

## Summary of the Opening Talk of the Round Table Discussion

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*The round table discussion was convened by S-E Gryning.*

*Participating – A. Baklanov, R. San Jose, S.S. Zilitinkevich, E. Batchvarova, A. Mahura, I. Lowndes, G. Golitsyn, K. Rubinstein, O. Sorokovikova, V. Voloshin, D. Simonenkov, G. Djolov, D. Nolan, S. Stepanenko, B. Grisogono and other conference participants.*

Based on the presentations and questions during the conference, the introduction for the round table highlighted the following topics for the discussion:

1. The ability of Mesoscale Meteorological Models (MMMs) to predict
  - surface meteorological parameters
  - boundary-layer height
  - vertical profiles of meteorological parameters

for dispersion, air pollution and climate modeling. The state of art shows that modeled turbulent fluxes, vertical profiles and boundary layer heights traditionally are not verified partly because of lack of data. Consequently, knowledge on the effect these parameters have on the air pollution modeling results is presently poor.

2. The effect and feed back of air pollution on meteorological parameters is a topic for current research. Extreme cases connected to the interaction of cloud formation and aerosol formation on the energy balance has been reported. How important is the effect in general? General practice does not include feedback from air pollution to meteorological models. How important is this issue and can it be treated with applied models, or is it a matter for complex models only?

3. Improvements needed in parameterisations – it is noted that MM5 is used quite a lot in the community present at this conference. In Russia and Ukraine there is a long tradition for developing parameterisations. What considerations have to be done in order to chose an

appropriate parameterisation for the meso-scale models - this was a topic rarely addresses in the presentations here as well as in conferences in general.

4. Are the aggregation methods used in MMMs and CTMs (Chemical Transport Models) appropriate? In many models (MM5 for example) no aggregation is applied for surface fluxes over grid cells, just dominating land use is identified and the surface parameters are taken accordingly. There are studies and knowledge on aggregation of fluxes that are not employed in meso-scale models yet. Is a combination of remote sensing (satellite) and data aggregation/assimilation considered to be a promising tool for future improvements in the model skills?

5. Suggested important issues for further research include:

- Coupling of meso-meteorological and atmospheric chemical transport models including feedback mechanisms.
- Flow and turbulence over heterogeneous and complex surfaces, especially urban and forest canopies.
- Flux aggregation ...
- Very stable stratification ...
- Observations => vertical profiles, estimation of PBL height ...

6. Observation based on conference presentations – in Russia, Belarussia and Ukraine MM5 and WRF are widely used now. In Moscow (Hydrometcenter of Russia) many models are developed, tested and evaluated, MM5 and WRF are among them. What should be the balance between the international and national efforts for the developments of meso-scale models?