Supplementary information supporting the paper: Warnatzsch and Reay (2019) Assessing Climate Change Projections and Impacts on Central Malawi's Maize Yield: The Risk of Maladaptation.

Table 1: Regional Climate Models (RCM) sources. All of the models other than CanRCM4_r2 were accessed through The Earth System Grid Federation (ESGF) data index (ESGF, 2017). The CanRCM4_r2 model was accessed through the Canadian Centre for Climate Modelling and Analysis website (CCCma, 2017).

RCM	Institution	Lateral Boundary Conditions	Original Calendar	Reference
CCLM4-8-17_v1	Climate Limited-area Modelling Community (CLMcom)	CNRM-CM5 r1i1p1	365-days	(COSMO, 2017)
		HadGEM2-ES r1i1p1	360-days	
		EC-EARTH r12i1p1	366-days	
		MPI-ESM-LR r1i1p1	366-days	
HIRHAM5_v2	Danmarks Meteorologiske Insitut (DMI)	EC-EARTH r3i1p1	366-days	(Christensen et al., 2007)
RACMO22T_v1	Koninklijk Nederlands Meteorologisch Instituut (KNMI)	HadGEM2-ES r1i1p1	360-days	(van Meijgaard et al., 2008)
		EC-EARTH r1i1p1	366-days	
RCA4_v1	Sveriges Meteorologiska och Hydrologiska Institut (SMHI)	CanESM2 r1i1p1	366-days	(Samuelsson et al., 2015)
		CNRM-CM5 r1i1p1	366-days	
		CSIRO-MK3-6-0 r1i1p1	365-days	
		GFDL-ESM2M r1i1p1	365-days	
		IPSL-CM5A-MR r1i1p1	365-days	
		HadGEM2-ES r1i1p1	360-days	
		EC-EARTH r12i1p1	366-days	
		MIROC5 r1i1p1	365-days	
		MPI-ESM-LR r1i1p1	366-days	
		NORESM1-M r1i1p1	365-days	
REMO2009_v1	Climate Service Centre Germany (CSC) and Max Planck Institut (MPI)	EC-EARTH r12i1p1	366-days	(Jacob et al., 2012)
		MPI-ESM-LR r1i1p1	366-days	
CanRCM4_r2	Canadian Centre for Climate Modelling and Analysis (CCCma)	CanESM2 r1i1p1	365-days	(Scinocca et al., 2016)

Table 2: Observed data sources

Dataset	Variable Used	Resolution	Time-Period Available	Source	Reference
Climate Research Unit (CRU) version 4.0	Tas, TasMin, TasMax and Pr	0.5° Monthly Land Only	1901-2015	Gridded Station Data	(Harris et al., 2014)
University of Delaware (UDel) version 4.01	Tas and Pr	0.5° Monthly Land Only	1901-2010	Gridded Station Data	(Willmott and Matsuura, 2001)
Global Precipitation Climatology Centre (GPCC) version 7	Pr	1.0° Monthly	1901-2010	Satellite and Station Data	(Schneider et al., 2015)

Table 3: List of data sources for the 13 climate files used in the crop models. Note that all RCMs referred to in this table are listed in Table 1 and the observed data referred to in this table are from the sources listed in

Table 2.

File	Time Scale	RCP	Temperature	Evaporation Rate	Precipitation Rate	CO_2 concentration
1	1971-2000	N/A	Mean of observed monthly data for minimum and maximum temperature	Hindcasted ensemble mean monthly evaporation rates	Observed monthly data for precipitation rates	AquaCrop Mauna Loa CO_2
2	2020-2049	4.5	Projected ensemble mean daily minimum and maximum temperature	Projected ensemble mean daily evaporation rate	Projected ensemble minimum precipitation rate	AquaCrop IPCC RCP 4.5
3					Projected ensemble mean precipitation rate	
4					Projected ensemble maximum precipitation rate	
5		8.5			Projected ensemble minimum precipitation rate	AquaCrop IPCC RCP 8.5
6					Projected ensemble mean precipitation rate	
7					Projected ensemble maximum precipitation rate	
8	2040-2069	4.5			Projected ensemble minimum precipitation rate	AquaCrop IPCC RCP 4.5
9					Projected ensemble mean precipitation rate	
10					Projected ensemble maximum precipitation rate	
11		8.5			Projected ensemble minimum precipitation rate	AquaCrop IPCC RCP 8.5
12					Projected ensemble mean precipitation rate	
13					Projected ensemble maximum precipitation rate	

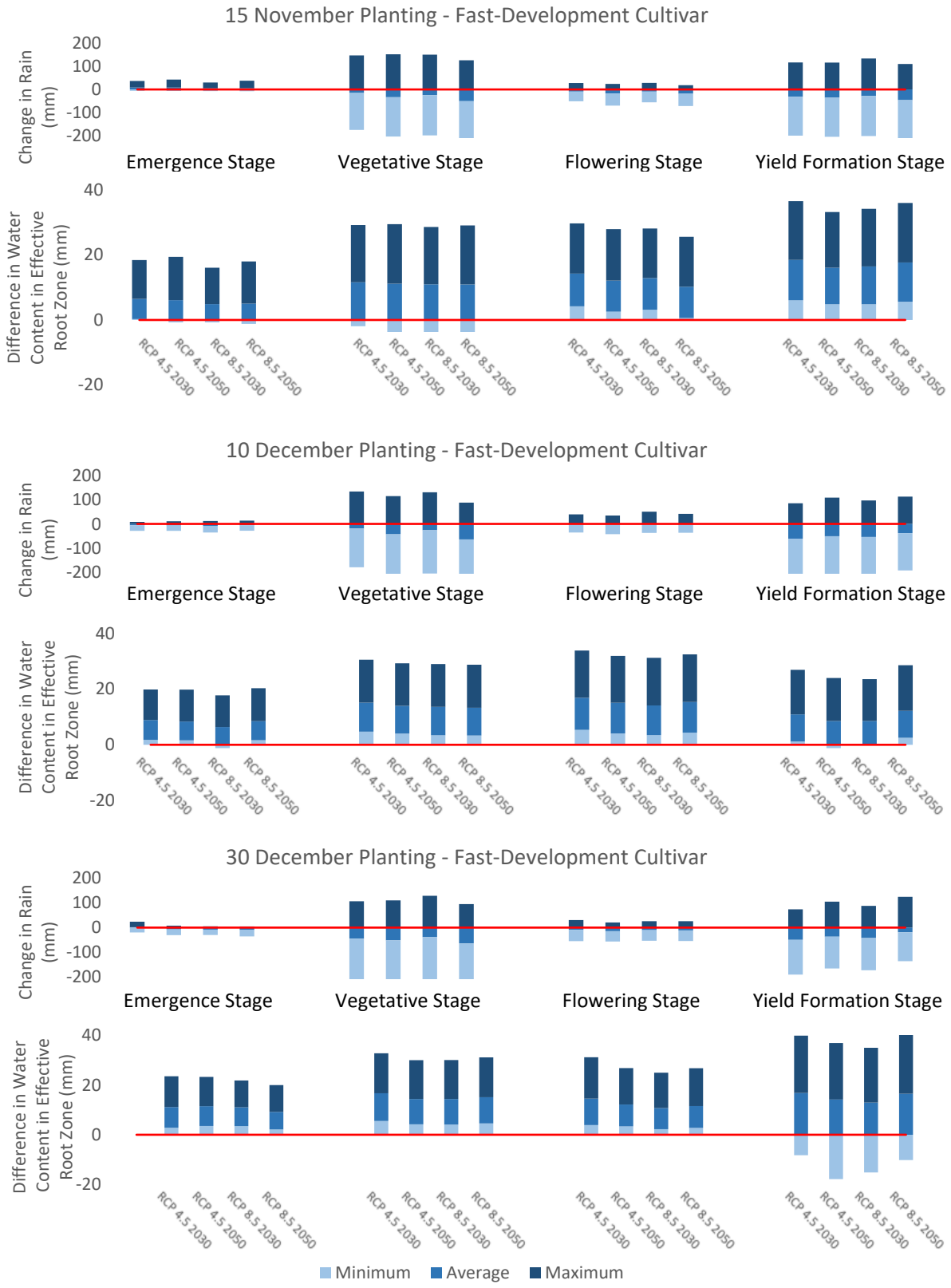

Figure 1: Change in total precipitation (mm) and water content in the effective root zone (mm) by developmental stage of the fast-development cultivar maize grown in Central Malawi for the three planting dates as compared to the baseline 1971-2000 period (red line). This data is shown for the three precipitation scenarios: minimum (palest), average (medium shade) and maximum (darkest) precipitation, for the two RPC scenarios and time periods.

Table 4: Number of days exceeding the maximum temperature threshold (32 degrees Celsius) by development stage for each cultivar

	Planting Date	Stage	Historic	RCP4.5		RCP8.5	
				2030	2050	2030	2050
Slow-Development Cultivar	Nov. 15	Emergence	0	6	8	8	7
		Vegetative	0	0	2	1	10
		Flowering	0	0	0	0	0
		Yield Formation	0	0	0	0	0
		Total	**0**	**6**	**10**	**9**	**17**
	Dec. 10	Emergence	0	0	0	0	0
		Vegetative	0	0	0	0	0
		Flowering	0	0	0	0	0
		Yield Formation	0	0	0	0	0
		Total	**0**	**0**	**0**	**0**	**0**
	Dec. 30	Emergence	0	0	0	0	0
		Vegetative	0	0	0	0	0
		Flowering	0	0	0	0	0
		Yield Formation	0	0	0	0	0
		Total	**0**	**0**	**0**	**0**	**0**
Fast-Development Cultivar	Nov. 15	Emergence	0	5	5	5	5
		Vegetative	0	1	5	4	12
		Flowering	0	0	0	0	0
		Yield Formation	0	0	0	0	0
		Total	**0**	**6**	**10**	**9**	**17**
	Dec. 10	Emergence	0	0	0	0	0
		Vegetative	0	0	0	0	0
		Flowering	0	0	0	0	0
		Yield Formation	0	0	0	0	0
		Total	**0**	**0**	**0**	**0**	**0**
	Dec. 30	Emergence	0	0	0	0	0
		Vegetative	0	0	0	0	0
		Flowering	0	0	0	0	0
		Yield Formation	0	0	0	0	0
		Total	**0**	**0**	**0**	**0**	**0**

Table 5: Number of days falling short of the minimum temperature threshold (13 degrees Celsius) by development stage for each cultivar

	Planting Date	Stage	Historic	RCP4.5		RCP8.5	
				2030	2050	2030	2050
Slow-Development Cultivar	Nov. 15	Emergence	0	0	0	0	0
		Vegetative	0	0	0	0	0
		Flowering	0	0	0	0	0
		Yield Formation	21	0	0	0	0
		Total	**21**	**0**	**0**	**0**	**0**
	Dec. 10	Emergence	0	0	0	0	0
		Vegetative	0	0	0	0	0
		Flowering	0	0	0	0	0
		Yield Formation	67	0	0	0	0
		Total	**67**	**0**	**0**	**0**	**0**
	Dec. 30	Emergence	0	0	0	0	0
		Vegetative	0	0	0	0	0
		Flowering	0	0	0	0	0
		Yield Formation	57	0	0	0	0
		Total	**57**	**0**	**0**	**0**	**0**
Fast-Development Cultivar	Nov. 15	Emergence	0	0	0	0	0
		Vegetative	0	0	0	0	0
		Flowering	0	0	0	0	0
		Yield Formation	21	0	0	0	0
		Total	**21**	**0**	**0**	**0**	**0**
	Dec. 10	Emergence	0	0	0	0	0
		Vegetative	0	0	0	0	0
		Flowering	0	0	0	0	0
		Yield Formation	0	0	0	0	0
		Total	**0**	**0**	**0**	**0**	**0**
	Dec. 30	Emergence	0	0	0	0	0
		Vegetative	0	0	0	0	0
		Flowering	0	0	0	0	0
		Yield Formation	0	0	0	0	0
		Total	**0**	**0**	**0**	**0**	**0**

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