Mini Project 3

Data

I chose the American River as my study domain. The daily stream flow data were downloaded from USGS at station 11446500 from October 1, 2011 through May 31, 2012. The hourly MERRA snow depth data were downloaded from GIOVANNI website for the domain (-121.22 E, -120.33 E), (38.63 N, 39.28 N) for the same period. The hourly MERRA data was then processed to be daily data.

Analysis

The stream flow and snow depth data are plotted in Fig. 1. And the figure shows that the average time lag between snow fall and rise in stream flow is about two months.

Monitoring of snow depth during winter can be used to forecast water supply, spring flooding and hydropower generation in the following ways: stream flow in winter is smaller than in spring, so the floodgate in the dam should be closed in early April when the stream flow starts to rise, as shown in the figure. The closure of floodgate in early April could effectively prevent the spring flooding downstream. After the fall of stream flow, the dam has stored enough water to generate hydropower, and the floodgate could be opened then for hydropower generation. And the water flown out of dam could be used for water supply in winter, when the natural stream flow is small.

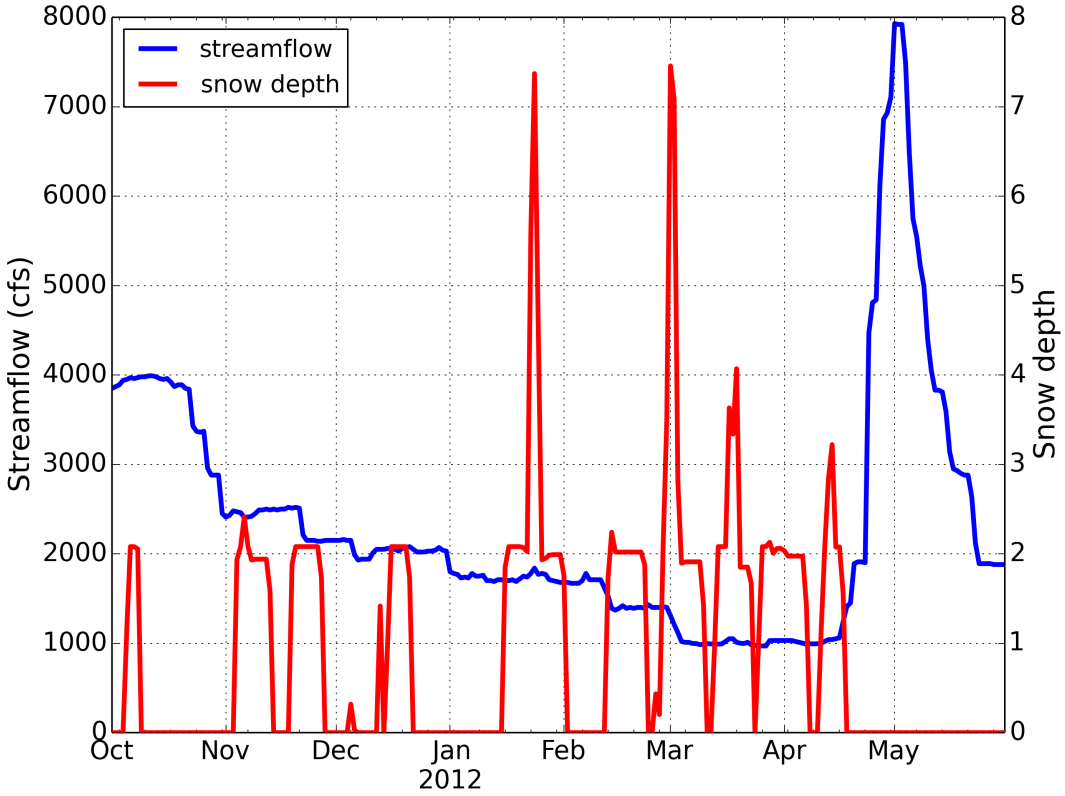

Fig 1 Relationship between streamflow and snow depth