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When will European countries exceed the 2°C temperature increase?

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Climatologists all agree that an increase of 2°C at global scale could have serious socio-economic consequences for the future. The Cancun agreement in 2010 officially stated that "With a view to reducing global greenhouse gas emissions so as to hold the increase in global average temperature below 2 °C above pre- industrial levels . . . Parties should take urgent action to meet this long-term goal." Recent studies highlighted that this threshold is likely to be reached by 2060 at global scale if we follow the higher greenhouse gases emission scenarios. However, this threshold might be crossed earlier over lands, by 2040, for Europe, Asia, North Africa and Canada. This study aims to highlight when this threshold might be reached at the country level for members states of the European Union. A large ensemble of regional climate model simulations driven by the SRESA1B emission scenario carried out within the ENSEMBLES project framework for the European continent is employed to achieve such a task. Results corroborate that the European continent is likely to warm faster than the global average temperatures, with the multi-model ensemble mean crossing the 2°C threshold by 2045-2055. Regionally, Eastern Europe, Scandinavia and the Mediterranean basin are likely to cross that threshold earlier than northwestern/central Europe. As an example of these regional differences, Cyprus is likely to experience a 2°C increase during the mid 2040s while this might happen over Ireland during the late 21st century.