

The management of Lake Maggiore water levels: a study of low water episodes

ELISABETTA A. CARRARA, WALTER AMBROSETTI & LUIGI BARBANTI

Institute of Ecosystem Studies, National Research Council, Largo Tonolli 50, 28922 Verbania Pallanza, Italy
e.carrara@ise.cnr.it

Abstract Lake Maggiore, due to the elevation, morphology and precipitation regime of its drainage basin, is subjected to floods and long-lasting low water episodes. Based on the lake water levels recorded at Pallanza from 1952 to 2005, 30 flood and 41 low water episodes were identified. In the last 15 years, the frequency of floods has decreased, and since the end of 2004, no floods have occurred. In light of this, the cause-effect relationship between each low water episode and the precipitation, the management of the weir, and the mountain reservoir is analysed. The data presented shows that the altered rainfall regime characteristic of the 1980s onwards, although of great relevance, is not the only factor influencing low water episodes. In fact, the management of the outflow at the Miorina weir and of the mountain reservoirs has a great impact on the onset and evolution of low water events.

Key words low water; climate change; anthropogenic impact; Southern Alpine lake