

# Water balance of several tributaries in Huaihe River Basin and its implications to complementary relationship

# Akihiko Kondoh[1]; Atsushi Higuchi[2]

[1] CEReS, Chiba Univ.; [2] CEReS, Chiba University, Japan

<http://dbx.cr.chiba-u.jp/>

Runoff, precipitation and pan evaporation data in the Huaihe River Basin are compiled as the activity of the Global Research Network Systems (GRNS) by STA/NASDA. Datasets contain the runoff and pan evaporation data at the outlet of the watershed and the precipitation from the several stations in the watershed on a daily basis.

Annual average runoff ( $Q$ ) and precipitation ( $P$ ) between 1982 and 1991 are calculated for eleven watersheds, and annual actual evaporation ( $E_a$ ) are estimated as water loss,  $P-Q$ . Annual runoff ( $Q$ ), actual evaporation ( $E_a$ ) and pan evaporation ( $E_{pan}$ ) are compared with annual precipitation ( $P$ ).

Annual actual evaporation,  $E_a$ , shows relatively small variations among years except northwestern part of the Huaihe River Basin, and it means the accuracy of dataset is fairly well. Steady  $E_a$  suggests that there is enough water to evaporate under the given climatological conditions.

Annual actual evaporation,  $E_a$ , is about 800mm along main stream of lower Huaihe River, and it decreases northwestward to about 600mm. Annual precipitation also decreases from southeast to northwest. At Dawangmiao (DW),  $E_a$  decreases with decreasing  $P$  when  $P$  falls below 600mm, and  $E_{pan}$  seems to increase with decrease in  $P$ . It means the complementary relationship between areal evaporation and potential evaporation, and water deficit occurs in a dry year.

Pan evaporation,  $E_{pan}$ , coincide almost with  $E_a$  in southern part of the Huaihe River Basin, and  $E_{pan}$  departs from  $E_a$  toward northwestward. It means that drying power of the air increases northwestward. Land use of southern side of the Huaihe River Basin is characterized by paddy and forest, and northern side of the river is characterized by crop field with irrigated and non-irrigated. The land use pattern is regarded as a reflection of the climatic condition, however, extensive paddy field furnishes much water to the atmosphere, while evaporation from cropland is small compared with paddy field.