



Supplement of

Modelling the impacts of iodine chemistry on the northern Indian Ocean marine boundary layer

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1 **Supplement:**

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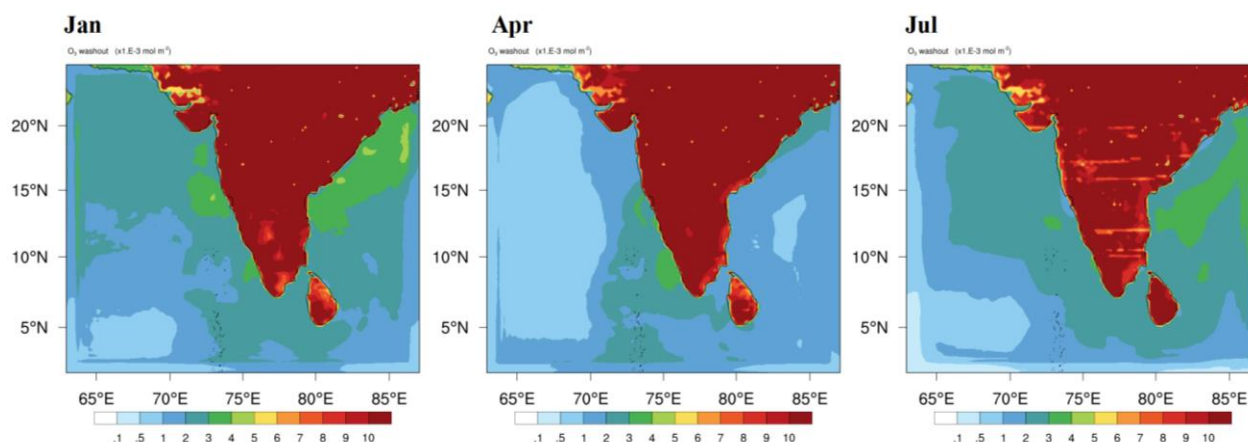
7 **Table S1:** Monthly means and standard deviations of O₃, NO₂, NO, NO₃, OH, HO₂ mixing
 8 ratios (unit in parenthesis) over the domain region for the model simulations in January,
 9 April, and July for the HAL scenario along with the absolute difference and absolute
 10 difference percentage between HAL and BASE. The table also includes monthly mean
 11 values only over the MBL.

	January	April	July	January	April	July
	O₃ (ppbv)			NO₃ (pptv)		
	Over the whole domain					
HAL	32.16±9.76	29.64±10.79	23.34±8.85	7.64±8.08	10.38±15.53	4.52±6.14
HAL-BASE	1.25±0.69	0.98±0.69	0.21±0.22	0.46±0.35	0.50±0.74	0.16±0.25
HAL-BASE %	3.75±3.17	3.21±3.58	0.89±1.04	5.73±13.6	4.68±9.78	3.52±6.84
	Only over the MBL					
HAL	28.17±7.83	24.17±6.42	19.49±5.97	4.47±5.44	2.99±4.09	2.38±3.94
HAL-BASE	1.31±0.66	1.22±0.65	0.15±0.18	0.45±0.31	0.29±0.29	0.11±0.17
HAL-BASE %	4.45±3.37	4.80±3.49	0.77±1.13	9.20±14.15	8.81±10.08	4.55±7.47
	NO₂ (ppbv)			OH (pptv)		
	Over the whole domain					
HAL	0.43±1.27	0.30±0.77	0.27±0.79	0.14±0.05	0.26±0.07	0.28±0.08
HAL-BASE	0.008±0.019	0.007±0.018	0.004±0.012	0.004±0.004	0.008±0.005	0.005±0.004
HAL-BASE %	1.89±10.63	2.15±5.71	1.63±5.33	3.29±3.14	3.02±1.94	1.82±1.40
	Only over the MBL					
HAL	0.10±0.46	0.06±0.30	0.07±0.29	0.15±0.05	0.27±0.08	0.27±0.08

HAL-BASE	0.004±0.007	0.002±0.007	0.002±0.006	0.005±0.004	0.008±0.005	0.005±0.004
HAL-BASE %	3.47±11.25	3.51±6.08	2.52±5.95	3.64±3.39	3.05±1.89	1.75±1.36
	NO (pptv)			HO₂ (pptv)		
	Over the whole domain					
HAL	49.49±221.23	36.66±164.95	38.79±173.78	7.10±1.49	10.18±1.64	9.24±1.97
HAL-BASE	1.60±5.61	1.57±6.33	1.03±4.32	0.51±0.39	0.44±0.27	0.21±0.14
HAL-BASE %	3.22±14.32	4.36±8.15	2.64±6.46	6.76±4.87	4.16±3.09	2.18±1.52
	Only over the MBL					
HAL	12.56±85.76	10.38±77.48	11.64±58.45	7.32±1.12	9.8±1.36	8.67±1.53
HAL-BASE	0.70±2.78	0.72±2.78	0.45±1.95	0.67±0.36	0.53±0.25	0.23±0.14
HAL-BASE %	5.48±14.86	7.07±8.58	3.76±7.15	8.38±4.51	5.17±2.98	2.63±1.49

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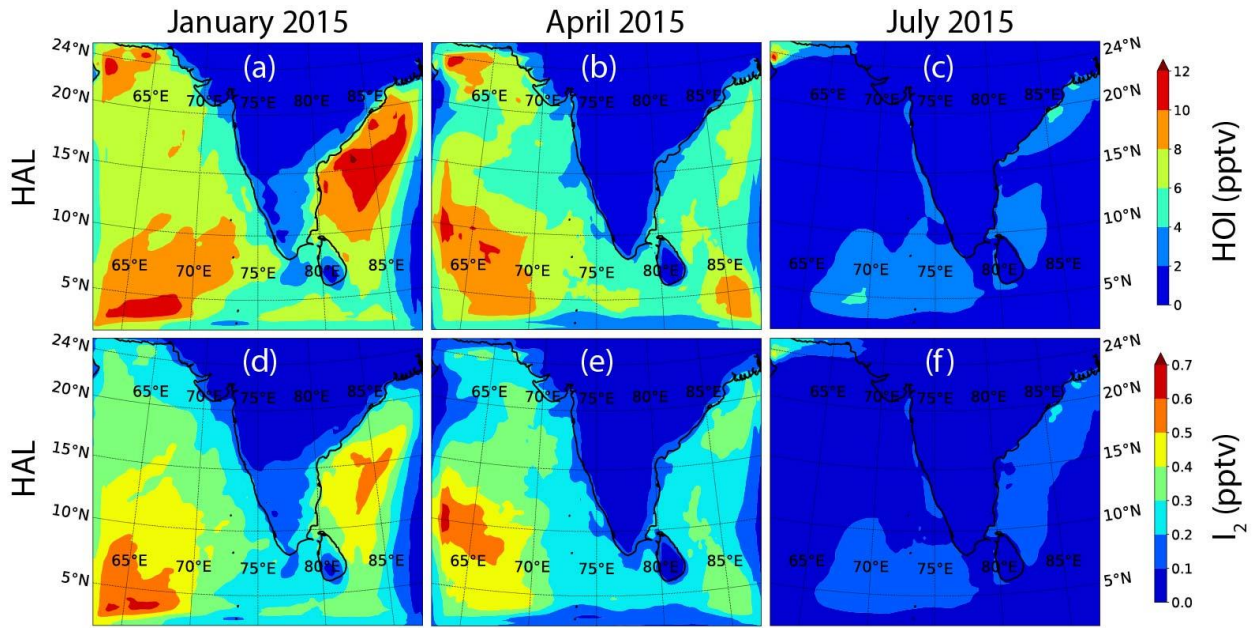
13 **Figures:**



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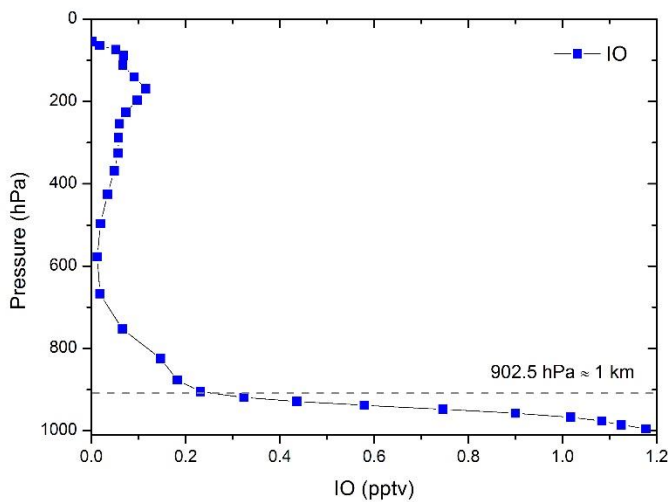
15 **Figure S1:** Simulated O₃ washout (x10⁻³ mol m⁻²) in HAL scenario in three months.

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18 **Figure S2:** Seasonal variability in the HOI and I_2 mixing ratios indicate that the emissions of HOI
 19 and I_2 are lowest during July, coinciding with the lowest O_3 mixing ratios.



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21 **Figure S3:** The vertical distribution of IO in the WRF-Chem simulations is shown. The dashed
 22 line indicates the assumed boundary layer height below which the column is integrated for all the
 23 other figures in the manuscript.