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The effect of Sobradinho lake on the regional climate

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We study the effects of the artificial Lake Sobradinho on the local near-surface and boundary layer atmospheric conditions in north-east Brazil. Using 3-month simulations of the regional climate model CCLM (i) with the lake and (ii) with the native vegetation cover as the replacement, the model outputs are compared with both surface and satellite data.
The simulations indicate that the lake affects the near-surface air temperature of the surrounding area, as well as its humidity and wind patterns. We quantify how Sobradinho cools down the temperature of the surroundings during the day and warms up the air during the night. Humidity has been increased as a result of the presence of the lake and it can cause a Lake Breeze. Effect of the lake on humidity and temperature can also extend over areas near to the lake.