

Supplementary Information

Effects of Lockdown due to the COVID-19 pandemic on air quality at Latin America's largest open-pit coal mine

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Table S1. Statistical performance of hourly values of RH, T2, and WS10 estimated by the WRF model. Correlation coefficient (r), biases (Bias), root-mean-square error (RMSE), and normalized root-mean-square error (NRMSE) between WRF model simulations and observation data located at a station in the study area (11.13° N–72.62° W).

	r	Bias	RMSE	NRMSE
RH	0.76	-1.25 %	3.69 %	0.05
T2	0.87	-2.17 K	2.27 K	0.01
WS10	-0.13	-0.15 m/s	0.82 m/s	0.20

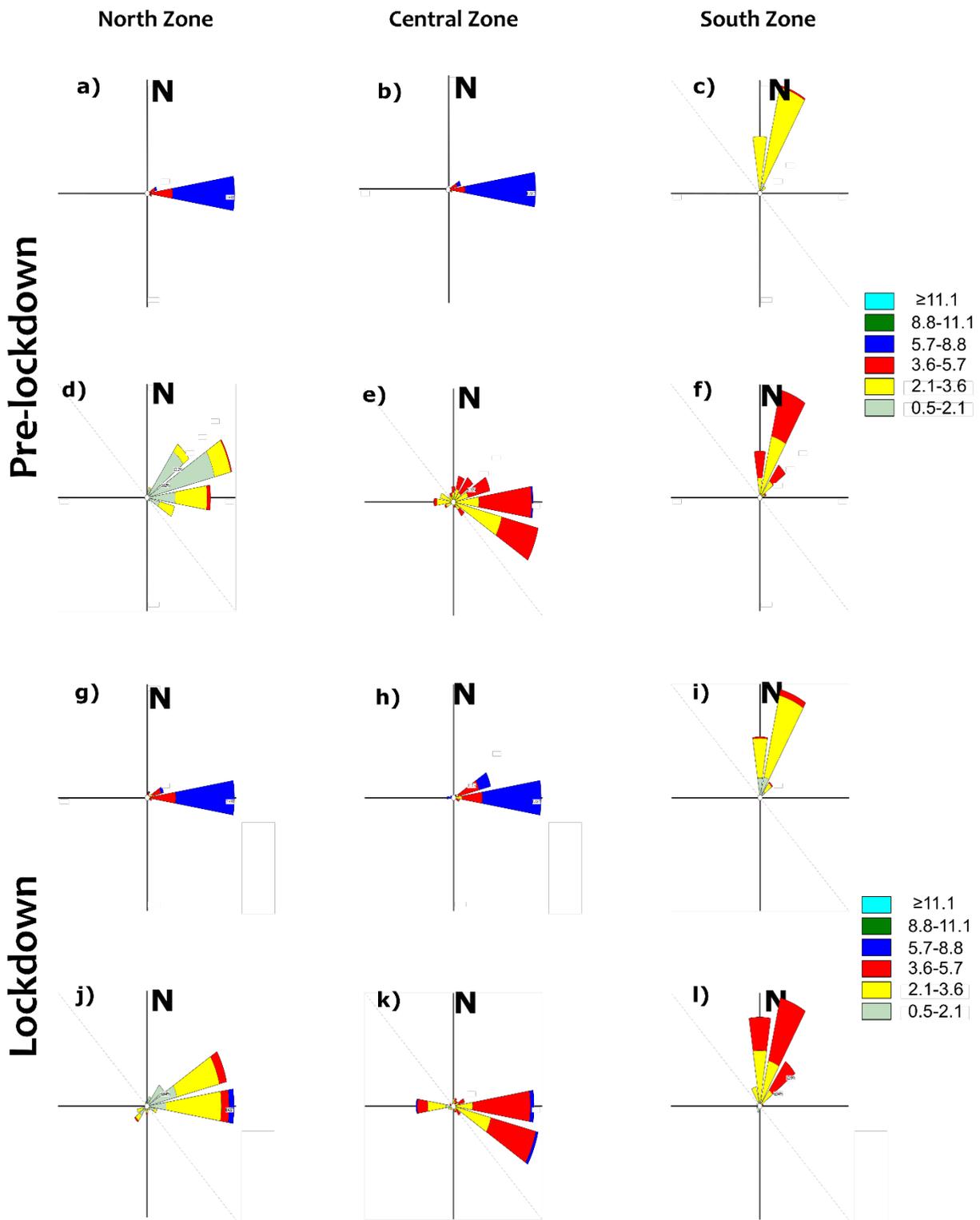


Fig. S1. Wind roses for day and night in the pre-lockdown and lockdown periods in the three study areas. a–c) Pre-lockdown during the night, d–f) Pre-lockdown during the day, g–i) Lockdown during the night, j–l) Lockdown during the day.

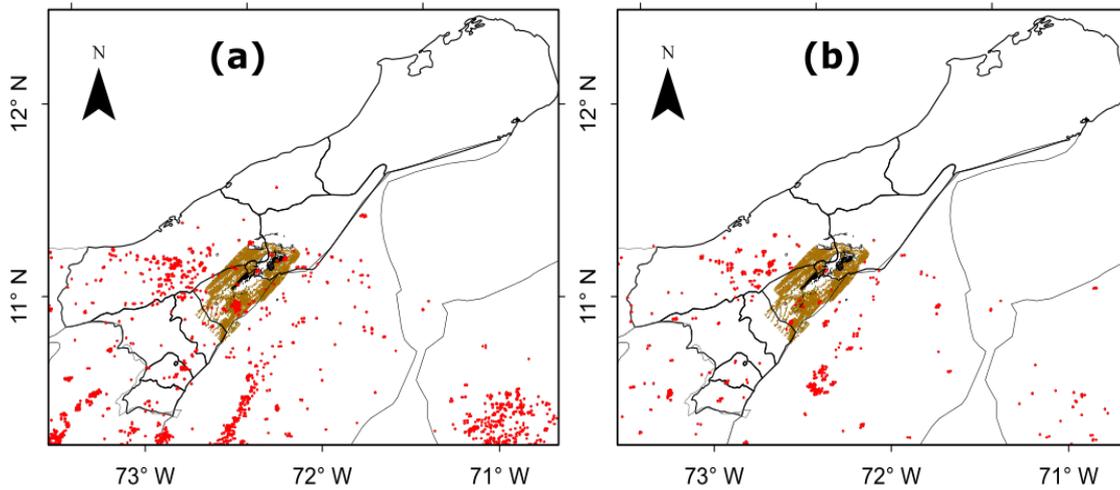


Fig. S2. Vegetation fire hotspots in the region where the largest open-pit mine in Latin America is located. Occurrences during (a) Pre-lockdown and (b) Lockdown

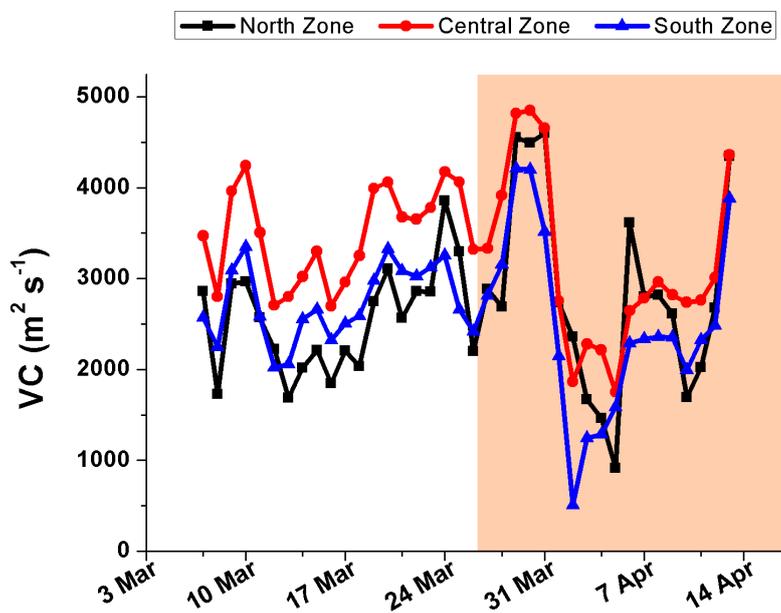


Fig. S3. Daily variation of ventilation coefficient (VC) values over the North Zone, the Central Zone, and the South Zone of the largest open-pit coal mine in South America during the pre-lockdown and lockdown periods due to COVID-19.

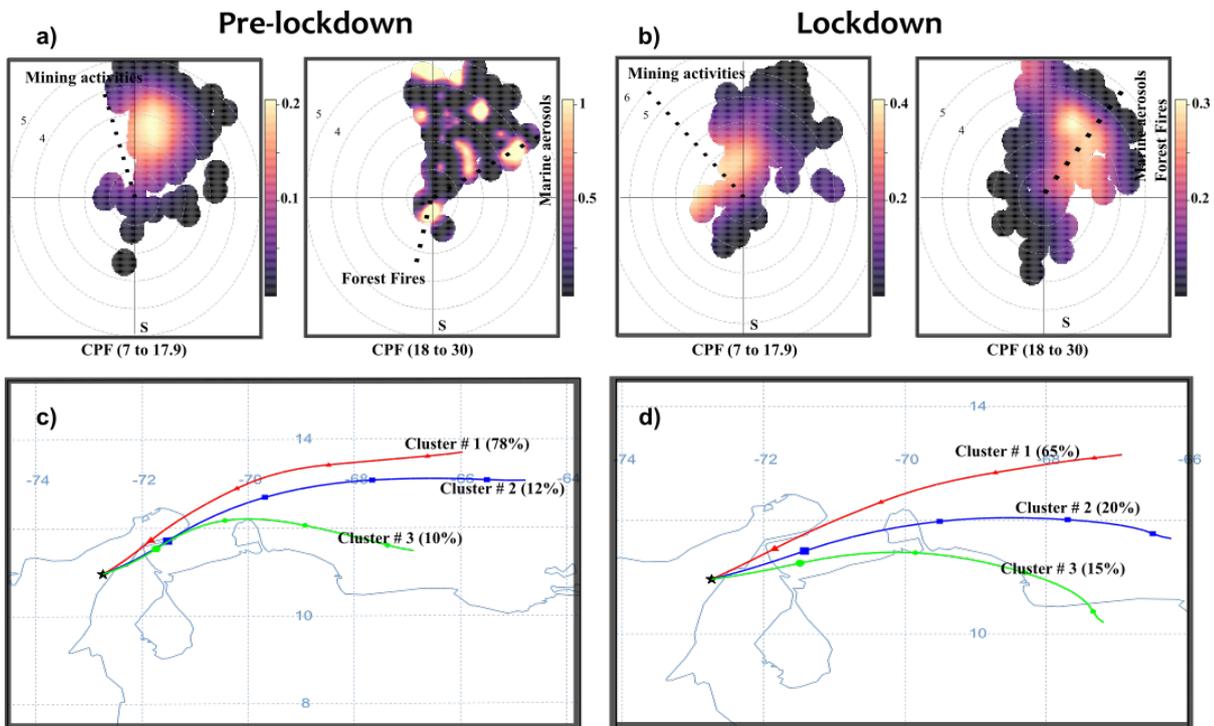


Fig. S4. CPF plots for different concentration intervals of PM_{2.5} concentration and cluster of 24-hour back-trajectories arriving (height 100m AGL) at the largest open-pit coal mine in Latin America. (a) PM_{2.5} sources in the ranges 7-17.9 $\mu\text{g m}^{-3}$ and 18-30 $\mu\text{g m}^{-3}$ during the pre-lockdown (b) PM_{2.5} sources in the ranges 7-17.9 $\mu\text{g m}^{-3}$ and 18-30 $\mu\text{g m}^{-3}$ during the lockdown (c) Clusters of air masses arriving in open-pit coal mine ending during the pre-lockdown and (d) Clusters of air masses arriving in open-pit coal mine ending during the lockdown.

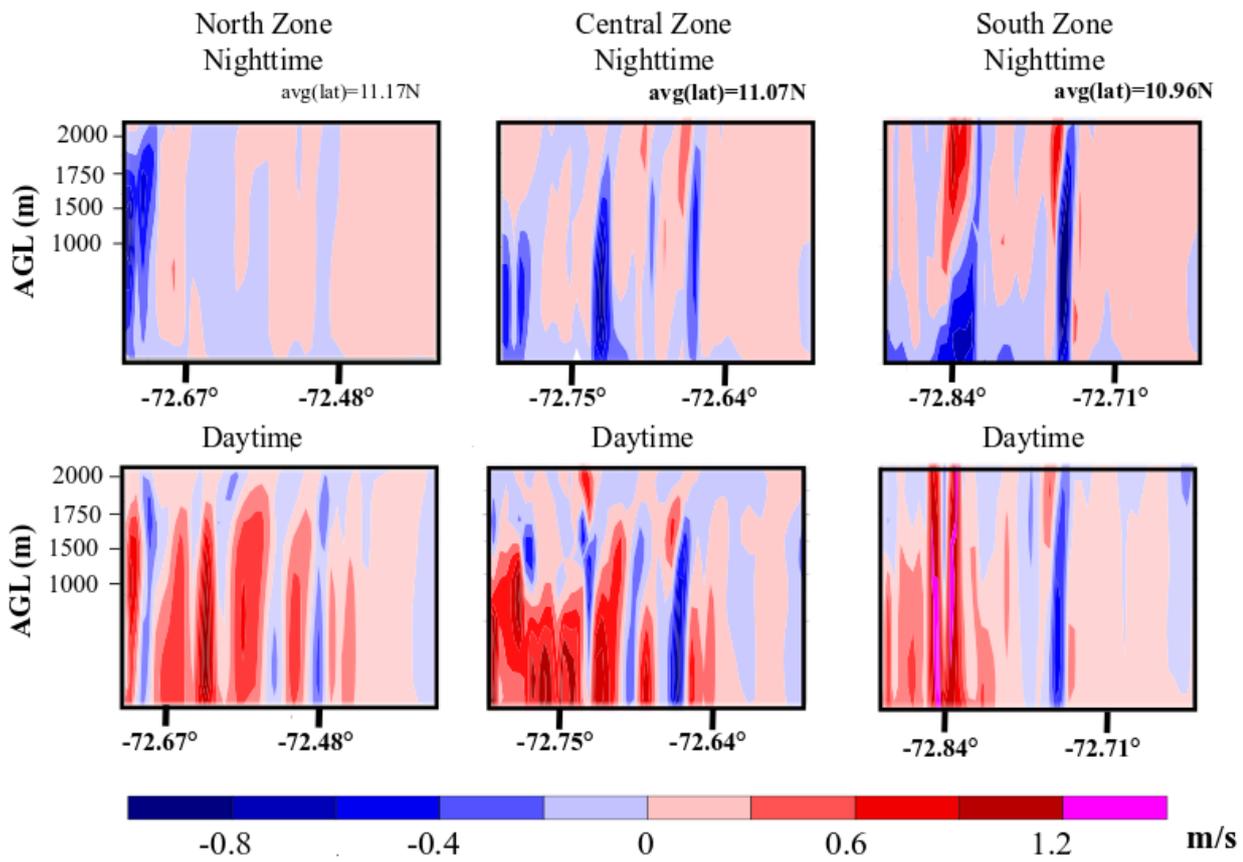


Fig. S5. Wind velocity vertical component (w) during daytime–nighttime (March 30, 2020 at 0300 and 1200 LST) at the largest open-pit coal mine in Latin America