

Supporting information

Climate change alters elevational phenology patterns of the European spruce bark beetle (*Ips typographus*).

Oliver Jakoby, Heike Lischke, Beat Wermelinger

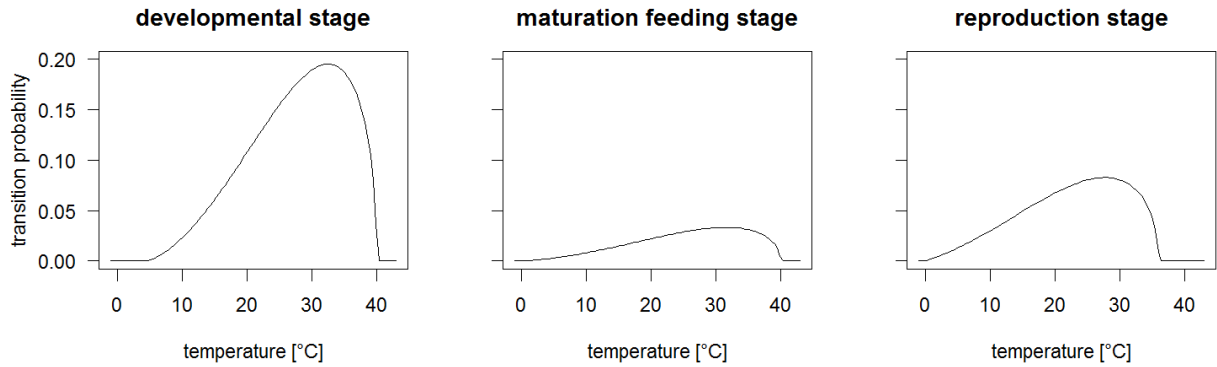


Figure S1: The non-linear transition functions for the different bark beetle stages. The graphs visualise the hourly transition probabilities between sub-stages of the developmental stage (left), the maturation feeding stage (mid) and the reproduction stage (right) depending on current phloem temperature. The curves result from the function proposed by Briere *et al.* (1999; adapted with a simplification of van der Heide *et al.*, 2006), as presented in the method section (Eq. 1), using the parameters given in Table 1.

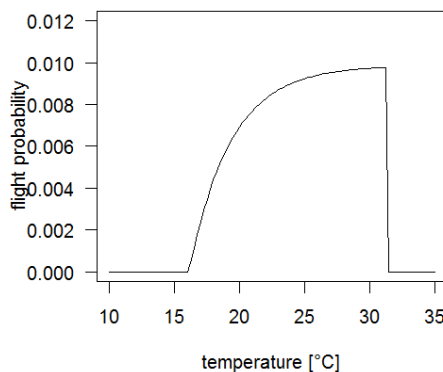


Figure S2: The hourly flight probability depending on current air temperature. The curve follows the function described in the method section (Eq. 3), using the parameters given in Table 1.

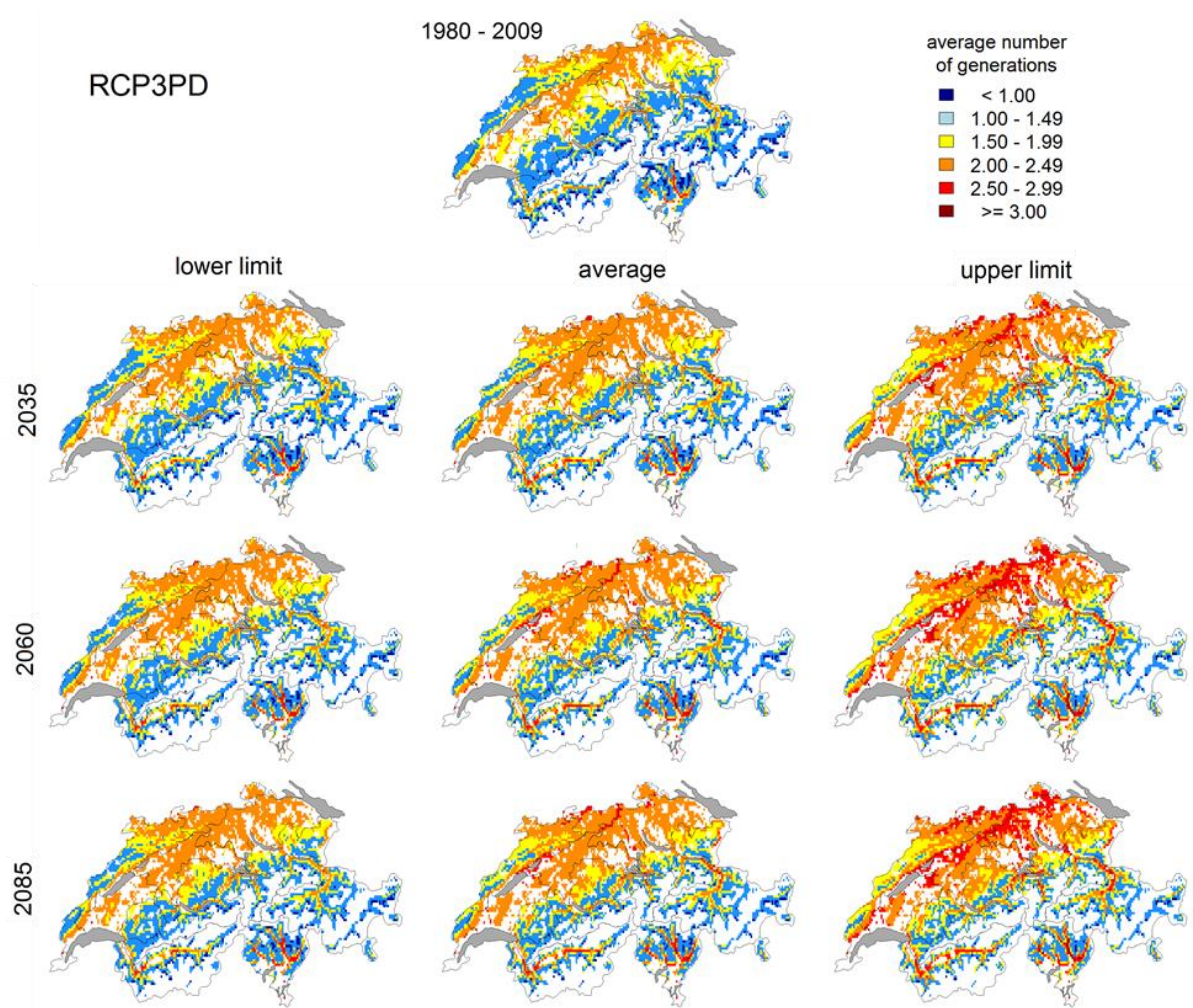


Figure S3: Uncertainty range for the average number of generations of the spruce bark beetle (*Ips typographus*) in Switzerland for the climate change scenario RCP3PD at the three scenario periods (mean of 30 years centred around 2035, 2060, and 2085). The figure illustrates the variability (i.e. lower limit, average and upper limit) of the results as a consequence of the uncertainty in the different climate projections for the scenario.

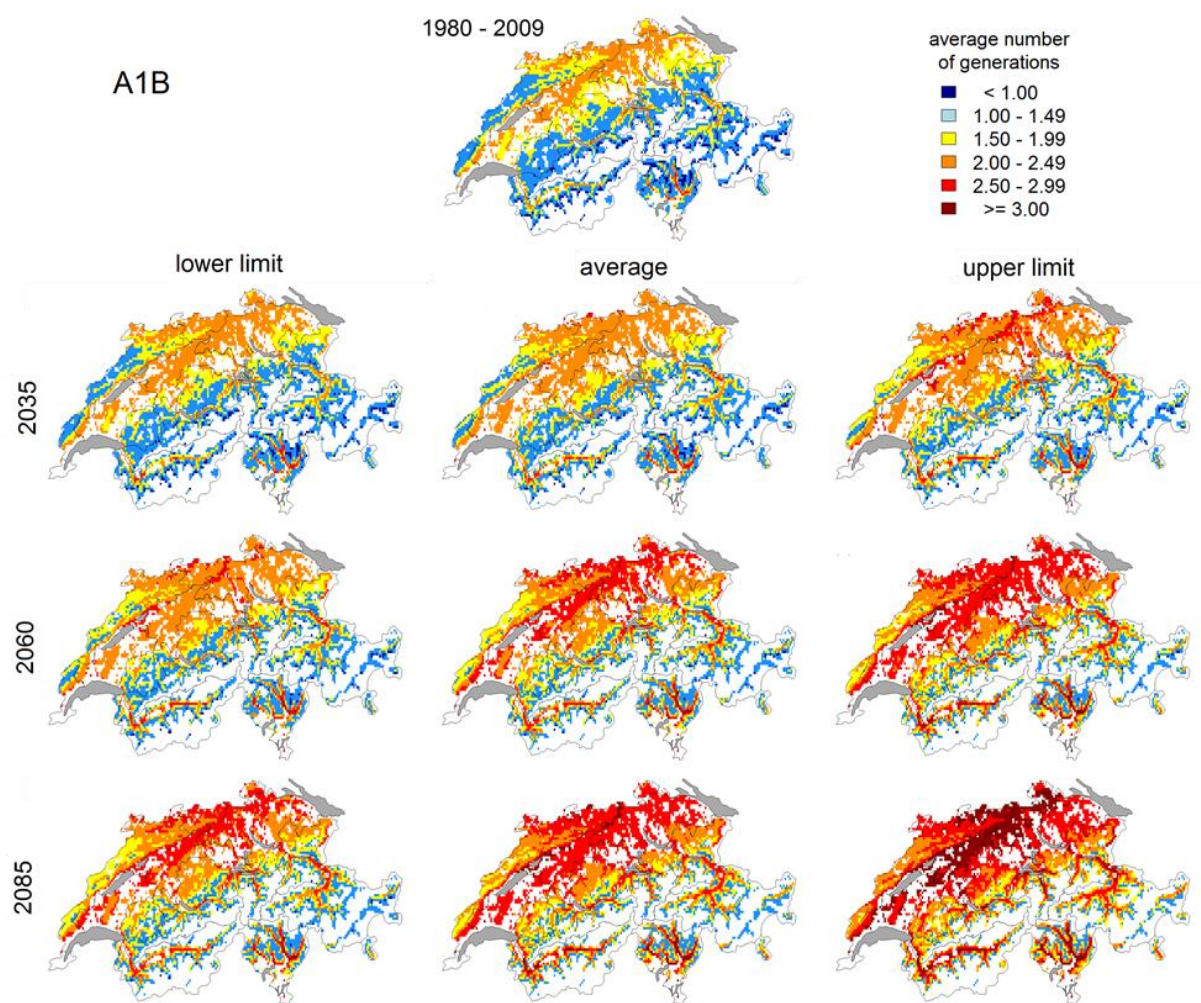


Figure S4: Uncertainty range for the average number of generations of the spruce bark beetle (*I. typographus*) in Switzerland for the climate change scenario A1B at the three scenario periods (mean of 30 years centred around 2035, 2060, and 2085). The figure illustrates the variability (i.e. lower limit, average and upper limit) of the results as a consequence of the uncertainty in the different climate projections for the scenario.

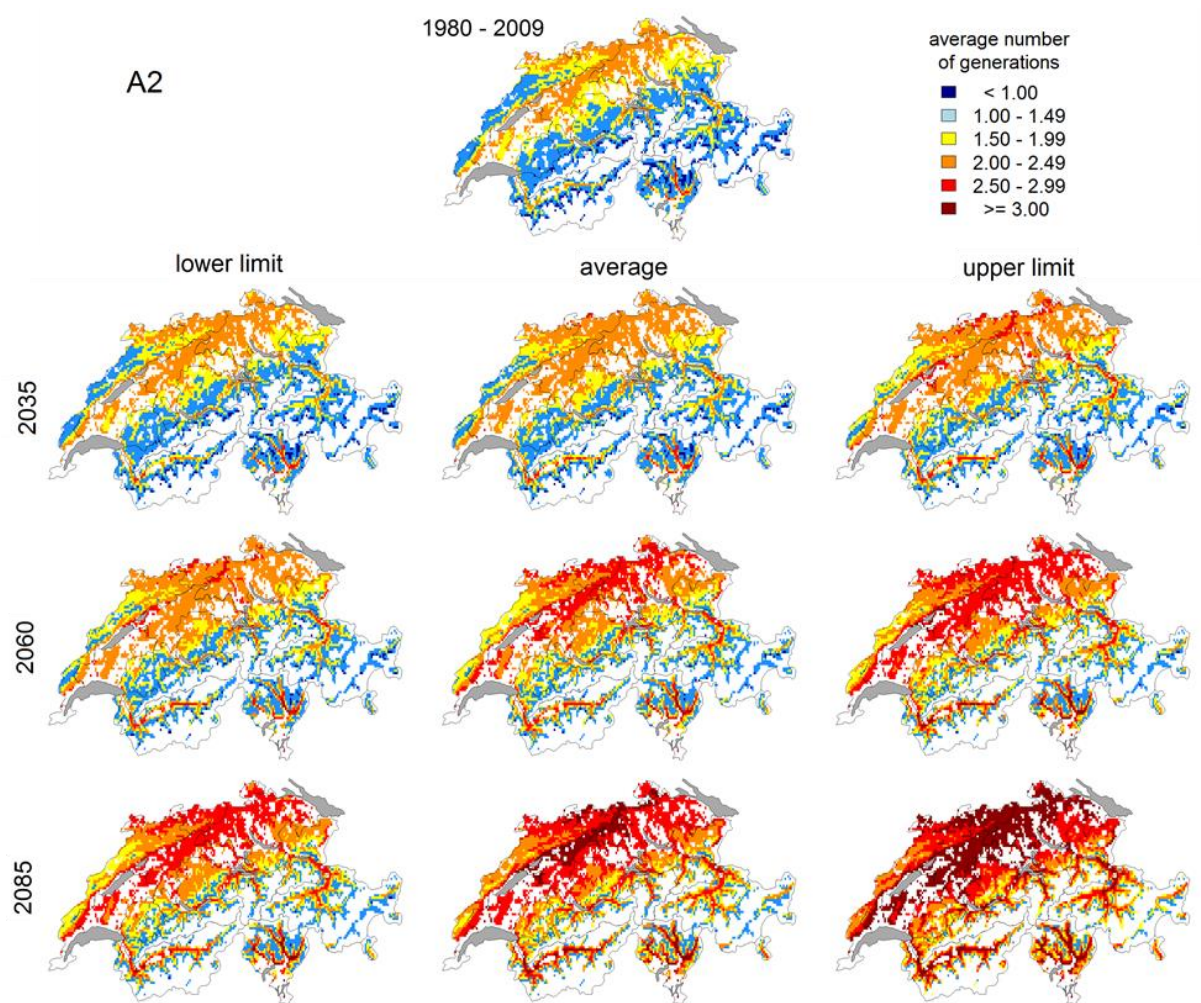


Figure S5: Uncertainty range for the average number of generations of the spruce bark beetle (*I. typographus*) in Switzerland for the climate change scenario A2 at the three scenario periods (mean of 30 years centred around 2035, 2060, and 2085). The figure illustrates the variability (i.e. lower limit, average and upper limit) of the results as a consequence of the uncertainty in the different climate projections for the scenario