Climate change, Sierra Nevada snowpack & California's water supply
Make-up assignment

Answer the following questions thoroughly. Include graphs/plots to backup your answers to these questions. Hint: the web site will plot many of these quantities for you. Turn in a PowerPoint file with answers to these questions. In addition to your answers, include the plots and approach to support them. Due date: 7:00 am, Nov 16, 2010.

1) Look up the streamflow for the Merced River at Happy Isles at http://water.usgs.gov (surface water). Answer the following:
   - Examine daily average stream stage and discharge for a 10-day period in October this year and last year. Describe differences. How do these 2 years compare to long-term averages?
   - Stream stage is a water height measurement in the streambed & stream discharge is the flow rate. What units does the USGS use for each? How are the two quantities related?
   - At the same water.usgs.gov web site look up the long-term daily average discharge at the Happy Isles gage (365 values). What days of the year normally have the 5 highest versus 5 lowest flow rates (discharge)? What is the ratio between the highest and lowest flow rates?
   - Also at water.usgs.gov look up the long-term monthly average discharge at the Happy Isles gage, for each month of the year (12 values). Plot month versus discharge. What month is highest versus lowest? Explain the monthly pattern, as to why it has the shape it does.

2) Look up snow water equivalent and snow depth for the Gin Flat snow sensor site at http://cdec.water.ca.gov/snow. The CDEC station name is GIN. Answer the following:
   - Examine the snow sensor data for March-April last year and the 4 years before. How much snow was at Gin Flat in 2010 versus 2006 and 2007? On what days did snowmelt occur?
   - What was the minimum, maximum and daily average air temperature for the same periods. Does this help explain why snow either accumulated or melted?
   - What other measurements are available at the Gin Flat site?