

Minutes of the Seventh COST 715 Meeting of Working Group 2

Rome, Italy, 10 and 11 April 2002

Participants:

Jerzy Burzynski (partly)
Marco Deserti
Sylvain Joffre
Ari Karppinen
Filip Lefebvre
Patrice Mestayer
Douglas Middleton (partly)
Martin Piringer
Maria Tombrou

1. MP opened the meeting and welcomed the participants. Filip Lefebvre participated at this meeting on behalf of Koen De Ridder. On 11 April, WG 2 welcomed the new member from Poland, Jerzy Burzynski.
2. The agenda was adopted slightly revised and is given in Annex 1.
3. The minutes of the Toulouse meeting have been adopted having identified minor typing errors.
4. Status of WG 2:
JB is the new member from Poland. The actual list of Working Group 2 members including full addresses is given in Annex 2.
D 1: MP checks ongoing participation of Joao Ferreira in WG 2.
D 2: MP clarifies future Belgic WG 2 member(s).
5. Review of Toulouse decisions:
All the Toulouse decisions (Study contract, Final Report, Fumapex, outcome of Toulouse WS) appear as separate items on the Rome agenda and will be treated accordingly.
6. Reports and discussions:
6.1: Toulouse workshop: Since extended abstracts have not yet been submitted to EC-COST, conclusions and recommendations of the WS already submitted to WG 2 and 3 members have been discussed again.
D 3: MP circulates a revised version of the Toulouse WS conclusions for additional amendments by WG 2 and 3 members.

Jaakko Kukkonen and MP will review the extended abstracts, write an introduction and add the conclusions and submit everything to EC-COST for publication as soon as possible.

6.2: FUMAPEX: During a short joint meeting of WGs 2 and 3, Alix Rasmussen on behalf of AB reported on the acceptance of the FUMAPEX proposal. The initialisation and final acceptance of FUMAPEX is one of the most important activities of COST-Action 715 members so far.

6.3: Study contracts: MP reported on the rejection of the study contract proposal of Baumann and Piringer by EC-COST for budgetary reasons. WG 2 appreciates how Bernard Fisher, chairman of COST-Action 715, expressed his concern on how the study contract proposal was treated to Markku Warras, head of the COST secretariat. Suggestions by PM and AK to carry out this work possibly within FUMAPEX were discussed.

D 4: MP will contact AB on possibilities to carry out the investigations proposed in the study contract within FUMAPEX.

D 5: In the light of this situation, WG 2 does not recommend further work on the AB study contract proposal.

6.4: UBL/Escompte and Basle experiments: According to PM, the UBL/Escompte data base is intended to be ready end of Sept. 2002 and will be available to the public probably April 2003.

D 6: MP will ask Mathias Rotach and former WG 2 member Roland Vogt about a possible short contribution on results of the Basle experiment relevant for WG 2 to be included in the final report.

6.5: Activities in Bologna: MD gave an interesting report on heat island mapping, turbulence and mixing height measurement campaigns in Bologna. Heat island mapping was made by means of 21 thermometers positioned in- and outside the town (inside primarily on rooftop). Turbulence and mixing height measurements were made by means of a SODAR, a sonic anemometer and a high frequency hygrometer located on the top of a building in downtown Bologna. Measurement campaigns were made during typical summer and winter weather conditions.

Temperature mapping shows the growth of a heat island during calm weather conditions. The structure of the heat island is influenced by orography. The Bologna data set will be used to validate MH estimation schemes in meteorological pre-processors and to study the urban vs. the rural energy budget. The results of the study will provide basic information for the design of an urban meteorological network in the Emilia Romagna region.

6.6: Publications:

Loutraki paper: MP reported on the acceptance of the manuscript “Investigating the surface energy balance in urban areas – recent advances and future needs” for publication in *J. Water, Air and Soil Pollution – Focus*. He thanked the WG members and the other co-authors for their active participation in revising the original manuscript.

Antwerp proceedings: Final editorial corrections were arranged between Pavol Nejedlik and MP; printing is foreseen in the near future.

7. Final report:

The draft outline of the structure of the final report of WG 2 was discussed. MP has started preliminary work on the final report in mainly adding existing text to sections. Some changes of the structure of the draft have been proposed. The revised draft is given in Annex 3.

D 7: Convenors for the main sections of the final report have been appointed: PM for sections 2 and 3; AB for section 4; MP for sections 5 and 7; KR for section 6.

Momentum flux will be treated within WG 1 (contacts between MT and Mathias Rotach established).

There is agreement among WG members not to write a textbook, but to concentrate on own work of WG members and on results achieved within the action. At the next MCM in Sofia, WG chairmen and vice-chairmen will co-ordinate activities concerning the final report. With this respect:

D 8: WG 2 members provide convenors with a short statement on their intended contribution to the final report; convenors co-ordinate these contributions before next MCM.

8. Polish participation:

JB presented measurement equipment in and around Krakow (including remote sensing

devices like backscatter lidar and sodar) and modelling capabilities. 2 years continuous measurements are available. Financial support from the Polish National Board for Scientific Research is likely. The proposed scope of work within WG 2 is given in Annex 4.

D 9: WG 2 welcomes these activities and will give guidance in evaluations and additional measurements to cope with the aims of the WG. JB provides details on current investigations and informs WG 2 when funding of new project is successful.

9. Workplan:

Work of WG 2 will concentrate on issuing the Toulouse proceedings and on the final report as outlined in D 8.

10. Reports on ongoing/future symposia/projects related to WG 2 topics:

AK reports on ENV-e-CITY – project approved within 5th Framework Programme with the aim to provide city authorities needing efficient environmental assessments with available reliable environmental information (see also MC minutes).

D 10: AK provides relevant homepage addresses.

MP will take part in the conference week in Norfolk, VA, 20 – 24 May 2002 including the 4th AMS Symposium on the urban environment as well as in the conference “EnviroInfo Vienna 2002”, 25 – 27 Sept. 2002 (homepage: <http://enviroinfo.isep.at/>).

MP briefly reports on a research proposal to the Austrian Research Fund dealing with turbulence measurements at several heights on and at selected distances around a 160 m high meteorological tower in inhomogeneous terrain. Details will be given on approval of the proposal.

11. AOB: none.

Annex 1: Agenda

1. Welcome of participants
2. Adoption of agenda
3. Adoption of minutes of WG 2 meeting at Toulouse
4. Status of WG 2
5. Review of Toulouse decisions
6. Reports and discussions:
 - 6.1 Toulouse workshop
 - 6.2 FUMAPEX
 - 6.3 Study contracts
 - 6.4 UBL/Escompte and Basle experiments
 - 6.5 Activities in Bologna
 - 6.6 Publications
7. Final report
8. Polish participation
9. Workplan
10. Report on ongoing/future symposia/projects related to WG 2 topics
11. AOB

Annex 2: List and addresses of participants and WG 2 members

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Annex 3: Draft outline of structure of final report (revised)

Executive summary

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List of acronyms and symbols

1. Introduction
2. Review of theoretical concepts of the structure of the urban boundary layer (Convenor: PM)
3. Review and assessment of pre-processors, schemes and models for the surface energy budget (Convenor: PM)
 - 3.1 The surface energy budget
 - 3.1.1 Equations
 - 3.1.2 Urban modifications in the HPDM pre-processor
 - 3.1.3 Local-scale Urban Meteorological Pre-processing Scheme (LUMPS)
 - 3.1.4 The Town Energy Balance (TEB) scheme
 - 3.1.5 The Finite Volume Model (FVM)
 - 3.1.6 Urban parameterisations in SUBMESO
 - 3.2 Results of intercomparisons of different schemes against each other and against data
 - 3.3 Effect of strong heterogeneity on radiative fluxes
 - 3.4 Surface temperature
 - 3.5 Temperature roughness
 - 3.6 Input data requirements
4. Review and assessment of pre-processors, schemes and models for determining the mixing height (Convenor: AB)
 - 4.1 Methods based on radiosoundings
 - 4.2 Methods based on parametrisation schemes
 - 4.2.1 Methods based on NWP model outputs
 - 4.3 Effect of internal boundary layer development on the mixing height
 - 4.4 Results of intercomparisons of different schemes against each other and against data
 - 4.5 Input data requirements
5. Review and assessment of ongoing and recent urban experiments and their data availability (Convenor: MP)
 - 5.1 UBL/Escompte, Marseilles (PM)
 - 5.2 Basle experiment BUBBLE (Rotach, Vogt)
 - 5.3 Bologna (MD)
 - 5.4 Krakow (JB)
 - 5.5 Birmingham (DM)
 - 5.6 Helsinki (AK)
 - 5.7 Athens (MT)
 - 5.8 Graz (MP)
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6. Assessing the suitability of remote sensing tools to estimate canopy characteristics and surface fluxes (Convenor: KR)
 - 6.1 Satellite remote sensing
 - 6.2 Remote sensing from ground (JB)
7. Recommendations and needs (Convenor: MP)
 - 7.1 Improvement of existing pre-processors, schemes and models for the surface energy budget
 - 7.2 Improvement of existing pre-processors, schemes and models for the mixing height
 - 7.3 Outlook for development of new schemes
 - 7.4 Improvement of input data availability and quality for research and model validation
 - 7.5 Monitoring strategy for required parameters
 - 7.6 Need and planning of future field campaigns

List of references

Annex 4: Scope of work of Polish participation in WG 2

1. Verification of the radiation balance models with use of measured data.
2. Verification of the models used for estimation of mixing layer depth.
3. Implementation of the mixing layer parameterization model using the radon concentration data (measured values).
4. Application of the LES model for characterizing the turbulent flow in urban UBL (Reynolds Number, turbulent kinetic energy TKE, mixing layer depth, roughness coefficient, roughness velocity, radiation stream), in order to verify the parameterization formulae used in other widely used models (Gaussian plume model, Gaussian cloud model) in local meteorological environment.