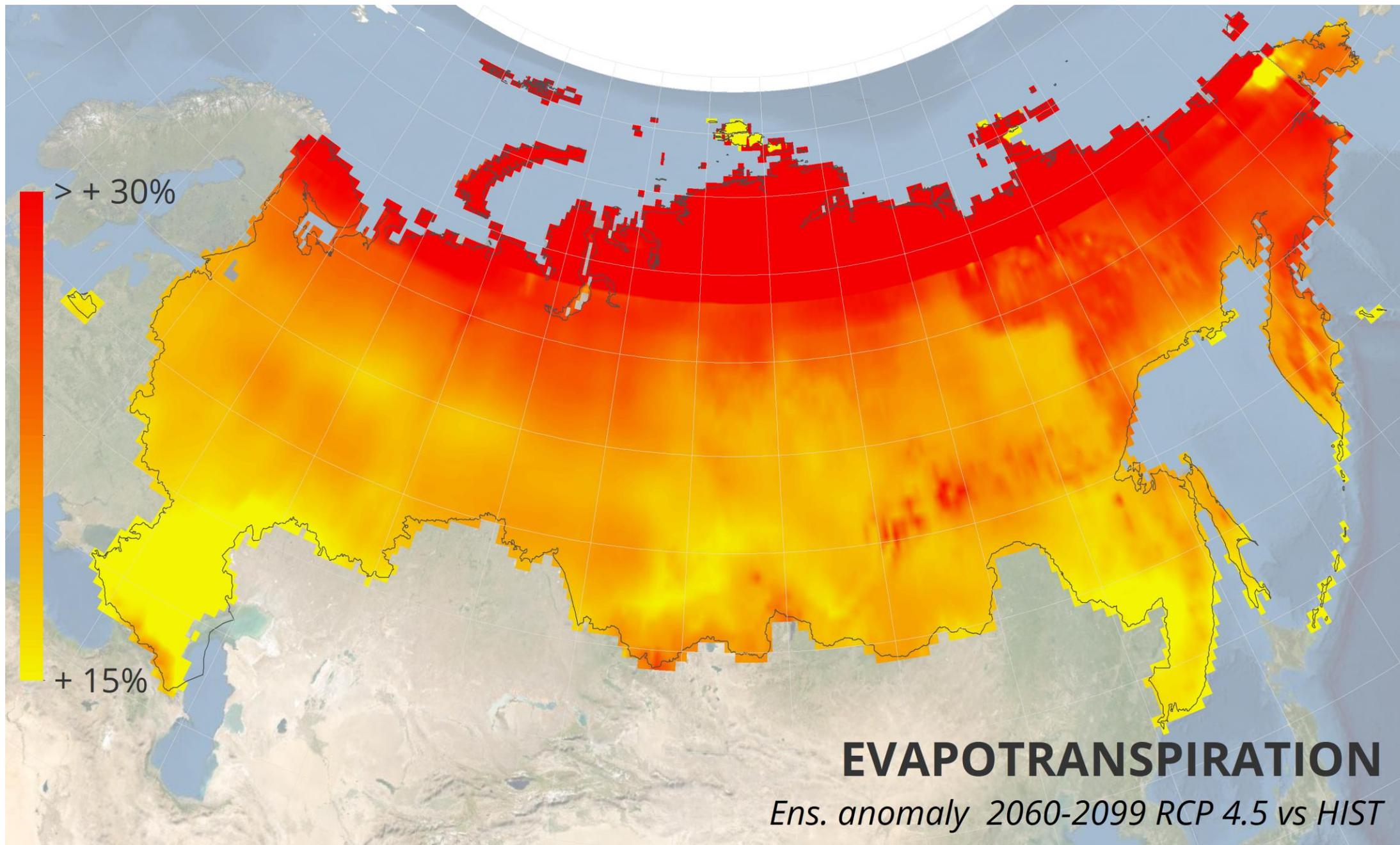
2070-99

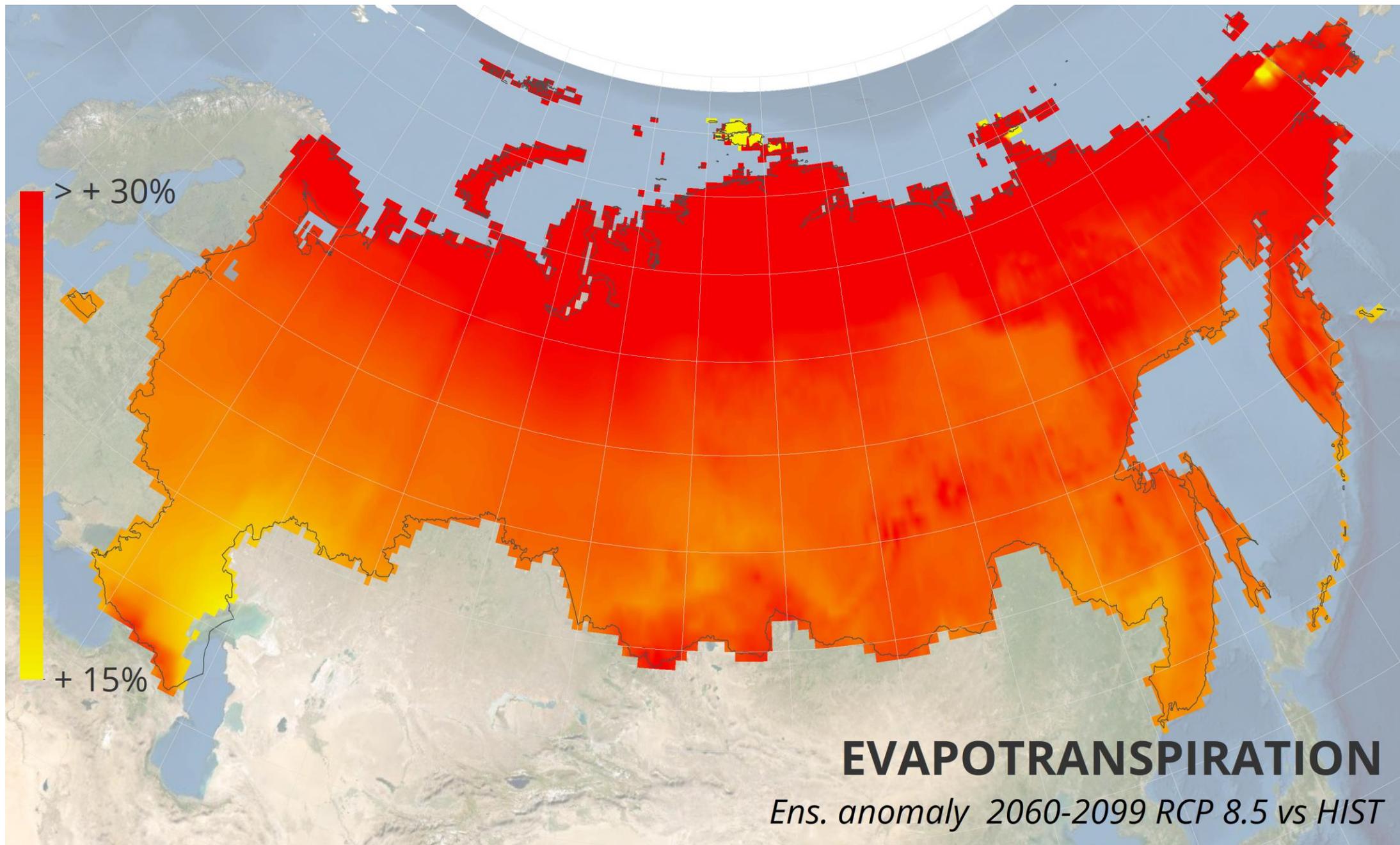


Precipitation Anomaly









Main messages

- A general climate warming trend has occurred in Russia over the past 40 years with an average decadal increase of 0.61 °C, corresponding to about 2.5 times the global average increase.
- At the same a general enhancing of the hydrological cycle with increasing precipitation has been observed across Russia (+2.2 mm per month per decade), particularly in the Central Far East. A slight decrease of precipitation was observed in central and southern European Russia. Extreme events and hydrological hazards increased by almost 3 times between 2000 and 2018.
- Future climate change projections show in all scenarios both at medium (2036-2065) and long term (2070-2099), a continuation of the observed past warming trends with good confidence across models.
- Cumulative precipitation continues to increase on average across Russia with stronger enhancements in Siberia and projected decreases in Southern European Russia. However, climate variability and related extreme events are projected to increase particularly in the central and far east region of Russia.
- Potential increase of continentality climate events will affect Central Siberia regions
- Increase of evapotranspiration across northern regions may create water limiting conditions for forests