Clim. Past Discuss.,
https://doi.org/10.5194/cp-2018-82-SC2, 2018

Climate of the Past Discussions

Interactive comment on "The 4.2 ka BP event in the Levant" *by* David Kaniewski et al.

D.S. Kaufman

darrell.kaufman@nau.edu

Received and published: 24 July 2018

The onset of the Late Holocene (Meghalayan Age) is now formally recognized as coinciding with the 4.2 ka event[1]. The event is characterized as an abrupt, 200-year-long megadrought and cooling that impacted agricultural societies around the world[2].

As a paleoclimatic phenomenon, the underlying cause of the 4.2 ka event has not been identified. It is unclear whether the event was externally forced, a non-linear response to forcing by gradual orbital changes, or a feature of unforced climate variability. In addition, whether the 4.2 ka event is more pronounced than any of the other centennial-scale climate fluctuations experienced by early agricultural societies has

[1]http://www.stratigraphy.org/ICSchart/ChronostratChart2018-07.jpg

[2]http://www.stratigraphy.org/index.php/ics-news-and-meetings/119-collapse-of-civilizations-worldwide-defines-youngest-unit-of-the-geologic-time-scale

not yet been evaluated systematically. Indeed, a relatively recent global synthesis of Holocene climate variability did not recognize a prominent change around 4.2 ka[3].

The promotion of the 4.2 ka event as the Late Holocene marker intensifies scientific interest in this paleoclimatic event. To understand its underlying cause and to document its spatial-temporal pattern requires a globally distributed network of well-curated paleoclimate time series. While the development of such a dataset is underway[4], most of the proxy climate and geochronological data needed to investigate the spatial-temporal pattern of the 4.2 ka event are not presently available through public repositories, hampering the ability to place this now-famous event in a global paleoclimatic context.

The authors of this special issue have a timely opportunity, if not an obligation, to integrate their data into the emerging open-data infrastructure for paleoclimatology. Adopting FAIR data practices will not only accelerate discovery and safeguard scientific integrity[5], it will contribute to answering outstanding questions about the 4.2 ka event. This requires that the time series of the paleo environmental proxies (both new and previously published) be transferred to a trusted data repository, along with sufficient metadata to facilitate their intelligent reuse. Persistent links to the digital versions of the datasets used in or generated by each study should be provided in the "Data Availability" section of the paper, as required by journal policy.

This procedure was recently applied[6] to the papers in PAGES 2k special issue in this journal, for which the co-editors assisted authors in their stewardship of data. We invite authors, reviewers and editors to call on us with questions about archiving paleo

[3]Wanner, H., Solomina, O., Grosjean, M., Ritz, S.P., Jetel, M. Structure and origin of Holocene cold events. Quaternary Science Reviews 30, 3109-3123 (2011).

[4]Kaufman, D., Kolus, H., McKay, N., Routson, C. Is 4.2 ka the most prominent marker for subdividing the Holocene? 4.2 ka BP Event International Workshop, Università di Pisa, 10-12 Jan (2018).

[5]Wilkinson, M.D. The FAIR Guiding Principles for scientific data management and stewardship, Scientific Data, 3, 160018 (2016). doi:10.1038/sdata.2016.18

[6]Kaufman, D.S., PAGES 2k Special Issue Editorial Team. Technical Note: Open-paleo-data implementation pilot – The PAGES 2k special issue. Climate of the Past 14, 593-600 (2018). doi:10.5194/cp-14-593-2018

datasets. Transferring the data presented in this special issue to public repositories will help ensure that these valuable resources are not lost forever.

Darrell Kaufman and Nick McKay

Northern Arizona University

Interactive comment on Clim. Past Discuss., https://doi.org/10.5194/cp-2018-82, 2018.