

Interactive comment on “Sustainable management of river oases along the Tarim River in North-Western China under conditions of climate change” by C. Rumbaur et al.

Anonymous Referee #2

Received and published: 10 November 2014

The paper deals with a broad interdisciplinary topic on a remote region in China, where scientific knowledge is scarce and global water resource problems and climate change problems are increasing during last decades. **ABSTRACT:** Main problem and aim is well written, but single disciplinary results from the consortium are not deeply inter-linked for common interpretation and main result statement. It ends in an aim, and not in a result conclusion or home message, related to the regional problems. **INTRODUCTION:** Region and problem statement with increasing water resource conflicts is documented in a short sufficient manner. In relation to the multiple result description research aim is too descriptive and must be more related to the international problem of Integrated watershed management and Ecosystem services. Methods and study

C554

sites: In a broad manner the used methods for a multidisciplinary research group, written for each discipline, are documented precise and sufficient. Regional, global datasets (climate, hydrology, satellite images e.g. MODIS, own plot analysis, agro-economic statistics), own questionnaires for household analysis and models (e.g. SWIM, STARS, CCLM, MIKE-SHE) were used to analyse backward LUC, trends in climate (T, R) and discharge and forward with climate emission scenarios future climate change (for water balance scenarios foreseen). Further on plot based detailed analyses of the riparian vegetation (with plant physiology monitoring) in relation to ground water level, summer floods and soil water development were done. Ways of stakeholder analysis (mainly because of political restrictions with scientists and official governmental people) and data management are also well signed out. **RESULTS:** According to the methodical subchapters the results are described for the different disciplines, with a lot of very interesting detailed new results (e.g. influence of glacier melt of a subbasin on the discharge dynamic and development, role of glacier lake outburst floods, ground water level and distance to main river channel for vitality and juvenile trees in the riparian ecosystem, high increase of large farmland with cotton etc.). Some remarks on this: text and tables to prove the water use efficiency of irrigation methods are not sufficient - which water consumption have the different crops?, data and discussion to the amount of capital investment to improve irrigation systems is missing, how different farm types have possibilities for water sharing? role of soil salinization in a spatial sense and in the agro-economic role is too short discussed; p. 1244 row 1-7 reference to tables is missing; in the WTP method (p. 1246) the comparison of Xinjiang and Peking seems strange - there is no description on actor analysis and how the respondents were selected? Fig. 10 and 11 gives only general information on environmental questions of whole arid/semi-arid China - not related to the research area and project aims. Chapter 4.3 and 4.5 are only weak related to the main aim and topic of water use conflicts and competition (see Introduction). **DISCUSSION and OUTCOMES:** In relation to the detailed result documentation this chapter is really rough, too short and general. Discussion with literature references must go more in detail and must focus on the linking up of the

C555

single disciplinary results (e.g. future change in discharge regime and consequences on irrigation agriculture; more reservoirs and dams - dangerous consequences for the Tugai forests ...). In the discussion the planned outcomes (e.g. steps for the DST) are discussed, not the results. This chapter must be written new, the written content can be used for an outlook and conclusion chapter.

Interactive comment on Earth Syst. Dynam. Discuss., 5, 1221, 2014.