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Reply on RC2

Demetris Koutsoyiannis and Nikos Mamassis

Author comment on "From mythology to science: the development of scientific hydrological concepts in Greek antiquity and its relevance to modern hydrology" by Demetris Koutsoyiannis and Nikos Mamassis, Hydrol. Earth Syst. Sci. Discuss., <https://doi.org/10.5194/hess-2021-7-AC3>, 2021

We thank the anonymous reviewer for the encouraging and very constructive comments. We agree with all comments, and we have addressed them in a revised manuscript. As an example, here is the modified version of the abstract according to the reviewer's suggestion.

Abstract. Whilst hydrology is a Greek term, it has not been in use in the Classical literature but much later, during the Renaissance, in its Latin version, hydrologia. On the other hand, Greek natural philosophers (or, in modern vocabulary, scientists) created robust knowledge in related scientific areas, to which they gave names such as meteorology, climate and hydraulics. These terms are now in common use internationally. Greek natural philosophers laid the foundation of hydrological concepts and the hydrological cycle in its entirety. Knowledge development was brought about by search for technological solutions to practical problems, as well as by scientific curiosity. While initial explanations belong to the sphere of mythology, the rise of philosophy was accompanied by the quest for scientific descriptions of the phenomena. It appears that the first geophysical problem formulated in scientific terms was the explanation of the flood regime of the Nile, then regarded as a paradox because of the spectacular difference from the river flow regime in Greece, i.e., the fact that the Nile flooding occurs in summer when in most of the Mediterranean the rainfall is very low. While the early attempts were unsuccessful, Aristotle was able to formulate a correct hypothesis, which he tested through what appears to be the first in history scientific expedition, in the turn from the Classical to Hellenistic period. The Hellenistic period brought advances in all scientific fields including hydrology, sample of which is the definition and measurement of flow discharge by Heron of Alexandria. These confirm the fact that the hydrological cycle was well understood in Ancient Greece yet it poses the question why correct explanations had not been accepted and, instead, ancient and modern mythical views had been preferred up to the 18th century.