

Interactive comment on “Enjoying the ice. Dutch Winter landscapes, weather and climate in the Golden Age, 17th century” by Alexis Metzger

Anonymous Referee #2

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1) General comments

This is a very interesting contribution to the use of landscape paintings as possible source of the reconstruction of winter weather in the 17th century. The author deals with an important issue in general, because Dutch winter paintings of the 17th century are often used to illustrate publications on Little Ice Age without further source criticism. It is important to contextualize the paintings in their climatological cultural background and the author succeeds at least to some extent in doing so by analysing a corpus of 49 paintings from the 17th century Netherlands. Based on documentary evidence (the collection by Buisman and van Engelen as well as studying the weather observations by “enthusiasts” such as David Fabricius) he carves out that the weather situation depicted (cold winters with frozen rivers, canals, lakes and the sea, but no

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precipitation) is only one pattern out of six. According to Fabricius's observations, this weather pattern only represents about a sixth of all winter days. At least some of the winter landscapes refer to really cold winters with freezing canals, lakes and sea (e.g. in 1608, when Hendrick Avercamp painted his first winter landscape). The popularity of winter landscapes corresponds with the cold period of the Maunder Minimum, but it represents also political and social circumstances of that time. However, as will be shown in the following section, the arguments used by the author are not always convincing. Furthermore, several errors have to be corrected before publication. Some publications both on the overall climatic development of the Little Ice Age as well as on the use of paintings for historical climatology should be recognized.

2) Specific comments on individual scientific issues

Chapter 1: Introduction I. 22: "medieval warming" is a concept that has been rejected more and more in recent research – see, for instance, the Palgrave Handbook of Climate History (2018, the new authoritative handbook on historical climatology that has not been cited at all). The whole paragraph has to be elaborated in more detail, also pointing out that Little Ice Age has not been a period with only cool weather conditions but significant fluctuations. In the context of this article, the Maunder Minimum should be mentioned and explained here for the first time and not only very briefly at the very end on p. 11 (l. 336). I. 45-47 The remark that only a few studies have explored European landscape paintings with climatic analyses is only partly true. There is, indeed, quite a potential for more studies, but there are several studies the author neglected, e.g.: Brönnimann, S.: Picturing climate change. In: *Climate Research* 22 (2002): 87-95. Thornes, J.E.: Constable and the Beaufort Wind Scale. In: Hamilton, J. (Ed.), *Fields of Influence*. Birmingham 2001: 93-109 Thornes, J.E.: Cultural climatology and the representation of sky, atmosphere, weather and climate in selected art works of Constable, Monet and Eliasson. In: *Geoforum* 39 (2008): 570–580. Rohr, C.: Die Winterbilder der französischen Impressionisten im Spiegel der Klimageschichte. In: Kornhoff, O. (Ed.): *Lichtgestöber. Der Winter im Impressionismus*. Arp Museum

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Bahnhof Rolandseck, 11. November 2012 bis 14. April 2013. Bielefeld 2012: 48-54.

Chapter 2.1 A corpus of winter landscapes I. 84 The wording “cloud classification was only invented in 1802” obviously refers to Luka Lamark’s system. However, single weather observers sometimes developed their own system to distinguish between different types of clouds. I suggest rather speaking of a “commonly used and standardized cloud classification” I. 89: The caption of Fig. 1 contains some errors: read “Salomon van Ruysdael” instead of “Salomon van Rusydael” and “New York, Metropolitan Museum of Art” instead of “Metropolitain Museum of Art” without naming the place of the museum. I. 93: Here, Salomon van Ruysdael and Jacob van Ruysdael cited later are mixed up. Correct is “Salomon van Ruysdael” instead of “Jacob van Ruysdael” I. 94-95: I cannot follow the argument that people are moving toward the inside “Which means the tide is reasonable”. If the water is completely frozen, the tide will not cause the people moving. In addition, we absolutely do not know whether van Ruysdael depicted the sea (e.g., the Zuiderzee) or a larger frozen water area inland or a larger canal or river. The painting is named “Drawing the Eel” and obviously refers to the eel pulling festival (the so-called palingtrekken). Maybe the author could think about a more specific localisation based on the tradition of palingtrekken.

Chapter 2.2 Climatic sources The collection of sources by Buisman and van Engelen is, as the author states himself, a good starting point, but not always satisfying. Including David Fabricius in more detail is without doubt a good choice, but still it would need more information about freezing canals etc. I wonder why the author did not refer to the accurate study by Adriaan de Kraker of 2016 (Ice and water. The removal of ice on waterways in the Low Countries, 1330–1800. In: Water History) dealing with the ice removal on Dutch and Belgian canals (amongst others the Leiden – Haarlem – Amsterdam canal). This study shows that in particular the canals got frozen during Little Ice Age quite frequently, but that people tried to break up the ice due to several reasons.

Chapter 3.1 Painting and climatic diachronies I. 152 Please add the place of the Mu-

seum Boijmans van Beuningen (i.e. “Rotterdam”) in the caption of Fig. 2. I. 172 read “Thames” instead of “Tames” I. 180: The reference “see table 1” is obviously wrong. It should rather be “see Fig. 3”.

Chapter 3.2 An imaginary of cold weather I. 193-194: this is obviously a quote taken from Buisman, but the reference is missing. I. 200: read “6 days in 1600” instead of “6 days in 1660” I. 217-223: The last paragraph of the chapter is a bit confusing. First, it starts with a reference to Fabricius. Second, an information on 1667 and 1672 is inserted. Finally, the narrative turns back to Fabricius. Please rephrase in a logical order.

Chapter 3.3 A landscape climatic figure? 4 hypotheses I. 225: The title “A landscape climatic figure?” is not understandable to me. Please revise wording. I. 228: I cannot see, why the image of winter given by the paintings is “very misleading”. It is indeed “one-sided”, but we have to ask, why painters should have produced also landscapes with rainy winter weather or other non-spectacular winter scenery. This is a question of aesthetics and of the market of art. I. 244-253: I totally disagree with the religious argument and I suggest skipping it totally. Having in mind that the reformed churches in the northern Netherlands were mostly Calvinists, this is the church fighting against amusements like ample eating and drinking or dancing more than any other confession. Catholics, however, were allowed to celebrate with only few restrictions, if there was a celebration day, a public feast etc. The examples given for a negative winter experience seem to be taken by pure chance and we have plenty of opposite examples both for the Middle Ages and for Early Modern Times (e.g. frescos of people enjoying snow in winter by making snowball fights, as in the cycle of months in the Torre dell’Aquila in Trento, Italy, around 1410). Without doubt, winter had also been a symbol for the old age and even death, but not related to a specific confession. And people who were freezing would not have enjoyed winter at all, no matter if they were Catholics, Lutherans, Calvinists or Non-Christians. I. 255-256: For artificial flooding as a defensive strategy in the Netherlands, one should refer to Adriaan de Kraker’s article “Flooding

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in river mouths: human caused or natural events? Five centuries of flooding events in the SW Netherlands, 1500-2000” (Hydrology and Earth System Sciences 19/6 (2015): 2673-2684, in particular 2678 and 2680-2682). l. 279: A Citation is missing

Chapter 4: Discussion l. 290: Only here, the aspect of the market of art and its demands is mentioned shortly. This aspect should be discussed in more detail, because it explains best why so many winter landscapes had been painted (e.g. by Hendrick Avercamp). l. 291: I would rather speak of “limited information” instead of “little information” given by weather enthusiasts, because compared to other sources for climate reconstruction of that time they are actually quite rich sources.

3) Technical corrections

a) Language and style

Both language and style are satisfying. Nevertheless, the paper should once again be proofread by a professional native speaker. For instance, the term “precipitation” should only be used in singular (instead of “precipitations” as used six times in Table 1, l. 208). Similarly, the term “weather” should always be used without article (with article in l. 76, 82, 113, 119, 124, 146, 234, 291). Some typos should be corrected, such as “see” instead of correctly “sea” (l. 236). Please check the passages quoted verbatim once again, e.g. read “natural archives” instead of “archives natural” (l. 109). In addition, I suggest avoiding “we” for a single-authored paper, if only the position of the author is expressed (l. 12, 38, 52, 53, 57, 60, 61, 71, 73, 76, 82, 104, 125, 134, 147, 189, 199, 230, 292, 298, 300, 311, 332). In the same sense, avoid “our”/“ours” (l. 41, 54, 71, 77, 109, 134, 141, 160, 189, 196, 199, 227, 242, 296, 297).

“ b) Formal requirements

l. 26 and 417: F. Mauelshagen’s “Klimageschichte der Neuzeit” appeared in 2010 and not 2012. The place of publication is “Darmstadt” and not “s.l.”

Some smaller corrections to be made: Read “Janković” instead of “Jankovic” (l. 42,

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406) “van” is a fixed part of Dutch surnames. So, always read “van Engelen” instead of “Engelen” (l. 126, 157, 207, 275, 278, 315, 367, 369)

4) Overall assessment

In general, this is an interesting contribution addressing an important question for historical climatology, which should be accepted with major revision, i.e. there are both some critical remarks in content to be dealt with and in addition, some technical improvements (formal requirements, typos) and some clarifications needed, as mentioned in my comments.

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