

EGU21-1599, updated on 30 Jun 2022

<https://doi.org/10.5194/egusphere-egu21-1599>

EGU General Assembly 2021

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## Climate Change Impacts on a Mediterranean Coastal Wetland due to Sea Level Rise (L'Albufera de Valencia, Spain)

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Sea level rise produced by climate change severely affects coastal ecosystems. The increase in the area below sea level facilitates the penetration of the marine wedge and causes an increase in soil salinity. Coastal wetlands are areas of great ecological importance due to the richness of flora and fauna that inhabit them. A change in salinity conditions could lead to a reduction or loss of habitat for the wetland biota. Based on RCP4.5 and RCP8.5 CMIP5 multimodel scenarios, in the Western Mediterranean coast, the sea level will rise 0.16 m in the short term (2026 - 2045) and 0.79 m in 2100. Also, high-end scenarios indicate that sea level will rise between 1.35 m and 1.92 m in the long term.

A sea level rise analysis has been developed in the coastal wetlands of Júcar River Basin District (JRBD). The results show that coastal wetlands are the mainly area affected in the JRBD, so the 90% of the area under the sea level are wetlands. L'Albufera de Valencia is the main wetland in this basin and, also the main wetland affected. It is an anthropized humid zone, regulated by users through gates to preserve the adequate water level for agricultural and environmental purposes such as rice cultivation around the lake and bird habitats conservation, especially in winter. The outcome of the study shows a significative increase in the area below the sea from 507 ha and 4.2 hm<sup>3</sup> of water volume at present to 3,244 ha that represents 42.6 hm<sup>3</sup> of water volume in the short term. In the long term, the area below the sea is 7,253 ha which means 118.4 hm<sup>3</sup> of water volume in the percentile 50 scenario and, in the worst extreme scenario, it is 13,896 ha that represents 289.7 hm<sup>3</sup> of water volume. This leads to a redefinition of the lake management levels as a climate change adaptation measure to prevent the lake salinization and severe impacts in the lake ecosystem. L'Albufera lake levels need to be increased in the next years to avoid the sea water penetration, related to the sea level rise. Thus, in the short term the lake levels must be increased around 0.16 m and, in the long term, L'Albufera levels must be increased around 0.8 m.