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Impact of the Dubai Coastline Intensive Urbanization on the Atmosphere Employing MODIS Data (2001-2014)

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Over the last 20 years Dubai landscape has dramatically changed – artificial islands have been constructed as well as residential and industrial facilities along with roads systems. This rapid and massive construction placed Dubai urban growth rate at the top of the global list. Here, we investigate the impact of those constructions on the local atmosphere, both in land and sea based on MODIS data. It was found that, over the tested time period, temperature decreases and albedo increases were observed in the sea area of the artificial islands. In land, albedo decreases along with temperature increases of up to 2C were observed in the areas along the coast where intensive constructions occurred. In addition, the coast of Dubai was found to have urban heat island characteristics, where the urban center point at Deira area exhibits higher temperature than surrounding points along the coast. Nonetheless, the largest temperature trends were observed in the coastal area in between Palm Jumeirah and Palm Jebel Ali, where massive construction was performed during the tested time frame.

Reference: E.Elhacham and P. Alpert ,"Impact of coastline-intensive anthropogenic activities on the atmosphere from moderate resolution imaging spectroradiometer (MODIS) data in Dubai (2001–2014)", Earth's Future, 4, 2016.