



## **Shifts of heat availability and stressful temperatures in Russian Federation result in gains and losses of wheat thermal suitability**

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Climate changes are likely to shift the suitability of lands devoted to cropping systems. We explored the past-to-future thermal suitability of Russian Federation for wheat (*Triticum aestivum*) culture through an ensemble of bias corrected CMIP5-GCMs outputs considering two representative concentration pathways (RCP 4.5 and 8.5). Thermal suitability assesses where wheat heat requirement, counted from suggested sowing dates, is satisfied without the occurrence of stressful hot and frost temperatures. Thermal requirement was estimated by means of phenological observations on soft wheat involving different wheat cultivar collected in different regions of Russian Federation, Azerbaidhan, Kazakhstan and Tadzhikistan, whilst stressful temperatures were taken from a literature survey. Results showed projected geographical shift of heat resource toward the north-eastern regions, currently mainly covered by forests and croplands, but also an increase of very hot temperatures in the most productive areas of the southern regions. Gains and losses were then quantified and discussed from both agronomical and climatic perspective.