Geophysical Research Abstracts
Vol. 17, EGU2015-2490, 2015
EGU General Assembly 2015

Virtual water trade in the Roman Mediterranean

Brian Dermody (1), Rens van Beek (2), Elijah Meeks (3), Kees Klein Goldewijk (1,4), Walter Scheidel (5), Ype van der Velde (6), Marc Bierkens (2), Martin Wassen (1), and Stefan Dekker (1)

(1) Utrecht University, Copernicus Institute, Environmental Sciences, Netherlands (b.dermody@uu.nl), (2) Utrecht University, Department of Physical Geography, Utrecht, the Netherlands, (3) Stanford University Library, Palo Alto, USA, (4) Netherlands Environmental Assessment Agency, De Bilt, the Netherlands, (5) Stanford University, Department of Classics, Palo Alto, USA, (6) Wageningen University, Department of soil, geography and landscape, Wageningen, the Netherlands

The Romans were perhaps the most impressive exponents of water resource management in pre-industrial times with irrigation and virtual water trade facilitating unprecedented urbanisation and socio-economic stability for hundreds of years in a region of highly variable climate. To understand Roman water resource management in response to urbanisation and climate variability, a Virtual Water Network of the Roman World was developed. Using this network we found that irrigation and virtual water trade increased Roman resilience to inter-annual climate variability. However, urbanisation and population growth arising from virtual water trade likely pushed the Empire closer to the boundary of its water resources, led to an increase in import costs, and eroded its resilience to climate variability in the long term. Our newest findings also assess the impact that persistent climate change associated with Holocene climate anomalies had on Roman water resource management. Specifically we assess the impact of the change in climate from the Roman Warm Period to the Dark Ages Cold Period on the Roman food supply and whether it could have contributed to the fall of the Western Roman Empire.