



Impact of Coastline-intensive Anthropogenic Activities on the Atmosphere from Moderate Resolution Imaging Spectroradiometer (MODIS) Data in Dubai (2001-2014)

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This study illustrates the potential impact of large or the largest anthropogenic surface activities on the future of Earth's near-surface climate due to constructions performed in Dubai within just about 14 years. Dubai massive constructions in the outstanding form of both artificial islands and coastal urbanization areas during 2001-2014 are rated in among the top global growth-rates. While earlier studies in the Dubai area focused mainly either on the sea or the land impacts, here, we examine the atmospheric dynamic effects in an extended area including both land and sea. Temperature increases along with albedo decreases were observed in most recently urbanized areas, while the opposite occurred over the big artificial islands, all based on MODIS data. Temperature changes in both land and sea are associated through the coastal breezes also with humidity and wind speed changes that are analyzed against several meteorological stations. Surface observations show humidity increases in all stations, while the wind speed changes seem to follow the temperature gradient variations, particularly in Dubai.