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Transport of regional pollutants through a remote trans-Himalayan valley in Nepal

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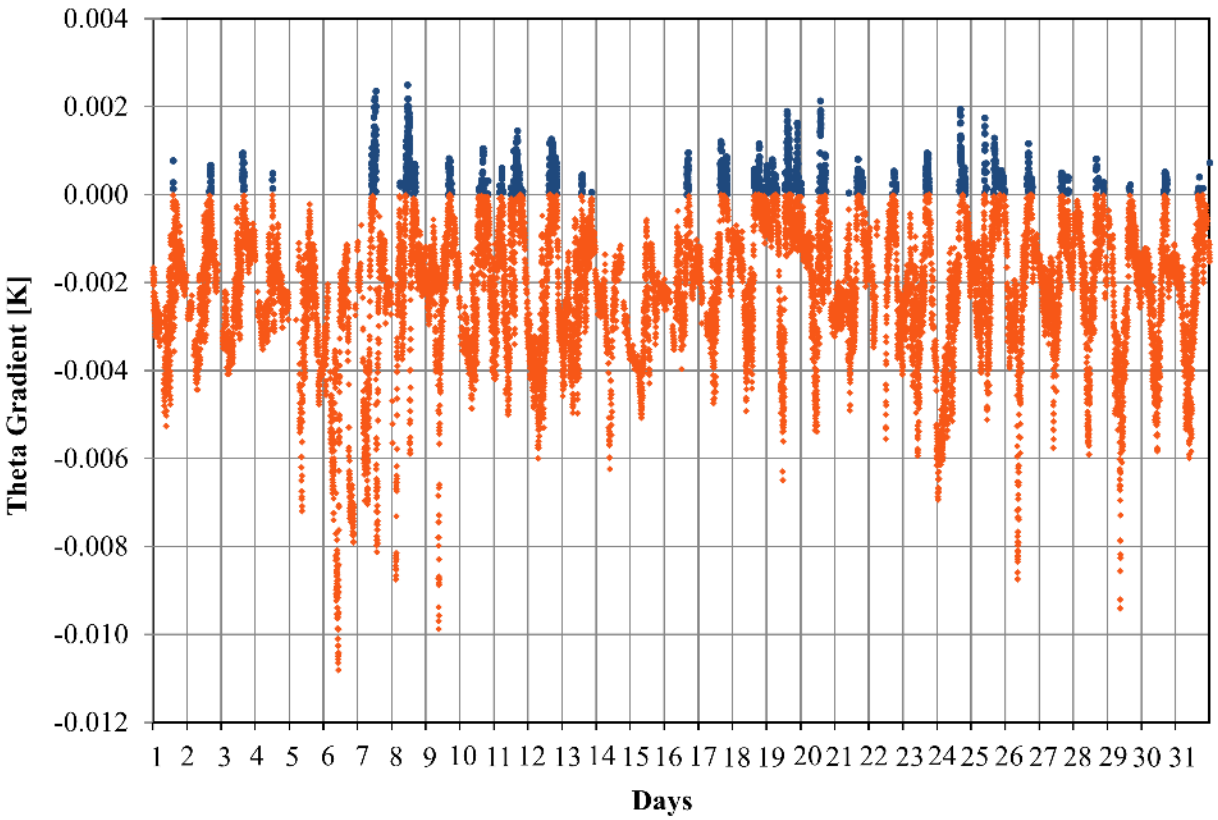
Supplementary Table 1. Station location details, instrument specifications, and measurement periods for each measurement site along the Kali-Gandaki Valley.

.Station	Location	Elevation	Instrument(parameters measured)	Measurement period
JSM_STA	28.87N, 83.73E	2850m	Thermo BC MAAP–Model 5012 (Black carbon)	Jan 2013 – July 2015
			2B Tech Ozone instrument–Model 205 (Ozone)	Jan 2013 – July 2015
JSM_1	28.87N, 83.73E	2800m	DAVIS–Model Vantage Pro 2 (WD, WS, T, RH, DP)	Mar – May 2015
JSM_2	28.87N, 83.73E	3700m	NexSens–Model Vaisala WXT520 (WD, WS, T, RH, DP, Precip, Solar rad)	Jan 2013 – July 2015
LET_AWS	28.93N, 83.35E	2500m	Nexsens–ModelVaisala WXT520 (WD, WS, T, RH, DP, Precip, Solar rad)	Mar – May 2015
MPH_AWS	28.44N, 83.41E	2665m	HOBO–Model AWS U–30 (WD, WS, T)	Mar – May 2015
EKL_AWS	28.49N, 83.46E	2804m	NexSens–ModelVaisala WXT520 (WD, WS, T, RH, DP, Precip, Solar rad)	Mar – May 2015

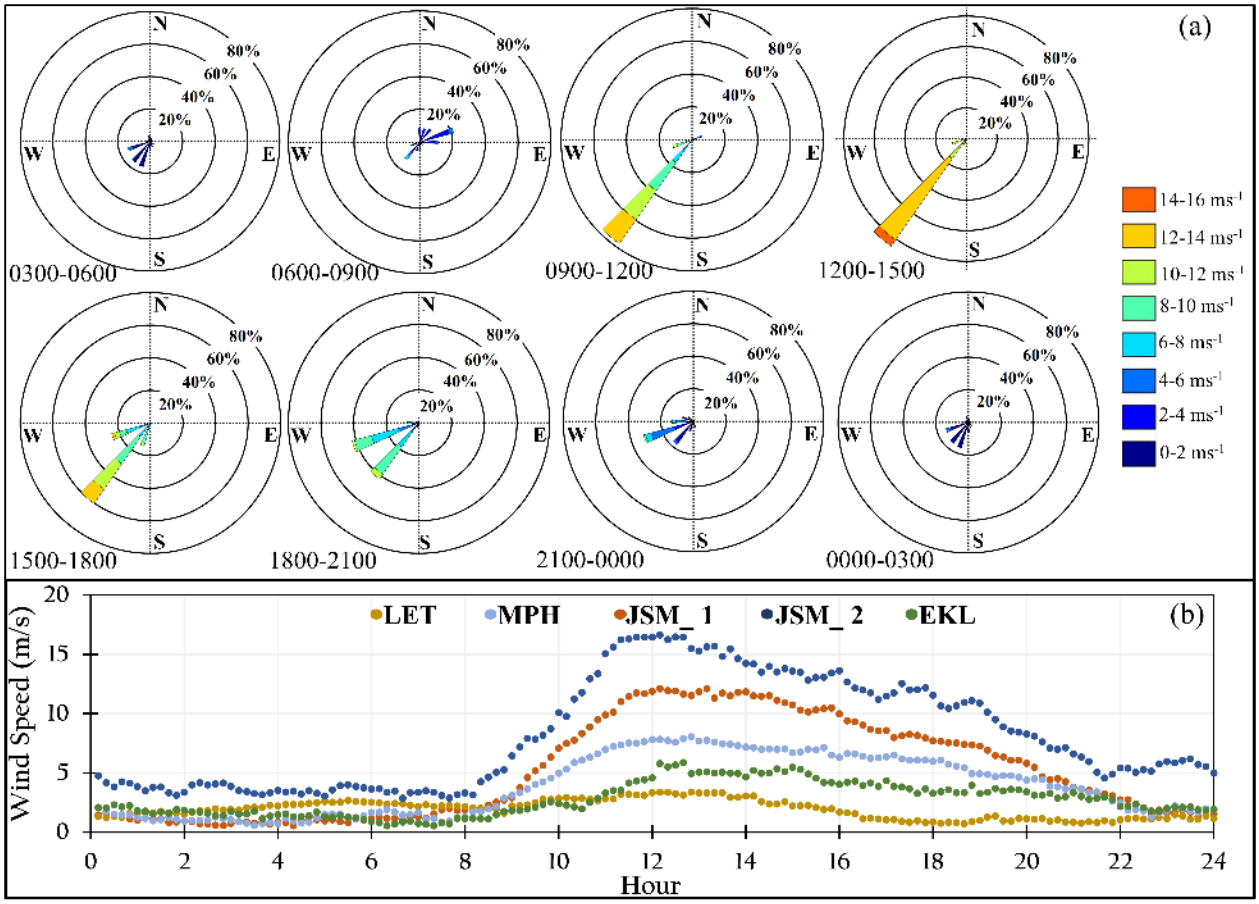
Supplementary Table 2. Mean, median, and 25th and 75th percentile distributions for BC concentration (μg m^{-3}), flux (mg m^{-2} hr^{-1}) for up-valley and down-valley flows, and net daily flux (mg m^{-2} day^{-1}) for each season. Positive net daily flux values indicate a net up-valley flux.

Wind direction		Pre-Monsoon			Monsoon			Post-Monsoon		
		[BC]	BC flux	Net flux	[BC]	BC flux	Net flux	[BC]	BC flux	Net flux
Northwesterly (down-valley)	Mean	1.06	14.09	...	0.37	3.98	...	0.80	10.44	...
	Median	0.80	9.13	...	0.28	2.64	...	0.65	6.70	...
	25th	0.46	4.57	...	0.15	1.18	...	0.33	3.18	...
	75th	1.42	18.16	...	0.43	4.55	...	1.24	13.87	...
Southwesterly (up-valley)	Mean	0.98	38.03	...	0.18	5.98	...	0.73	27.02	...
	Median	0.71	26.18	...	0.13	4.06	...	0.60	19.53	...
	25th	0.38	12.76	...	0.07	2.24	...	0.07	2.24	...
	75th	1.31	52.81	...	0.23	7.59	...	1.11	39.30	...
Difference	Mean	0.08	-23.94	...	0.20	-2.00	...	0.07	-16.58	...
	Median	0.08	-17.04	...	0.15	-1.43	...	0.05	-12.83	...
	25th	0.08	-8.18	...	0.08	-1.06	...	0.26	0.94	...
	75th	0.11	-34.65	...	0.20	-3.04	...	0.13	-25.43	...
Daily (net up- and down-valley flux)	Mean	...	...	0.75	...	...	0.22	...	...	0.37
	Median	...	...	0.51	...	...	0.15	...	...	0.27
	25th	...	...	0.26	...	...	0.11	...	...	0.98
	75th	...	...	1.14	...	...	0.27	...	...	0.60

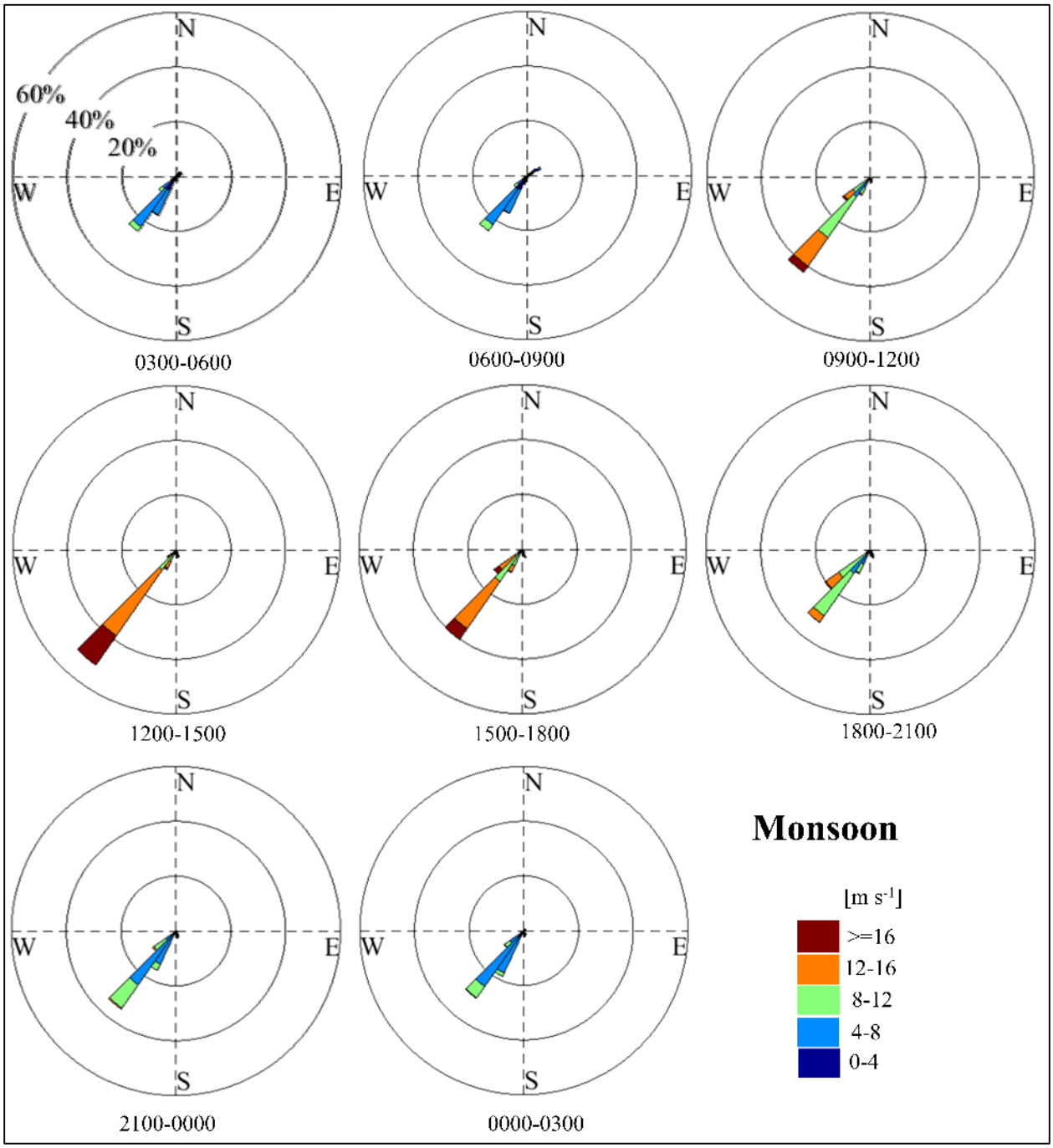
Supplementary Figure 1. Image taken from JSM_2 looking down the valley shows a haze layer deeper than 800m (altitude difference between JSM_1 and JSM_2) – during daytime.



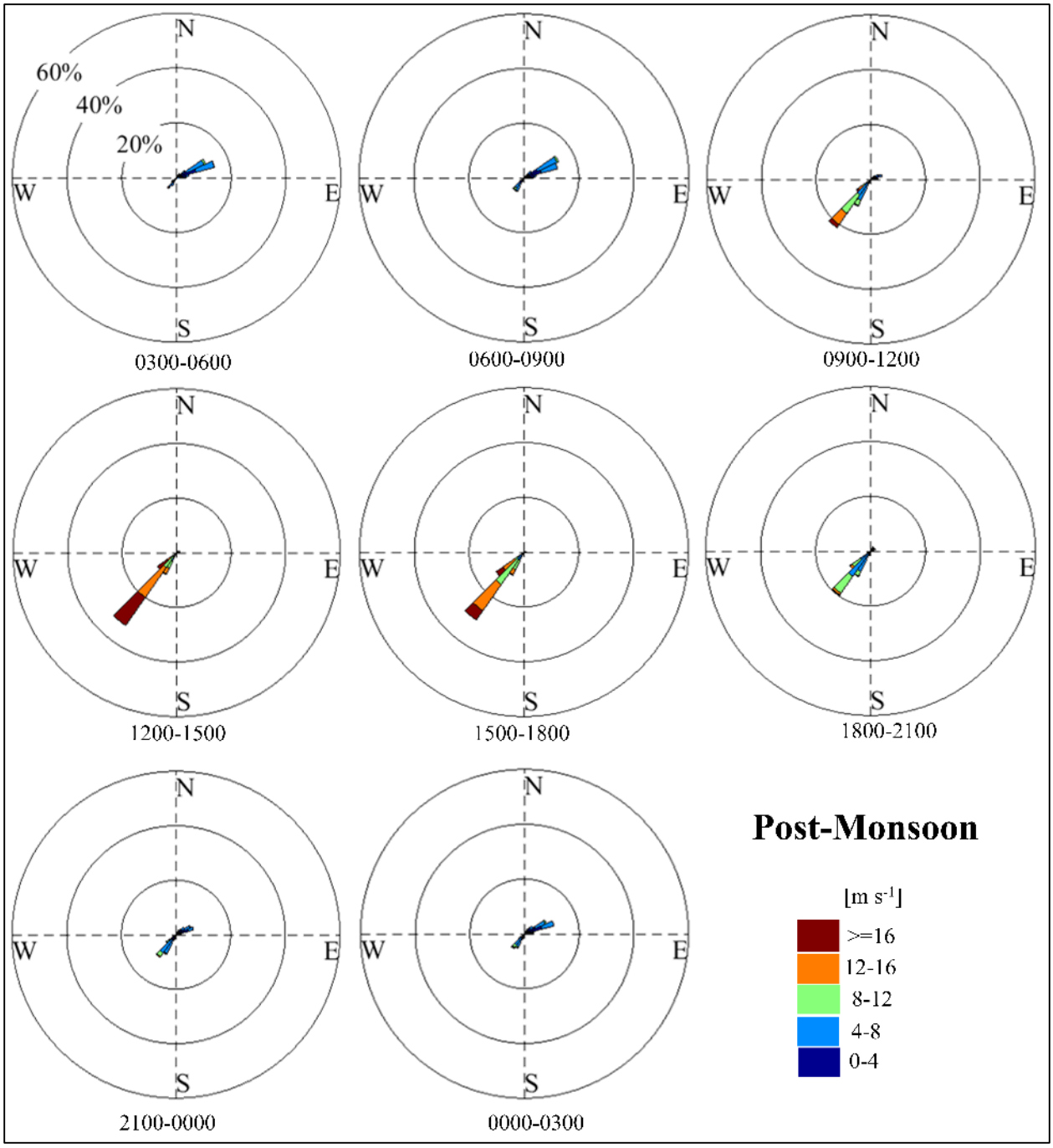
Supplementary Figure 2. Potential temperature gradient between JSM_1 and JSM_2. Values were calculated as the potential temperature of JSM_2 minus the potential temperature of JSM_1. The orange dots indicate a negative gradient and the blue dots indicate a positive gradient.



Supplementary Figure 3. (a) Wind rose for data from May 8 to 14, 2015 binned into 3-hour increments depiciting the diurnal evolution of wind speed and direction at JSM_1. (b) Corresponding diurnal variability in wind speed based on average values over the same 7-day period at LET, MPH, JSM_1, JSM_2, and EKL.



Supplementary Figure 4a. Wind rose for monsoon season – binned into 3-hour increments depiciting the diurnal evolution of wind speed and direction at JSM_2.



Supplementary Figure 4b. Wind rose for post-monsoon season – binned into 3-hour increments depiciting the diurnal evolution of wind speed and direction at JSM_2.