Future scenarios of soil water availability at managed grassland ecosystems in the Austrian Alps

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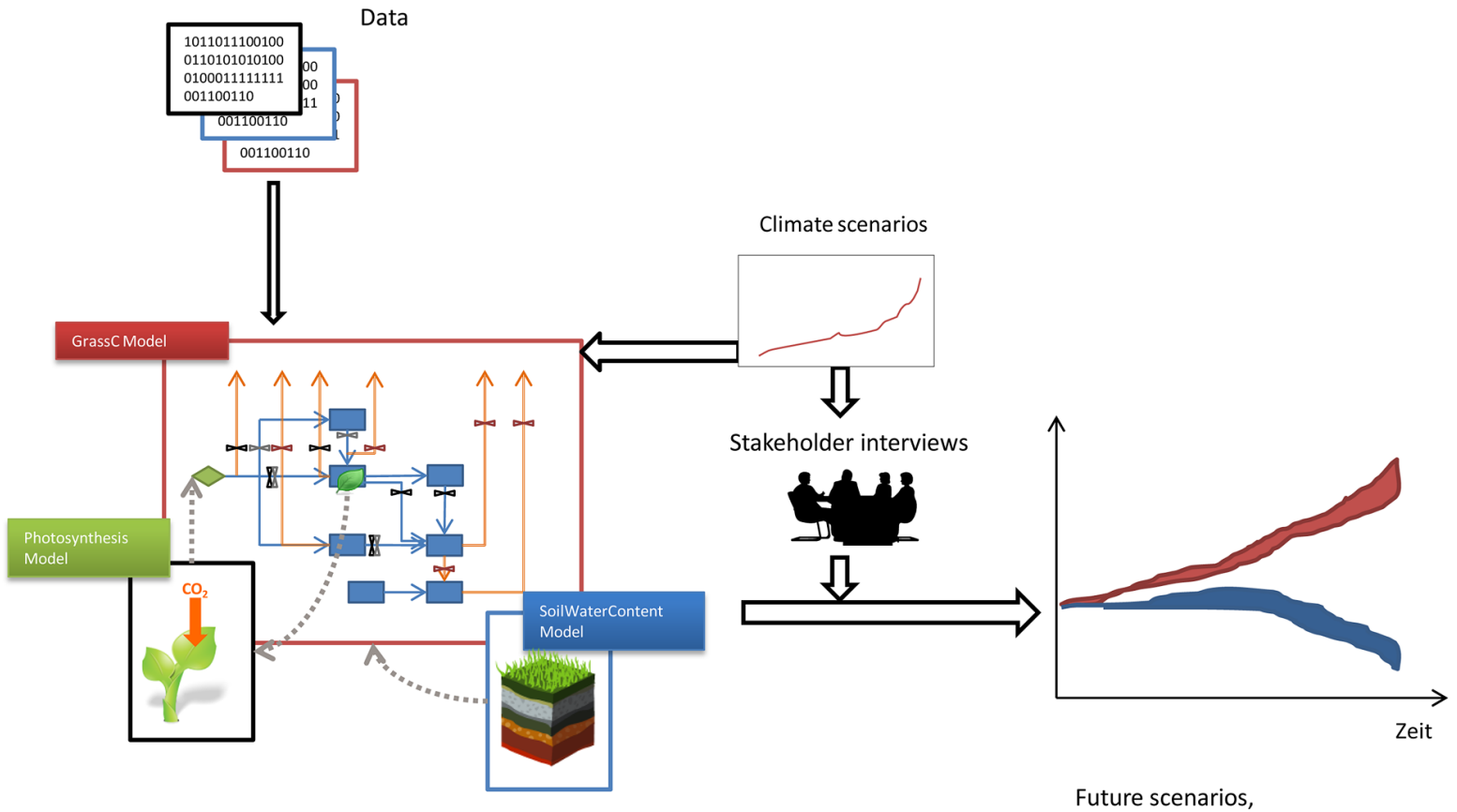
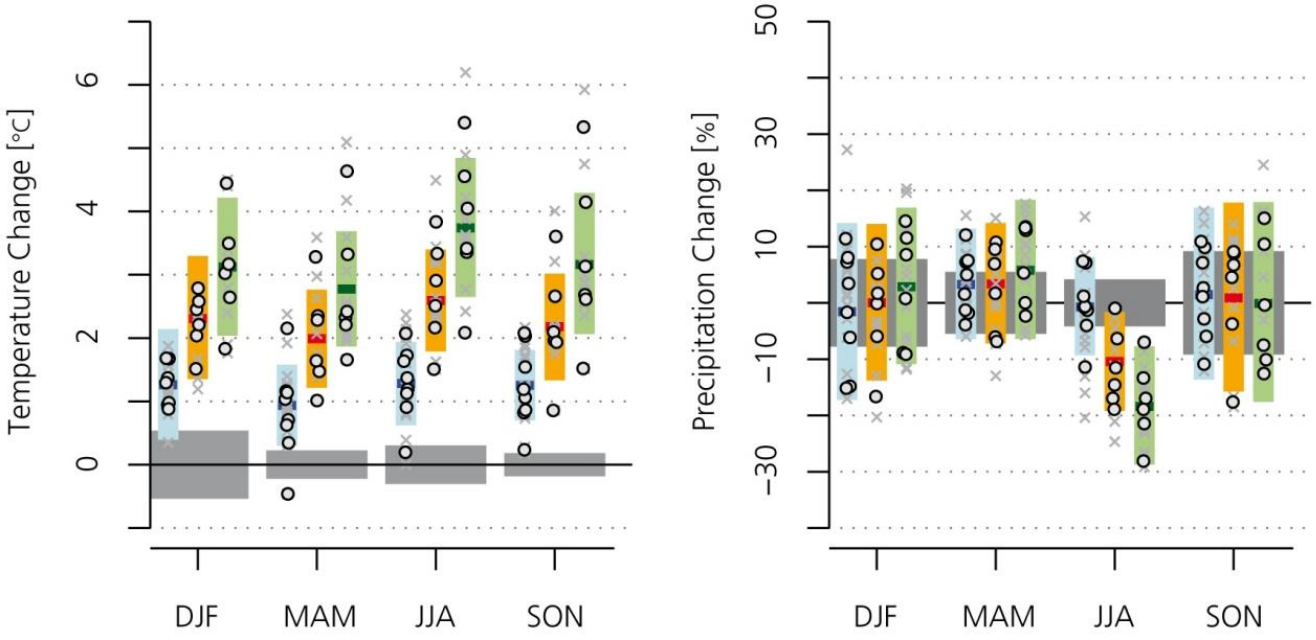
THE BIGGER PICTURE



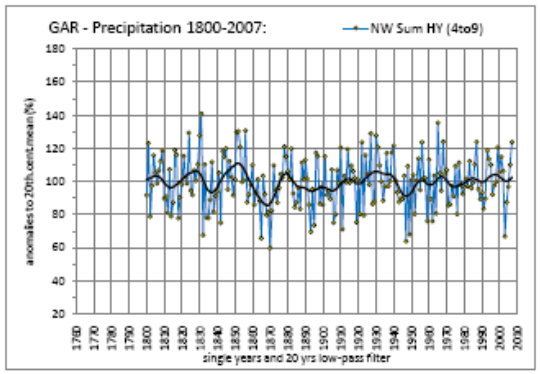
Future Climate in the Alps (north-eastern Switzerland)

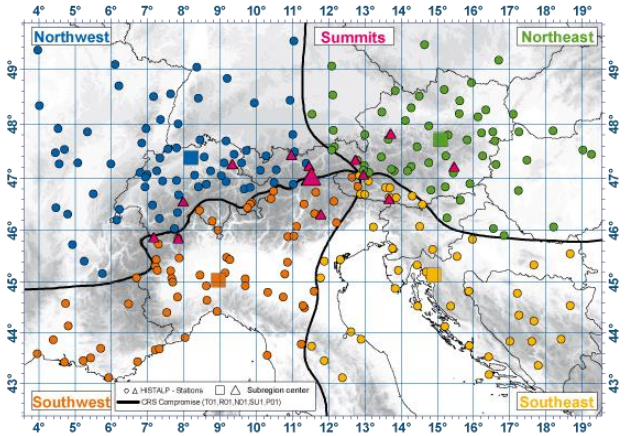


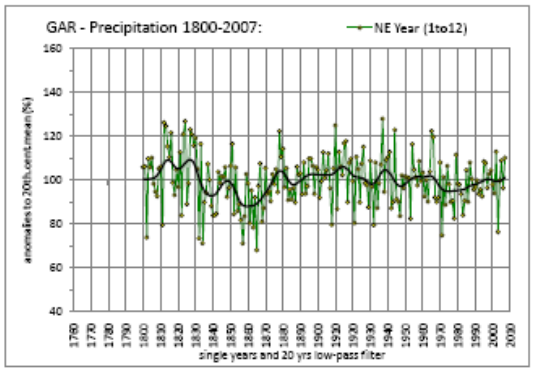
Reference period: 1980 – 2009 vs. 2020–2049, 2045–2074 and 2070–2099

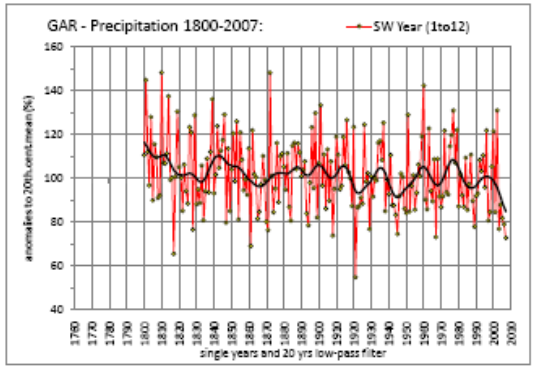
CH2011 (2011), Swiss Climate Change Scenarios CH2011, published by C2SM, MeteoSwiss, ETH, NCCR Climate, and OcCC, Zurich, Switzerland, 88 pp. ISBN: 978-3-033-03065-7

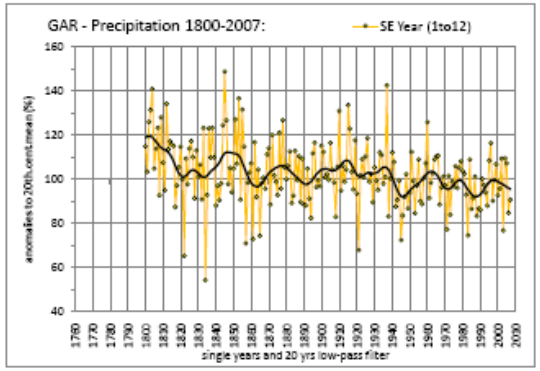
RECENT TRENDS





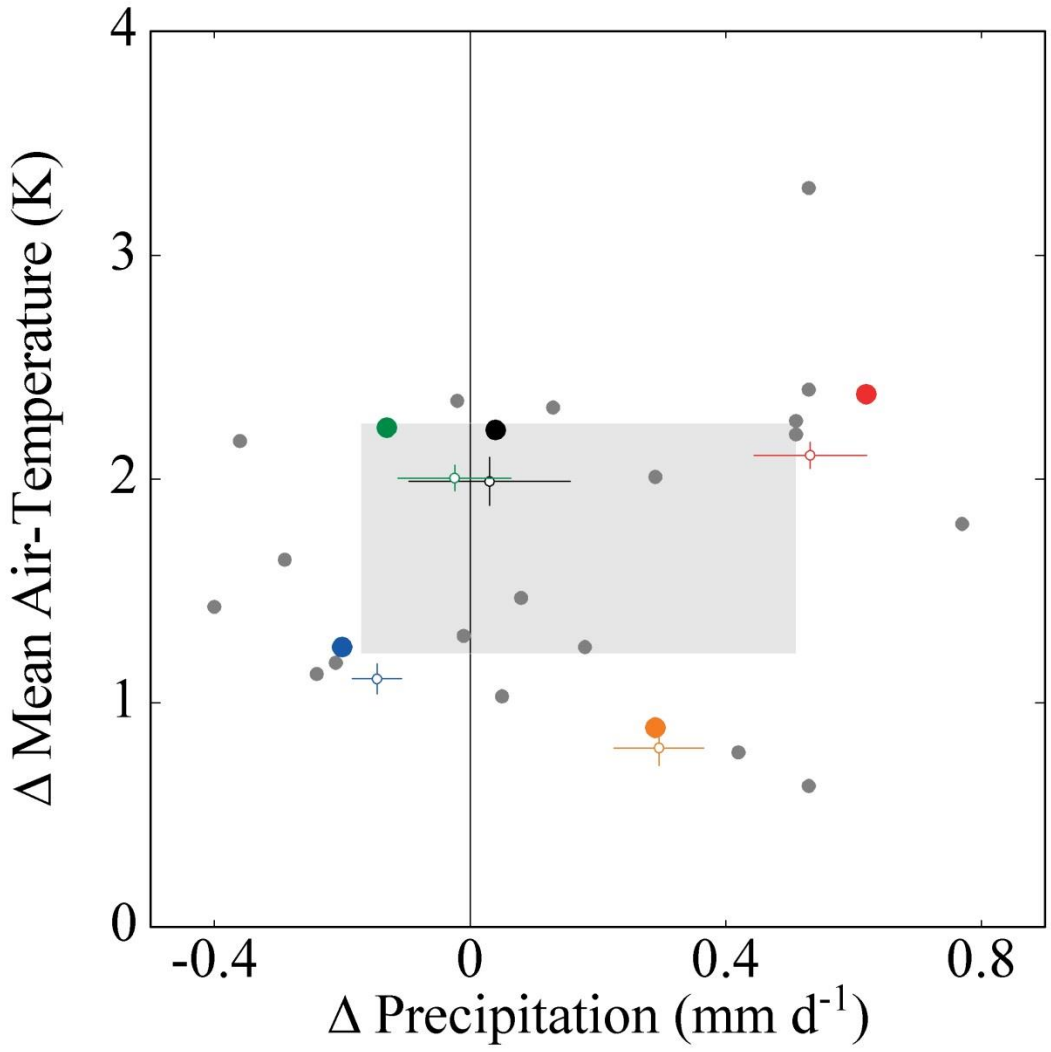






http://www.zamg.ac.at/histalp/

CLIMATE SCENARIOS SELECTED



ETHZCLM

CNRMRM4.5

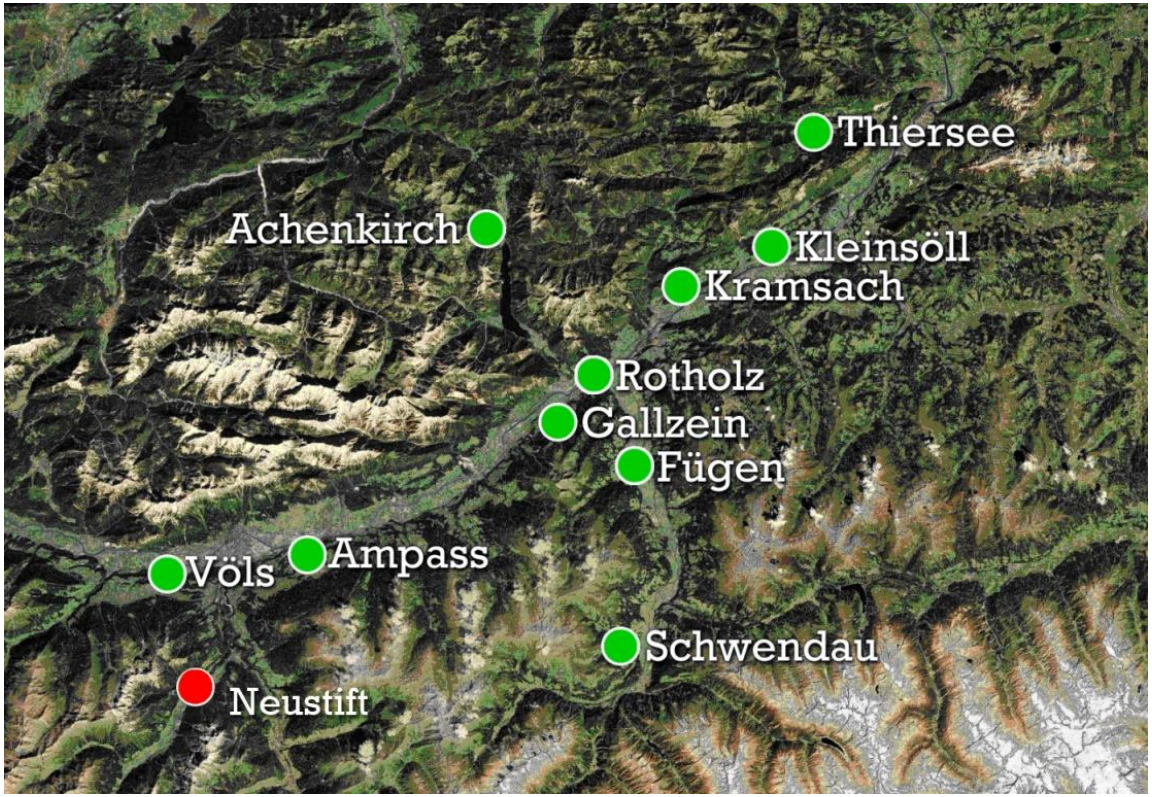
AITCCLM

DMIHIRHAM

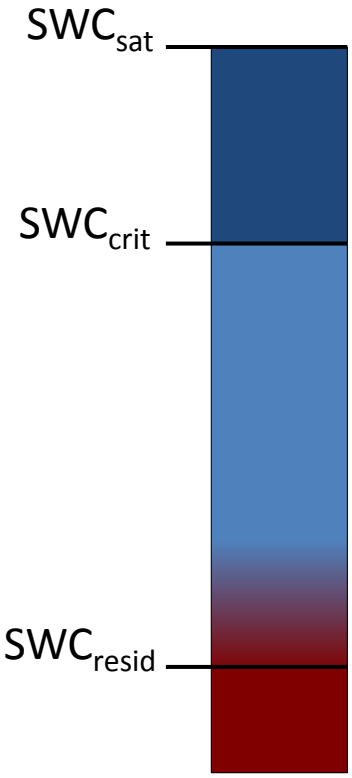
KNMIRACMO

M A M J J A

SITES


Thiersee
Achenkirch
Kleinsöll
Kramsach
Rotholz
Gallzein
Fügen
Völs
Ampass
Schwendau
Neustift

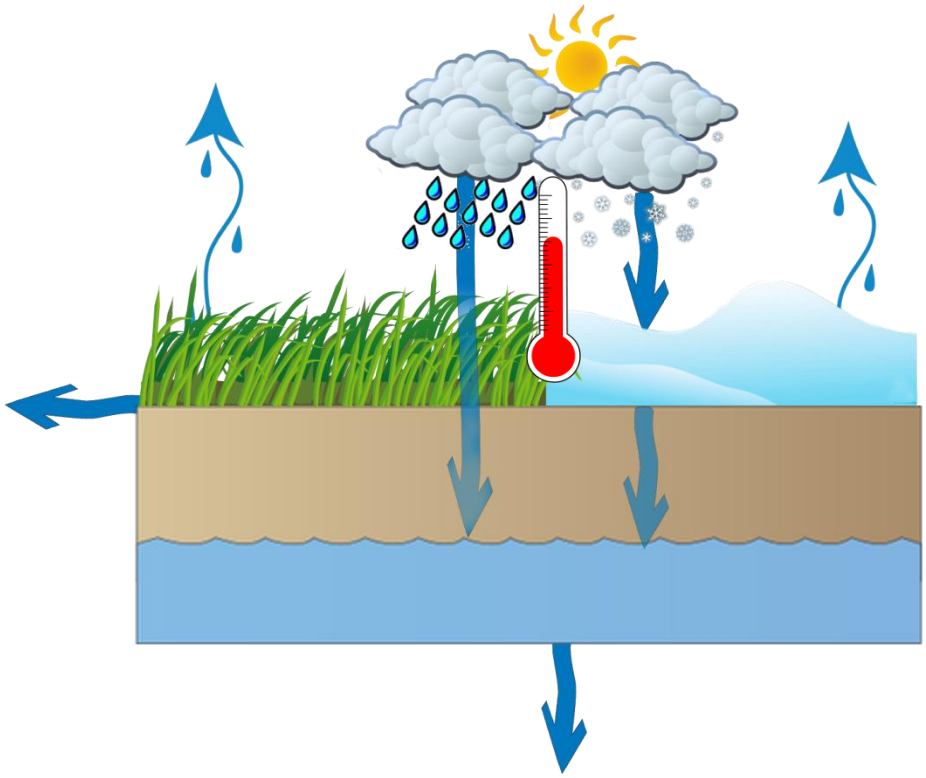
BACKGROUND



$$ET_{max}$$

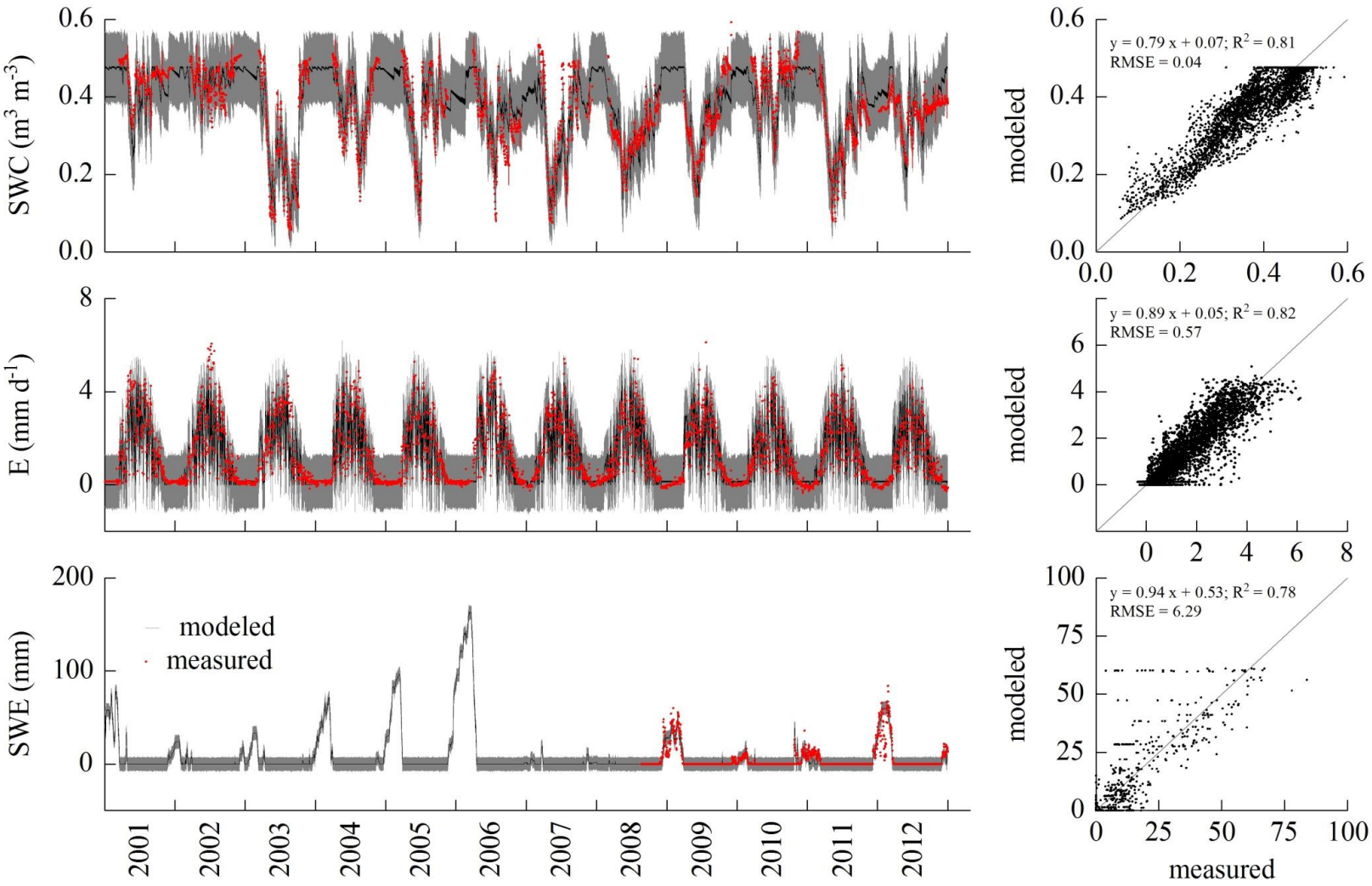
$$ET_{max}\left\{ f_{ET} + (1 - f_{ET})\left(\frac{\theta - \theta_{resid}}{\theta_{crit} - \theta_{resid}} \right) \right\}$$

$$ET = 0$$

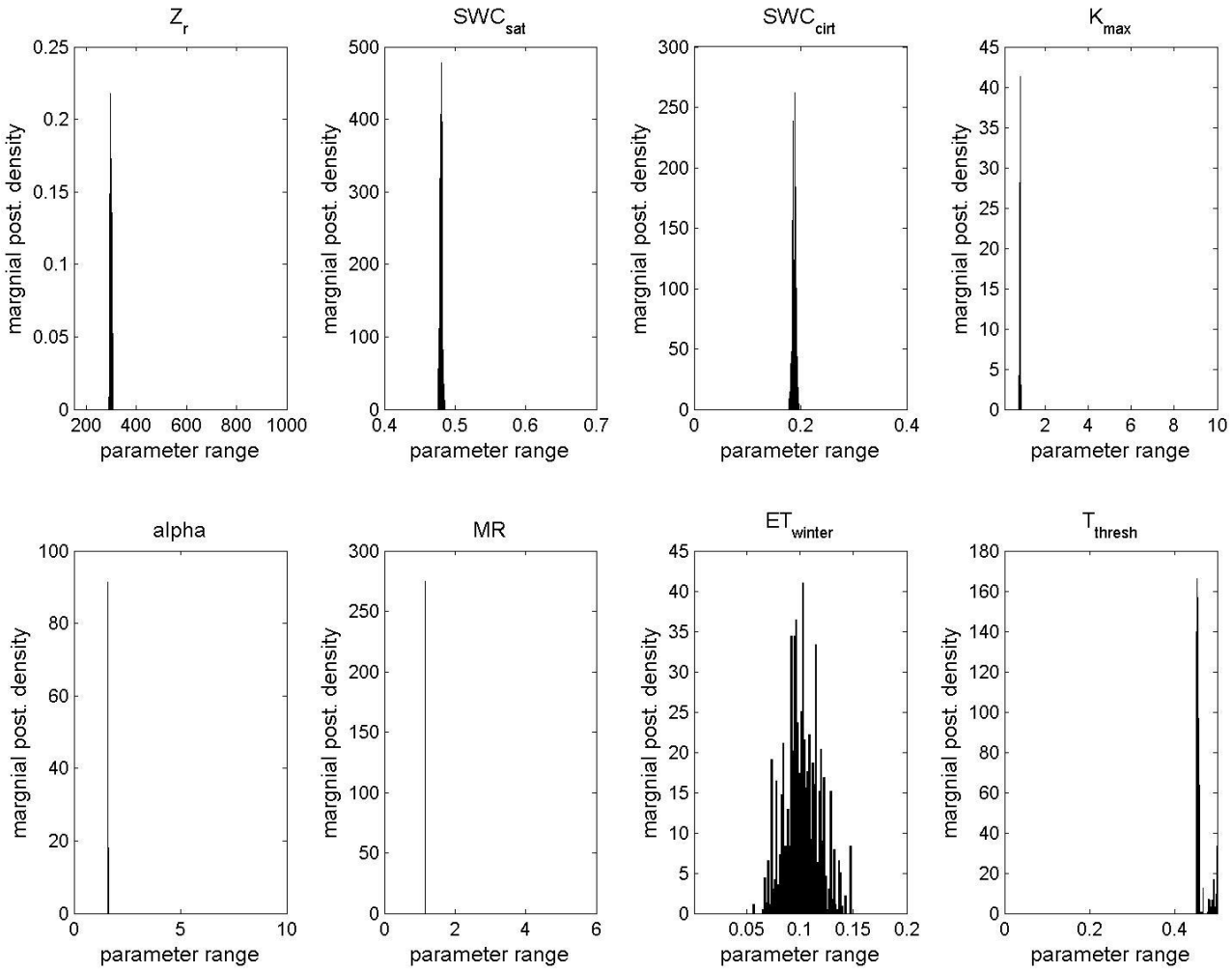


Developed by Pierluigi Calanca, Forschungsanstalt Agroscope Reckenholz-Tänikon ART, Zürich (CH)

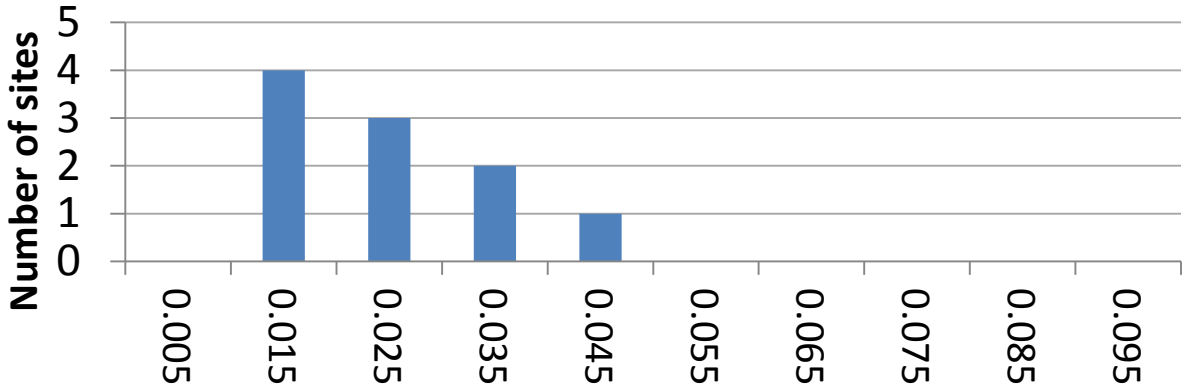
PERFORMANCE



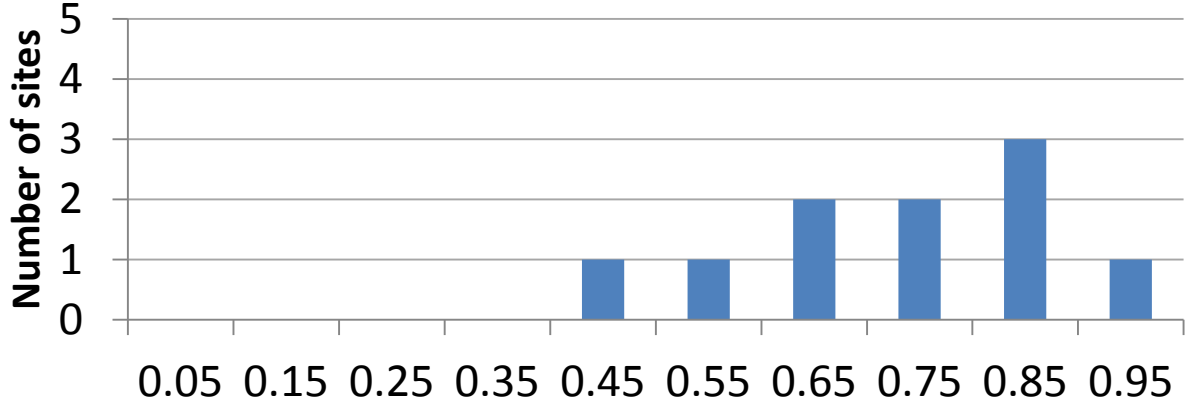
PARAMETER ESTIMATES



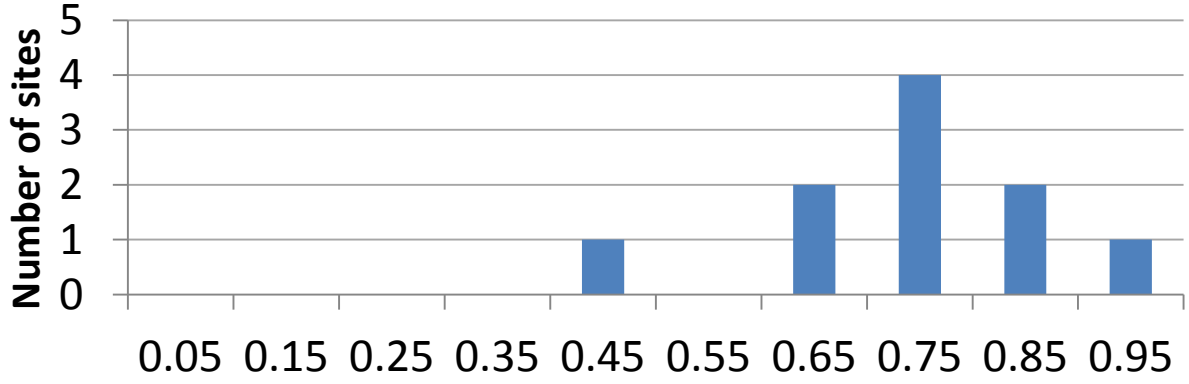
RMSE



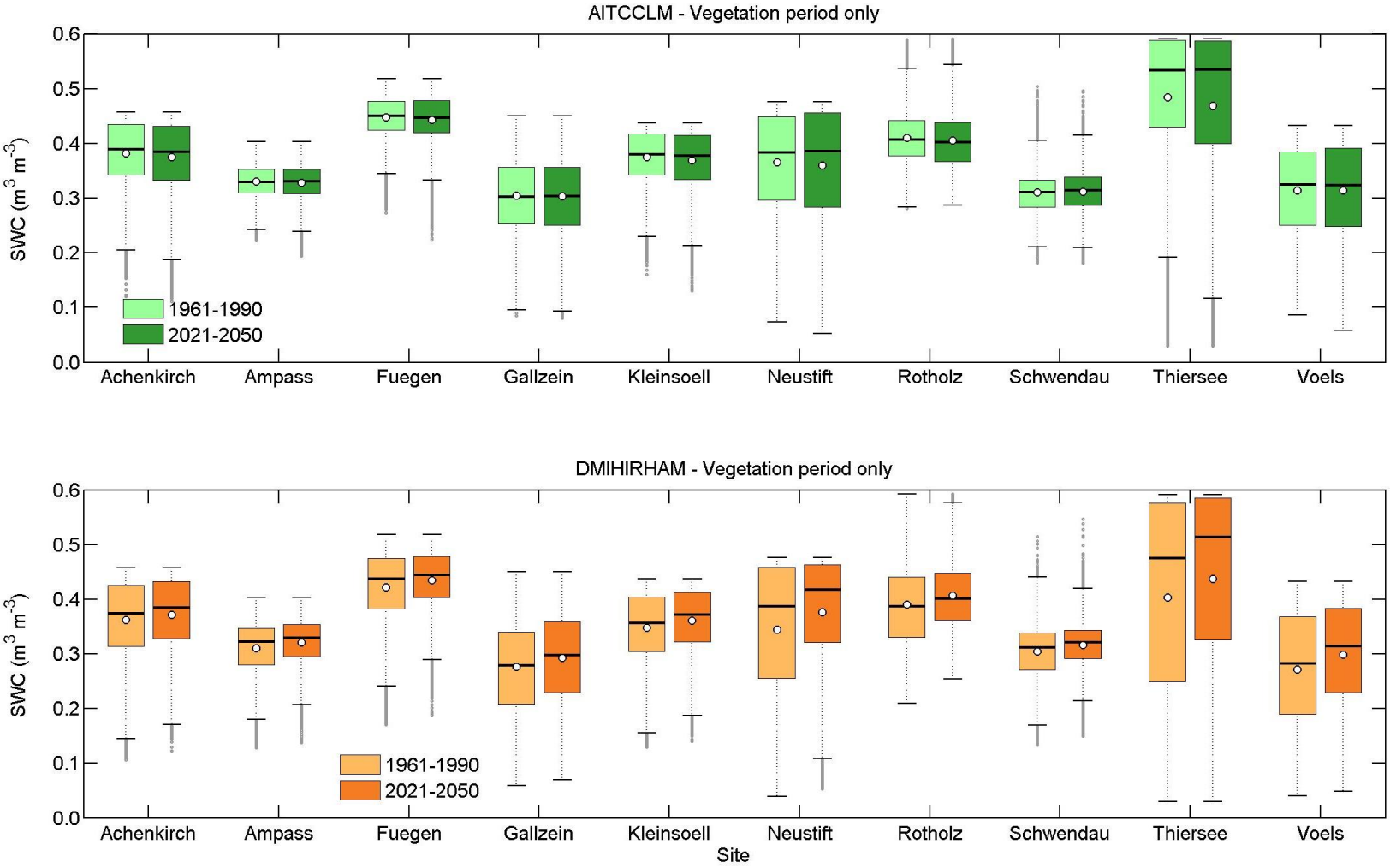
R^2

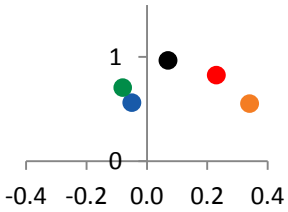


slope



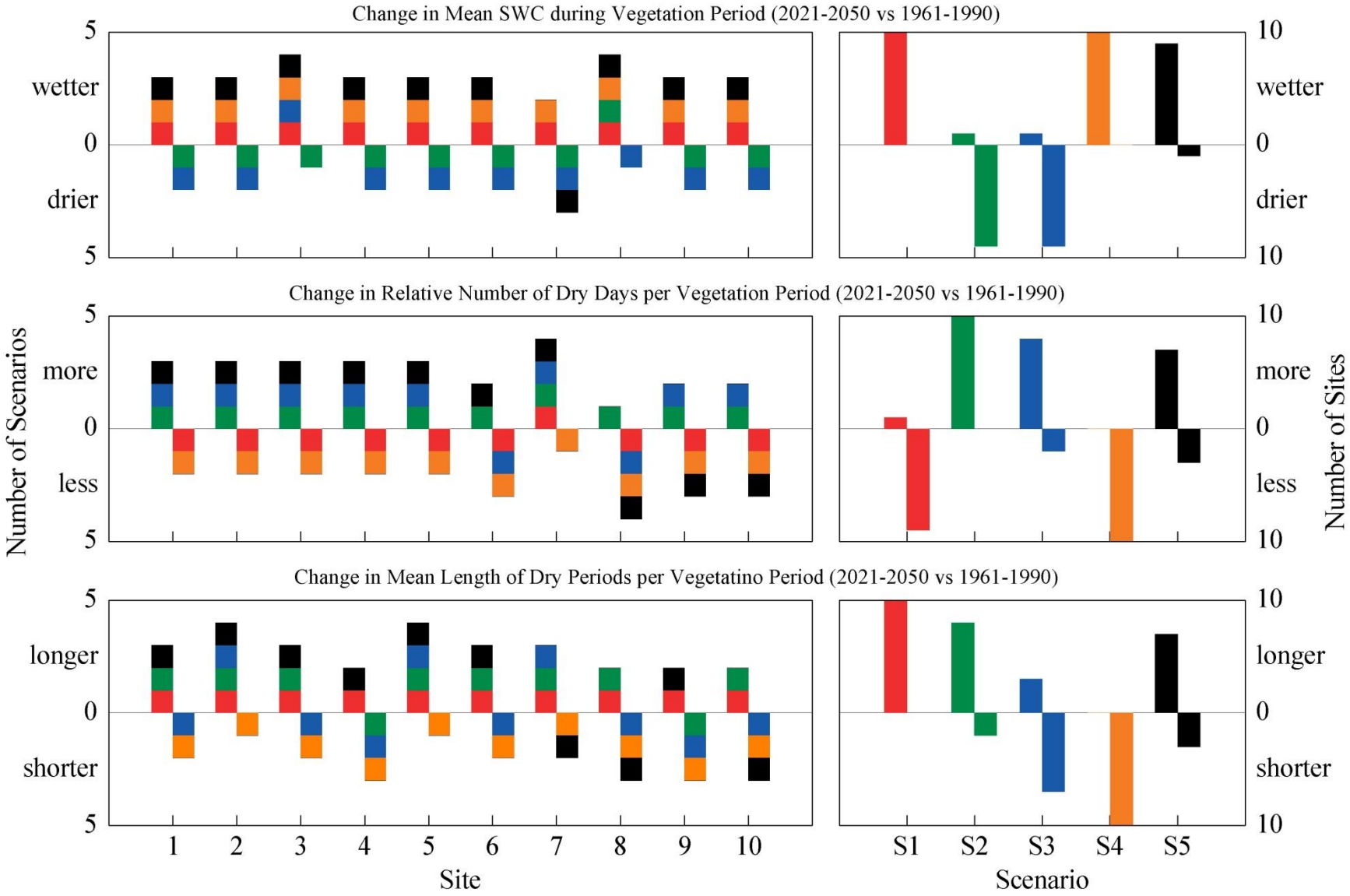
SCENARIOS - 1961-1990 vs 2021-2050





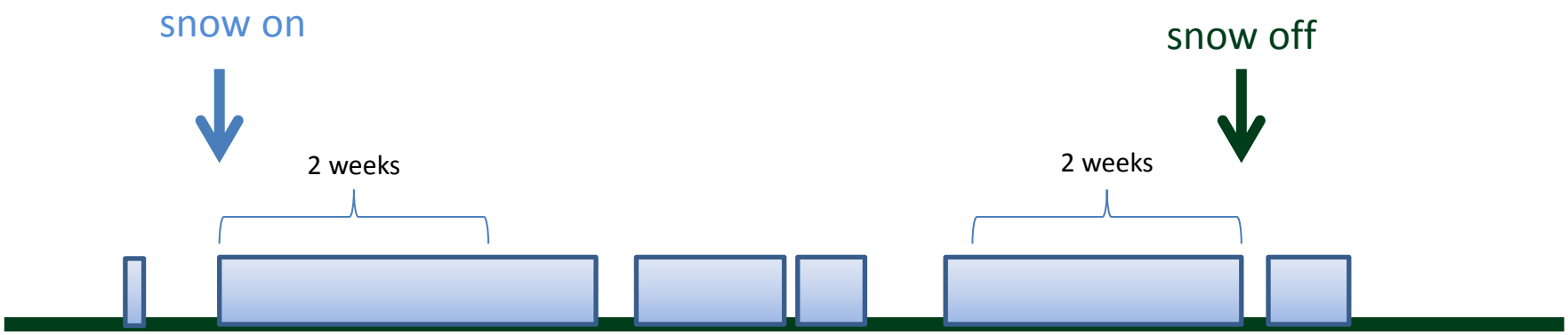
ETHZCLM CNRMRM4.5 AITCCLM DMIHIRHAM KNMIRACMO

CHANGES IN SWC - 1961-1990 vs 2021-2050

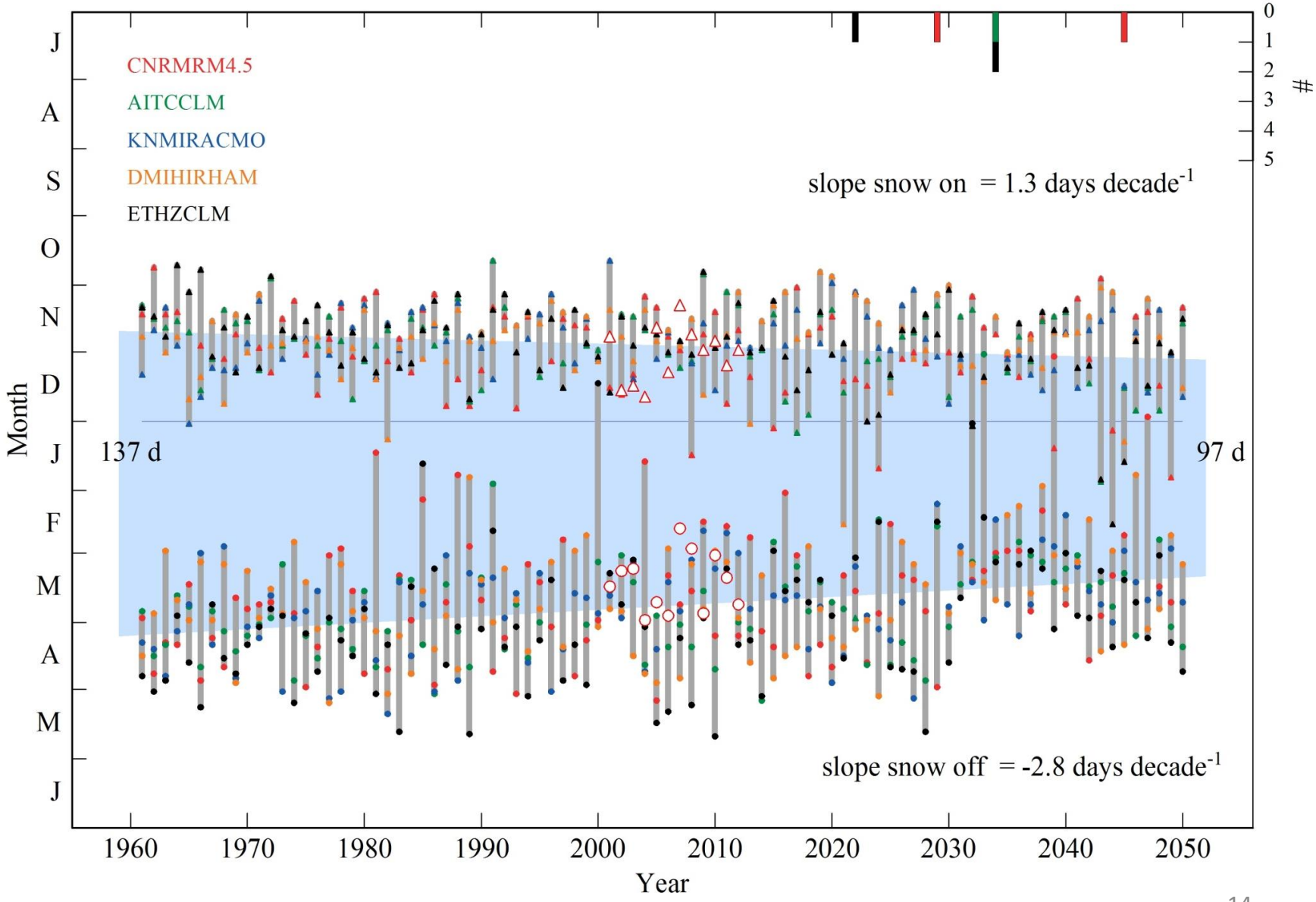


ETHZCLM **CNRMRM4.5** **AITCCLM** **DMIHIRHAM** **KNMIRACMO**

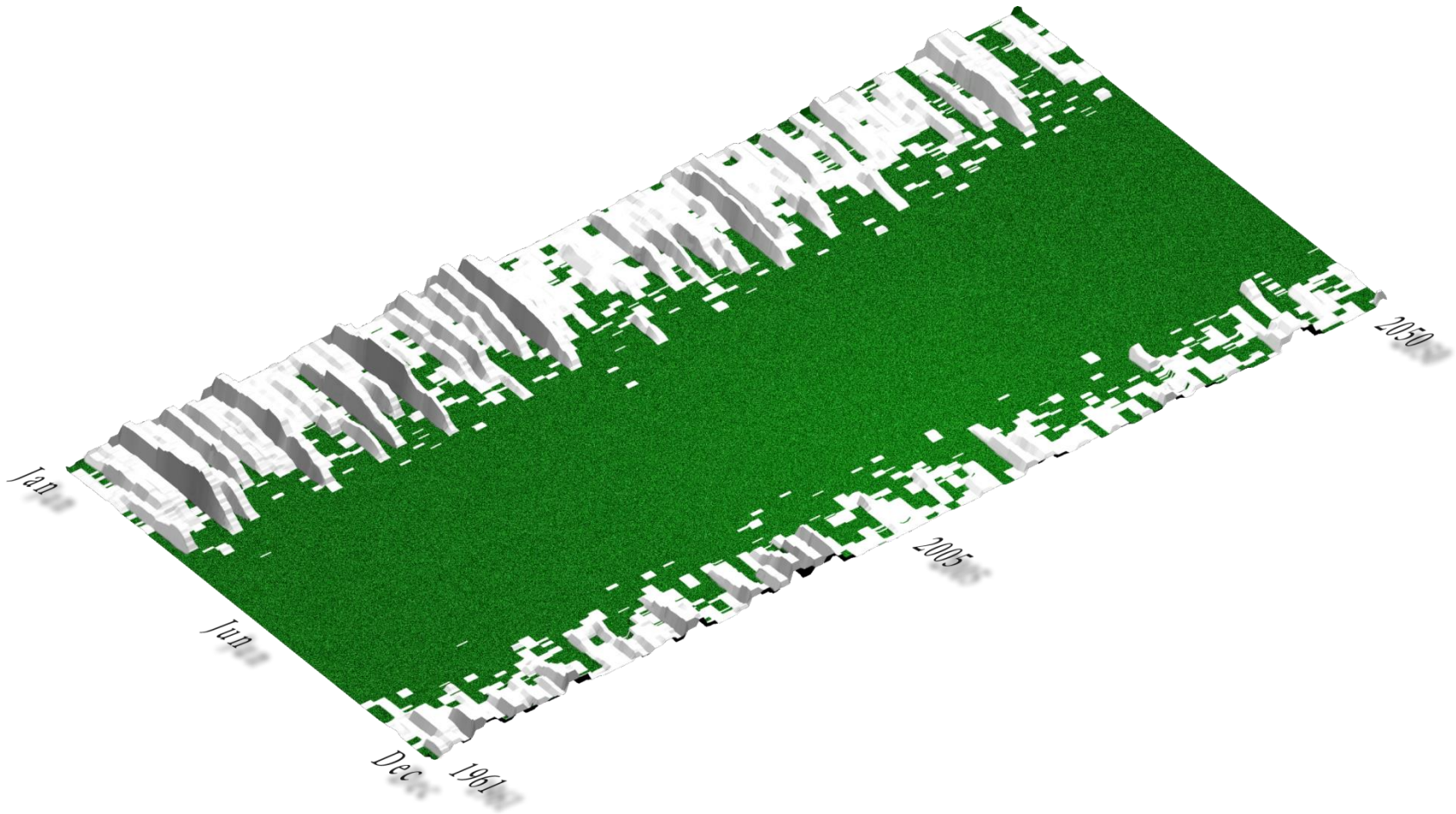
SNOW COVER DURATION



SNOW COVER DURATION



SNOW COVER DURATION



CONCLUSIONS

„SoilBucket“

(i) Efficient
(ii) Good performance
(iii) Broad range of application

SWC-trends

(i) no clear trend among the different scenarios concerning SWC
(ii) majority of scenarios leads to wetter conditions on average
(iii) relative number of dry days does not show any clear trend
(iv) length of dry periods is more likely to increase than not

Snow cover

(i) less days with snow cover – increase in vegetation period length

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