

The Botín Foundation and the International Rosenberg Forum on Water Policy

**Managing Drought and Scarcity in Semi-Arid Lands:
The cases of California and Spain**

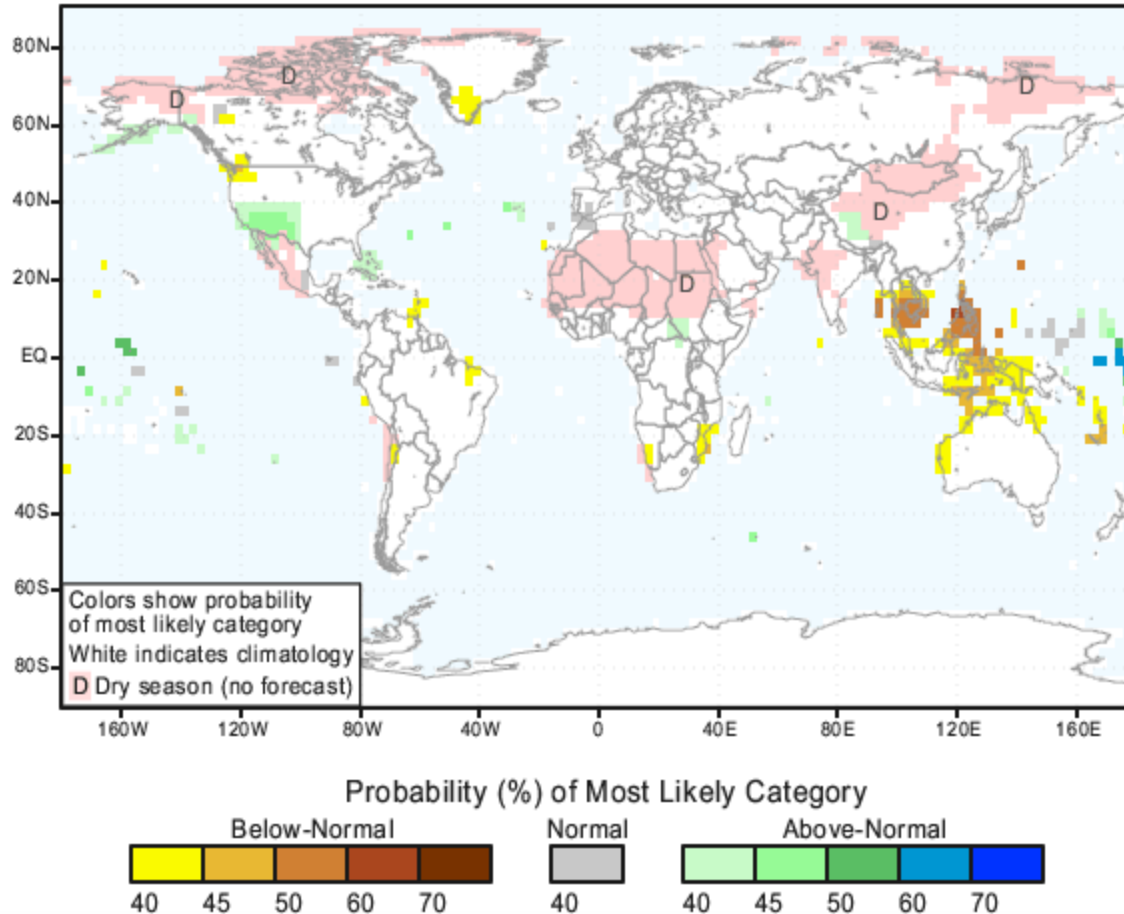
Botín Foundation, Madrid, January 29, 2015

**California-Spain discussion on Drought -
Issues related to agriculture**

Elías Fereres

IAS-CSIC-Universidad de Córdoba

IRI Multi-Model Probability Forecast for Precipitation for February-March-April 2015, Issued January 2015

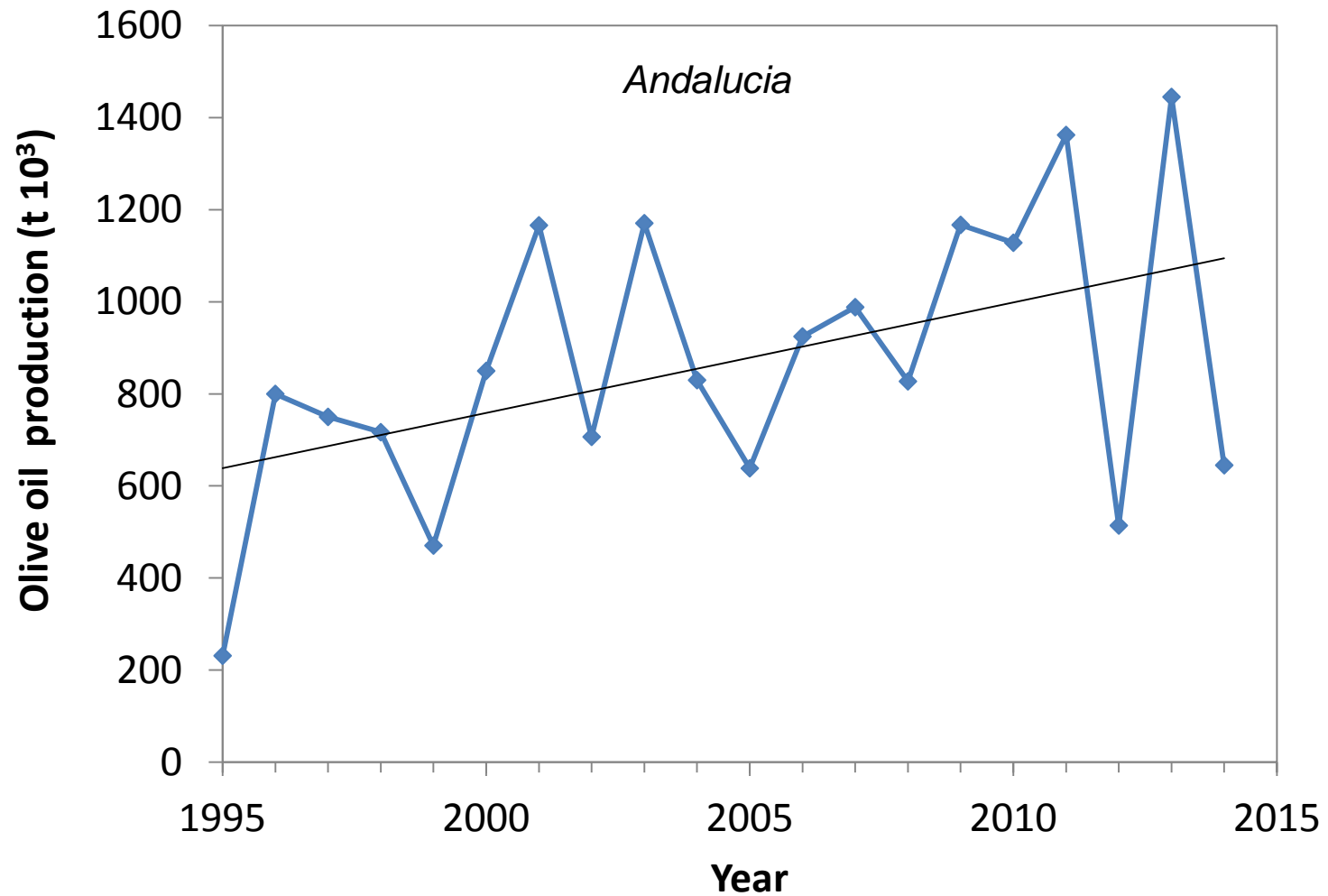


BETTER PLANNING FOR THE FUTURE

Research on seasonal predictions vs. research on climate change?

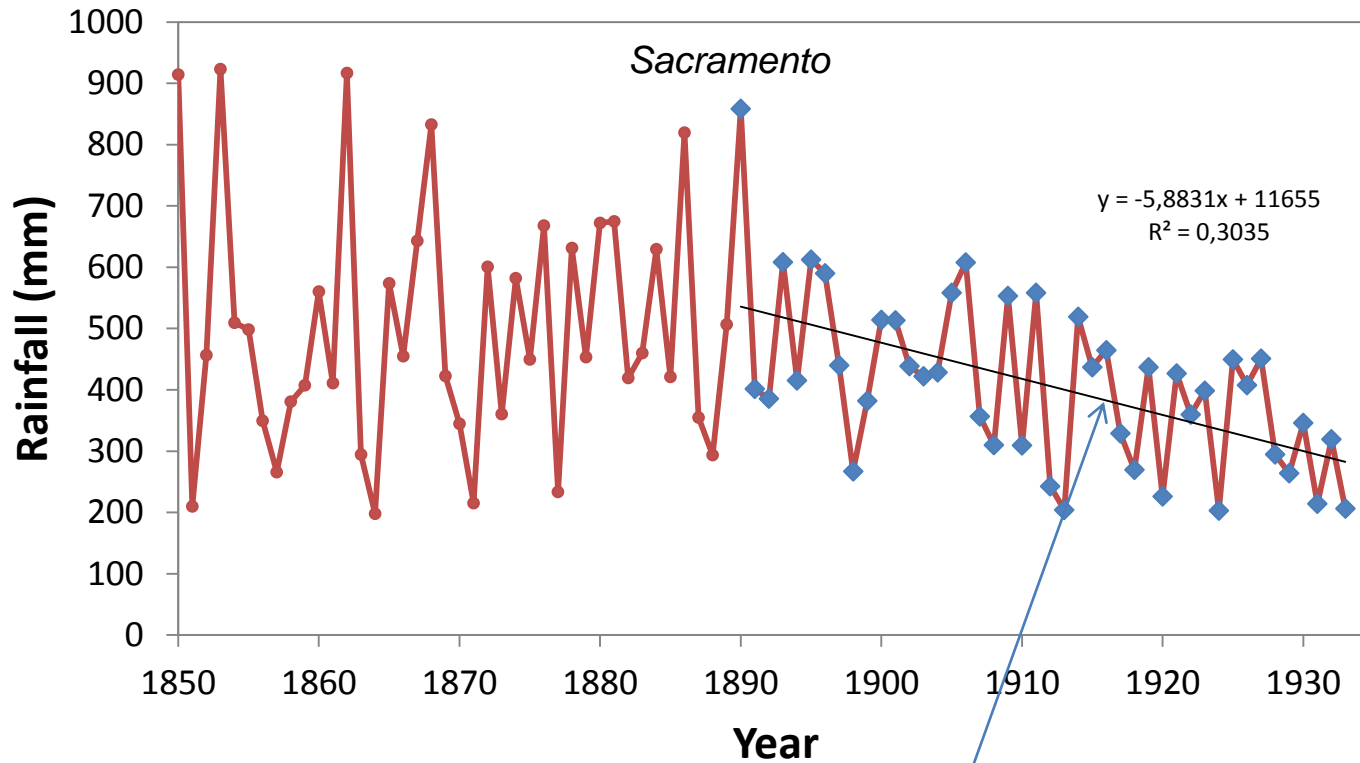
MITIGATING THE IMPACTS OF DROUGHTS

An extreme example of instability in production



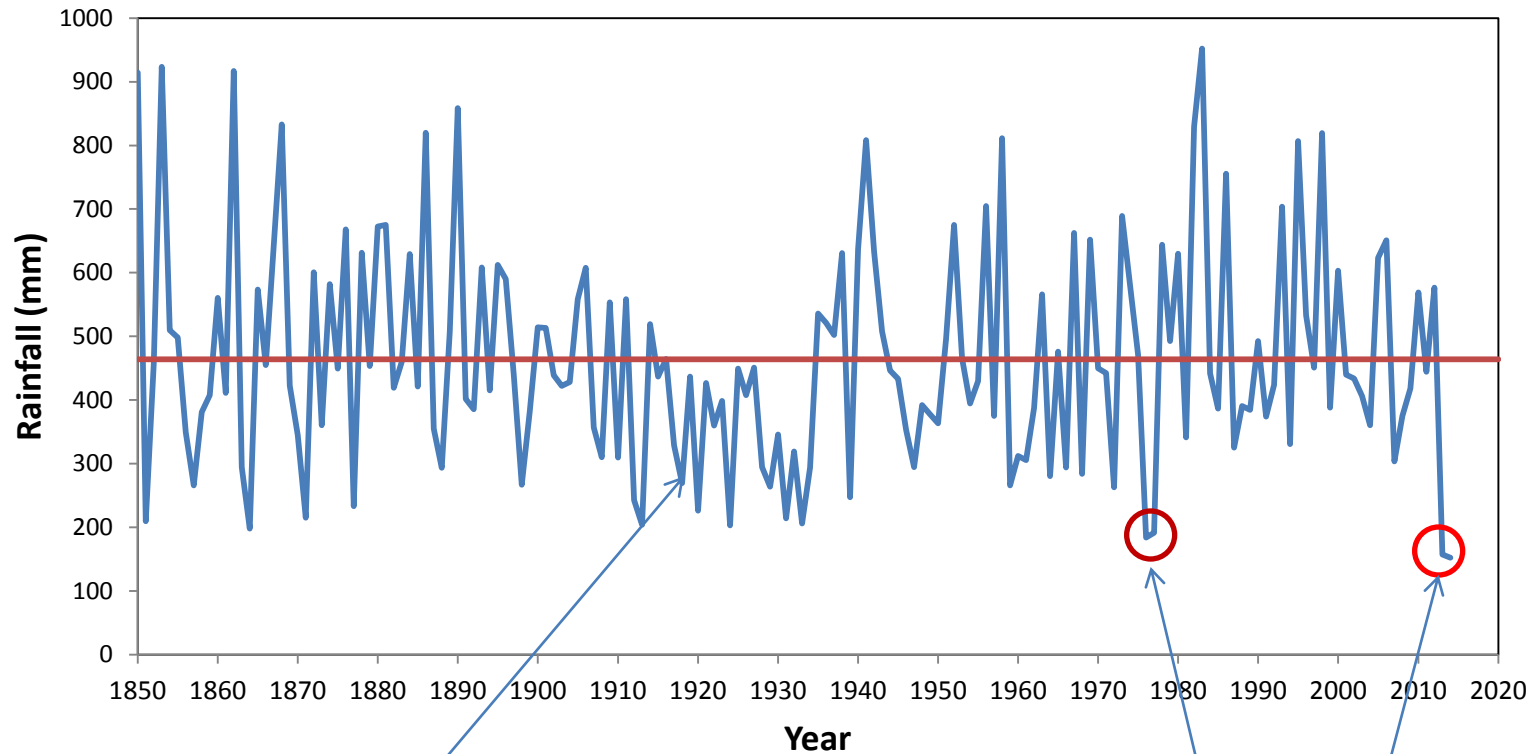
CLIMATE CHANGE??

Annual Rainfall, Sacramento, California, 1850-1934



SIGNIFICANT DECLINING TREND > 0.2 "/yr

Long term rainfall records, Sacramento

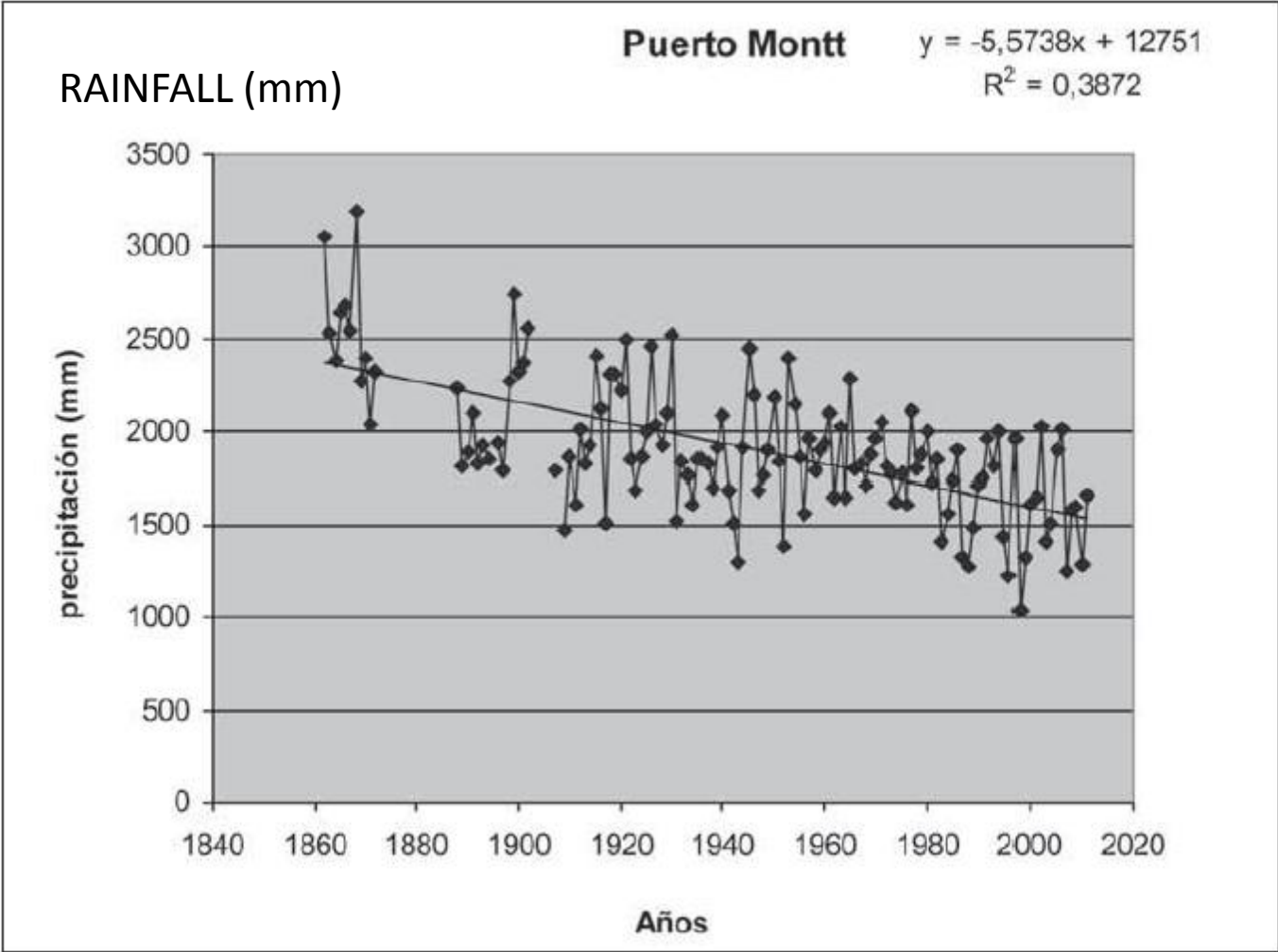


What were the causes for this decline of precipitation over more than 30 years?

Extreme droughts

RAINFALL IS CLEARLY DECLINING IN SOME PARTS OF THE WORLD

EVOLUCIÓN ANUAL DE LA PRECIPITACIÓN EN PUERTO MONTT (South Chile)

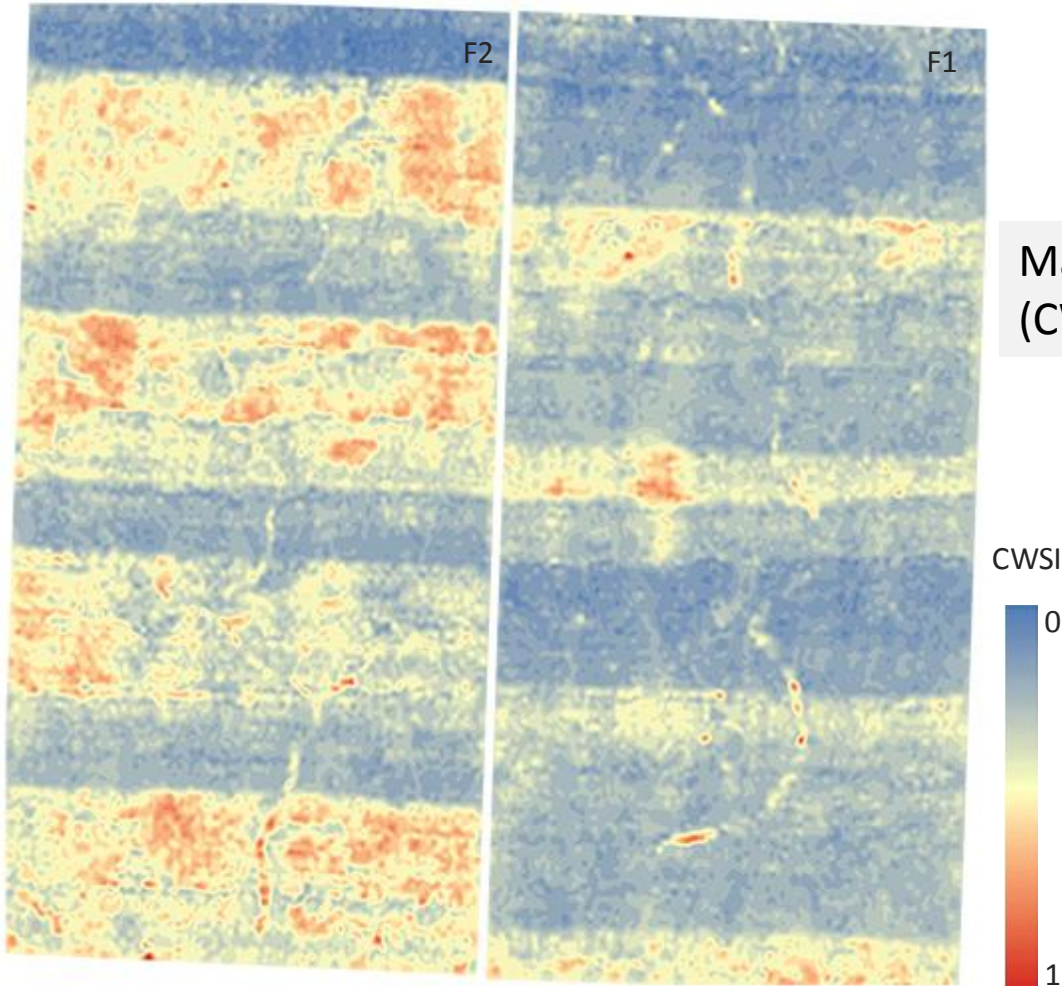


(J.J.Sanz, 2012)

The water productivity gap

HOW ARE WE DOING OUT THERE? PRECISION IRRIGATION

Agriworld, Madera Co., two pistachio blocks, 300 acre each, individual tree measurements



Maps of the Crop Water Stress Index (CWSI) with 35 cm resolution

**ADOPTION OF NEW TECHNOLOGY
STILL SLOW**

Gonzalez-Dugo et al., Irrig.Sci. 2014