IAHS2017-30
IAHS Scientific Assembly 2017

Assessment of the impact of dams on river regimes, sediment transports to the sea, and coastal changes

Gil Mahé (1), Oula Amrouni (2), Thouraya Benmoussa (2), Laurent Dezileau (3), Rajae Elaoula (4), Hamadi Habaieb (5), Abderraouf Hzami (2), Ilias Kacimi (4), Abderrahmane Khedimallah (6), Fatma Kotti (7), Mohamed Meddi (6), Nadia Mhammdi (3), and Abdeljaouad Saadi (8)

(1) IRD, UMR HSM, Montpellier University, France (Gil.Mahe@ird.fr), (2) INSTM, Salammbo, Tunisia (oulabz@yahoo.fr), (3) Geosciences laboratory, University of Montpellier, France (dezileau@gm.univ-montp2.fr), (4) Institut Scientifique, University Mohammed V, Rabat, Morocco (nmhammdif@yahoo.com), (5) INRGREF, Ariana, Tunisia (habaieb.hamadi@yahoo.fr), (6) ENSH, Blida, Algeria (mmeddi@yahoo.fr), (7) INAT, Tunis, Tunisia (f.kotti@yahoo.fr), (8) Faculty of Sciences, University of Tunis El Manar, Tunis, Tunisia (saadi_abdeljaouad@yahoo.fr)

A great number of rivers of North Africa are equipped with many dams for multiple purposes, mainly potable water, irrigation and energy production. In most of the countries –Morocco, Algeria and Tunisia, the storage capacity exceeds the runoff capacity, which means that water is stored several times in a row during its course to the sea. This leads to the storage of massive amounts of sediments into the dams' lakes, but nothing is known about how much sediment is released from these dams. This topic is mainly unstudied by the regional scientists due to lack of measurements of sediment transport, or poor access to observed data when available. Thus there are no time series of sediment loads to the sea from the North African rivers. One of the consequences is that it is impossible to relate recently observed coastal morphological changes to changes in the sediment recharge from the continent. This study brings a synthesis of recent works on this topic over the largest rivers of North Africa in the three countries. In Morocco and Tunisia there no continuous time series of sediment transport observations. There we sampled sediment cores in river meanders, to draw the history of real sediment exportations to the sea, on the basis of granulometry, geochemical and isotopic studies. Only in Algeria there are observations of sediment transport at main hydrological stations. The times series show many lack of data which are reconstructed according to runoff/concentrations correlations, taking seasonal factor into account. Methodologies and first results are shown in this study. They reflect the huge decrease of the sediment transport to the sea over time since several decades, and in the case of the Medjerda river in Tunisia, the absence of sands in the river sediments since 34 years and the construction of the major dam on the main stream.