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Climate of the Past Discussions

Interactive comment on "Assessing extreme droughts in the Iberian Peninsula during 1750–1850 from rogation ceremonies" *by* F. Domínguez-Castro et al.

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General comments :

The authors notice the difficulty which the research meets when it is a question of studying the droughts of the preinstrumental period for which the major part of the data is above all qualitative. So it suffers from a lack of historic thickness because it uses instrumental data collected during the last 60 years. The authors thus consider with good reason that the historic hindsight is insufficient to interpret correctly the variability and the observed trends.

They propose to cure it thanks to a social and religious source well-known of the his-

torians: rogations. These religious ceremonies are indeed a historical factor of permanence in the European catholic countries, in particular in Spain where one has very long series sometimes ranging between the 16th century and the end of the 19th century. The Spanish characteristic lies in the fact that the ceremonies 'pro pluvia', according to the gravity of the dryness, gave place to different liturgical practices, as many differences which make it possible the Spanish historian to relatively deduce severity from the event. In other countries like France or Germany, the rogations do not give place to such a rich liturgy. It is thus difficult to propose a comparable hierarchisation.

Incontestably, it is a record that the hydrologists and the climatologists cannot neglect if they wish to better understand the cycles, the synchronies or the shifts between the areas and the periods. For as much, the exploitation of this source is not an innovation and certain authors of this paper are besides specialists recognized for a long time in this field. Under these conditions, the principal contribution of the study would lie in the use of 16 new series of rogations which enable them to study the drynesses ranging between 1750 and 1850, one period characterized by the minimum of Dalton (1790-1820) and the major eruption of Tambora in 1815). However, because of the political risks (Napoleonean wars, political liberalization) and the different regional agricultural evolutions the quality of the source 'rogation' has been degrated for the period (p 4041).

Specific comments : individual scientific questions/issues

Whereas the authors claim to subject new series, it is astonishing to note in table 1 (p 4061) that except for the towns of Calahorra, Teruel and Zafra, all already seem to be exploited in sometimes old publications (1990, 1995,1997). One thus does not understand why the authors speak about 16 new series. Precise details on this subject would be the welcomes.

In addition, the sources of records of these various rogations really are not clearly indicated. The will to keep these confidential documents can be understood on behalf of very young researchers. On the other hand, the undeniable notoriety of certain

authors of this paper would not have made it possible to be more precise in the origin of the files. In the field of the historical method, it is highly recommended to justify its documentation at least partially. The reader must be satisfied with the publications in which these series were published (see table 1 p 4061).

If the criticism of the source is carried out, it would have probably deserved to be more rigorous. Thus, it would have been necessary to insist on the fact that the rogations used relate to all of the cities. However, the city at modern times (16th-18th) is particularly sensitive to the extreme events and in particular to the drynesses since its provisioning depends largely on the level of the rivers for the routing of its food. One can thus consider that the religious perception of the dryness is exaggerated perhaps here than in the rural world.

On the methodological plan, the authors indicate that they used other sources like the diaries and private correspondence. For as much, they do not seem to be really exploited whereas these documents bring to the historian information often more tangible than the only rogations. Thus they indicate the duration of the phenomenon, the reference marks of low water levels compared to the bridges or with the quays, of testimonys on the economic consequences (raising of prices of the supplies) and ecological (algae, died of fish) of these extreme events. Fault of being able to offer to the researchers exact sciences purely quantitative data, this textual information can be used to specify with a greater reliability severity of an event. Beyond, they represent invaluable tools to build an interdisciplinary dialogue and to compare the historical and contemporary drynesses.

The results and the conclusions presented in connection with Tambora are very new and astonishing. Indeed, whereas the year 1816 is known for its spring and its very wet summer in Europe, the year 1817 is on the contrary particularly dry in Spain with a maximum number of rogations in the country. It seems well that it is about an Iberian exception in Europe and it would have been liked that the authors explain us the reasons of this phenomenon thanks to the contest of the geophysicists.

It is regrettable that the authors did not justify their argumentation and their graphs by proposing in appendix a table containing the series of the historical drynesses by geographical site and by indicating the date and the approximate source of records (place, name of the issues of records) if it comprises a confidential aspect.

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