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Comment on cp-2021-165

Anonymous Referee #2

Referee comment on "A global inventory of quantitative documentary evidence related to climate since the 15th century" by Angela-Maria Burgdorf, *Clim. Past Discuss.*, <https://doi.org/10.5194/cp-2021-165-RC2>, 2022

The thematic focus of the article — a global inventory of "historical documentary evidence" — is highly relevant. And it is certainly desirable to create such an inventory. However, there are serious methodological issues to solve in order to create a useful and reliable inventory of this kind, and I doubt that these problems have been addressed appropriately in the reviewed version of the article. Methodological problems start with the problem of definition. In the context of historical climatology, "historical" and "documentary" evidence are synonymous. So, what is the meaning of "historical documentary evidence" in the first instance? Moreover, the term "observations" is used in more than one way in this article, which requires clarification. In some of the earlier passages, observations are distinguished — at least implicitly — from the documentary record. In these passages, "observations" refer to measurements. Later, Pfister is quoted affirmatively for subsuming measurements under the broader distinction between "direct" and "indirect" information. Observations in his understanding — and I agree with him — not only include measurements, but also non-quantitative (in other words: qualitative) descriptions. These distinctions need clarification in order to produce a coherent explanation regarding the type of information gathered in the inventory.

The greatest challenge in creating a global inventory of non-quantitative documentary information, which is also much more difficult to solve, is related to language. The author is obviously not in a position, nor is it her ambition, to provide a survey of all available archival records related to climate history in the given timeframe (late middle ages to the present). This is clear enough in the article. However, even a review of existing reconstructions based on the historical record (the instrumental record not counting) is almost impossible to achieve for a single person. It requires a consortium of authors capable of screening through older as well as more recent bodies of literature in multiple languages. I nevertheless believe that the findings presented in this article deserve attention and should be published. Yet, the problem of limits to the scope of such an inventory created by a single person should be problematized and addressed.

Further problems: (1) The case studies in part 4 are unnecessary. Historical climatology is an established field of study. Hence, there is no need to demonstrate the value of historical climate information. It is unclear how part 4 relates to parts 1-3. — (2) The explanations given for the decline of number of historical records in the 19th (in some places) and 20th century (in other places) are too general and somewhat superficial. For example, the Chinese case — and even more so the Asian — is much more complex than can be grasped in one sentence stating that Imperial China ended in 1911. In this context it is particularly important that the author addresses the changing relation between the instrumental and the non-instrumental record. — (3) The English language requires considerable rephrasing and editing.