Study of boundary layer stability influence to WRF model forecasts quality for Siberia

Исследование влияния устойчивости пограничного слоя атмосферы на качество численных прогнозов модели WRF для территории Сибири
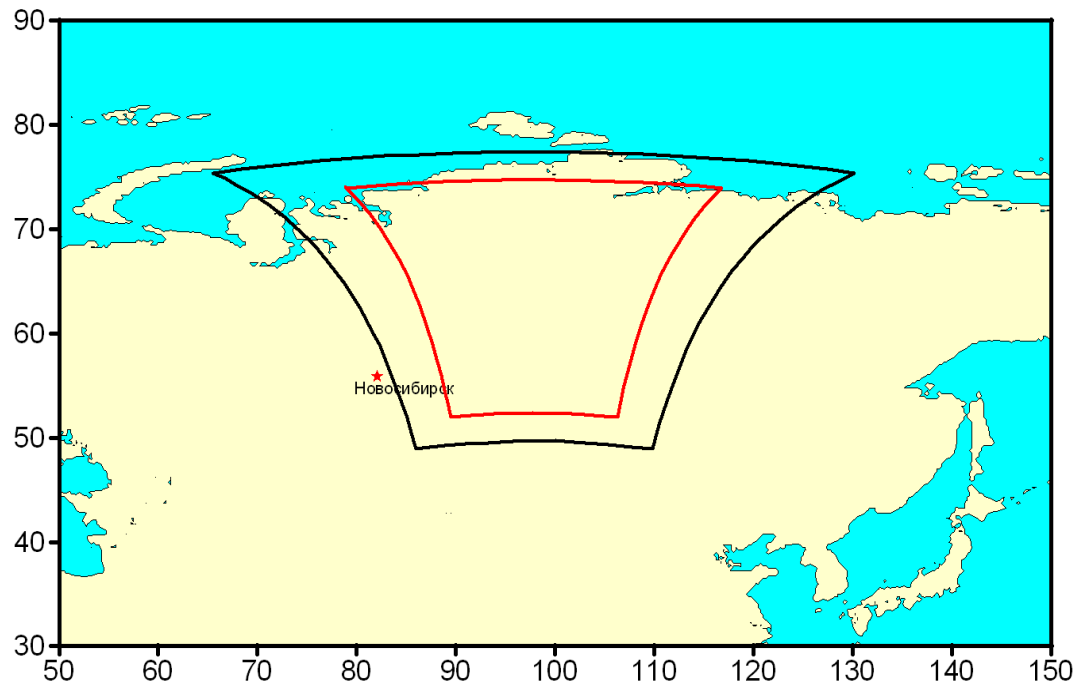
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Hypothesis:

For conditions with a stable atmospheric boundary layer quality of the WRF ARW predictions is worse than for conditions with a unstable boundary layer.

Experiment

Periods:

20070206 – 20070216
20070501 – 20070510
20070705 – 20070714

20080110 – 20080131
20080610 - 20080630

Model version:

WRF ARW 2.1

WRF ARW 3.0

Quality estimation:

RMS
STDEV

Isobaric layer stability:

$$Ri = \frac{g}{\theta} \frac{\partial \theta / \partial z}{(\partial u / \partial z)^2 + (\partial v / \partial z)^2}$$

Conclusion

Results of this study corroborate the hypothesis about influence of atmospheric boundary layer state to WRF ARW predictions quality.

Thank you for your attention!

See you at my poster :-)