

Interactive comment on “Linkages between ENSO/PDO signals and precipitation, streamflow in China during the last 100 years” by R. Ouyang et al.

Anonymous Referee #1

Received and published: 12 May 2014

Review of the manuscript, Linkages between ENSO/PDO signals and precipitation, streamflow in China during the last 100 years.

General comments The paper under review investigated the relationship between ENSO/PDO and precipitation, streamflow in China. This study is interesting and the presented results are relevant for water resources prediction and management in China. However, the presented analysis did not consider the impacts of human activities on streamflow when examining the relationship between the ENSO/PDO signals and streamflow in major rivers of China, where human activities are the dominating factor leading to significant changes in runoff during the past decades. In this case,

C1337

the observed streamflow is not expected to reflect the natural variability well. Overall, I recommend the MS to be published after some revision.

Specific comments 1. P4239, The background information of the 4 major river basins such as basin average precipitation, runoff, size etc. are necessary to give readers an idea of the river basins under study. Furthermore, there is a general lack of justification of the selection of the 4 river basins, gauging stations and the study period. How the 4 river basins represent water resources in China? Do these stations represent the study basins well? Also, the information are missing regarding the spatial extent of the precipitation data, the sources and quality of streamflow data, the geographical characteristics of the gauging stations. How about the streamflow data quality? Are they homogeneous? Any missing data? Since the study period is very long (1901-2009), there could be discontinuities in the data set, the stations also could be relocated during the period. For example, there is missing data from 1919-1933, 1935~1946, 1947-1948 at Huayuankou station. How the authors deal with the missing data and data nonhomogeneity? 2. As mentioned above, the observed streamflow are largely affected by human activities over the past 50 yr. In this case, changes in streamflow are mainly due to human activities rather than natural variability such as ENSO/PDO. Moreover, changes in land use/cover have to be taken into considerations when the authors look into 100 years time period. So how do the authors know whether the variability of streamflow is due to natural variability or other factors such as human activities and land use changes, etc.? In this case, I would suggest focusing on the unregulated period or natural runoff. 3. The study examined the relationship between ENSO/PDO signals and precipitation, streamflow in China base on mean value. The paper could have been more valuable if the authors looked in depth at the relationship between the extreme precipitation events and ENSO/PDO. Extreme events over past 100 years will be particularly interesting to investigate. 4. To quantify the strength of the teleconnection and to investigate the potential for forecasting, lag correlation rainfall, streamflow and ENSO/PDO is also necessary to determine.

C1338

Others P4236, L10, “especially in the October and November”. Change to: especially in October and November. L20, rephrase the sentence “with the ENSO-related precipitation/streamflowin the cool PDO phases” P 4237, “There are various studies extensively documented the linkages. . .” Change to: There are various studies extensively documenting the linkages. . .” P 4241, what is the significant level? “ which does not assume normality. . . .” Change to: “and does not assume normality. . . .” P4242, “The influence of El Nino.are found have obviously. . .” Change to: “The influence of El Nino.are found to have obviously. . .” P4243, “ . . .in the eastern and southern China (including the pearl River.. and Yellow River” I don’t agree that the Yellow River is in eastern and southern China. The same applies to P4244, L10-15. L20, “discrepant” changes to “discrepancies” “ which to some extent would lead to uniformly” How can different ENSO influences among different parts of the basin lend to uniform streamflow response? I expect uneven streamflow response.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 11, 4235, 2014.