Heatmap comparing Relative RMSE (w.r.t. 48h GraphCast forecast RMSE, lower is better) across specific_humidity pressure levels. Left panel: "Assimilated Data based on 48h Forecast" by Number of observed columns (1000, 2000, 4000, 8000, 10000, 20000). Right panel: "GraphCast Forecast on ERA5" by Lead time (6, 12, 18, 24, 48).

| specific_humidity | 1000 | 2000 | 4000 | 8000 | 10000 | 20000 | 6 | 12 | 18 | 24 | 48 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 50 hPa | 5.94e-08 | 5.62e-08 | 5.11e-08 | 4.29e-08 | 3.93e-08 | 3.01e-08 | 2.01e-08 | 2.94e-08 | 3.85e-08 | 4.43e-08 | 5.95e-08 |
| 100 hPa | 1.83e-07 | 1.74e-07 | 1.58e-07 | 1.40e-07 | 1.33e-07 | 1.06e-07 | 8.06e-08 | 1.09e-07 | 1.33e-07 | 1.49e-07 | 2.02e-07 |
| 150 hPa | 1.31e-06 | 1.26e-06 | 1.15e-06 | 1.04e-06 | 9.68e-07 | 7.99e-07 | 6.42e-07 | 8.35e-07 | 9.96e-07 | 1.08e-06 | 1.26e-06 |
| 200 hPa | 8.63e-06 | 8.41e-06 | 7.68e-06 | 7.02e-06 | 6.71e-06 | 5.64e-06 | 4.17e-06 | 5.38e-06 | 6.32e-06 | 6.60e-06 | 7.61e-06 |
| 250 hPa | 2.95e-05 | 2.87e-05 | 2.64e-05 | 2.40e-05 | 2.32e-05 | 1.98e-05 | 1.46e-05 | 1.87e-05 | 2.19e-05 | 2.36e-05 | 2.69e-05 |
| 300 hPa | 6.55e-05 | 6.37e-05 | 5.97e-05 | 5.36e-05 | 5.14e-05 | 4.29e-05 | 2.86e-05 | 3.99e-05 | 4.61e-05 | 5.10e-05 | 6.23e-05 |
| 400 hPa | 1.97e-04 | 1.91e-04 | 1.80e-04 | 1.64e-04 | 1.56e-04 | 1.28e-04 | 7.82e-05 | 1.20e-04 | 1.40e-04 | 1.58e-04 | 1.93e-04 |
| 500 hPa | 3.97e-04 | 3.86e-04 | 3.61e-04 | 3.28e-04 | 3.17e-04 | 2.58e-04 | 1.45e-04 | 2.16e-04 | 2.54e-04 | 2.94e-04 | 3.79e-04 |
| 600 hPa | 5.63e-04 | 5.50e-04 | 5.19e-04 | 4.71e-04 | 4.47e-04 | 3.66e-04 | 1.91e-04 | 2.98e-04 | 3.37e-04 | 3.88e-04 | 5.27e-04 |
| 700 hPa | 7.85e-04 | 7.64e-04 | 7.23e-04 | 6.48e-04 | 6.16e-04 | 5.05e-04 | 2.57e-04 | 3.89e-04 | 4.59e-04 | 5.37e-04 | 7.11e-04 |
| 850 hPa | 9.84e-04 | 9.56e-04 | 9.11e-04 | 8.40e-04 | 8.03e-04 | 6.71e-04 | 3.65e-04 | 5.17e-04 | 5.97e-04 | 6.85e-04 | 8.98e-04 |
| 925 hPa | 7.90e-04 | 7.71e-04 | 7.41e-04 | 6.78e-04 | 6.56e-04 | 5.60e-04 | 3.51e-04 | 4.70e-04 | 5.33e-04 | 5.86e-04 | 7.12e-04 |
| 1000 hPa | 5.70e-04 | 5.61e-04 | 5.27e-04 | 4.80e-04 | 4.61e-04 | 3.79e-04 | 2.85e-04 | 3.32e-04 | 3.58e-04 | 3.93e-04 | 4.91e-04 |