



Interdecadal climate variability in the Black Sea region: mechanism and impacts

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Interdecadal variability of meteorological, hydrological and marine characteristics in the Black Sea basin is discussed using results of processing of long-term routine meteorological data, output of 20th century re-analysis, deep-sea observations and paleoreconstructions. It is shown that different meteorological, hydrological and marine parameters undergo the significant high-magnitude interdecadal variations with the typical time scales from 20-30 to 60-80 yrs. Superimposed centennial trends are not significant for some regional climate parameters. Output of the state-of-the-art coupled ocean-atmosphere models and results gained by different authors prove that extracted interdecadal variations are the regional manifestations of Atlantic Multidecadal and Pacific Decadal Oscillations (AMO and PDO, respectively). Typical temporal scales of AMO and PDO are determined by advective processes in the oceanic component of the coupled system. Joint influence of AMO and PDO accounts for large proportion of regional climate variations. These inherent climatic signals sufficiently impact the Black Sea basin and cause different regional consequences resulting in the effectiveness of coastal management, safety of marine transport infrastructure, fresh water supply, health of marine biota, regional agriculture potential, etc. This demonstrates the practical importance of study of natural interdecadal processes in the coupled system for regional climate variability.