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The NAO Influences on Sapanca Lake-levels by Wavelet Analysis

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The North Atlantic Oscillation (NAO) controls weather and climate conditions and extremes in the sectors of the Atlantic and Mediterranean basin. One of important signal of climatic change is lake-level fluctuations in relation to global scale climate indices. In this regard, the present study is to investigate the variability of Lake Sapanca, located in northwestern Turkey, in time-scale domain. The analysis of lake-level variations in time-scale (period) domain here incorporates with the method of continuous wavelet transform and global spectrum. The long winter lake-level series and NAO index (NAOI) series were subjected to the wavelet transform. The global wavelet spectrum of lake-levels and winter NAOI anomalies constituted a significant correlation. The periodic structures of lake-levels in relation to the NAO appeared starting at 1-year scale up to 10-year scale level. Although the periodicities more than 10-year scale level were detected, it is not straightforward to define significant relations between the NAOI and long-term periodicities.