



Cereal production as climate proxy in southwestern Iberian Peninsula, 1580-1837.

Fernando S. Rodrigo

Universidad de Almería, Física Aplicada, Almería, Spain (frodrigo@ual.es, 0034-950-015477)

In this work, series of cereal harvest taxes (tithes) of 21 localities corresponding to southwestern Iberian Peninsula, in the Guadalquivir River Basin, from 1580 to 1837 are investigated as a proxy of climate conditions in the region. With the exception of the secular trends to changes in the land use, rainfall was the main modulator of the annual cereal production, making these series an excellent basis to reconstruct the southwestern Iberian precipitation during the preinstrumental period. Local series were standardized, and a regional index was obtained averaging the local series. This series has the advantage of representing the average crop variability for the entire study period with only two gaps in 1821 and 1822. Preliminary analysis show that the greater part of the drought episodes resulted in an index minimum, but other events, like continuous rainfall and floods, could provoke important decreasing in the cereal production. In addition, non-climatic events linked to socioeconomic features, could influence the behaviour of cereal production. The index was compared with series of tree ring indices and a very similar behaviour was found in the long-time scales, with a significant correlation coefficient between the 11 year moving averages of the cereal production index and the tree ring width index from Sierra de Cazorla, in the springs of the Guadalquivir river. Future developments of this study are outlined.