

**Minutes**  
**W-188 Technical Committee Annual Meeting**  
**January 3-5 2005 - Circus Circus Hotel & Casino, Las Vegas, NV**

The annual meeting of the Multi-State Soil Physics Research project W-1188 was called to order by Yan Jin (Chair) at 8:30 am on Monday, January 3, 2005. All project members and visitors participating are listed as follows:

Members

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|-----------------------|---|
| 1. Ahuja, L.          | USDA-ARS, Great Plains, CO                |
| 2. Blanco-Romero, A.  | USDA-ARS, Riverside, CA                   |
| 3. Bradford, S.       | USDA-ARS, Riverside, CA                   |
| 4. Butters, G.        | Colorado State University, Ft Collins, CO |
| 5. Dragila, M.        | Oregon State University                   |
| 6. Ewing, T.          | Iowa State University                     |
| 7. Gee, G.            | PNNL-Battelle, Richland, WA               |
| 8. Holcom, R.         | California State University, Fresno, CA   |
| 9. Hopmans, J.        | University of California, Davis, CA       |
| 10. Jin, Y.           | University of Delaware, Newark, DE        |
| 11. Jones, S.         | Utah State University, Logan, UT          |
| 12. Kluitenberg, G.   | Kansas State University, Manhattan, KS    |
| 13. Knighton, R.      | CSREES, USDA, Washington, DC              |
| 14. Lazorovitch       | University of Arizona, Tucson, AZ         |
| 15. Leising, J.       | Southern Nevada Water Authority, NV       |
| 16. Miller, W.        | University of Nevada, Reno, NV            |
| 17. Mitchell, A.      | University of Alaska FBKS                 |
| 18. Mesdows, D.       | Desert Research Institute                 |
| 19. Nielsen, D.       | University of California, Davis, CA       |
| 20. Ochsner, T.       | USDA, Minnesota, MN                       |
| 21. Or, D.            | University of Connecticut, Storrs, CT     |
| 22. Prunty, L.        | University of North Dakota                |
| 23. Schaap, M.        | USDA-ARS, Riverside, CA                   |
| 24. Schwartz, R.      | USDA-ARS, Bushland, TX                    |
| 25. Shouse, P.        | USDA-ARS, Riverside, CA                   |
| 26. Simunek, J.       | University of California, Riverside       |
| 27. Skaggs, T.        | USDA-ARS, Riverside, CA                   |
| 28. Stoffregen, H.    | University of California, Riverside       |
| 29. Tuller, M.        | University of Idaho, Moscow, ID           |
| 30. van Genuchten, R. | USDA-ARS, Riverside, CA                   |
| 31. Warrick, A.       | University of Arizona, Tucson, AZ         |
| 32. Wierenga, P.      | University of Arizona, Tucson, AZ         |
| 33. Wraith, J.        | Montana State University, Bozeman, MT     |
| 34. Wu, J.            | Washington State University, Pullman, WA  |
| 35. Young, M.         | Desert Research Institute, Las Vegas, NV  |
| 36. Yates, S.         | USDA-ARS, Riverside, CA                   |
| 37. Zhang, F.         | PNNL-Battelle, Richland, WA               |

Visitors

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| 38. Caldwell, T. | Desert Research Institute, Las Vegas, NV |
| 39. Hong, S.     | New Mexico Tech                          |

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| 40. Iwama, K.         | Japan                                    |
| 41. Kelleners, T.     | USDA-ARS, Riverside, CA                  |
| 42. Pagliarin, Chiara | Universita of Padova, Italy              |
| 43. Robinson, D.      | Utah State University, Logan, UT         |
| 44. Zhu, J.           | Desert Research Institute, Las Vegas, NV |
| 45. Zhuang, J.        | University of Tennessee                  |

At about 8:30, after Yan Jin reviewed the previous year's report, Allen Mitchell (University of Alaska) gave the administrative report. He distributed two handouts - resource listing and project outputs. He mentioned that the project report is due in 60 days from this day but he needs to receive the report by Feb. 15. Ray Knighton gave the CSREES representative's report.

Followed the administrative representative's report was the W1188 business meeting. The 2004 annual report was approved unanimously. Nominations were taken for next year's secretary. Scott Bradford was nominated and approved to be the W-1188 secretary for next year's meeting. The cost for this year's meeting was \$120 per person, the same as the previous year. After the voting, the location for next year's meeting was discussed and decided to be at The Desert Research Institute (DRI). Allen Mitchell was formally invited to next year's meeting.

The technical presentations began after the morning coffee break. Totally there were 35 presentations during the meeting, 12 on the first day, 17 on the second day, and 6 on the third day.

First, Todd Skaggs (USDA-ARS, Riverside, CA) talked about forage production with saline drainage water and Critical Path Analysis (CPA) for the calculation transport parameters for strong heterogeneous media. Maria Dragila (Oregon State University) presented her work on evaporation and salt redistribution in fractures. Convective venting of fractures is theoretically possible and has been observed. Jirka Simunek (University of California, Riverside) presented recent advances of the HYDRUS software. The new capabilities include geochemical modeling, nonequilibrium and preferential flow and transport, and a constructed wetlands module. The last presenter in the morning was Heiner Stoffregen (University of California, Riverside), who talked about water repellence in numerical models: the concept of critical water content and hysteresis.

Jan Hopmans (University of California, Davis, CA) started the afternoon session by presenting research on the vadose zone flow and transport spatial and time scale, which included parameter identification at regional scale, C sequestration – tillage effects, crop nitrate availability and leaching under micro-irrigation, a multi-functional heat pulse probe for simultaneous measurement of water heat and solute transport in VZ, comparison of air and water permeability between disturbed and undisturbed soils, and neutron radiography and computer tomography. Then Jon Wraith (Montana State University, Bozeman, MT) discussed his research on thermo-dielectric effect, soil microbial biophysics, and multiplexer-induced interference in TDR EC measurements. The last presenter before the afternoon break was Tyson Ochsner (USDA, Minnesota, MN). He compared methods to measure soil heat flux.

Six presentations were given after the break. Robert Schwartz (USDA-ARS, Bushland, TX) presented results on TDR calibration and coaxial cable studies and cable type and length study. Fred Zhang (PNNL-Battelle, Richland, WA) talked about the log-linear relationship between soil anisotropy coefficient and saturation. Glendon Gee (PNNL-Battelle, Richland, WA) reviewed the landfill monitoring methods. Three presentations were given by researchers from the University of Arizona. Art Warrick discusses infiltration into a layered soil with structured one-dimensional heterogeneity for a binary or a tertiary system. Naftali Lazorovitch talked about the influence of soil hydraulic properties on discharge uniformity of subsurface drip irrigation. Peter Wierenga closed the afternoon session by presenting the

researches on Cone penetrometer and air permeameter.

The technical presentations continued on Jan. 4, 2005. First Rien van Genuchten (USDA-ARS, Riverside, CA) talked about the Vadose Zone Journal followed by a discussion about improved hydraulic functions of structured soils. He was followed by Scott Yates (USDA-ARS, Riverside, CA), who presented VOC emission and methods to reduce the emission. Dani Or (University of Connecticut, Storrs, CT) summarized his research on soil hydromechanics, diffusion heterogeneity enables coexistence of microbes, gravity effect on gas diffusion, and interfacial polarization on soil dielectric measurements.

After a break, Greg Butters (Colorado State University, Ft Collins, CO) discussed the alpha question in soil water hysteresis: “How good is the wetting  $\alpha$  constant?” Joan Wu (Washington State University, Pullman, WA) discussed her research on evaluating WEPP model performance using PCFS data. Markus Tuller (University of Idaho, Moscow, ID) presented his research on hydraulic and swelling properties of clay soils, characterization of clay pore structures, and universal scaling law for soil water retention curves at low water contents. The last speaker in the morning was Scott Bradford (USDA-ARS, Riverside, CA), who presented a talk on transport of microbes in the absence and presence of manure suspensions.

After lunch, Gerald Kluitenberg (Kansas State University, Manhattan, KS) gave a business report on next year’s SSSA meeting on issues such as the use of new format and software, division awards, and a tour on Campbell Scientific. The first technical speaker in the afternoon was Jie Zhuang (University of Tennessee), who discussed colloid transport in porous media under transient flow conditions. Yan Jin (University of Delaware, Newark, DE) continued with colloid and virus interfacial interaction and transport in unsaturated media, a micromodel study of colloid interfacial retention, and the removal and inactivation of water-borne virus. Michael Young (Desert Research Institute, Las Vegas, NV) presented his findings in hydraulic properties of alluvial fans in the Mojave desert. Darren Mesdows (Desert Research Institute, Las Vegas, NV) presented hydraulic properties determination of desert pavements followed by a break.

After the break, Lyle Prunty (University of North Dakota) talked about temperature effects on infiltration. Scott Jones (Utah State University, Logan, UT) discussed flow and distribution of fluid phases through porous plant growth media in microgravity and standardizing characterization of EM sensors. David Robinson (Utah State University, Logan, UT) continued with agricultural hydrogeology using EMI survey techniques. Thijs Kellengers (USDA-ARS, Riverside, CA) presented the permittivity measurements in air, fluids, and soils using water content reflectrometers. Marcel Schaap (USDA-ARS, Riverside, CA) closed this day’s presentation by talking about soil physics in non-terrestrial environments – applying our knowledge to Martian and Lunar soils.

On Jan. 5, 2005, the technical presentations started by Laj Ahuja (USDA-ARS, Great Plains, CO), who presented the work by the Great plains systems research unit on root zone water quality model, GPFARM - a whole farm decision support system, IFARM DSS – a model for strategic and tactical planning and management, scaling and modeling space time variability of landscape processes to enhance management, and scaling of hydraulic properties and processes across soil textures. Wally Miller (University of Nevada, Reno, NV) discussed the characterization of mass and energy transport at different scales: importance of fire and litter. Peter Shouse (USDA-ARS, Riverside, CA) discussed how to modify a tension infiltrometer to measure low flow rates. Toby Ewing (Iowa State University) spoke on such issues as instrumentation needs, USA energy independence, in site monitoring of soil carbon, and critical connectivity in cubic lattices. Before the break, Ronald Holcomb (California State University, Fresno, CA) talked about the GIS based modeling of watersheds and groundwater banks in San Joaquin valley.

After the coffee break, Gerard Kluitenberg (Kansas State University, Manhattan, KS) went through his written report before he presented the research on the in site determination of specific yield using soil moisture and water level changes in the Riparian zone of the Arkansas River, Kansas. Alex Blanco-Romero (USDA-ARS, Riverside, CA) talked about multiphase flux through mining loam wastes. The meeting was concluded by Sung-ho Hong (New Mexico Tech), whose presentation was on the mapping of ET in arid zones from remotely sensed optical imagery using SEBA. The Meeting adjourned at 11:54.

Respectively Submitted,

Fred Zhang  
Substitute for Mart Oostrom, Secretary of W-1188

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