

## ***Interactive comment on “El Niño-Southern Oscillation and water resources in Headwaters Region of the Yellow River: links and potential for forecasting” by A. Lü et al.***

**A. Lü et al.**

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Anonymous Referee #2 Received and published: 5 February 2011 Review El Niño-Southern Oscillation and water resources in Headwaters Region of the Yellow River: links and potential for forecasting Lu, S. Jia, H. Yan, and S. Wang

General comments

1. Too many language errors. The paper needs to be proof read by a native English Speaker before it can be accepted for final publication.

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Res: In the revised manuscript, the language was improved greatly as we paid much more attention to the revision of text and asked scholar from English-speaking countries to help revise the language.

2. Page 8524 L19-23, this paragraph shall be integrated with L5-L11 to give general background information of the Huang River Basin as well as the headwater catchment of the Huang River Basin (HRYP). Some key figures such as basin average precipitation, runoff, size etc. are necessary to give readers an idea of the catchment under study. Please consider to add a sub-section in section 2 that describes HRYP.

Res: According to your suggestion, we have integrated paragraph 3 with L5-L11 of paragraph 2. A sub-section is added in sections 2 to describe the background information of HRYP following your advice.

3. Regarding steamflow data, the procedure described is not clear. See P8525, L8-11.

Res: We have rewritten the description about the runoff data modification procedure as following: During periods when social and economic activities consume significant amounts of water of the river, the streamflow data measured at the hydrometric stations is usually lower than for natural runoff. For this study, the streamflow data has been modified by the HWRSB through addition of the volume of water consumed by daily life, industrial and agricultural production to the raw measurements from the hydrometric stations.

4. No detailed information regarding spatial and temporal resolutions of the original data obtained from various sources.

Res: We have added the information about the spatial and temporal resolution of the data used in this study in section 2. The temporal resolution of runoff, precipitation, temperature and ENSO indicators is month and the spatial distribution of weather station is shown in Fig.1

5. It is a preliminary study on statistical correlation between ENSO and precipitation

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and streamflow for HRYR. The paper could have been more valuable if the authors looked in depth at the major types of precipitation events and atmospheric circulation patterns and find the relationship between ENSO and the major events affected. Extreme events over the 50-year period will be particularly interesting to investigate. In addition to the ENSO activities, there are other factors that influence precipitation over the HRYR region such as the South Asia monsoon.

Res: Thanks for your valuable ideas for our future studies. In the next step, we will focus on the relationship between extreme events in HRYR with ENSO indicators. Also, other factors, such as Pacific Decadal Oscillation (PDO), South Asia monsoon, and Indian Ocean Dipole (IOD), will be examined to find better predictors.

6. I recommend publication after some revision.

Specific comments 1. Figures 2 and 3 have wrong subtitles.

Res: Yes, the caption of Fig. 2 and 3 mixed up in the original manuscript. We have corrected in revised MS as following: the caption of Fig.3 is “Average monthly streamflow hydrographs of headwaters region of the Yellow River” and the caption of Fig 2. is “Average monthly rainfall of headwaters region of the Yellow River.”.

2. Figure 1 should contain a north arrow and a scale.

Res: We have added north arrow and a scale in the Figure 1

3. ‘bold italic values’ are wrongly stated in all three tables. Should be ‘bold fonts’

Res: We have revised “bold italic values” in three tables into “bold fonts” in the revised MS.

P8522 L15: HRYR can be extent to one to thirty-six months Change to: HRYR can be extended from one to

Res: We have revised “HRYR can be extent to one to thirty-six months” into “HRYR can be extended from one to” in the revised MS.

L21: chiefly across its core region in the tropical-subtropical Pacific mainly across the region in the tropical-subtropical Pacific

Res: We have revised “chiefly across its core region in the tropical-subtropical Pacific” into “mainly across the region in the tropical-subtropical Pacific ” in the revised MS.

P8523 L4-6, consider to rephrase the sentence.

Res: We have rephrase the sentence as :The delayed response of climate variability to ENSO and the overall predictability of ENSO make ENSO indicators a valuable predictor for regional climates because of the longer lead-time compared to other predictors.

L11, streamflow, which is comprehensive integrators : : : Change to: streamflow, which is a comprehensive integrator: : :

Res: We have changed “streamflow, which is comprehensive integrators” to “stream-flow, which is a comprehensive integrator” in the revised MS.

L12-13, The ability to predict flow patterns in rivers will be highly enhanced if a strong relationship between river discharge and ENSO exists, and is quantified. Change to: The ability to predict flow patterns in rivers will be highly enhanced if a strong relationship between river discharge and ENSO exists and can be quantified.

Res: We have changed “The ability to predict flow patterns in rivers will be highly enhanced if a strong relationship between river discharge and ENSO exists, and is quantified.” to “The ability to predict flow patterns in rivers will be highly enhanced if a strong relationship between river discharge and ENSO exists and can be quantified. ” in the revised MS.

L26, Sri Lank Change to: Sri Lanka

Res: We have revised “Sri Lank” into “Sri Lanka” in the revised MS.

L29: for some important river Change to: for a number of rivers

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Res: We have revised “for some important river” into “for a number of rivers” in the revised MS.

P8524 L9-11, The headwaters region of the Yellow River are most important in an international sense 10 because they generate 40% of the flow in the whole Yellow river system, a densely populated region with major economic, cultural and environmental significance. What do you mean by ‘an international sense’? Consider to rephrase.

Res: Following your comments, We have rephrase this sentence as “The headwaters region of the Yellow River are most important as they generate 40% of the flow in the whole Yellow river system.” .

L13, through analysis the runoff Change to: through analysis of the runoff

Res: We have changed “through analysis the runoff” to “through analysis of the runoff” in the revised MS.

P8525 L12, The climate data 1956-2005, same period as the streamflow data, is not explicitly mentioned for the climate data.

Res: We have added the period “1956-2005” for the climate data.

L13-18, The Figs. 3 and 4 are shown the average monthly rainfall and temperature respectively. Maximum monthly precipitation 15 of HRYR is occurred at July. The periods from January to March and from November to December are lack of rain, averaged monthly rainfall below 20 mm. The averaged monthly temperature is above zero between April and September, and is below zero for other months. Change to: Figs. 3 and 4 show the average monthly precipitation and temperature respectively. Maximum monthly precipitation of HRYR occurs in July. Mean monthly precipitation is below 20mm between January and March and between November and December each year. Mean monthly temperature is above zero from April to September and below zero for the rest of the year.

Res: Following your advice, we have changed “The Figs. 3 and 4 are shown the

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average monthly rainfall and temperature respectively. Maximum monthly precipitation 15 of HRYR is occurred at July. The periods from January to March and from November to December are lack of rain, averaged monthly rainfall below 20 mm. The averaged monthly temperature is above zero between April and September, and is below zero for other months” to “Figs. 3 and 4 show the average monthly precipitation and temperature respectively. Maximum monthly precipitation of HRYR occurs in July. Mean monthly precipitation is below 20mm between January and March and between November and December each year. Mean monthly temperature is above zero from April to September and below zero for the rest of the year. ” in the revised MS.

P8527 L15, it is show::: Change to: it is shown:::

Res: We have revised “it is show” into “it is shown” in the revised MS.

L24, Februry and: : : Change to: February and: : :

Res: We have revised “Februry and” into “February and” in the revised MS.

P8528 L6, Streamflow of JAS not only correlated Change to: Streamflow of JAS is not only correlated

Res: We have revised “Streamflow of JAS not only correlated” into “Streamflow of JAS is not only correlated” in the revised MS.

L10, streamflow main through altering the soil moisture and groundwater store. Change to: streamflow mainly through altering the soil moisture and groundwater storage.

Res: Following your advice, We have changed “streamflow main through altering the soil moisture and groundwater store.” to “streamflow mainly through altering the soil moisture and groundwater storage ” in the revised MS.

P8531 L28, can be extended to one to thirty-six months Change to: can be extended from one to thirty-six months

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Res: Following your advice, we have changed “can be extended to one to thirty-six months” to “can be extended from one to thirty-six months” in the revised MS.

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Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 7, 8521, 2010.

**HESSD**

7, C5264–C5271, 2011

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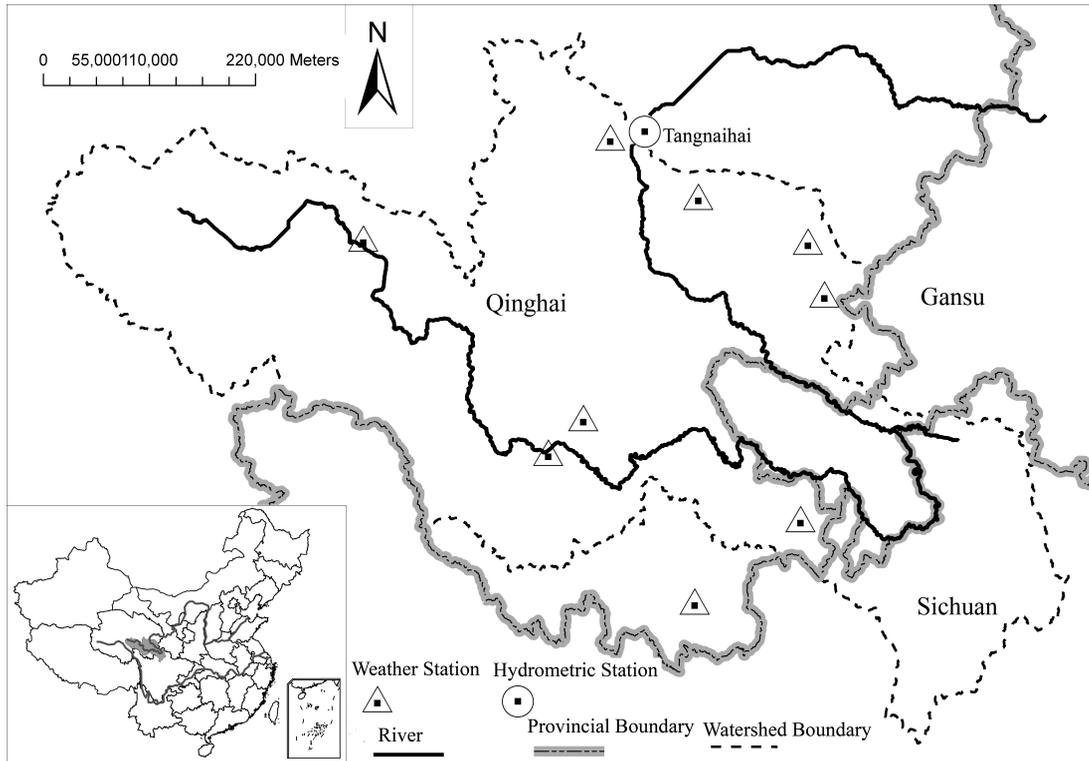
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**Fig. 1.** The geographic location of Headwaters region of Yellow River and the location of hydro-metric station used in this study

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