

12th GMU ATD Conference Notes

OFCM Session 6: “Urban Test Beds: Productivity, Problems, and Progress

1st Panelist: Dr. Jeff Basara

Significant points:

- Consider OKC for your urban net studies

2nd Panelist: Mr. Andrew Stern

Significant point: VII can significantly contribute to urban and rural observation collection

3rd Panelist: Dr. Jeff McQueen

Significant points:

- Need to ask community what types of data are needed
- Need to ask community what spatial and temporal resolution is required.
- Need to balance the need for vertical profiles with surface obs

4th Panelist: Dr. Will Shaw

Significant points:

- Need to approach the building of UTB by asking ourselves: “What don’t we know?” That should drive UTB design.
- UTBs can be very expensive (\$Ms annually)
- Regular sensor monitoring and calibration required
- In order to understand the physics over several years, need regular tracer studies.

Questions/Comments and Panel Response Session:

Question/Comment 1: (Ted ????)

- We did not hear much about boundary conditions. Must get those correct in order to reproduce met situations correctly.
- Examples of boundary conditions: Building materials, pavement type, building locations

Response 1: (Dr. Bach)

- You are absolutely correct and there are many ongoing studies dealing with just that.

Response 1: (Dr. Shaw)

- Agree, we need to take into account the urban canopy and the deposition of dangerous compounds on the various surfaces in the urban environment.

Question/Comment 2: (Ruther Weiner, Sandia National Labs)

- How applicable is the OKC Micronet as a UTB? It might not be representative of cities like Albuquerque or other cities in the Pacific NW. Many cities have rivers running through them or very mountainous terrain that have significant influence on wx. Do we need other UTB cities?

Response 2: (Dr. Basara)

- The OKC Micronet is not a true UTB. It was constructed and designed taking advantage of opportunity and timing more than comprehensive UTB planning. We must set up several UTBs in cities with widely varying influences to weather in order to study all aspects of urban wx.

Question/Comment 3: (Fred ???)

- The PBL height is certainly important but don't you think we should be focusing on soil moisture's influence on the urban environment?

Response 3: (Dr. Basara)

- I have had the opportunity to do quite a bit of work with soil moisture. All 100 OK Mesonet sites have soil moisture sensors in them. Soil moisture is an important modulator in the coupled land-atmosphere boundary. Soil moisture is important and must be addressed.

Question/Comment 4: (Name Unknown)

- How do we test hypotheses about the use of the many different types of urban observation types in the various model setups? (Ensembles)

Response 4: (Dr. Bach)

- You just identified a major area of study that is related to UTB!

Question/Comment 5: (Name Unknown, From U.K.)

- City planners/operators stand to benefit from UTB from an energy consumption standpoint alone. We must work with them to help them understand the benefits.
- To help expand UTB to a more representative sample we should expand them globally!
- If sensing is done correct...modeling may not be required.
- For a city to be a good candidate for a UTB, we need physical models of cities to be built for flow studies.

Question/Comment 6: (Chuck Hocheide)

- The OKC surface observations at 9m will be very useful but to be truly useful a UTB must measure the entire volume over a city up to the PBL.
- It will take \$Ms to build a true UTB
- It is time to quit building studies about how to select a site for UTBs and it is time to build a test bed for test beds! Just pick a site and start building. You will learn from that first one and then improve from there. Take ARM for example. I bet you learned quite a bit and went through many changes in the beginning.

Response 6: (Dr. Shaw)

- ARM did change throughout its lifecycle especially early on however every UTB should start out with a solid set of scientific goals. You can scale back on the goals as you go but you need that foundation to get going and keep it going.