

Supplement of

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

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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 |