

Application of an efficient soil water content model in ecosystem modeling and scenario development

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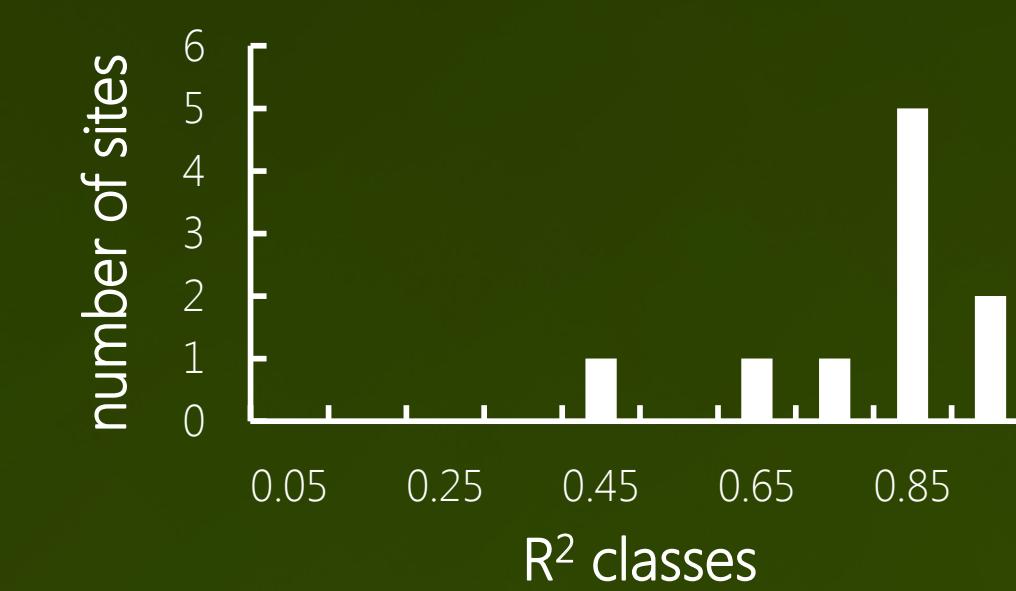
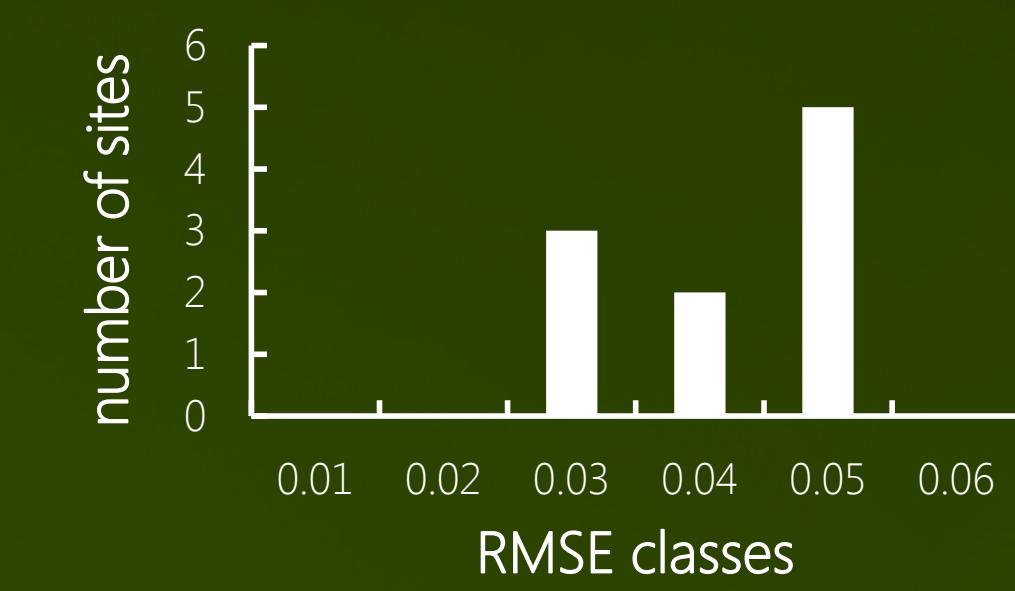
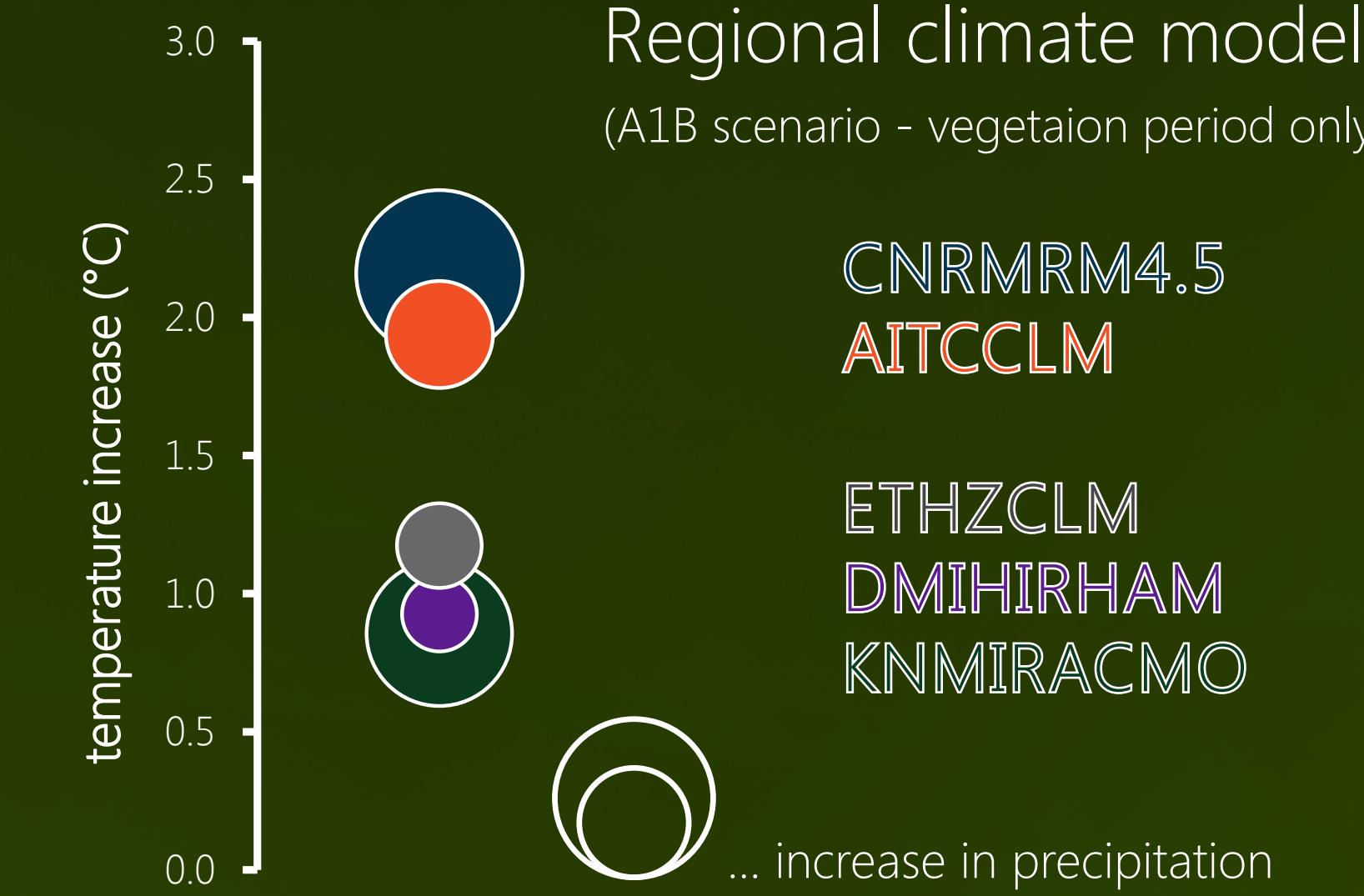
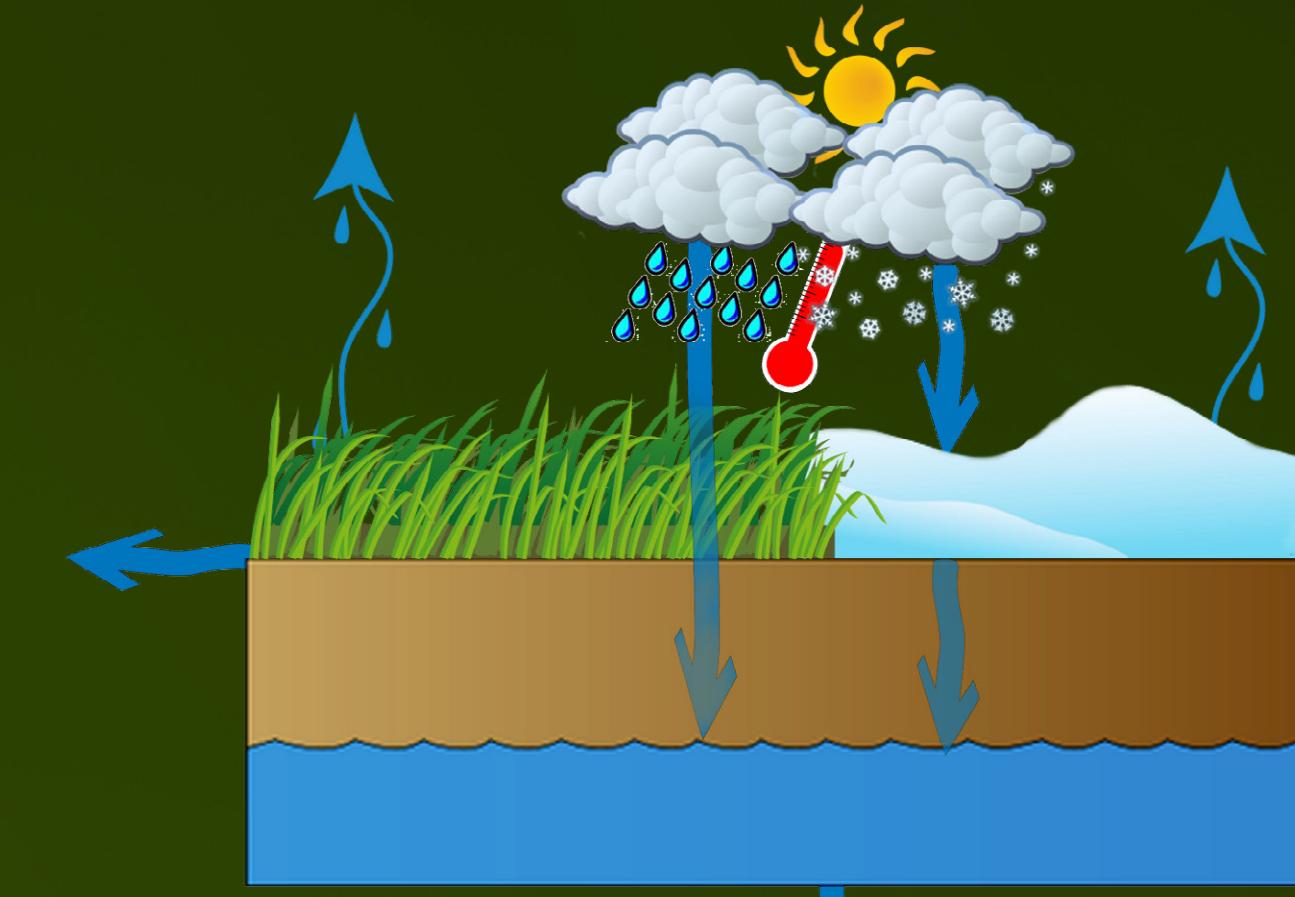
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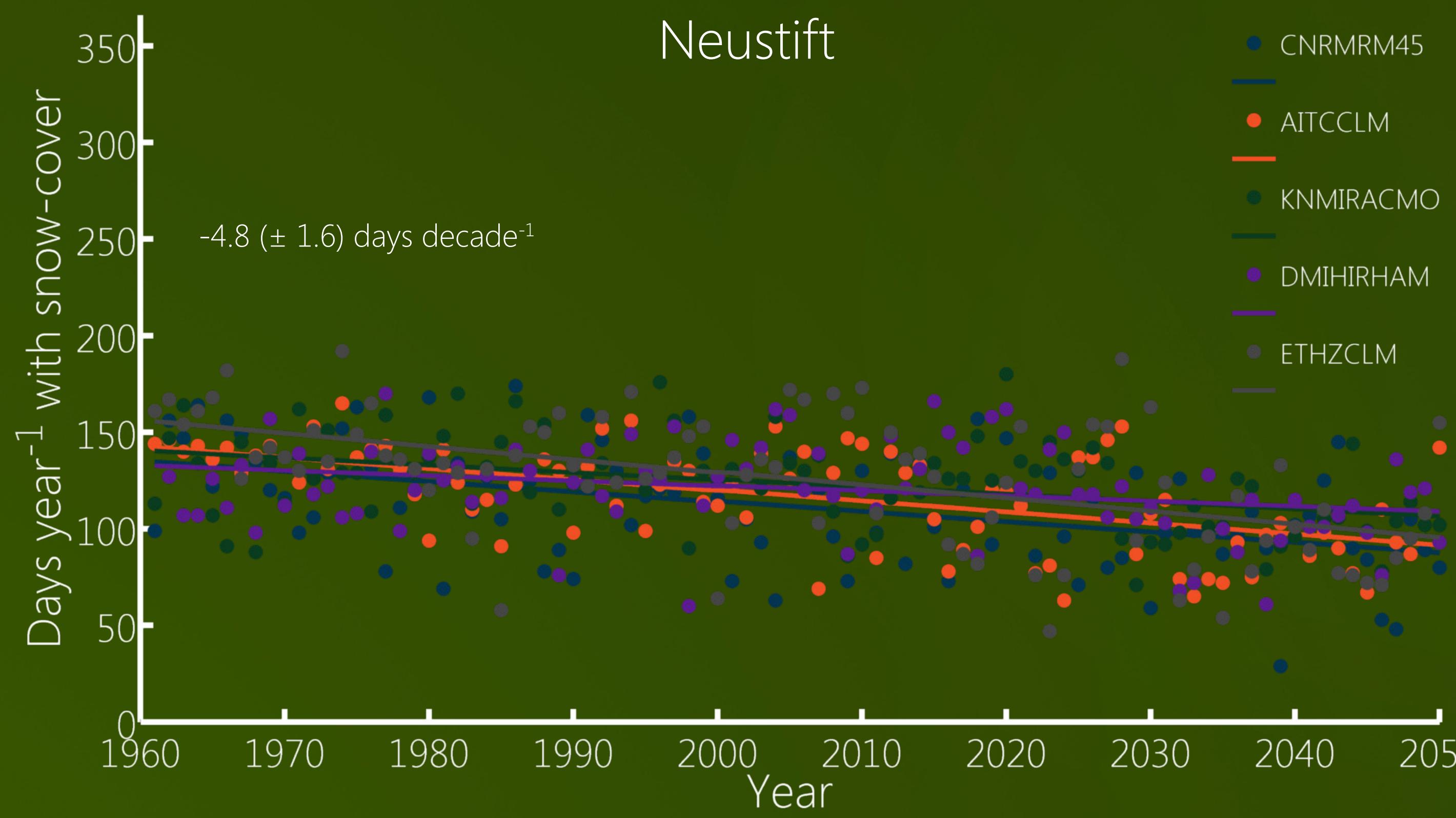
model (performance) & scenarios

(I)



snow-cover duration

(II)



dry periods

(III)

Model	Dry days per veg. per.		Duration of dry periods (d)	
	1961-1990	2021-2050	1961-1990	2021-2050
CNRMM4.5			8.75	10.14
AITCCLM	10.70	19.70	8.74	10.44
KNMIRACMO			12.50	8.20
DMIHIRHAM	10.70	4.00	9.62	11.20
ETHZCLM	10.70	13.70		



motivation & aims

Available soil water is a major constraint for numerous ecosystem functions and is likely to be considerably affected by projected shifts in temperature and precipitation. Quantifying likely future changes in soil water content is therefore essential for assessing impacts of climate change on ecosystem functions.

Here we present a modeling study addressing changes in future soil water content (swc) and snow cover duration of temperate grasslands in the Austrian Alps based on the application of "SoilBucket", a soil moisture model characterized by an efficient structure and minimal requirements regarding meteorological inputs.

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results & conclusions

Model SoilBucket

- efficient
- good performance ^(I)
- minimal input requirements
- broad range of possible applications

Trends until 2050

- no clear trend in average swc ^(IV)
- majority of scenarios leads to wetter conditions on average ^(IV)
- increase in number of dry days more likely than not ^(III)
- length of dry periods is likely to increase ^(III)

Snow-cover (sc)

- later onset of permanent sc
- earlier thawing of sc
- longer vegetation period ^(II)
- more years without permanent sc



swc distributions during vegetation periods

(IV)

