

# 1997-1998 Climate Analysis of the Xizhuang Watershed

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## Abstract

Data from the Ganwangkeng (Banqiao) meteorological station ( $25^{\circ}13'N$ ,  $99^{\circ}9'E$ ), which is located in the middle of the Xizhuang watershed at 1955 masl, were used to provide an overall impression of the climatic conditions in the watershed, one of the five watersheds being investigated by PARDYP.

This paper provides climate information from June 3<sup>rd</sup> 1997 to December 31<sup>st</sup> 1998. Monitoring of rainfall and temperature started on June 3<sup>rd</sup> 1997, and of wind on September 3<sup>rd</sup> 1997. The strongest El-Nino of the 20th century occurred in 1997. This delayed the start of the rainy season and led to the lowest number of sunshine hours being recorded for July since records began. Precipitation was irregular, especially in July and September. The El-Nino phenomenon ended in the first half of 1998 but was followed by a strong La-Nina, which also influenced the climate of the watershed. The temperature and precipitation were higher than normal from January to April 1998. The 1998 rainy season began and ended as normal (May to mid October), but the temperatures were above and precipitation below average and the number of sunshine hours lower than average. In November and December temperatures were higher than normal and precipitation lower.

## Meteorological Data

The 1997-1998 temperature, precipitation, sunshine, relative humidity, and evaporation data are summarised in Figures 48 to 52. Data are also shown for the Baoshan meteorological station, which is located in the Baoshan valley outside but near to the watershed and at lower altitude (approximately 30 km distance and 1600 masl).

## Temperature

Yunnan Province is influenced by the South Asian monsoonal climate, which is characterised by distinct wet and dry seasons. In 1998, both the extreme minimum temperature ( $-0.7^{\circ}C$ ), and the mean monthly minimum temperature ( $7^{\circ}C$ ) occurred in January. The extreme maximum temperature ( $28^{\circ}C$ ) occurred in May, and the mean monthly maximum temperature ( $19^{\circ}C$ ) in June (Figure 48).

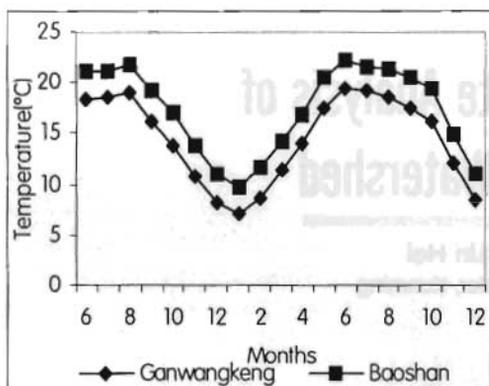


Figure 48: Mean Monthly Temperatures from June 1997 to December 1998 (°C)

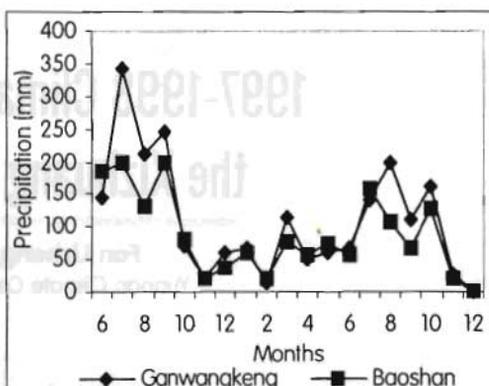


Figure 49: Mean Monthly Precipitation from June 1997 to December 1998 (mm)

## Precipitation

The total precipitation in the second half of 1997 was 1096 mm and the total annual precipitation for 1998 was 1013 mm. Figure 49 shows the monthly precipitation from June 1997 to December 1998. In 1997, the rainy season in the watershed began on June 20th and ended on October 9th. The meteorological data for Baoshan indicate that the beginning of the rainy season was delayed by the influence of El-Nino.

In 1998, 22 per cent of the total annual precipitation fell in the period from January to April, and 70 per cent during the monsoon period from May-October. The 1998 rainy season began in late May and the most rain fell in July to October.

## Sunshine

There were 940 hours of sunshine from June to December 1997 and 1,939 hours of sunshine in all of 1998.

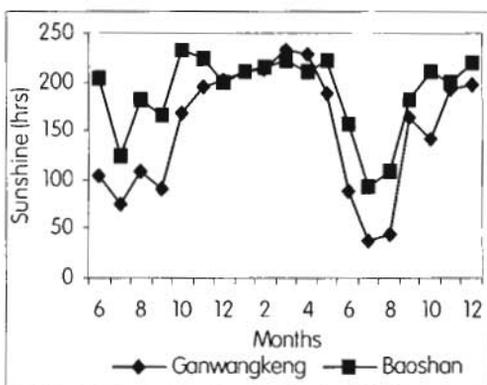


Figure 50: Monthly Sunshine Duration from June 1997 to December 1998 (hrs)

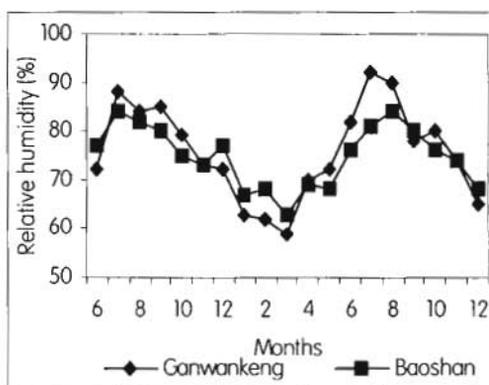


Figure 51: Mean Monthly Relative Humidity from June 1997 to Dec. 1998 (%)

## Relative Humidity

The mean monthly relative humidity was low from January to April 1998; the lowest value was recorded in March (59%). The relative humidity increased during the monsoon reaching a peak of 92% in July. In December 1998, the mean monthly relative humidity was 65% (Figure 51).

## Evaporation

In 1998, evaporation was highest in March and lowest in August. The sunshine hours and wind speed were somewhat higher than normal in March, resulting in a monthly evaporation rate of 147mm; in July the evaporation rate was 52mm.

## Wind Direction and Speed

Wind observations began on September 3rd 1997. The maximum wind speed recorded (auto recording) was between 9 and 10 m/s. In 1998, the dominant wind direction in the dry season was SSW, in May (before the rainy season) and in September (towards the end of the rainy season), SW, and during the rainy season NE.

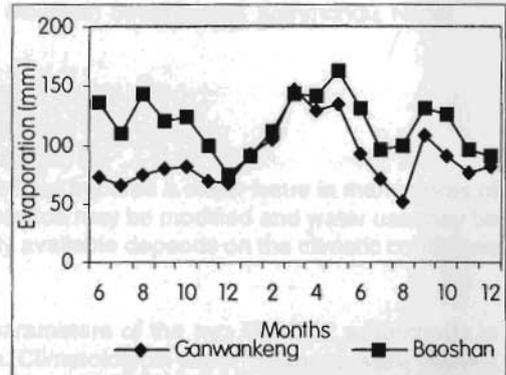


Figure 52: Mean Monthly Evaporation from June 1997 to December 1998 (mm)