



Vegetation dynamics and drought in semiarid savannas (South Africa - Spain).



UNIVERSITY of the
WESTERN CAPE

IFAPA

Instituto de
Investigación y
Formación Agraria
y Pesquera



UNIVERSIDAD
DE
CÓRDOBA



MP. Gonzalez-Dugo, MJ
Muñoz-Gomez, H. Nieto, MJ.
Polo-Gomez, T. Dube, A.
Andreu



Vegetation dynamics and drought in semiarid savannas (South Africa - Spain).



UNIVERSITY of the
WESTERN CAPE

IFAPA

Instituto de
Investigación y
Formación Agraria
y Pesquera



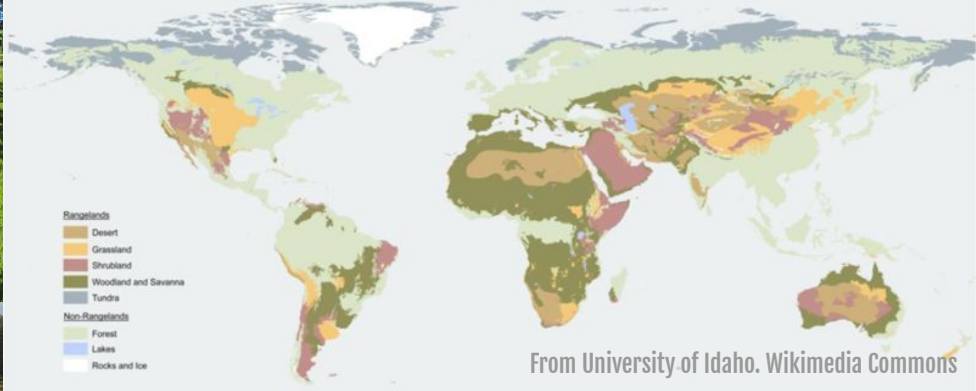
UNIVERSIDAD
DE
CÓRDOBA



MP. Gonzalez-Dugo, MJ
Muñoz-Gomez, H. Nieto, MJ.
Polo-Gomez, T. Dube, A.
Andreu



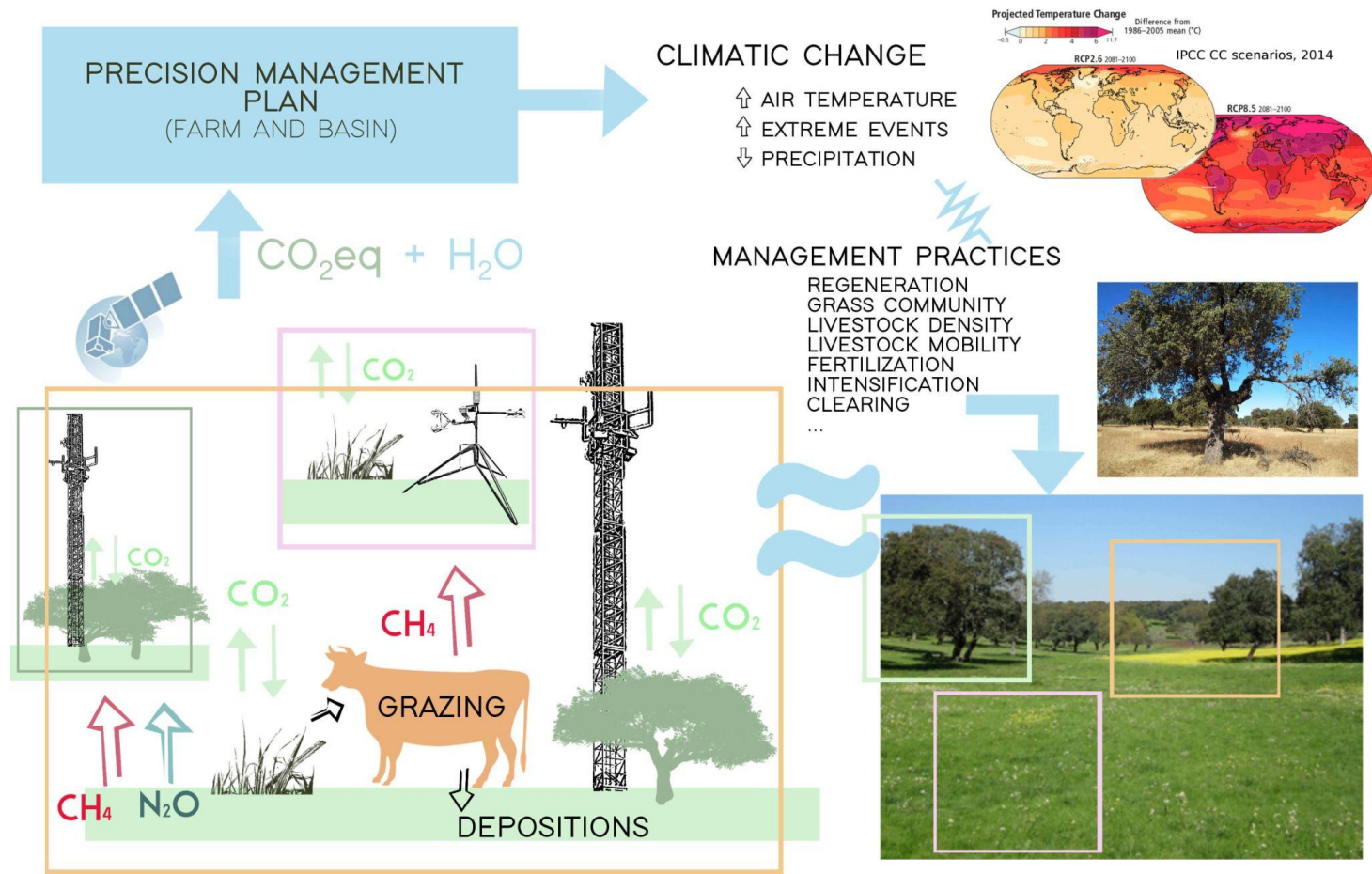
Rangelands of the World



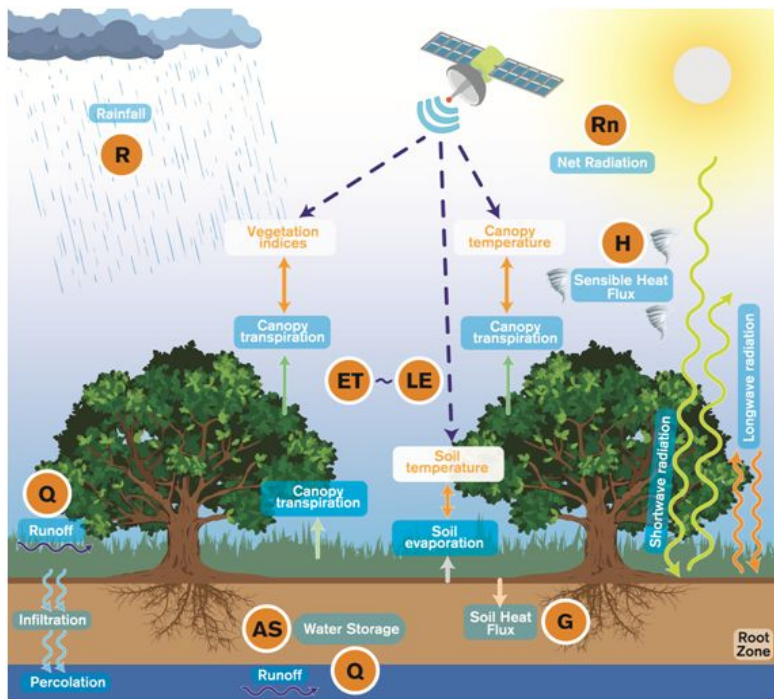
From University of Idaho. Wikimedia Commons

- **Mosaic of Land Uses** → Livestock & Conservational
- **Water-limited** → Pasture production determined by water availability
- **Heterogeneous** → We need to include the variability

Vegetation production dynamics in the face of drought



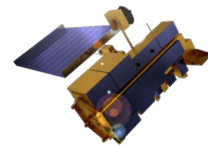
WATER



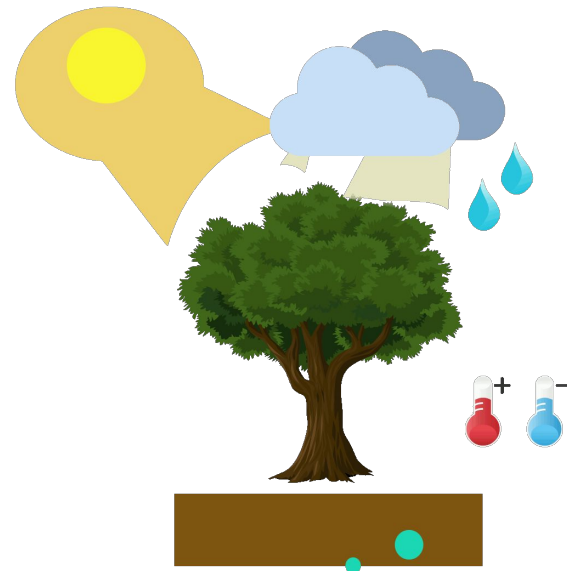
Water Balance
 $R = ET + Q + AS$

Energy Balance
 $Rn = LE + H + G$

BIOMASS



$$NPP = \int \overline{F_{PAR}} \text{ PAR LUE DT}$$

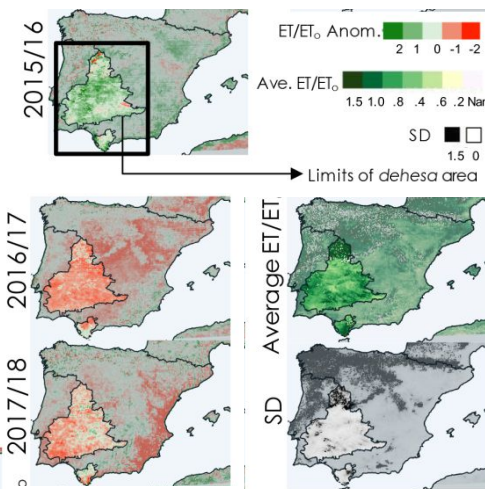
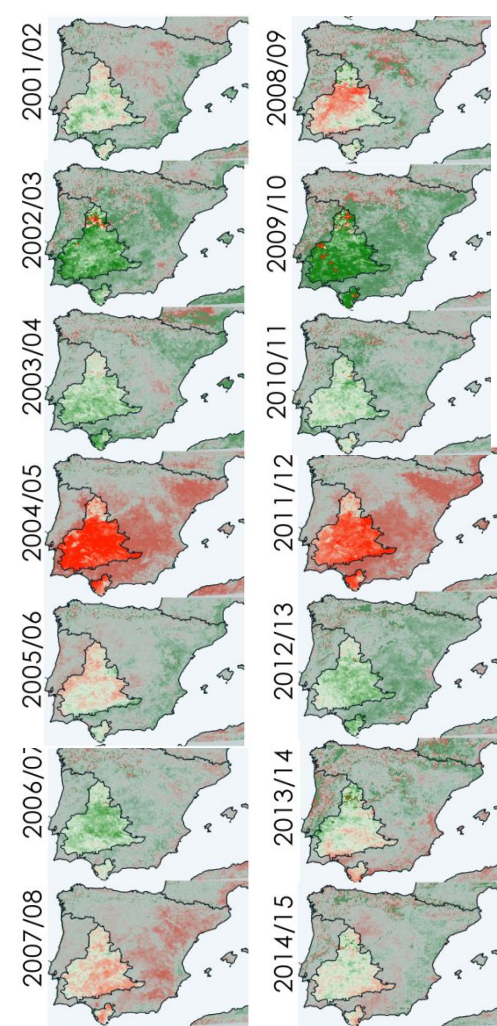


Based on graph by Y. Pei et al. 2022.

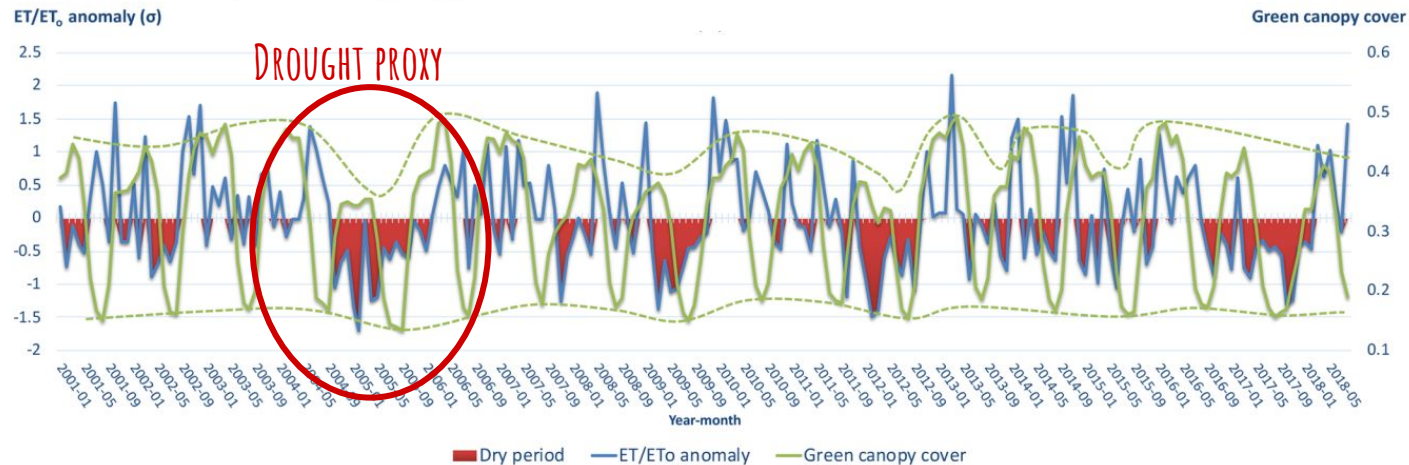
Kc-FA056

TSEB, SEBS

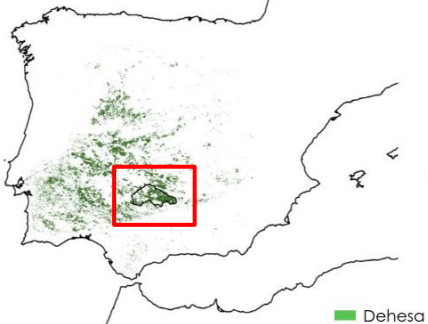
Andreu et al., 2018
 Gómez-Giráldez et al., 2019
 Carpintero et al., 2021
 Burchard-Levine et al., 2022



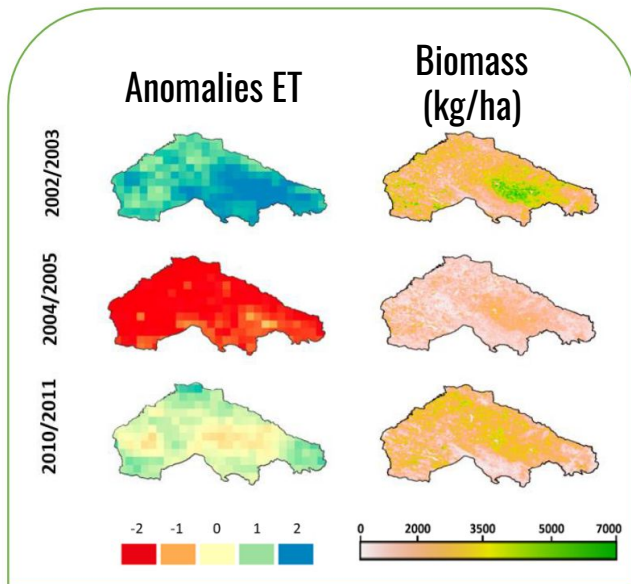
WATER



BIOMASS

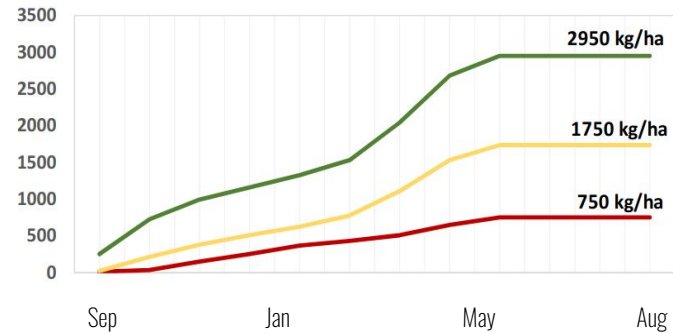


Dehesa



Accumulated Biomass (kg/ha)

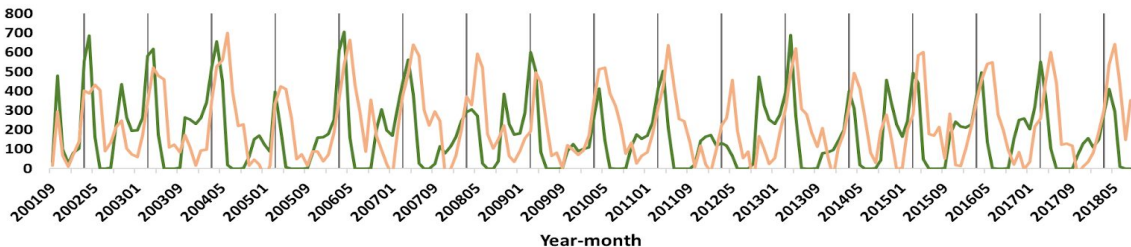
Annual Production in a Farm



Month

Max 2002/03 Min 2011/12 Avg

Grasslands biomass (kg/ha)



Biomass ET

Evapotranspiration (W/m²)

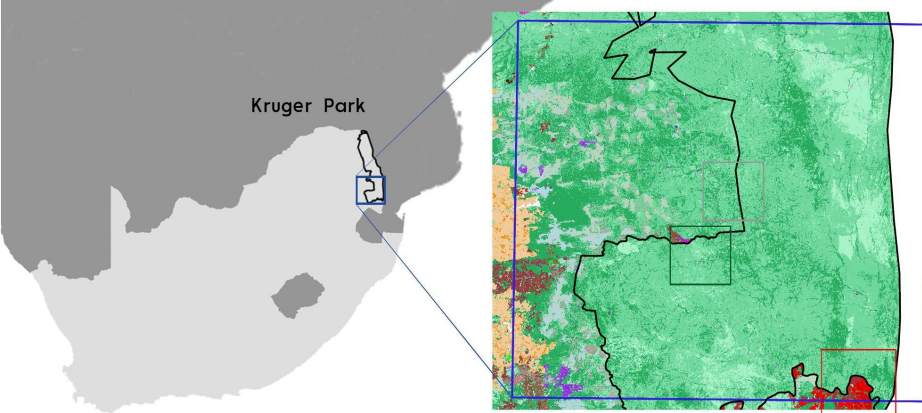


Muñoz et al., 2022, 2023,

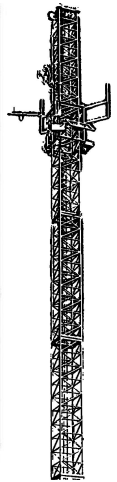
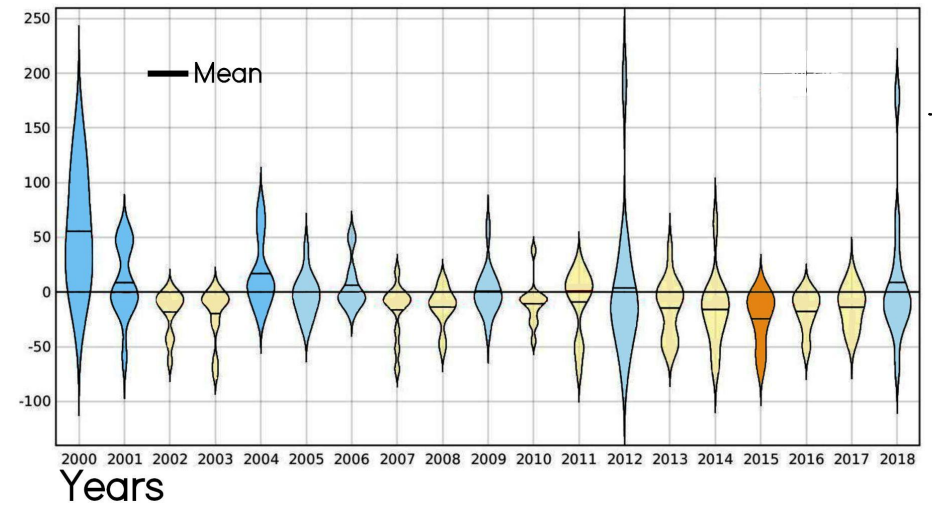
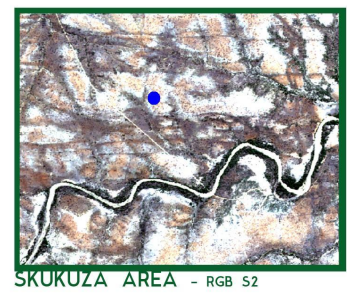
<https://meetingorganizer.copernicus.org/IAHS2022/IAHS2022-498.html>

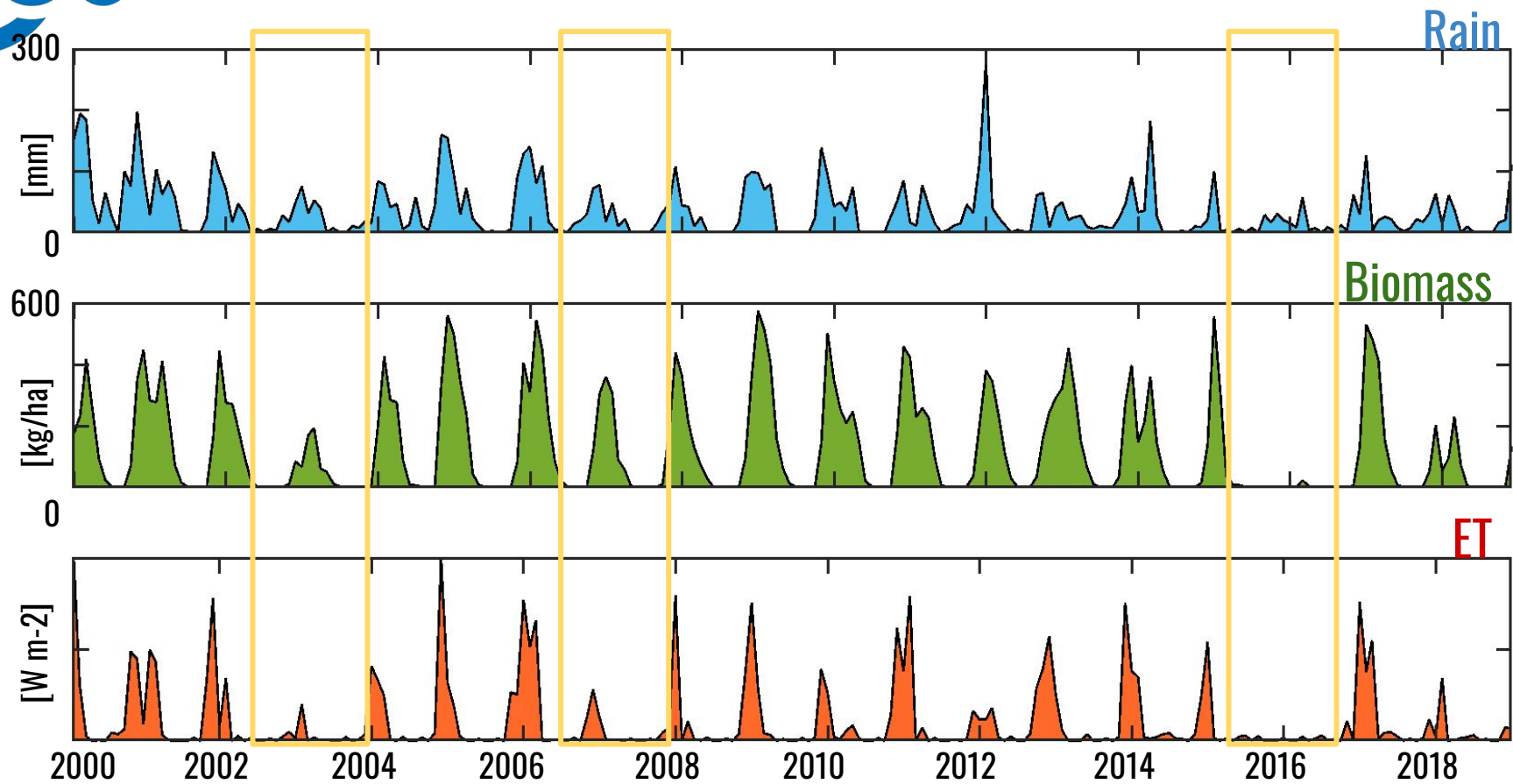
South Africa

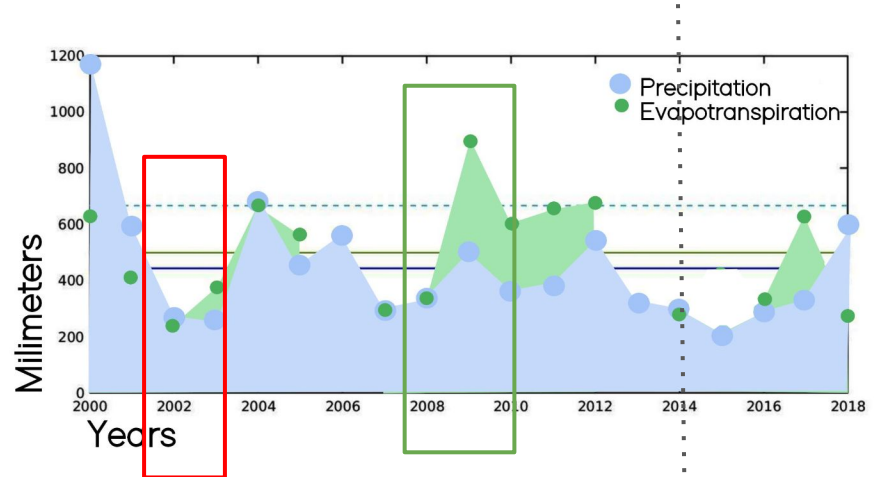
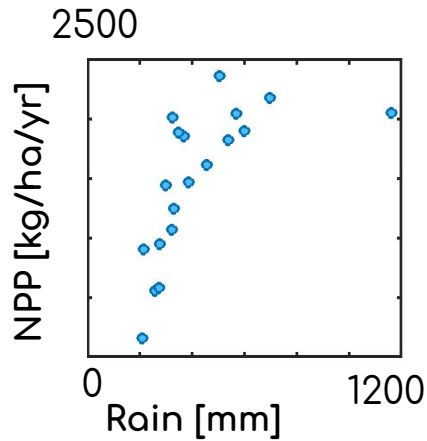
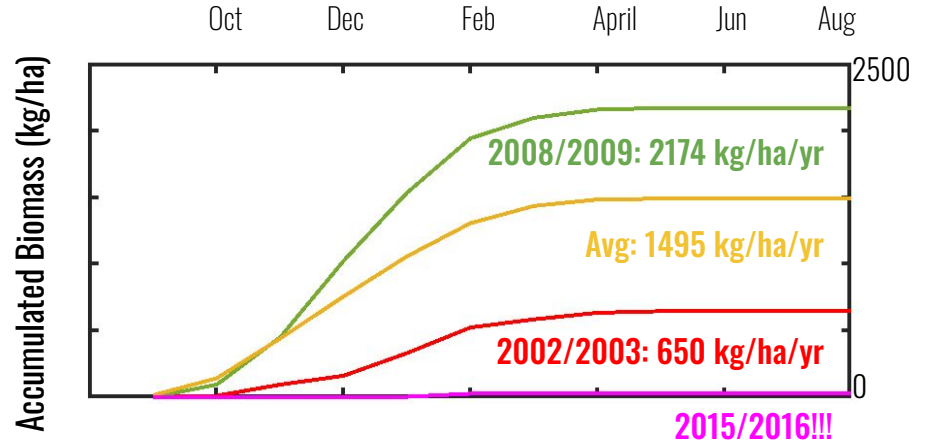
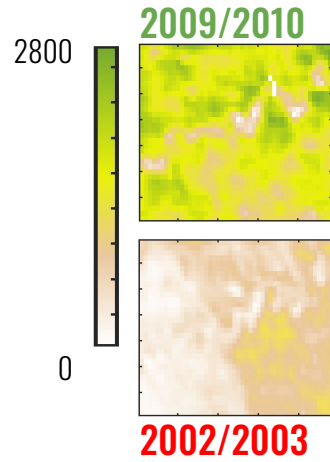
Land Use map for the Sentinel 2 36JUT Tile



Drought in rangelands of South Africa
by Alexandra Dr. Sandhage-Hofmann









Thanks a lot!!



UNIVERSITY of the
WESTERN CAPE

IFAPA

Instituto de
Investigación y
Formación Agraria
y Pesquera



UNIVERSIDAD
DE
CÓRDOBA



MP. Gonzalez-Dugo, MJ
Muñoz-Gomez, H. Nieto, MJ.
Polo-Gomez, T. Dube, A.
Andreu