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## Severe ozone air pollution in the Persian Gulf region

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**Abstract.** Recently it was discovered that over the Middle East during summer ozone mixing ratios can reach a pronounced maximum in the middle troposphere. Here we extend the analysis to the surface and show that especially in the Persian Gulf region conditions are highly favorable for ozone air pollution. We apply the EMAC atmospheric chemistry-climate model to investigate long-distance transport and the regional formation of ozone. Further, we make use of available in situ and satellite measurements and compare these with model output. The results indicate that the region is a hot spot of photochemical smog where European Union air quality standards are violated throughout the year. Long-distance transports of air pollution from Europe and the Middle East, natural emissions and stratospheric ozone conspire to bring about relatively high background ozone mixing ratios. This provides a hotbed to strong and growing indigenous air pollution in the dry local climate, and these conditions are likely to get worse in the future.

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