



Pilot Modeling of Marun Catchment and Shadegan Wetland

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Abstract

The Marun and Allah Rivers rise in the Zagros Mountains in south-western Iran. The Marun Dam has created a large reservoir used for storing water for irrigation and hydro-power production. Upstream the Marun Reservoir the basin is sparsely populated. Behbahan, which with its population of about 150,000 is the largest town in the study area, has some industries (cement factory). Below Behbahan the Marun River flows in north westerly direction parallel to the mountain range until it meets the Allah River and forms the Jarahi River. The Jarahi River forms an alluvial fan with many distributaries on its winding course towards Shadegan City feeding water to the Shadegan Wetland. A Pilot Model of Marun Catchment is a model based on readily available information and data and if necessary supplemented with a few additional field data. A Pilot Model is thus an integration of all existing information of the system studied. The most important purpose of the research is to increase the understanding of the behavior of the system studied, and thereby focusing the study on the relevant issues. Considering the objectives of the modeling a standard 1D-modelling approach is well suited for establishing the Pilot Model of the river system.

Key Words: Modeling, Marun Catchment, Shadegan Wetland, Hydrodynamic

1. INTRODUCTION

The Marun and Allah Rivers rise in the Zagros Mountains in south-western Iran. The Marun Dam has created a large reservoir used for storing water for irrigation and hydro-power production. Upstream the Marun Reservoir the basin is sparsely populated. Behbahan, which with its population of about 150,000 is the largest town in the study area, has some industries (cement factory). The Jarahi River carrying the combined flow of the Marun and Allah Rivers starts at an elevation of approximately 70 MASL and flows for more than 180 km before it reaches the Shadegan City at an elevation of about 5 MASL. The Jarahi River forms an alluvial fan with many distributaries on its winding course towards Shadegan City feeding water to the Shadegan Wetland. With its more than 400,000 hectares the Shadegan Wetland is the largest wetland of Iran. The wetland is Ramsar-listed. The northern part of the wetland can be characterized as largely seasonal floodplain wetlands (thus a wetland which dries out during the lean season) of the Marun and earlier also of the Karun and the southern part consists of tidal mudflats at the head of the Persian Gulf. There are fresh and brackish marshes in the north and tidal saline mudflats, creeks, sandbars and low muddy islands to the south. The site is extremely important for wintering waterfowl (for some threatened species the most important in the World), and also for breeding and passage waterfowl of a wide variety of species. It not only supports a very diverse flora and fauna but up to 5,200 people are directly working on the Shadegan wetland, with the livelihoods of over 30,000 people depending on the wetland. The main threats to the wetland are 1) diminished water supply as a result of diversion of water for irrigation schemes further upstream, 2) discharges of saline drain water from sugar cane industries and irrigation schemes (the soils of the area are very saline), and 3) industrial and oil pollution. The most important objectives of the Pilot Modeling in the present study are: 1. to increase the understanding of the behavior of the system studied, and thereby focusing