



The Hydrological Cycle: A Contrary Historical Perspective

Okke Batelaan

Flinders University, National Centre for Groundwater Research and Training, College of Science and Engineering, Adelaide, Australia (okke.batelaan@flinders.edu.au)

The hydrological or water cycle is to us, scientists, as well as to the general public, the best known concept of the hydrological sciences; my children got it already introduced in the kindergarten. But if we look at definitions of the hydrological cycle we find a stunning variation. This is further becoming clear from a critical review of how we, hydrologists, vaguely use the term 'hydrological cycle'. So, an eminent question emerges: is it at all a concept? Or maybe it is a principle, a law, a convenient description, a metaphor? Hence, what is it? In order to shed light on the 'hydrological cycle' a historical analysis has been performed on its origin. Many authors find in writings of the antiquity or long past proofs of man's acquaintance with the 'hydrological cycle'. Generally, they mean that one or more hydrological processes like precipitation, evaporation, infiltration or runoff was correctly understood. Aristotle in 'Meteorologica' came close to using the term when he wrote: "So we get a circular process that follows the course of the sun. For according as the sun moves to this side or that, the moisture in this process rises or falls. We must think of it as a river flowing up and down in a circle and made up partly of air, partly of water. When the sun is near, the stream of vapour flows upwards; when it recedes, the stream of water flows down: and the order of sequence, at all events, in this process always remains the same." This idea of a continuous flow of circulating water as sketched by Aristotle is strongly engrained in our perception and is enforced by the circular movements of the planets. Horton (1931) is likely the first who used the term 'hydrological cycle' literally and who started the plethora of grossly-simplified depictions. However, as Horton's introduction of the term was mainly aimed at bringing scientists together with a unifying concept into the new science of hydrology (Linton, 2008), we are left with the question of the real scientific value of the 'hydrological cycle'.