Prunus padus

Description of model and ensemble projections

The current distribution of *Prunus padus* is modelled to cover mostly scattered parts of the Swiss Plateau. The species naturally inhabits riverine forests, moist forests and forest edges on the Swiss Plateau. The species also occurs in interior valleys, but finds less frequently the required wet or moist soils in these drier climates.

Under expected climate change using the A1B scenario, most combinations of statistical and regional climate models predict a slight shift to higher altitudes of *P. padus* on the Plateau, mostly in Eastern Switzerland, which seems to be too high (and cold) under current climate. It does, however, not really shift that much to higher altitudes, likely also due to the soil requirements, as it does not frequently grow on slopes.

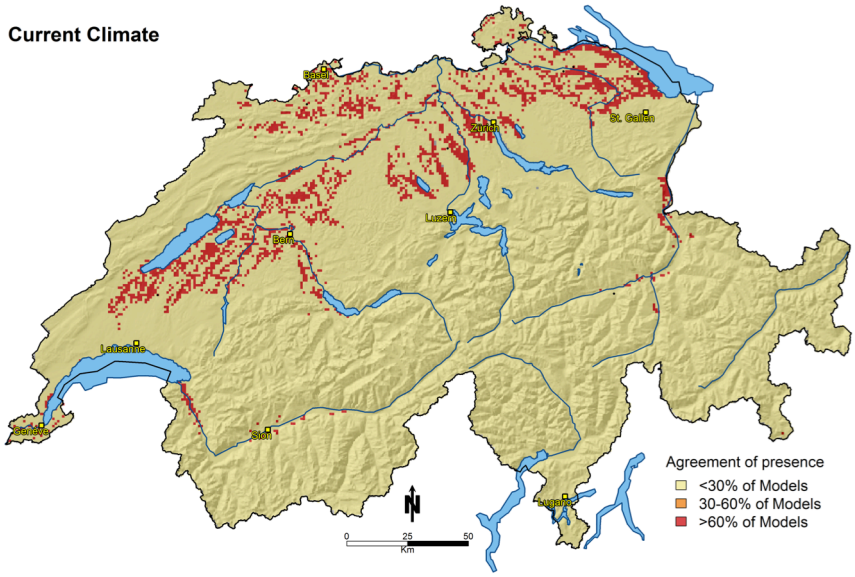


Figure 1. Current distribution (black dots) from the Swiss National Forest inventory (LFI 1) and simulated habitat suitability under current climate as calibrated from LFI forest inventory data of Switzerland.

Synthesis and Conclusions

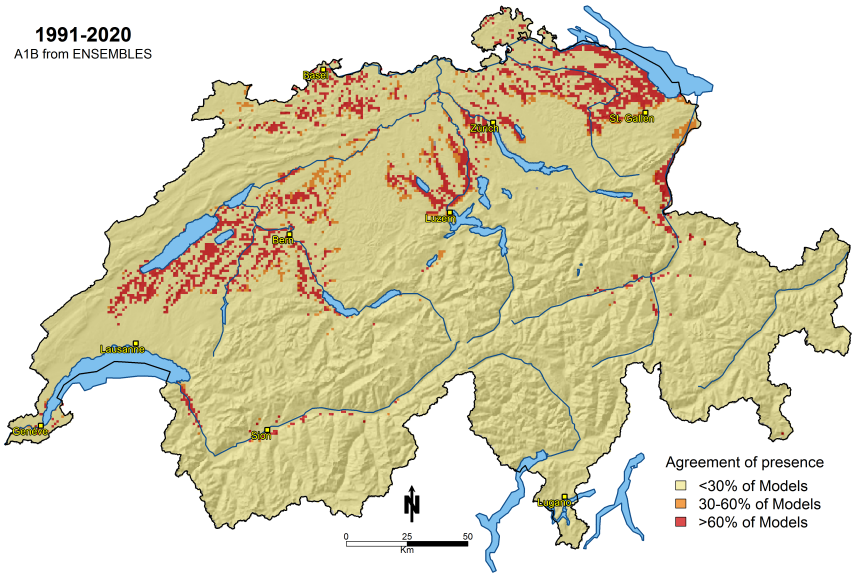
The model fits the distribution of *P. padus* moderately well, and can be considered a useful model to project the future habitat suitability of *P. padus*. The model suffers a bit from too few observations for building an even better model. The ensemble models project a 68% overlap between the current and the future range in Switzerland, while no data is available for the European scale. In addition, there is merely no difference between future and current range sizes (+1%), thus the species maintains its range largely, and keeps a strong overlap between current and future ranges. This may primarily originate from a strong control of soil parameters in the model.

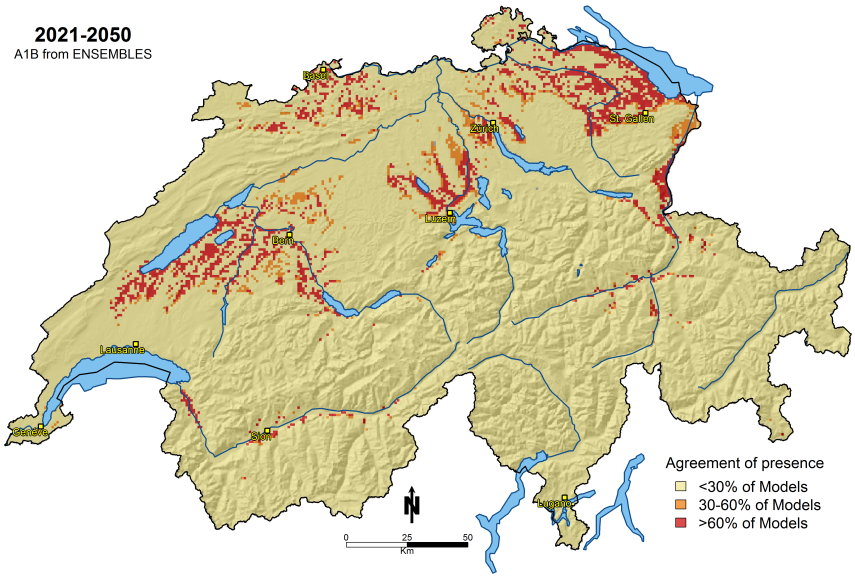
Range change statistics

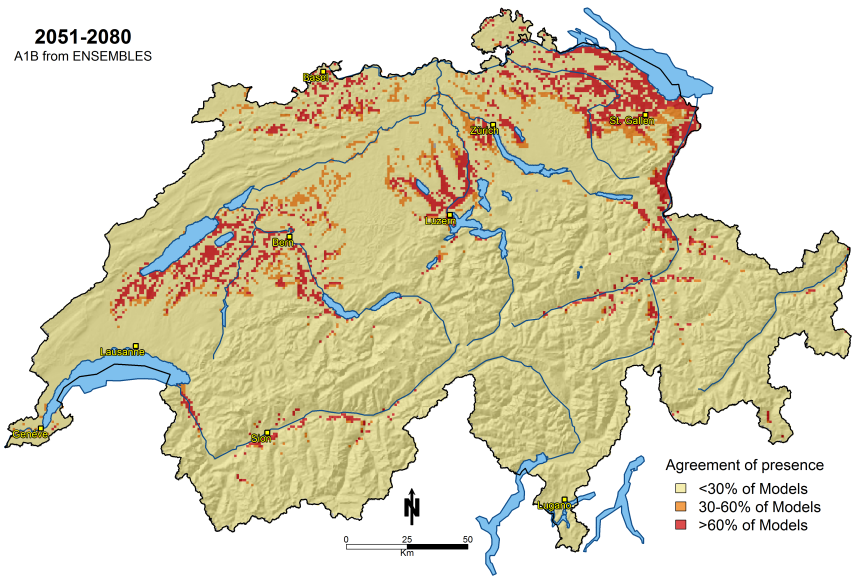
	CH	Europe
Current range size [km²]	2'675	
Future (2080) range size	2'709	
Range Change 2080/2000 [%]	101.3%	
Overlap 2000/2080 [km²]	1'827	
Overlap/current range [%]	68.3%	

P. padus does not have specific economic or ecological value in forests. It indicates groundwater, and thus is usually only found in moist and flat areas (see patchy distribution in Figure 1). Alternatively, it can grow on river embankments with sufficiently close distance to groundwater and it so helps stabilizing such embankments. *P. padus* has few known pests, but doesn't pose a real threat to forest management when infested. It's an important food source for some bird species, and adds to the beauty of forests with its large inflorescence.

The species is likely affected by climate change, but not heavily threatened by the projected amount of change by the end of the 21st century. The species grows well under a warmer climate, as long as there are soils with groundwater available. It would disappear quickly, if groundwater levels were sinking.


1991-2020
A1B from ENSEMBLES
Basel
Zürich
St. Gallen
Luzern
Bern
Lausanne
Genève
Sion
Lugano
Agreement of presence
<30% of Models
30-60% of Models
>60% of Models
0 25 50
Km


2021-2050
A1B from ENSEMBLES
Basel
Zürich
St. Gallen
Luzern
Bern
Lausanne
Genève
Sion
Lugano
Agreement of presence
<30% of Models
30-60% of Models
>60% of Models
0 25 50
Km


2051-2080
A1B from ENSEMBLES
Basel
Zürich
St. Gallen
Luzern
Bern
Lausanne
Genève
Sion
Lugano
Agreement of presence
<30% of Models
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Km