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Reactive nitrogen around the Arabian Peninsula and in the Mediterranean Sea during the 2017 AQABA ship campaign

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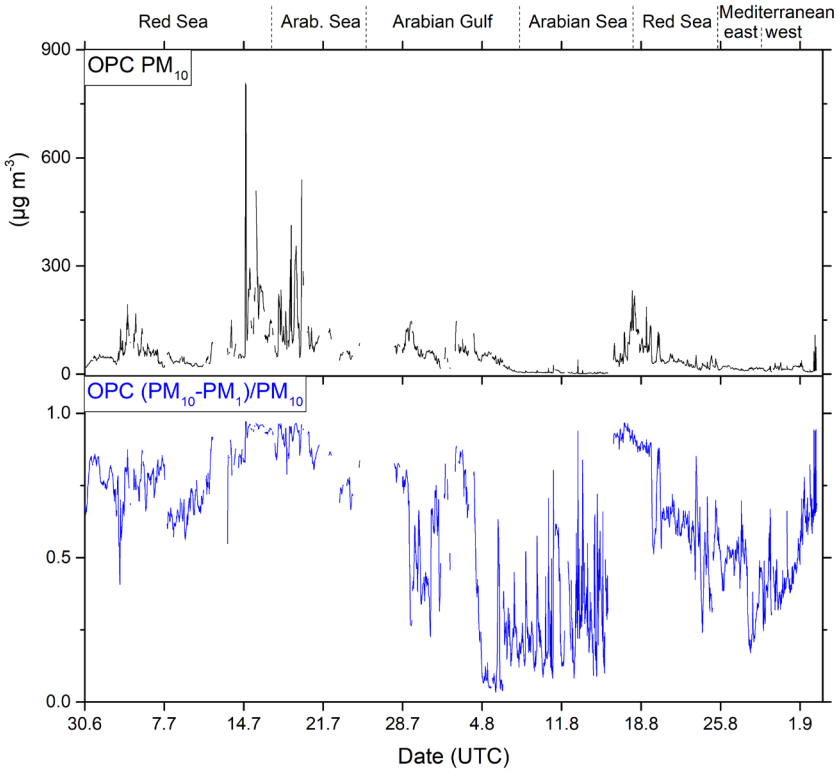

Figure S1: Total aerosol mass concentration during the AQABA campaign, as measured by an Optical Particle Counter in the PM_{10} size range. The contribution of coarse mode aerosol was estimated in form of the $(PM_{10}-PM_1)/PM_{10}$ ratio. Highest PM_{10} concentrations were on both legs observed in the transitional area between Red Sea and Arabian Sea, where coarse mode aerosol contributed ca. > 90 % to the total aerosol mass concentration.

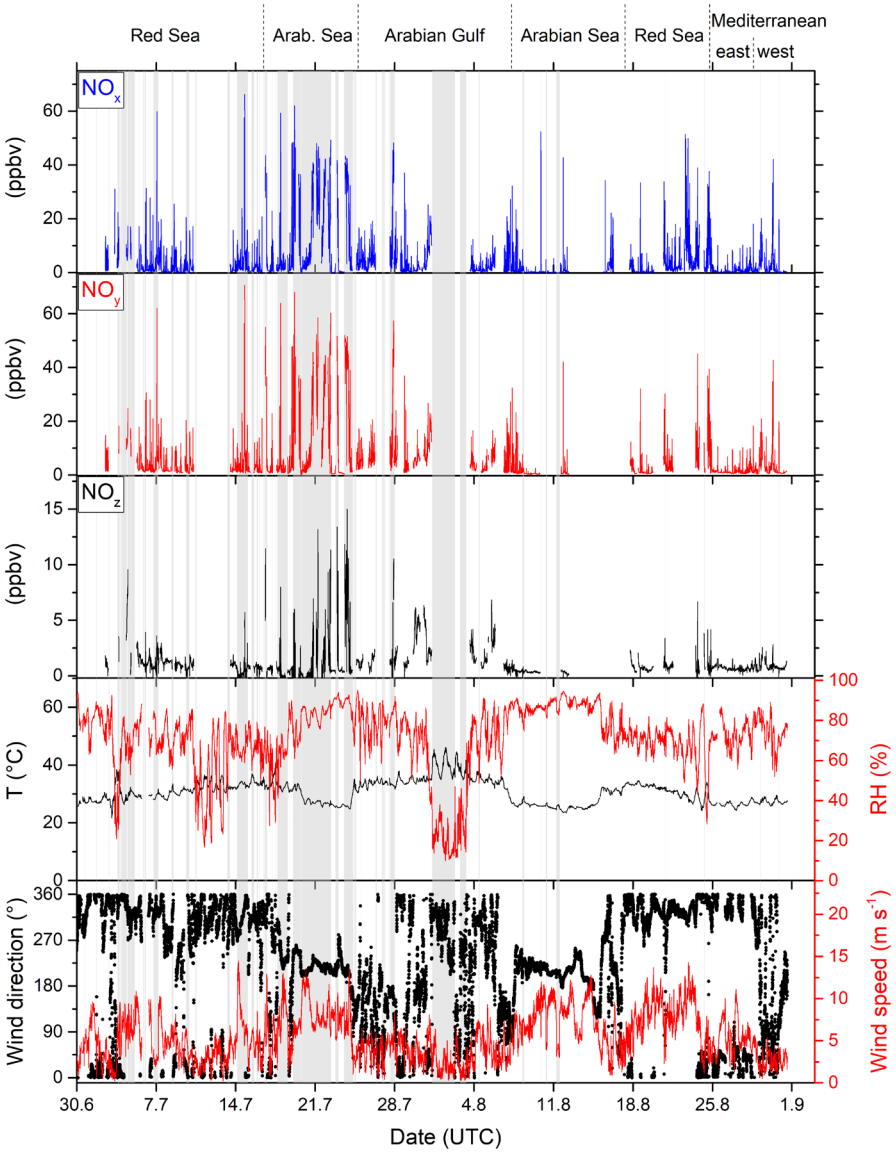

Figure S2: NO_x, NO_y and NO_z measured by TD-CRDS (5 minute averages). Periods during which the measurement was contaminated by the ship's stack are highlighted in grey. The first leg ended on the 31 July, the 2nd leg started on 3 August 2017 after anchorage in Kuwait. The two lowest panels indicate prevailing temperature, relative humidity, wind direction and wind speed.

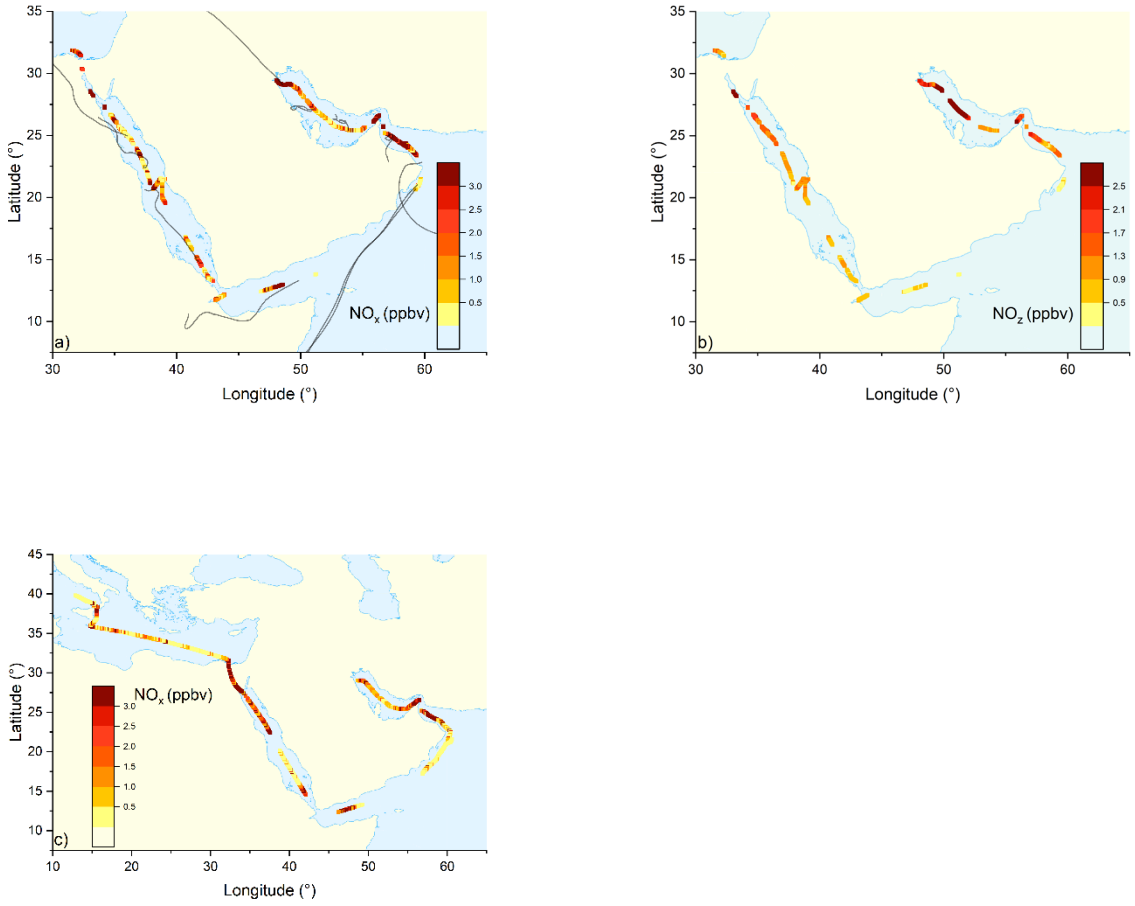

Figure S3: NO_x *(a)* and NO_z *(b)* mixing ratios during the first leg, and *(c)* NO_x mixing ratios during the second leg of AQABA. The data points are 30 min averages, periods contaminated with ship stack contamination (e.g. most of the Arabian Sea) have been removed. HYSPLIT back trajectories (48 hours) are indicated with grey lines in *(a)*. Elevated NO_z mixing ratios above 2.5 ppbv were encountered in the Arabian Gulf.

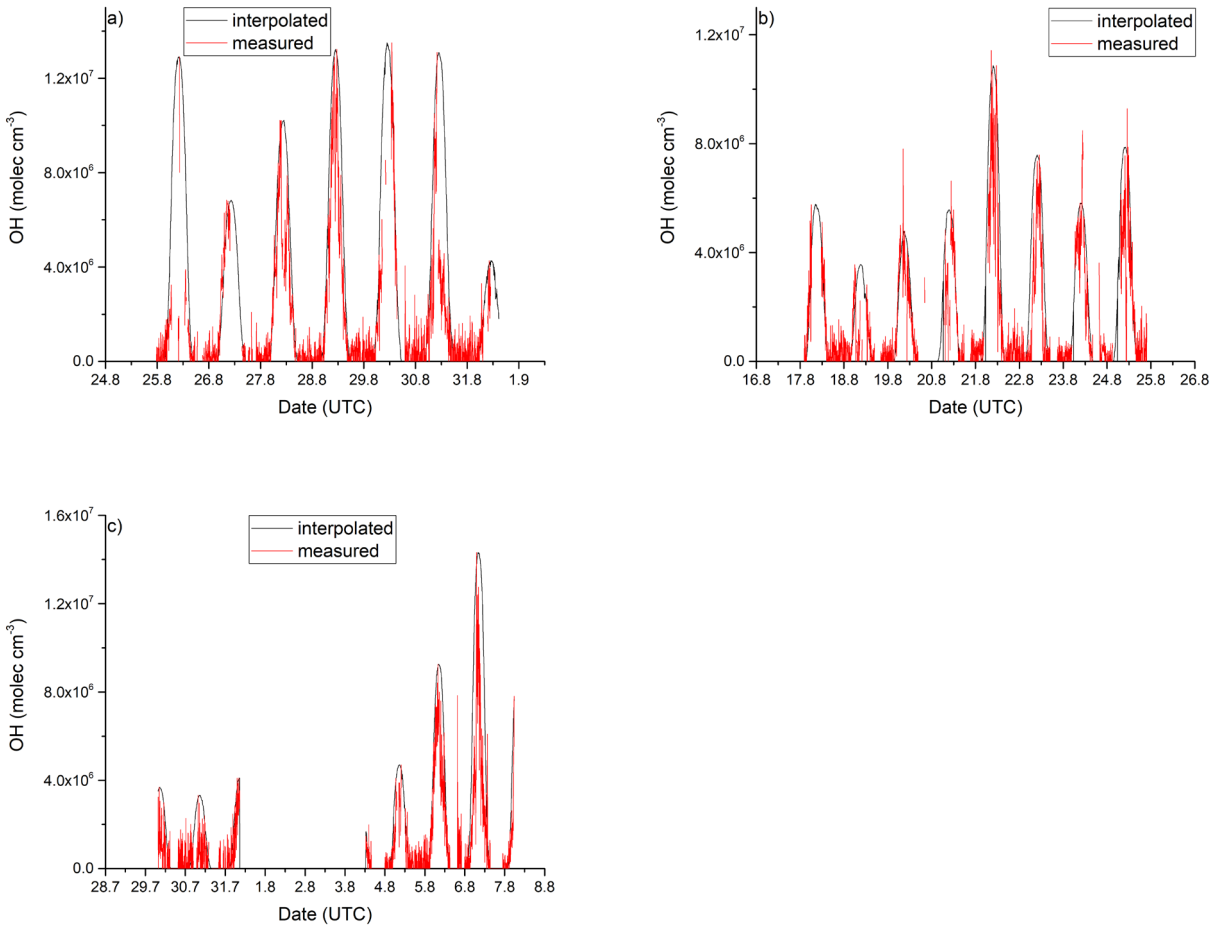

Figure S4: Comparison between measured OH concentrations and the interpolated trace based on J_{O1D} (see Sect. 3.1.3) in *(a)* the Mediterranean Sea, *(b)* the Red Sea, and *(c)* the Arabian Gulf.

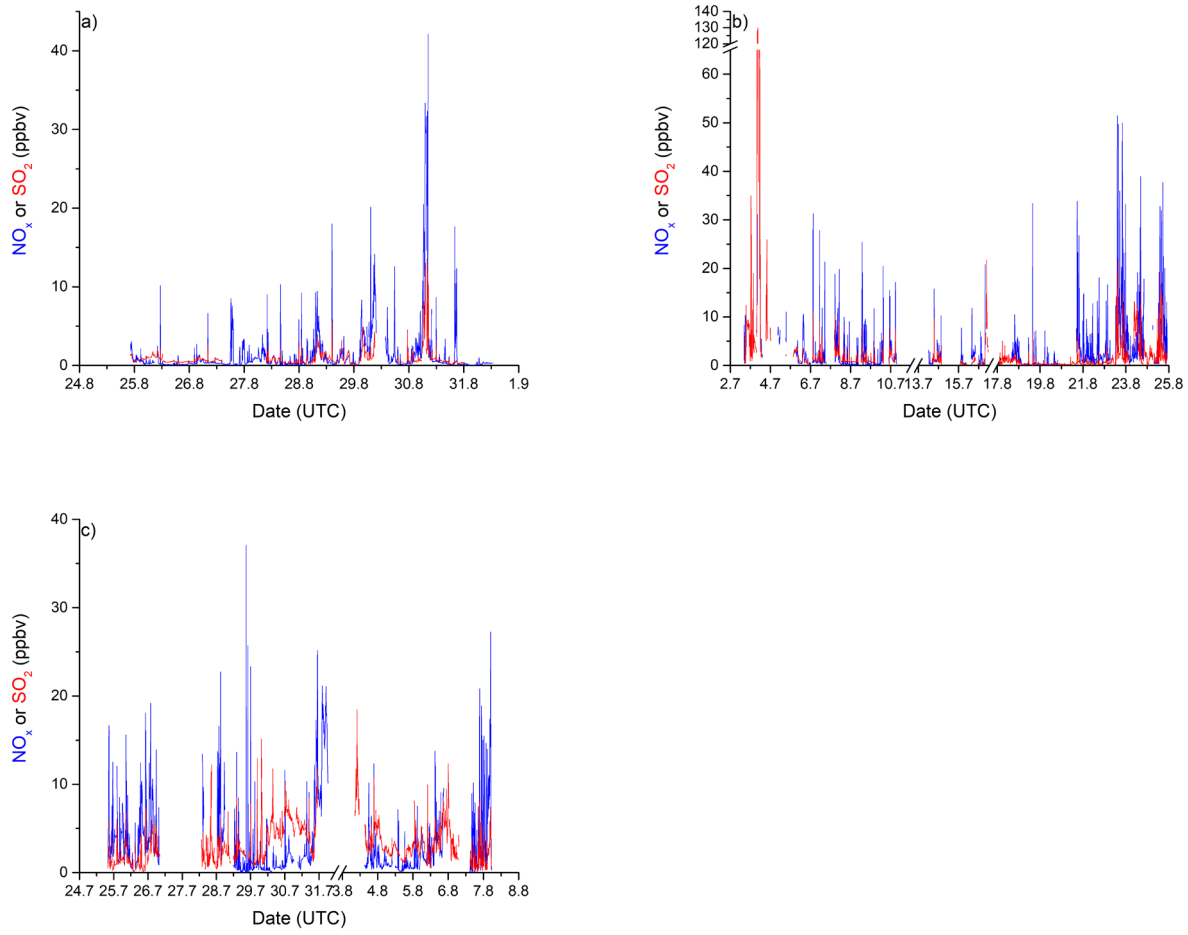

Figure S5: Time series of NO_x and SO_2 in *(a)* the Mediterranean Sea, *(b)* the Red Sea, and *(c)* the Arabian Gulf.