Supplement of Geosci. Model Dev., 13, 269–295, 2020
https://doi.org/10.5194/gmd-13-269-2020-supplement

Geoscientific Model Development
Open Access
EGU

Supplement of

The Canadian atmospheric transport model for simulating greenhouse gas evolution on regional scales: GEM–MACH–GHG v.137-reg

Jinwoong Kim et al.

Correspondence to: Jinwoong Kim (jinwoong.kim@canada.ca)

Table S1: Root-mean squared error of zonal wind (UU; m s^{-1}), wind speed (UV; m s^{-1}), geopotential height (GZ; dam) and temperature (TT; K) at 200, 500, 850 and 1000 hPa from GLB90, GLB45 and LAM experiments, based on comparison 24-h forecasts against North American radiosondes for July and December 2015.

July				December			
UU	**GLB90**	**GLB45**	**LAM**	**UU**	**GLB90**	**GLB45**	**LAM**
200	4.26	4.16	4.09	**200**	4.15	4.06	4.14
500	2.7	2.76	2.79	**500**	3.41	3.42	3.42
850	2.47	2.42	2.6	**850**	2.92	2.94	3.07
1000	2.36	2.31	2.55	**1000**	2.33	2.29	2.38
UV	**GLB90**	**GLB45**	**LAM**	**UV**	**GLB90**	**GLB45**	**LAM**
200	4.4	4.2	4.03	**200**	4.26	4.13	4.2
500	2.74	2.77	2.74	**500**	3.56	3.53	3.54
850	2.53	2.46	2.54	**850**	3.03	2.86	2.92
1000	2.18	2.09	2.28	**1000**	2.31	2.32	2.2
GZ	**GLB90**	**GLB45**	**LAM**	**GZ**	**GLB90**	**GLB45**	**LAM**
200	2.6	2.06	1.43	**200**	1.76	1.6	1.56
500	0.86	0.82	0.81	**500**	1.1	1.05	1.1
850	0.89	0.79	0.75	**850**	0.86	0.8	0.8
1000	0.9	0.84	0.9	**1000**	1.04	0.97	0.91
TT	**GLB90**	**GLB45**	**LAM**	**TT**	**GLB90**	**GLB45**	**LAM**
200	1.19	1.11	1.08	**200**	1.36	1.33	1.35
500	1.06	0.92	0.82	**500**	1.03	1.02	1.02
850	1.24	1.2	1.17	**850**	1.53	1.5	1.45
1000	2.33	2.03	1.72	**1000**	1.78	1.74	1.65

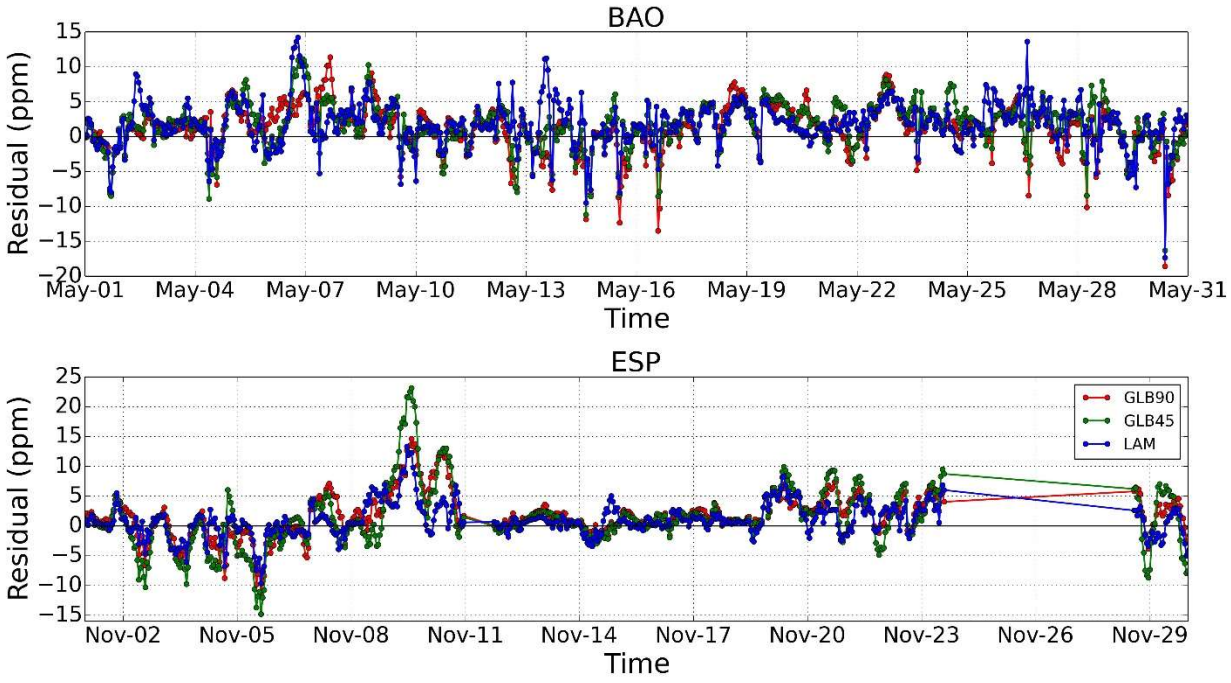

Figure S1: Residual of hourly modelled CO_2 (ppm) time series and observations at BAO (Model-Observation) from GLB90, GLB45 and LAM experiments for May 2015 (top) at ESP for November 2015 (bottom).

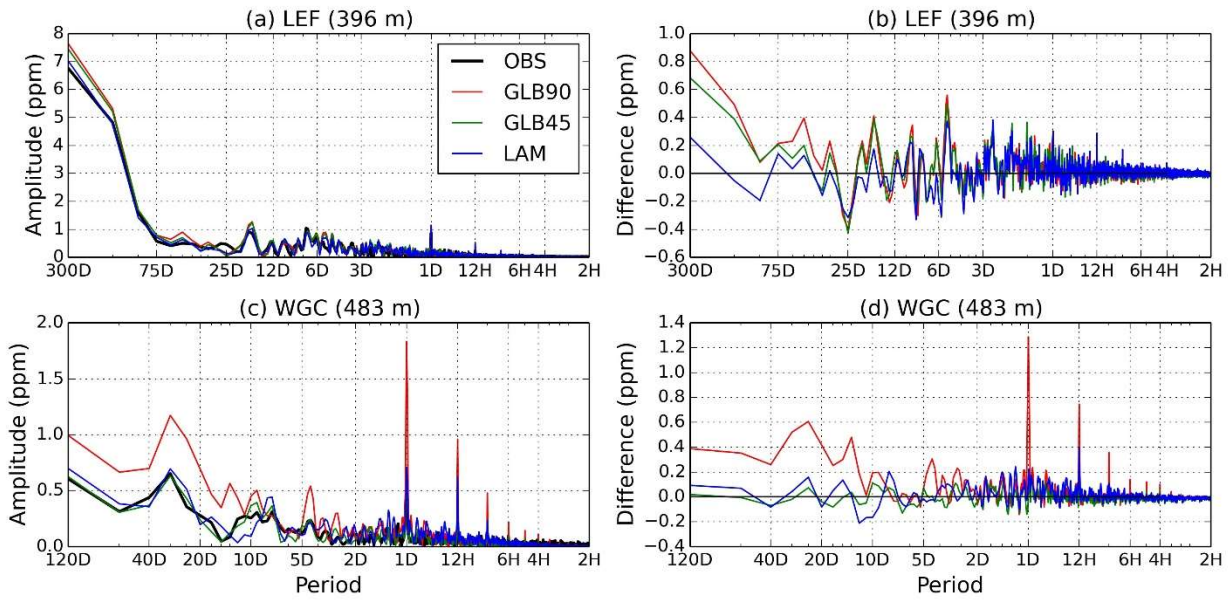

Figure S2: The amplitude of hourly time series of observed CO_2 (black) and modelled CO_2 concentrations from GLB90 (red), GLB45 (green) and LAM (blue) experiments across temporal scales from 2 h to 300 days from March to December 2015 at (a) LEF (the intake height at 396 m) and (b) their differences, from 2h to 120 days from May to August 2015 at (c) WGC (intake height at 483 m) and (d) their difference.

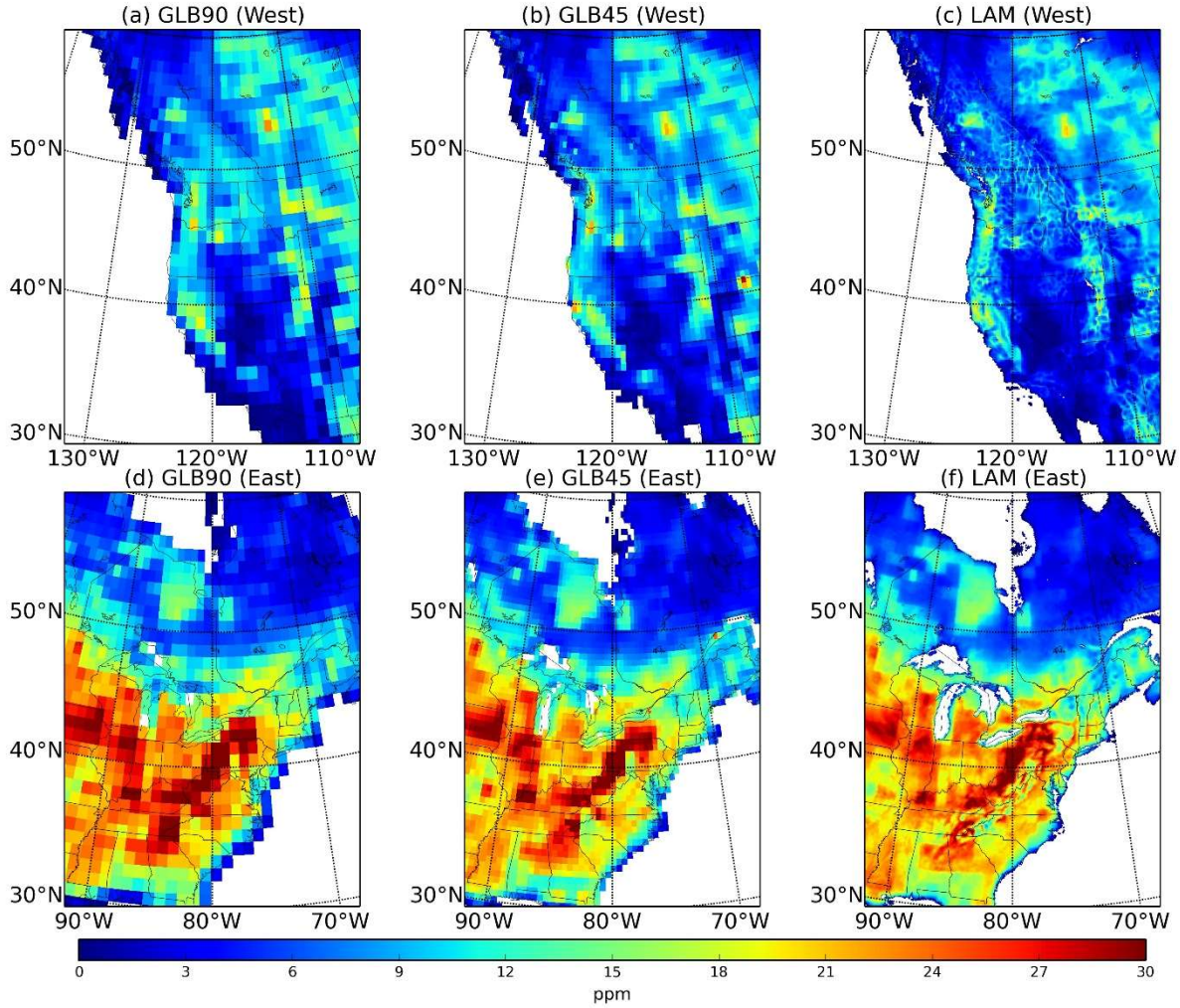

Figure S3: The amplitude of the diurnal cycle of hourly time series of CO_2 concentrations at the lowest model level from the (a,d) GLB90, (b,e) GLB45 and (c,f) LAM experiments during June to August 2015. Panels show zoomed in regions over the west part of North America (a-c) and the east part of North America (d-f).