

SUPPLEMENTARY MATERIALS

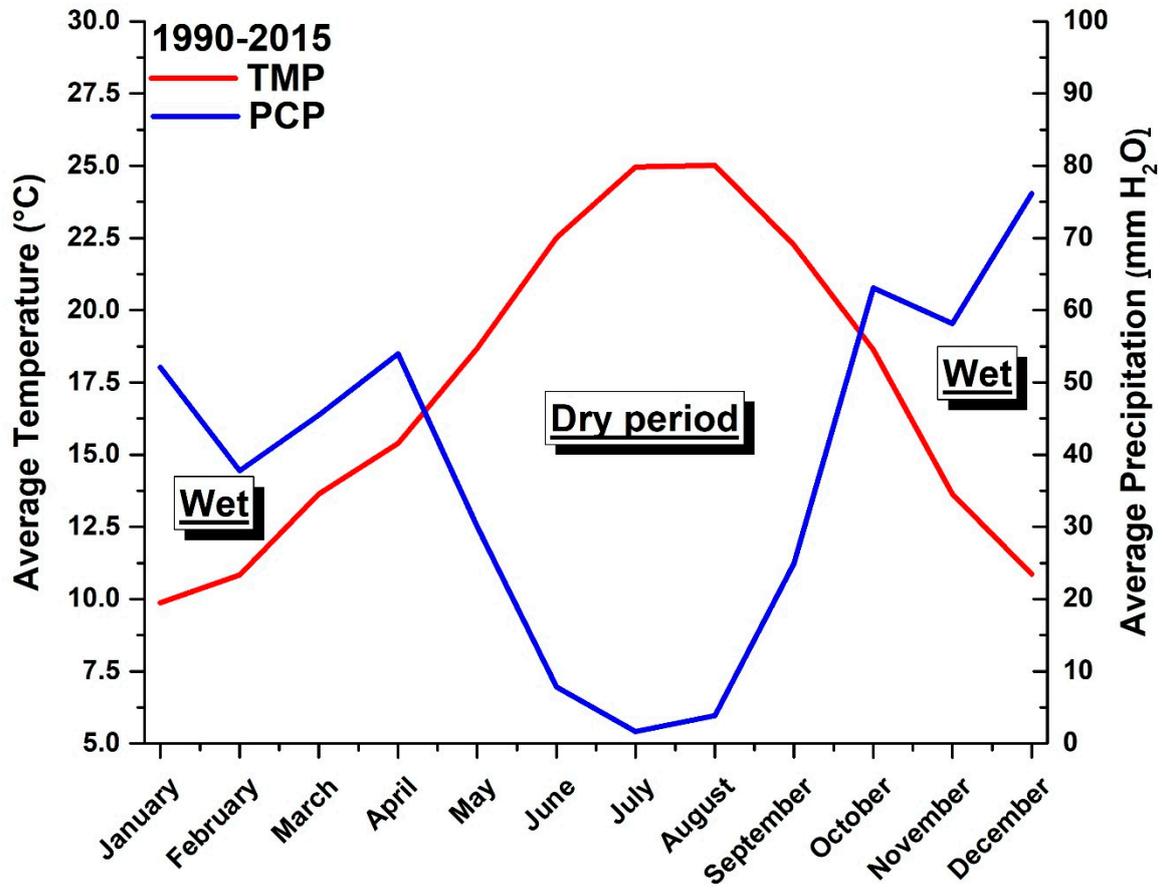


Figure S1: Thermo-pluviometric diagram for the Alentejo region.

Table S1: Morphology-slope and land cover classification (CLC, 2018) for the four study sites.

<u>Morphology-Slope</u>					
CLASSIFICATION (%)		P1	P2	P3	P4
0-5	Flat-Gently sloping	7%	55%	17%	77%
5-10	Moderately sloping	10%	25%	16%	21%
10-15	Strongly sloping	14%	15%	20%	2%
15-20	Moderately steep	23%	5%	19%	0%
>20	Steep	46%	0%	28%	-
<u>Land Cover (CLC-Categories)</u>					
CLASSIFICATION		P1	P2	P3	P4
FRSE		96%	62%	36%	7%
OLIV		-	19%	-	3%
OATS		-	11%	-	1%
WPAS		4%	8%	64%	89%

Table S2: SWAT soil parameters for the identified soil groups.

SOIL TYPE	SWAT main parameters							
	BD (g*cm⁻³)	AWC (%)	Ks (mm*h⁻¹)	OC (%)	Clay (%)	Silt (%)	Sand (%)	Rock (%)
Eutric Cambisols	1.52	0.14	33.46	0.85	10	25	65	11
Leptosols	1.50	0.18	28.71	0.70	10	25	66	23
Gleyic Luvisols	1.20	0.17	17.98	1.55	17	33	50	10
Haplic Luvisols	1.37	0.15	21.20	1.03	10	30	55	5
Chromic Vertisols	1.07	0.15	26.27	0.82	38	32	30	0
Pellic Vertisols	1.06	0.20	7.74	0.67	45	30	25	0

LIST OF ABBREVIATION

AET = actual evapotranspiration
ALPHA_BF = Baseflow alpha factor
AR5 = Fifth Assessment Report
AWC = available water content
BD = bulk density
BAU = business as usual, BAU
CC= climate change
CLC = Corine Land Cover
DEEP_IMP = Distance to the impervious layer
DGADR = Direcção-Geral de Agricultura e Desenvolvimento Rural
DEM = Digital Elevation Model
EPCO = plant uptake compensation
ESCO = soil evaporation factor
FRSE = rainfed forest
GCM = Global Climate Model
GHG = greenhouse gas
GW_DELAY = Groundwater delay time
GW_REVAP = groundwater "revap" coefficient
HIST = EURO-CORDEX historical
HRU = Hydrological Response Unit
IPCC = Intergovernmental Panel on Climate Change
Ks = hydraulic conductivity
LISEM = Limburg Soil Erosion Model
MUSLE = Modified Universal Soil Loss Equation
NSE = Nash-Sutcliffe efficiency
OATS = rainfed crop
OLIV = olive plantations
PBIAS = percent of bias
PET = potential evapotranspiration
PINE = coniferous and mixed forest

RCHGR_DP = deep aquifer percolation fraction

RCMs = Regional Climate Models

RCP4.5 = Representative Concentration Pathways 4.5

RCP8.5 = Representative Concentration Pathways 8.5

REVAP_MN = Threshold depth of water in the shallow aquifer for "revap" or percolation to the deep aquifer to occur (mm H₂O)

RUSLE = revised Universal Soil Loss Equation

SE= Soil erosion

SLM= sustainable land management

SLSUBBSN = Average slope length

SOC = soil organic carbon

SRTM = Shuttle Radar Topography Mission

SUFI-2 = Sequential Uncertainty Fitting version 2

SWAT = Soil and Water Assessment Tool

URMD = artificial settlements

UROSEM = European Soil Erosion Model

USLE_C = erosion land cover factor

USLE = Universal Soil Loss Equation

USLE_K = USLE equation soil erodibility

WEPP = Water Erosion Prediction Model

WPAS = Winter Pasture here intended as "montado" system