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Analysis of long flow discharge time series to assess possible changes in hydrological cycle over the Abruzzo Region in Central Italy

A. Lombardi, B. Tomassetti, and M. Verdecchia
CETEMPS, University of L'Aquila, I

A long time series of average flow discharge observations has been analyzed to assess possible changes in hydrological cycle over the Abruzzo Regions in the Central Italy in the last seventy years. The region is characterized by about ten small streams, each draining a basin of few hundreds of Km2, while greatest basin cover an area of about 4000 Km2. The observations have been collected in different points of such drainage network with daily time resolution.
The preliminary results of time series analysis are discussed showing an overall decreasing of flow discharge especially in the years from 1930 to 1955; the quantitative decreasing of flow discharge also appear to be very similar for the whole year cycle suggesting the hypothesis that water deficit is more likely linked to anthropic activities respect to climatic changes.
The sparse observations of flow discharge have also been analyzed using a distributed hydrological model in order to investigate the major areas affected by the decrease of water resources; the spatial distribution of such deficit clearly shows that the major differences affect the areas characterized by a strong urbanization in the half of last centuries; the observed decrease of flow discharge also lead to cause dry periods for many streams especially during July and August.