

On Dalton and evaporation research - a passage in the footsteps of scientific discovery (John Dalton Medal Lecture)

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It may seem peculiar that John Dalton known primarily for his pioneering contributions to chemistry with the development of gas laws and modern atomic theory is somehow associated with hydrology. Dalton conducted some of earliest and definitive experiments and analyses to deduce regional water balance (1799) and subsequently expanded into "Essay on Evaporation" in 1802 maintaining keen interest in hydrometeorology throughout his adult life. A striking aspect of Dalton's pioneering work is the conviction in the generality of the laws of nature – in the conclusion of his 1799 water balance study he writes: "I think we may fairly conclude - that the rain and dew of this country are equivalent to the quantity of water carried off by evaporation and rivers", Dalton then adds "and as nature acts upon general laws, we ought to infer that it must be the case in every other country, till the contrary is proved". The presentation will trace key steps in evaporation research inspired by Dalton's vision and motivated by historical and contemporary discoveries of this key process central to hydrology, climate, and life on Earth.