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The purpose of this paper is to probe into the migration process soil water, and identify each potential water source, which is well justified. There are also good data sets. To my knowledge, this would be the comprehensive study of soil water migration in the unsaturated zone in the western China. It does look like that the data are very good and useful, especially the isotopic data. Publication of this study could advance our understanding of alpine hydrology and also be of interest to hydrologists. There are some problems with the paper, and it will be revised to get it for publication in the journal. They are as follows:

(1) Add an inset map (e.g., a small China map) showing where the basin is relative to Beijing and Dingxi.

Response: Done. We have revised it. We have added an inset map (China map), which shows where the basin is relative to Beijing and Dingxi.

(2) On page 13 it is stated that isotope composition of xylem water of various plants are different. Soil water at the 40-60cm depth is mainly used by caraganakorshinshiikom. Groundwater? Precipitation? Why? I am not saying that the recharge is not possible but the stronger hydrogeological background is needed for it to be plausible. The Area description, especially the Hydrological Background, is also required.

Response: Done. We have revised it.

Characterized by dry climate, less precipitation, more evaporation and thicker soil layers, and groundwater buried deeper, groundwater in the study area is difficult to use due to the depth of water table in the northwestern Loess Plateau. The thickness of the soil layer in vadose zone is typically Tens of meters, even a few hundred meters.

The climate is semi-arid, with an average annual temperature of 6.3℃，annual accumulated temperature of 2239℃, extreme maximum temperature 34.3℃, extreme minimum temperature of -27.1 ℃ in the study area. The annual mean precipitation is 420mm. The annual mean evaporation is

1510mm. The aridity index is 1.15. Precipitation is low and unevenly distributed in temporal and spatial. The summer rainfall accounted for over 60% of the annual precipitation. This area is a part of the typical semi-arid in the hilly and gully region of Loess Plateau, with the altitude ranging from 1900m to 2250m.

The watershed area is 8.91km^2, which belongs to the hilly and gully region of Loess Plateau. Gully density is 3.14km/km^2, and the ditch depth ranges from 30 to 50m. Soil type is yellow loessal soil and saline soil, and the average thickness ranges from 40 to 60m. The soil density of soil layer ranges from 1.1 to 1.4 g/cm^3, average soil porosity is 55%. Soil structure has a vertical joint, and the nature of soil is loose and its wet collapsibility is serious. The grassland and shrubland ecosystems are the most extensively dominant ecosystems in the Anjiugou river basin. As it is a representative area of Loess Plateau area, the Anjiagou River basin is a suitable area for soil water study in semi-arid region.

The study area has broken terrain and serious soil erosion, with the terrain being loess long beam and terraces, and gully valley landscape. Geological structure is the uplift zone between the eastern part of Qilian fold system and the west Qinling fold system, at an altitude of 1700 m ~ 2580 m, with the gully density being 3 ~ 5 km/km^2, ditch slope being 5 ~ 10%, and the mountain slope being generally 20 to 50. The sunny slope is steep, while the shade slope is relatively flat.

The soil parent material is quaternary eolian loess, and the zonal soil mainly is yellow spongy soils, sierozem, which belongs to the typical semiarid loess hilly-gully region. It has soft soil, homogeneous structure, thicker soil layer, good water performance, and the widest distribution. The average thickness is 40 ~ 60 m. Clay soil is between 33.12% ~ 42.17%, organic matter content is between 0.37% ~ 1.34%, soil bulk density is 1.17 g/cm^3, wilting moisture content is 7.3%, and the saturated moisture content is 21.9% at the 0 ~ 20 cm. The soil bulk density is 1.09~1.36g cm^{-3}, and the porosity is 50% ~ 55% at the 2 m soil layer. The soil has vertical joint and strong collapsibility, so the soil erosion is easily happened, and the soil erosion modulus is 5000 t/km$^2 \cdot$ a.

(3) Vacuum distillation was considered as a reliable and accepted method for soil water and pant water abstraction in this paper. Please give a description on detailed procedure, such as time and temperature selection.

Response: Done. We have revised it.

Water was extracted from soil, leaf, branch, xylem and root by cryogenic vacuum distillation method. The moisture in the soil or plants under the condition of vacuum (vacuum below60MT), was heated by heat set to 105 ℃ after evaporation. Water vapor of evaporation in -50 ℃ (liquid nitrogen) was collected with frozen water collecting pipe (top-down frozen, in order to increase the collecting rate), and the precision extract of δD and δ^{18} are ±3‰ and ±0.3‰, respectively.

(4) On page 12, "Through analyzing the _D and _ 18 O in xylem water of caraganakorshinshiikom, and the _D and _ 18 O in potential source such as soil water and precipitation in Anjiagou Gully basin". Here what is the meaning of "in Anjiagou Gully basin"ïij§

Response: Done. We have revised it. The correct expression should be"in Anjiagou River basin"

(5) How about terrain and vegetation on soil water?

Response: Done. We have revised it.

The vegetation type belongs to arid grassland vegetation type, with less distribution of natural arbor. The grassland and shrubland ecosystems were the most extensive dominant ecosystems. Woodland area is less; with most being open forest land. The area of the crown density being greater than 0.2 are only Caragana intermedia and *Pinus tabulaeformis*, and species are single. The distribution of natural herbs mainly are Ben's s. grandis, thyme, cold pole, camel peng, with vegetation coverage 10 ~ 20%. Natural coverage is commonly 25% ~ 35% in the sunny slope, 50% ~ 60% in the shade slope. Natural vegetations are mainly compositae Asteraceae, Leguminosae, Gramineae, etc. The vegetation is sparse, and species are relatively poor because of long-term influence by human activities. The artificial forest vegetations mainly are Caragana intermedia, Hippophae rhamnoides, Pinus tabulaeformis, Platycladus orientalis, Stipa bungeana, etc.

The study area has broken terrain and serious soil erosion, with the terrain being loess long beam and terraces, and gully valley landscape. Geological structure is the uplift zone between the eastern part of Qilian fold system and the west Qinling fold system, at an altitude of 1700 m ~ 2580 m, with the gully density being 3 ~ 5 km/km^2, ditch slope being 5 ~ 10%, and the mountain slope being generally

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