


UV-B Monitoring and Research Program


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**2007**  
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**Books**

**Gao, W.**, and **Z.Q. Gao**, 2008, Applications of Remote Sensing and Numerical Modeling, Science Press, Beijing (in preparation)

**Gao, W.**, and **J.R. Slusser**, 2007, UV Radiation in Global Change: Measurements, Modeling and Effects on Ecosystems, Springer-Verlag and Tsinghua Univ. Press, Heidelberg (in preparation)

**Scientific Proceedings:**

**Wang, X.L.**, **W. Gao**, **B. Olson**, **J.M. Davis**, and **J.R. Slusser**, 2007, Dependence of erythemally weighted UV radiation on geographical parameters in the United States. In Remote Sensing and Modeling of Ecosystems for Sustainability IV, 667903, Published by SPIE, Bellingham, WA, USA

**Gao, W.**, Q.F. Lu, Z. Gao, W. Wu, **J.R. Slusser**, 2007, Correlation analysis of snow depth retrieved from SSM/I with precipitation and temperature over China. In Remote Sensing and Modeling of Ecosystems for Sustainability IV, 667913, Published by SPIE, Bellingham, WA, USA

Zou, L.J., **W. Gao**, T. Wu, and X. Xu, 2007, A method to compute solar radiation at surface in any time interval based on NCEP reanalysis. In Remote Sensing and Modeling of Ecosystems for Sustainability IV, 66790R, Published by SPIE, Bellingham, WA, USA

Liu, C.S., **W. Gao**, and **Z. Gao**, 2007, A study of retrieve land surface temperature and evapotranspiration in response to LUCC based on remote sensing data. In Remote Sensing and Modeling of Ecosystems for Sustainability IV, 66791F, Published by SPIE, Bellingham, WA, USA

Lu, Q.F., **W. Gao**, **Z. Gao**, W. Wu, C. Dong, and Z. Yang, 2007, Construction of land data assimilation system based on EnKF technology and community land model. In Remote Sensing and Modeling of Ecosystems for Sustainability IV, 667912, Published by SPIE, Bellingham, WA, USA

**Gao, Z.** and **W. Gao**, 2007, The spatiotemporal change of ecological capital and the effects from the climate change and land use/cover change in the northern slope of the Tianshan mountains, China. In Remote Sensing and Modeling of Ecosystems for Sustainability IV, 66790J, Published by SPIE, Bellingham, WA, USA

**Refereed Journal Articles:**

**Z. Gao**, **W. Gao**, and M.S. Chen, 2007, The study of LST retrieval and its response to LUCC based on TM/ETM images. Journal of Applied Remote Sensing, (submitted)

Koti, S., K.R. Reddy, V.G.Kakani, D. Zhao and **W. Gao**, 2007, Effects of carbon dioxide, temperature and ultraviolet-B radiation and their interactions soybean (*Glycine max L.*) growth and development. *Environmental and Experimental Botany*(60 1-10).

Adler-Golden, S.M.,**J.R. Slusser**,2007, Comparison of Plotting Methods for Solar Radiometer Calibration.*American Meteorological Society*.

Koti, S., K. R. Reddy, G. W. Lawrence, V. R. Reddy, V. G. Kakani, D. Zhao and W. Gao, 2007, Effect of enhanced UV-B radiation on reniform nematode (*Rotylenchus reniformis* Linford and Oliveira) populations in cotton (*Gossypium hirsutum*

L.). *Plant Pathology Journal*, 6: 51-59.

Thines, N., L. Shipley, J. Bassman, J. Fellman, D. Mattison, J. Slusser, W. Gao, 2007, Effects of Enhanced UV-B Radiation on Plant Chemistry: Nutritional Consequences for a Specialist and Generalist Lagomorph, *Journal of Chemical Ecology*, Vol. 33, 5, 1025-1039.

Liu, C., W. Gao, Z. Gao, 2007, The study of responses of remote sensing based ET and LST to LUCC, *The Journal of Agricultural Engineering*, 8, 1-8.

## 2006

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### Books

Qu, J., **W. Gao**, M. Kafatos, R. Murphy and V. Salomonson, 2006, *Earth Science Satellite Remote Sensing*, Science and Instruments, Volume I, Co-published by Tsinghua University Press, Beijing and Springer-Verlag GmbH Berlin Heidelberg

Qu, J., **W. Gao**, M. Kafatos, R. Murphy and V. Salomonson, 2006, *Earth Science Satellite Remote Sensing*, Data, Computational Processing, and Tools, Volume II, Co-published by Tsinghua University Press, Beijing and Springer-Verlag GmbH Berlin Heidelberg

### Scientific Proceedings:

**Gao, W.**, and S. Ustin, 2006, Remote Sensing and Modeling of Ecosystems for Sustainability III, Proceedings of SPIE, Volume 6298, 680 pages

Tong, Q.X., X.W. Chen, A. Huang, and **W. Gao**, 2006, Remote Sensing and Space Technology for Multidisciplinary Research and Applications, Proceedings of SPIE, Volume 6199, 250 pages

Tong, Q.X., **W. Gao**, and H.D. Guo, 2006, Remote Sensing of the Environment: 15th National Symposium on Remote Sensing of China, Proceedings of SPIE, Volume 6200, 285 pages

### Refereed Journal Articles:

**Slusser, J.**, 2006, Evaluation of an Alternative Formulation of the Langley Plot for Solar Radiometer Data Analysis; S.M. Adler-Golden and P. Rochford, Spectral Sciences, Inc., *Journal of Atmospheric and Oceanic Technology*, In press.

Bais, A.F., D. Lubin, (Lead Authors), A. Arola, G. Bernhard, M. Blumthaler, N. Chubarova, C. Erlick, H.P. Gies, N. Krotkov, K. Lantz, B. Mayer, R.L. McKenzie, R.D. Piacentini, G. Seckmeyer, **J.R. Slusser**, C.S. Zerefos, Surface Ultraviolet Radiation: Past, Present, and Future, Chapter 7 in *Scientific Assessment of Ozone Depletion: 2006*, Global Ozone Research and Monitoring Project-Report No. 50, 7.1 pp., World Meteorological Organization, Geneva, Switzerland, 2007.

The book, *Scientific Assessment of Ozone Depletion: 2006*, can be found at <http://www.wmo.ch/web/arep/ozone.html>

Gao, Z.Q., and **W. Gao**, 2006, Climate changes and their impacts on vegetation ecological zones in China in recent 100 years. *J. of Geographical Sciences* (in press).

Koti, S., K. R. Reddy, G. W. Lawrence, V. R. Reddy, V. G. Kakani, D. Zhao and **W. Gao**. 2006. Effect of enhanced UV-B radiation on reniform nematode (*Rotylenchus reniformis* Linford and Oliveira) populations in cotton (*Gossypium hirsutum* L.). *Plant Pathology Journal* (In Press).

**Gao, W.**, Z.Q. Gao, X. Pan, **J.R. Slusser**, M. Cao, J. Zhang, Y. Hamid, and Y. Ma, 2006, The impact of precipitation and temperature on net primary productivity (NPP) in Xinjiang from 1981-2000.; In: *Earth Science Satellite Remote Sensing II*, J. Qu, **W. Gao**, M. Kafatos, R. Murphy and V. Salomonson (eds). Co-published by Tsinghua University Press, Beijing and Springer-Verlag GmbH Berlin Heidelberg, 292-305

Grant, R.H., K. Apostol, and **W. Gao**, 2006, Biologically effective UV-B exposures of an oak-hickory forest understory during leafout. *Agric. Forest Meteorol.* Vol. 132 (1-2), 28-43

McKenzie, R., G. Bodeker, G. Scott, **J. Slusser**, and K. Lantz, Geographical differences in erythemally-weighted UV measured at mid-latitude USDA sites. *Photochem. Photobiol. Sci.*, 2006, 5, 343-352.

### Non-Refereed

B. Johnsen, B. Kjeldstad, T. N. Aalerud, L. T. Nilsen, J. Schreder, M. Blumthaler, G. Bernhard, A. Bagheri, B. Bhattarai, C. Topaloglou, G. Zablocki, O. Meinander, B. A. Hoiskar, R. Haugen, **W. S. Durham**, **G. Janson**, A. R. Marrero, A. Dahlback, D. Bolsée, **J. R. Slusser**, J. Stamnes, C. Torres, A. R. Smedley, L.-E. Paulsson, K. Lakkala, A. R. Webb, J. B. Orbak, A. A. Grimenes, T. Ringstad, T. Lange, W. Josefsson, 2006, International intercomparison of multiband filter radiometers in

Oslo 2005, 2006, Proc. SPIE Vol. 6362, 63620W, Remote Sensing of Clouds and the Atmosphere XI; **James R. Slusser**, Klaus Schäfer, Adolfo Comerón; Eds.

- K. Lantz, P. Disterhoft, C. Wilson, **G. Janson, B. Durham, J. Slusser**, 2006, Long-term evaluation of the calibration of YES UVB-1 broadband radiometers of the Central UV Calibration Facility (1994-2005) and the suite of UV radiometers in the USDA UV Monitoring Network, Proc. SPIE Vol. 6362, 63620X, Remote Sensing of Clouds and the Atmosphere XI; **James R. Slusser**, Klaus Schäfer, Adolfo Comerón; Eds.
- Shaw, Glenn E. Shaw, 2006, Genesis of sun photometry, Proc. SPIE Vol. 6362, 636201, Remote Sensing of Clouds and the Atmosphere XI; **James R. Slusser**, Klaus Schäfer, Adolfo Comerón; Eds.
- Thomas E. Taylor, **James Slusser**, Andrés Hernández, Michel Grutter, Barry Lefer, 2006, Ultraviolet aerosol optical properties retrieved during the 2006 MIRAGE-Mex experiment: initial results. Proc. SPIE Vol. 6362, 636203, Remote Sensing of Clouds and the Atmosphere XI; **James R. Slusser**, Klaus Schäfer, Adolfo Comerón; Eds.

#### Proceedings/Transactions:

- **Xinli Wang**, Wei Gao, James Slusser, John Davis, Becky Olson, Bill Durham, Roger Tree, George Janson, Scott Janssen, and Rita Deike, Gwen Scott, 2006. USDA UV-B monitoring system: An application of centralized architecture, In: Proceedings of the 2006 International Conference on Parallel & Distributed Processing Techniques and Applications & Conference on Real-Time Computing Systems & Applications, PDPTA 2006, edited by Hamid R. Arabnia, CSREA Press, pp. 279-285, 2006.
- **Xinli Wang**, Jean Mayo, Wei Gao, and James Slusser, 2006. An efficient implementation of vector clocks in dynamic systems, In: Proceedings of the 2006 International Conference on Parallel & Distributed Processing Techniques and Applications & Conference on Real-Time Computing Systems & Applications, PDPTA 2006, edited by Hamid R. Arabnia, CSREA Press, pp. 593-599, 2006.
- Chuanli Du, Wanli Wu, Ziaodong Liu, **Gao, W.**, 2006, Simulation of Soil Moisture and Its Variability in East Asia. In *Remote Sensing and Modeling of Ecosystems for Sustainability III*, 62982F-1—62982F-7, Published by SPIE, Bellingham, WA, USA
- **Gao, W.**, Q.F. Lu, Z.Q. Gao, W.L. Wu, B.Y., Du and **J. Slusser**, 2006, Analysis of temporal variations of albedo from MODIS. In *Remote Sensing and Modeling of Ecosystems for Sustainability III*, 62981G-1—62981G-7, Published by SPIE, Bellingham, WA, USA
- Li, X.L., X. Yang, and **W. Gao**, 2006, An integrative hydrological, ecological and economical (HEE) modeling system for assessing water resources and ecosystem production: calibration and validation in the upper and middle parts of the Yellow River Basin, China. In *Remote Sensing and Modeling of Ecosystems for Sustainability III*, 629821-1—629821-12, Published by SPIE, Bellingham, WA, USA
- Liu, S.Y., W. Gao, X-Z. Liang, H. Zhang, and **J. Slusser**, 2006, Sensitivity of CWRf simulations of the China 1998 summer flood to cumulus parameterizations. In *Remote Sensing and Modeling of Ecosystems for Sustainability III*, 62981I-1—62981I-7, Published by SPIE, Bellingham, WA, USA
- Liu, S.Y., **W. Gao**, X-Z. Liang, H. Zhang, and **J. Slusser**, 2006, CWRf simulations of the China 1991 and 1998 summer floods.; In *Remote Sensing and Modeling of Ecosystems for Sustainability III*, 62981J-1—62981J-7, Published by SPIE, Bellingham, WA, USA
- Liu, W.G., **W. Gao**, Z.Q. Gao, X.L. Wang, and **J. Slusser**, 2006, An analysis between the biomass of ecosystem of oasis and the vegetation index. In *Remote Sensing and Modeling of Ecosystems for Sustainability III*, 62982M-1—62982M-7, Published by SPIE, Bellingham, WA, USA
- Lu, Q.F., **W. Gao**, Z.Q. Gao, W.L. Wu, B. Du, and **J. Slusser**, 2006, Numerical simulation of CLM over Tibet Plateau of China. In *Remote Sensing and Modeling of Ecosystems for Sustainability III*, 62981H-1—62981H-7, Published by SPIE, Bellingham, WA, USA
- Sun, H., Z. Rong, C. Liu, J.Liu, Y. Zhang, P. Zhang, X. Wang, and **W. Gao**, 2006, Infrared spectrum characteristics of the forest fire from field experiments. In *Remote Sensing and Modeling of Ecosystems for Sustainability III*, 629806-1—629806-8, Published by SPIE, Bellingham, WA, USA
- Wang, X.L., **W. Gao**, **J. Slusser**, K.R. Reddy, Z.Q. Gao, and M. Xu, 2006, Preliminary results of a UV-B effect incorporated GOSSYM Model. In *Remote Sensing and Modeling of Ecosystems for Sustainability III*, 62980O-1—62980O-10, Published by SPIE, Bellingham, WA, USA
- Wang, X.L., **W. Gao**, **J. Slusser**, J. Davis, G. Scott, B. Olson, N. Krotkov, M. Xu, and X-Z. liang, 2006, Spectral distribution of UV-B irradiance derived by synthetic model compared with simulation results of TUV and ground measurements. In *Remote Sensing and Modeling of Ecosystems for Sustainability III*, 62980L-1—62980L-9, Published by

SPIE, Bellingham, WA, USA

Xu, M., X-Z. Liang, **W. Gao**, **J. Slusser**, and K. Kunkel, 2006, Validation of the TUV module in CWRF using USDA-UVB network observations. In *Remote Sensing and Modeling of Ecosystems for Sustainability III*, 62980N-1—62980N-8, Published by SPIE, Bellingham, WA, USA

Zou, L.J., **W. Gao**, T.W. Wu, Z.Q. Gao, B. Du, and **J. Slusser**, 2006, A 3DVAR land data assimilation scheme: Part 1, mathematical design. In *Remote Sensing and Modeling of Ecosystems for Sustainability III*, 62982E-1—62982E-8, Published by SPIE, Bellingham, WA, USA

Zou, L.J., **W. Gao**, T.W. Wu, Z.Q. Gao, B. Du, and **J. Slusser**, 2006, A 3DVAR land data assimilation scheme: Part 2, test with ECMWF ERA-40. In *Remote Sensing and Modeling of Ecosystems for Sustainability III*, 62981M-1—62981M-7, Published by SPIE, Bellingham, WA, USA

Gao, Z.Q., **W. Gao**, and **J. Slusser**, 2006, The LUCR Responses to Climatic changes in China in the last 20 years. In *Remote Sensing and Modeling of Ecosystems for Sustainability III*, 629818-1—629818-6, Published by SPIE, Bellingham, WA, USA

## 2005

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### Special Issues with Refereed Journals:

**Slusser, J.R.**, **W. Gao**, and J. Herman, 2005, Advances in UV Ground- and Space-based Measurements and Modeling, *Journal of Optical Engineering*, Volume 44 Number 4

### Scientific Proceedings:

Bernhard, G., **J.R. Slusser**, J.R. Herman, and **W. Gao**, 2005, Ultraviolet Ground- and Space-based Measurements, Models, and Effects V, Proceedings of SPIE, Volume 5886, 318 pages

**Gao, W.**, and D. Shaw, 2005, Remote Sensing and Modeling of Ecosystems for Sustainability II, Proceedings of SPIE, Volume 5884, 552 pages

Schäfer, K., A.T. Comeron, **J.R. Slusser**, R.H. Picard, Michel R. Carleer, Nicolaos Sifakis, Chairs/Editors, 2005, Remote Sensing of Clouds and the Atmosphere X, Proceedings of SPIE, Volume 5979

### Refereed Journal Articles

Goering, C.D., T. S. L'Ecuyer, G. L. Stephens, **J. R. Slusser**, G. Scott, J. Davis, J. C. Barnard, S. Madronich, 2005. Simultaneous retrievals of column ozone and aerosol optical properties from direct and diffuse solar irradiance measurements, *J. Geophys. Res.*, 110, No. D5, D05204, 10.1029/2004JD005330.

Gong L., X.L. Pan, W. Q.D. Shi, Z.M. Wang and **W. Gao**, 2005, Land use pattern and influential factors in the upper reaches of Tarim River. *Resources Sci.*, Vol.27 (4), 71-75

Grant, R.H., **J. Slusser**. 2005. Estimation of ultraviolet-A irradiance from measurements of 368-nm spectral irradiance. *J. Atmos. and Oceanic Tech.*, Vol. 22 (12), 1853-1863.

Hand, J.L., S.M. Kreidenweis, **J. Slusser**, and G. Scott. Comparisons of aerosol optical properties derived from Sun photometry to estimates inferred from surface measurements in big Bend National Park, Texas. *Atmos. Envir.* 38: 6813-6821.

Kakani, V. G., K. R. Reddy, S. Koti, T. P. Wallace, P.V.V. Prasad, V.R. Reddy and D. Zhao. 2005. Comparison of pollen and physiological characters of cotton cultivars as screening tools for high temperature tolerance. *Annals of Botany* 96: 59-67.

Kimlin, M.G., **J. R. Slusser**, K. A., Schallhorn,, K. Lantz and R. S. Meltzer, 2005. Comparison of ultraviolet data from co-located instruments from the US EPA Brewer Spectrophotometer Network and the USDA UVB Monitoring and Research Program, In press, *Optical Engineering* 44(4) 041009.

Koti, S., K. R. Reddy, V. R. Reddy, V. G. Kakani and Duli Zhao. 2005. Interactive effects of carbon dioxide, temperature and ultraviolet-B radiation on soybean (*Glycine max* L.) flower and pollen morphology, pollen production, germination and tube lengths. *Journal Experimental Botany* 56: 725-736.

Krotkov, N., P. K. Bhartia, J.R. Herman, **J. R. Slusser**, G. Labow, G. Scott, G. Janson, T. F. Eck, and B. Holben, 2005. Aerosol UV absorption experiment (2002-04): 1. UV-MFRSR calibration and intercomparison with CIMEL sun photometers, *Optical Engineering* 44(4) 041004.

Krotkov, N., P. K. Bhartia, J.R. Herman, **J. R. Slusser**, G. Labow, G. Scott, G. Janson, T. F. Eck, and B. Holben, 2005.

- Aerosol UV absorption experiment (2002-04): 2. Absorption optical thickness, refractive index and single scattering albedo, *Optical Engineering* 44(4) 041004.
- Liang, X-Z, Min Xu, W. Gao, K. Kunkel, **J. R. Slusser**, Y. Dai, Q. Min, P. R. Houser, M. Rodell, C. Barker Schaaf, and F. Gao, 2005. Development of Land Surface Albedo Parameterization Based on MODIS data, *J. Geophys. Res.* Vol. 110 D11107.
  - Liu, W.G., X.L. Pan, **W. Gao**, Q.D. Shi, G.H. Lu, and K. Guo, 2005, Estimation of ecosystem biomass in Fukang Oasis of Xinjiang using remote sensing. *Resources Sci.*, Vol.27 (5), 134-140
  - McKenzie, R., G. Bodeker, G. Scott, **J. Slusser**, and K. Lantz. 2005. Geographical differences in erythemally-weighted UV measured at mid-latitude USDA sites. *Photochem. and Photobiol. Sciences*, 5, 343-352.
  - Rochford, P.A., P.K. Acharya, S.M. Adler-Golden, A. Berk, L.S. Bernstein, M.W. Matthew, S.C. Richtsmeier, S. Gulick, Jr., and **J. Slusser**. 2005. Validation and refinement of hyperspectral/multispectral atmospheric compensation using shadowband radiometers. *IEEE Trans. Geosci. Remote Sensing*, Vol. 43, 2898-2907.
  - Wetzel, M. And **J. R. Slusser**, 2005. Mesoscale distributions of UV spectral irradiance, actinic flux and photolysis rates derived from multispectral satellite data and radiative transfer models. *Optical Engineering* 44(4) 041006.
  - Zhao, D., K.R. Reddy, V.G. Kakani, S. Koti and **W. Gao**, 2005, Physiological causes of cotton fruit abscission under conditions of high temperature and enhanced ultraviolet-B radiation. *Physiologia Plantarum*, Vol. 124, 189-199

### Proceedings/Articles

- Apostol, K.G., R.H. Grant, Bawhey, C.I. and **W. Gao**. 2005. Short-term impacts of elevated UV-B radiation on soybeans. In *Ultraviolet Ground- and Space-based Measurements, Models, and Effects V*, 58860I-1—58860I-10, Published by SPIE, Bellingham, WA, USA.
- Beneski, E., J.H. Bassman, **J.R. Slusser** and **W. Gao**. 2005. Application of CCD array digital fiber optic spectrometers in determination of within-tree and within- canopy irradiances of UV-B radiation. In *Ultraviolet Ground- and Space-based Measurements, Models, and Effects V*, 58860X-1—58860X-7, Published by SPIE, Bellingham, WA, USA.
- Britz, S., C. Caldwell, R. Mirecki, **J.R. Slusser** and **W. Gao**. 2005. Effect of supplemental ultraviolet radiation on the concentration of phytonutrients in green and red leaf lettuce (*Lactuca sativa*) cultivars. In *Ultraviolet Ground- and Space-based Measurements, Models, and Effects V*, 58860W-1—58860W-8, Published by SPIE, Bellingham, WA, USA.
- Davis, J. and J.R. **Slusser**. 2005. New USDA UV-B synthetic spectra algorithm. *Ultraviolet Ground- and Space-based Measurements, Models, and Effects V, Proc. SPIE 5886*, 58860B-1 – 58860B-7. Published by SPIE, Bellingham, WA, USA.
- Davis, J.M., **J. Slusser**. 2005. Impact of clouds with limited horizontal extent on UV radiation measurements. *Ultraviolet Ground- and Space-based Measurements, Models, and Effects IV*, 36-42, Published by SPIE, Bellingham, WA, USA.
- **Gao, W.**, Z. Gao, H.I. Choi, M. Xu and **J.R. Slusser**. 2005. Construction of surface boundary conditions for regional climate modeling in China by using the remote sensing data. In *Remote Sensing and Modeling of Ecosystems for Sustainability II*, 58840I3-1—58840I3-5, Published by SPIE, Bellingham, WA, USA.
- Gao, W., Y. Zheng, **J. Slusser**, and R. Grant. 2005. Effect of enhanced UV-B radiation combined with other climate stressors on winter wheat. *Ultraviolet Ground- and Space-based Measurements, Models, and Effects IV*, 111-116, Published by SPIE, Bellingham, WA, USA.
- Gao, Z., **W. Gao** and **J.R. Slusser**. 2005. The response of leaf area index to climate change during 1981-2000 in China. In *Remote Sensing and Modeling of Ecosystems for Sustainability II*, 58840S-1—58840S-4, Published by SPIE, Bellingham, WA, USA.
- Grant, R.H., **J. Slusser**. 2005. The measurement and modeling of broadband UV-A irradiance. *Ultraviolet Ground- and Space-based Measurements, Models, and Effects V*, 58860C-1—58860C-10, Published by SPIE, Bellingham, WA, USA.
- Guo, X., **W. Gao** and J. Wilmshurst. 2005. Measuring grassland structure for recovery of grassland species at risk. In *Remote Sensing and Modeling of Ecosystems for Sustainability II*, 58840B-1—58840B-12, Published by SPIE, Bellingham, WA, USA
- Hicke, J.A., **J. Slusser**, and K. Lantz. 2005. Long-term variability in surface UV-B radiation across the United States. *Ultraviolet Ground- and Space-based Measurements, Models, and Effects IV*, 7-16, Published by SPIE, Bellingham, WA, USA.
- Janson, G.T., **J. Slusser**, G. Scott, P. Disterhoft, and K. Lantz. 2005. Long-term stability of UV multifilter rotating shadowband radiometers, part 2: lamp calibrations versus the Langley method. *Ultraviolet Ground- and Space-based Measurements, Models, and Effects IV*, 43-54, Published by SPIE, Bellingham, WA, USA.
- Krotkov, N.A., P.K. Bhartia, J.R. Herman, and **J. Slusser**. 2005. Measuring aerosol UV absorption optical thickness by



- combining use of shadowband and almucantar techniques. *Ultraviolet Ground- and Space-based Measurements, Models, and Effects IV*, 17-27, Published by SPIE, Bellingham, WA, USA.
- Lantz, K., P. Disterhoft, C. Wilson, G.T. Janson, **J. Slusser**, S. Bloms, and J. Michalsky. 2005. Out-of-band rejection studies of the UV multi-filter rotating shadow-band radiometers. *Remote Sensing of Clouds and the Atmosphere X*, 59791N-1–59791N-9, Published by SPIE, Bellingham, WA, USA.
  - Liu, S., **W. Gao**, Z. Gao, H. Zhang and B. Du. 2005. Numerical simulation of summer 2003 climate in China region using RegCM3. In *Remote Sensing and Modeling of Ecosystems for Sustainability II*, 58840V-1—58840V-18, Published by SPIE, Bellingham, WA, USA.
  - Lu, Q., **W. Gao**, Z. Gao, W. Wu, X. Pan, D. Wang, B. Du and **J.R. Slusser**. 2005. Simulations of rainfall process in Southeastern China with WRF and MM5. In *Remote Sensing and Modeling of Ecosystems for Sustainability II*, 58840T-1—58840T-9, Published by SPIE, Bellingham, WA, USA.
  - Lu, Q., **W. Gao**, Z. Gao, W. Wu, X. Pan, B. Du and **J.R. Slusser**. 2005. An analysis of seasonal and interannual variability of LAI during 1982-2004. In *Remote Sensing and Modeling of Ecosystems for Sustainability II*, 58840U-1—58840U-12, Published by SPIE, Bellingham, WA, USA.
  - Reddy, K.R., S. Koti, V.G. Kakani, D. Zhao and **W. Gao**. 2005. Genotypic variation of soybean and cotton crops in their response to UV-B radiation for vegetative growth and physiology. In *Ultraviolet Ground- and Space-based Measurements, Models, and Effects V*, 58860K-1—58860K-13, Published by SPIE, Bellingham, WA, USA.
  - **Slusser, J.**, T. Taylor, and N.A. Krotkov. 2005. UV aerosol optical properties at three US sites. *Remote Sensing of Clouds and the Atmosphere X*, 59791O-1 – 59791O-16, Published by SPIE, Bellingham, WA, USA.
  - Sullivan, J.H., X. Chenping, **W. Gao** and **J.R. Slusser**. 2005. Development of UV-B screening compounds in response to variation in ambient levels of UV-B radiation. *Ultraviolet Ground- and Space-based Measurements, Models, and Effects V, Proc. SPIE 5886 58860L-1 – 58860L-11*.
  - Sullivan, J.H., C. Xu, **W. Gao** and **J.R. Slusser**. 2005. Development of UV-B screening compounds in response to variation in ambient levels of UV-B radiation. In *Ultraviolet Ground- and Space-based Measurements, Models, and Effects V*, 58860L-1—58860L-11, Published by SPIE, Bellingham, WA, USA.
  - Taylor, T.E., T. L'Ecuyer, **J.R. Slusser**, G. Stephens, N. Krotkov, J. Davis and C. Goering. 2005. Characterization and error analysis of an operational retrieval algorithm for estimating column ozone and aerosol properties from ground based ultra-violet irradiance measurements. *Ultraviolet Ground- and Space-based Measurements, Models, and Effects V, Proc. SPIE 5886 58860Y-1 – 58860Y-12*.
  - Taylor, T.E., T. L'Ecuyer, **J. Slusser**, G. Stephens, N. Krotkov, J. Davis, and C. Goering. 2005. Characterization and error analysis of an operational retrieval algorithm for estimating column ozone and aerosol properties from ground based ultra-violet irradiance measurements. *Ultraviolet Ground- and Space-based Measurements, Models, and Effects V*, 58860Y-1—58860Y-9, Published by SPIE, Bellingham, WA, USA.
  - Thines, N.J., J.H. Bassman, L.A. Shipley, and **J. Slusser**. 2005. Effects of enhanced UV-B radiation on secondary metabolites in forage plants and potential consequences for multiple trophic responses involving mammalian herbivores. *Ultraviolet Ground- and Space-based Measurements, Models, and Effects IV*, 117-130, Published by SPIE, Bellingham, WA, USA.
  - Tree, R., **J. Slusser**. 2005. Comparison of column ozone retrievals obtained by UV multifilter rotating shadow-band radiometer with those from Brewer and Dobson spectrophotometers. *Ultraviolet Ground- and Space-based Measurements, Models, and Effects IV*, 81-89, Published by SPIE, Bellingham, WA, USA.
  - Tree, R. and **J.R. Slusser**. 2005. Measurement of spectral signatures of invasive plant species with a low cost spectrometer. *Ultraviolet Ground- and Space-based Measurements, Models, and Effects V, Proc. SPIE 5886 58860U-1 – 58860U-9*.
  - Tree, R., **J. Slusser**. 2005. Measurement of spectral signatures of invasive plant species with a low cost spectrometer. *Ultraviolet Ground- and Space-based Measurements, Models, and Effects V*, 58860U-1—58860U-9, Published by SPIE, Bellingham, WA, USA.
  - Xu, M., X. Liang, **W. Gao**, K.R. Reddy, **J.R. Slusser** and K. Kunkel. 2005. Preliminary results of the coupled CWRP-GOSSYM system. In *Remote Sensing and Modeling of Ecosystems for Sustainability II*, 588409-1--588409-7, Published by SPIE, Bellingham, WA, USA.
  - Zhang, J., X. Pan, Z. Gao, Q. Shi, G. Lv and **W. Gao**. 2005. Modeling the dynamics of urban sprawl and spatial landscape pattern in Beijing metropolitan area. In *Remote Sensing and Modeling of Ecosystems for Sustainability II*, 58840Y-1—58840Y-13, Published by SPIE, Bellingham, WA, USA.
  - Zhang, J., X. Pan, Z. Gao, Q. Shi, G. Lv and **W. Gao**. 2005. Impact of urban sprawl on carbon uptake in Beijing metropolitan area. In *Remote Sensing and Modeling of Ecosystems for Sustainability II*, 8840Z-1—58840Z-10, Published

by SPIE, Bellingham, WA, USA.

Zheng, Y., **J. Slusser**, R. Grant, and C. Wang. 2005. Responses of different crop growth and yield to enhanced UV-B radiation under field conditions. *Ultraviolet Ground- and Space-based Measurements, Models, and Effects IV*, 102-110, Published by SPIE, Bel

Liang, X., M. Xu, W. Gao, K. Kunkel, J.R. Slusser, Y. Dai, Q. Min. **2005**. New land surface albedo parameterization based on MODIS data: Preliminary result. *Proc. SPIE*.

## 2004

[↑ Back to the top](#)

### Refereed

Barnard, J.C., E.G. Chapman, J.D. Fast, J.R. Schmelzer, **J.R. Slusser** and R.E. Shetter. 2004. An evaluation of the FAST-J-photolysis algorithm for predicting nitrogen dioxide photosynthesis rates under clear and cloudy sky conditions. *Atmos. Environ.*: 38, 3393-3403.

Bassman, J.H. 2004. Ecosystem consequences of enhanced solar ultraviolet radiation: secondary plant metabolites as mediators of multiple trophic interactions in terrestrial plant communities. *J. of Photochemistry and Photobiology*. 79 (5): 382-398

Drizek, D. T., and **W. Gao**. 2004. Ultraviolet Radiation and Terrestrial Ecosystems. *J. of Photochemistry and Photobiology*. 79 (5): 379-381

Flint, S.D., P.S. Searles and M.M. Caldwell. 2004. Field testing of biological spectral weighting functions for induction of UV-absorbing compounds in higher plants. *J. of Photochemistry and Photobiology*. 79 (5): 399-403

**Gao, W**, Y.F. Zheng, **J.R. Slusser**, G.M. Heisler, R. H. Grant, J.Q. Xu and D.L. He. **2004**. Effects of supplementary ultraviolet-B irradiance on maize yield and qualities: a field experiment. *J. of Photochemistry and Photobiology*. 80: 127-131

Grant, R., **J.R. Slusser**. **2004**. Estimation of Photosynthetic Photon Flux Density from 368-nm Spectral Irradiance. *American Meteorological Society*. 21: 481 - 487

Hand, J.L., S.M. Kreidenweis, **J. Slusser**, and G. Scott. **2004**. Comparisons of aerosol optical properties derived from Sun photometry to estimates inferred from surface measurements in Big Bend National Park, Texas. *Atmospheric Environment* 38: 6813-6821

Heisler, G.M., R.H. Grant, **W. Gao**, and **J.R. Slusser**. **2004**. Solar ultraviolet-B radiation in urban environments: the case of Baltimore, Maryland. *J. of Photochemistry and Photobiology*. 80: 422-428

Kakani, V. G., K.R. Reddy, D. Zhao and **W. Gao**. 2004. Senescence and hyperspectral reflectance of cotton leaves exposed to ultraviolet-B radiation and carbon dioxide. *Physologia Plantarum*. 121: 250-257

Koti, S., K.R. Reddy, V.G. Kakani, D. Zhao and V.R. Reddy. 2004. Flower and pollen morphology and in vitro pollen germination of soybean (*Glycine max L.*) genotypes as affected by ultraviolet-B radiation. *Annals of Botany*. 94: 1-10

Donald T. Krizek, **Gao W**. **2004**. Ultraviolet Radiation and Terrestrial Ecosystems. *Photochemistry and Photobiology*. 79(5): 379-381

Milchunas, D.G., J.Y. King, A.R. Mosier, J.C. Moore, J.A. Morgan, M.H. Quirk and **J.R. Slusser**. **2004**. UV radiation effects on plant growth and forage quality in a shortgrass steppe ecosystem. *J. of Photochemistry and Photobiology*. 79 (5): 404-410

Qi, Y.D., **W. Gao**, G.H. Heisler, and S.J. Bai. 2004. Dynamics and temporal changes of leaf UV-B absorbing capacity in thirty-five southern broadleaf tree species in the United States. *J. of Photochemistry and Photobiology*. (in press)

Reddy, K. R., V. G. Kakani, D. Zhao, S. Koti and **W. Gao**. **2004**. Interactive Effects of Ultraviolet-B Radiation and Temperature on Cotton Physiology, Growth, Development and Hyperspectral Reflectance. *J. of Photochemistry and Photobiology*. 79 (5): 416-427

Sullivan, J.H. 2004. The response of North American tree species to UV-B radiation. *Environmental Pollution*.(in press)

Zhao, D., K.R. Reddy, V.G. Kakani, A.R. Mohammed, J.J. Read and **W. Gao**. 2004. Photosynthetic characteristics of cotton (*Gossypium hirsutum L.*) plants as affected by elevated CO<sub>2</sub> and UV-B radiation. *J. of Plant Physiology*. 161: 581-590

### Non-Refereed

Beauharnois, M., P. Kiedron, L. Harrison. 2004. The USDA high-resolution UV radiation network: maintenance, calibration, and data tools. *Proc. SPIE*, 5545, 90-101

- Davis, J.M. and **J.R. Slusser**. 2004. Impact of clouds with limited horizontal extent on UV radiation measurements. *Proc. SPIE*, 5545, 36-42
- Flint, S.D., R.J. Ryel, M.M. Caldwell. 2004. Serious complications in experiments in which UV doses are affected by using different lamp heights. *Proc. SPIE*, 5545, 56-62
- Gao, W., Z. Gao, X. Pan, **J. Slusser**, J. Qi, X. Zhan, Y. Ma. 2004. Impacts of seasonal climate on net primary productivity (NPP) in Xinjiang, 1981-2000. In *Remote Sensing and Modeling of Ecosystems for Sustainability*, 543-552, Published by *SPIE*, Bellingham, WA, USA
- Gao, W.**, Y. Zheng, **J. Slusser**, and R. H. Grant, 2004. Effect of enhanced UV-B radiation combined with other climate stressors on winter wheat, *Proc. SPIE*, 5545, 111-116.
- Gao, Z., J. Liu, M. Cao, Q. Wang, **W. Gao**, **J. Slusser**, and X. Pan, 2004. Analysis on impact of climate changes over the past twenty years on NPP in China, *Proc. SPIE*, 5544, 553-560.
- Grant, R. H., G. M. Heisler, and **W. Gao**, 2004. Impact of cloud cover on erythemal UV-B exposure under vegetation canopies, *Proc. SPIE*, 5545, 71-80.
- Guo, X., **W. Gao**, P. Richard, Y. Lu, Y. Zheng, and E. Pietroniro. 2004. Canadian prairie drought assessment through MODIS vegetation indices. In *Remote Sensing and Modeling of Ecosystems for Sustainability*, 149-158, Published by *SPIE*, Bellingham, WA, USA
- He, Q, H. Li, X. Li, Q. Yang, X. Pan and **W. Gao**, 2004. The preliminary analysis on boundary climate effects between oasis and desert in the north margin of the Taklimakan desert, *Proc. SPIE*, 5544, 448-454.
- Hicke, J.A., **J.R. Slusser**, K. Lantz. 2004. Long-term variability in surface UV-B radiation across the United States. *Proc. SPIE*, 5545, 7-16.
- Hu, L., R. Wei, X. Wang and **W. Gao**, 2004. Study on an early warning system and the hierarchical criterions of the forecast intensity of dust storms in the Tarim Basin, Xinjiang, *Proc. SPIE*, 5544, 466-474.
- Janson, G.T., **J.R. Slusser**, G. Scott, P. Disterhoft, K. Lantz. 2004. Long-term stability of UV multifilter rotating shadowband radiometers: part2. Lamp calibrations versus the Langley method. *Proc. SPIE*, 5545, 43-48
- Krotkov, N.A. P.K. Bhartia, J.R. Herman, **J.R. Slusser**, G. Scott, G. Labow, A.P. Vasilkov, T. Eck, O. Dubovik, and B. Holben. 2004. Measuring aerosol UV absorption optical thickness by combining use of shadowband and almucantar techniques. *Proc. SPIE*, 5545, 17-27.
- Liang, X.-Z, M. Xu, **W. Gao**, K. Kunkel, **J. Slusser**, Y. Dai, Q. Min. 2004. New land surface albedo parameterization based on MODIS data: preliminary result. In *Remote Sensing and Modeling of Ecosystems for Sustainability*, 55-60, Published by *SPIE*, Bellingham, WA, USA
- Lu, Q., **W. Gao**, X. Pan, Z. Gao, and J. Liu. 2004. Preliminary numerical study on climate response to vegetation change in sensitive climatic area in arid region of China. In *Remote Sensing and Modeling of Ecosystems for Sustainability*, 207-214, Published by *SPIE*, Bellingham, WA, USA
- Thines, N.J., J.H. Bassman, L.A. Shipley and **J.R. Slusser**. 2004. Effects of enhanced UV-B radiation on secondary metabolites in forage plants and potential consequences for multiple trophic responses involving mammalian herbivores. *Proc. SPIE*, 5545, 117-130
- Tree, R., and **J.R. Slusser**. 2004. Comparison of column ozone retrievals obtained by UV multifilter rotating shadowband radiometer with those from Brewer and Dobson spectrophotometers. *Proc. SPIE*, 5545, 81-89
- Yang, Q, J. Lei, W. Wei, J. Zhao and **W. Gao**, 2004. Study on the effects of artificial oases to the climate change trend, *Proc. SPIE*, 5544, 455-465.
- Yuan, Y., L. Hu, Q. He, X. Pan and **W. Gao**, 2004. Preliminary study on the characteristics of sand-surface reflective spectra in the hinterland of the Taklimakan desert in winter, *Proc. SPIE*, 5544, 481-488.
- Zheng, Y., **W. Gao**, **J. Slusser**, R. H. Grant and C.H. Wang, 2004. Response of different crop growth and yield to enhanced UV-B radiation under field conditions, *Proc. SPIE*, 5545, 102-110.

### 2003

[↑ Back to the top](#)

### Refereed

- Bawhey, C.I., R.H. Grant and **W. Gao**. 2003. Digital measurement of heliotropic leaf response in soybean cultivars and leaf exposure to solar UVB radiation. *J. Agric. Forest Meteorol.* 120: 161-176
- Gao, W.** 2003. The applications of RS, GIS, and modeling technology in ecological environment of arid areas. In: *On the Frontiers of Science*, G.K. Liu (eds). *Tsinghua Univ. Press and Interpress*, 254-276.



- **Gao, W.**, R.H. Grant, G.M. Heisler and **J.R. Slusser**. 2003. UV-B radiation in a row-crop canopy: An extended 1-D model. *J. Agric. Forest Meteorol.* 120:
- Gao, W. Y.F. Zheng, **J.R. Slusser** and G.M. Heisler. 2003. Impact of enhanced UV-B irradiance on cotton growth, development, yield, and qualities under field conditions. *J. Agric. Forest Meteorol.* 120: 241-248
- Grant, R.H., G.M. Heisler, **W. Gao** and Matthew Jenks. 2003. Ultraviolet leaf reflection of common urban trees and the prediction of reflectance from leaf surface characteristics. *J. Agric Forest Meteorol.* 120: 127-140
- Grant, R.H. and **W. Gao**. 2003. Diffuse fraction of UV radiation under partly cloudy skies as defined by the Automated Surface Observation System (ASOS). *J. Geophysical Research*, Vol. 108, 4046-4055
- Grant, R.H., and **J. Slusser**. 2003. Spatial variability in UV radiation during the growing season across the continental USA , *Theor. Appl. Climatol.* 74, 167-177.
- Heisler, G.M., R.H. Grant and **W. Gao**. 2003. Individual-and scattered-tree influences on ultraviolet irradiance. *J. Agric. Forest Meteorol.* 120: 113-126
- Heisler, G.M., R.H. Grant, **W. Gao**, and **J.R. Slusser**. 2003. Ultraviolet radiation and its impacts on agriculture and forests. *J. Agric. Forest Meteorol.* 120: 3-8
- Kakani, V.G., K.R. Reddy, D. Zhao, and K. Sailaja. 2003a. Field crop responses to ultraviolet-B radiation: a review. *J. Agric. Forest Meteorol.* 120, 191-218.
- Kakani, V.G., K.R. Reddy, D. Zhao, and **W. Gao**. 2003b. Leaf senescence and hyperspectral reflectance of cotton leaves exposed to ultraviolet-B radiation and carbon dioxide, *Physologia Plantarum*. (in press).
- McArthur, L.J.B., D.H. Halliwell, O.J. Neibergall, N.T. O'Neill, **J.R. Slusser**, and C. Wehrli. 2003. Field comparison of network Sun photometers, *J. Geophys. Res.* 108 (D9), 4596, doi:10.1029/2002JD002964.
- Petters, J.L., V.K. Saxena, **J.R. Slusser**, B.N. Wenny, and S. Madronich. 2003. Aerosol single scattering albedo retrieved from measurements of surface UV irradiance and a radiative transfer model. *J. Geophys. Res.* 108, 4288, doi:10.1029/2002JD002360.
- Reddy K.R., V.G. Kakani, D. Zhao, A.R. Mohammed, and **W. Gao**. 2003. Cotton responses to ultraviolet-B radiation: experimentation and algorithm development. *J. Agric. Forest Meteorol.* 120: 249-266
- Tsvetsinskaya, E.A., L.O. Mearns, T. Mavromatis, **W. Gao**, L.R. McDaniel, and M.W. Downton. 2003. The effect of spatial scale of climate change scenarios on simulated Maize, winter wheat, and rice production in southeastern United States . *Climatic Change.* 60: 37-71
- Wetzel, M.A., G.E. Shaw, **J.R. Slusser**, R.D. Borys, and C.F. Cahill. 2003. Physical, chemical and ultraviolet radiative signatures of aerosol in central Alaska , *J. Geophys. Res.*, 108, 4418, doi:10.1029/2002JD003208.
- Zhao, D., K.R. Reddy, V.G. Kakani, A.R. Mohammed, J.J. Read, and W. Gao. 2003. Photosynthetic characteristics of cotton (*Gossypium hirsutum* L.) plants as affected by elevated CO<sub>2</sub> and UV-B radiation. *J. Plant Phys.* (in press).
- Zheng Y.F., W. Gao, **J.R. Slusser**, R.H. Grant and C.H. Wang. 2003. Yield and yield formation of field winter wheat in response to supplemental solar UV-B radiation. *J. Agric. Forest Meteorol.* 120: 279-284

### Non-Refereed

- Chang, S., Q. Shi, X. Pan, G. Lu, S. Zhao, Z. Gao, and **W. Gao**. 2003. Sensitivity analysis of response of land cover change to climate change from 1992 to 2000 across Xinjiang. *Proc. SPIE*, 5153, 289-301.
- **Gao, W.**, Y. Zheng, **J.R. Slusser**, Y. He, and R.H. Zhang. 2003. Impact of enhanced ultraviolet-B irradiance on maize yield formation and structure: A field evaluation, *Proc. SPIE*, 5156, 396-402.
- **Gao, W.**, Z.Q. Gao, X. Pan, **J.R. Slusser**, M. Cao, J. Qi, J. Zhang, X.W. Zhan, and Y. Ma. 2003. Responses of net primary productivity (NPP) in Xingjiang to climatic changes from 1981-2000. *Proc. SPIE*, 5153 , 73-84.
- Grant, R.H., and **J.R. Slusser**. 2003. Defining the probabilities of solar UV event exposures for plant effects research. *Proc. SPIE*, 5156, 207-215.
- Harrison, L.C., M. Beauharnois, J.L. Berndt, P.W. Kiedron, and P. Disterhoft. 2003. Transfer of UV irradiance calibration to our field spectroradiometers: current performance and operational experience at Table Mountain , Colorado , *Proc. SPIE*, 5156, 135-142.
- Heisler, G.M., R.H. Grant, D.J. Nowak, **W. Gao**, D.E. Crane, and J.T. Walton. 2003. Inclusion of an Ultraviolet Radiation transfer component in an urban forest effects model for prediction tree influences in potential below- canopy exposure to UVB radiation, *Proc. SPIE*, 5156, 228-235
- Janson, G.T., and J.R. Slusser. 2003. Long-term stability of UV multifilter rotating shadowband radiometers, *Proc. SPIE*, 5156, 94-100.
- Kimlin M.G., **J.R. Slusser**, K.A. Schallhorn, and R.S. Meltzer. 2003. U.S. EPA Brewer Spectrophotometer network and

the USDA UVB monitoring and research program: data comparison from co-located instruments, *Proc. SPIE*, 5156, 85-93.

King, J.Y., D.G. Milchunas, A.R. Mosier, J.C. Moore, M.H. Quirk, J.A. Morgan, and **J.R. Slusser**. 2003. Initial impacts of altered UVB radiation plant growth and decomposition in shortgrass steppe. *Proc. SPIE*, 5156, 384-395.

Krotkov, N.A., P.K. Bhartia, J.R. Herman, **J.R. Slusser**, G.R. Scott, G. Labow, A.P. Vasilkov, T. Eck, O. Dubovik, and B. Holben. 2003. Goddard UV aerosol absorption closure experiment (2002-03), *Proc. SPIE*, 5156, 54-62.

Qi, J., Y. Inoue, R. Zhang, and **W. Gao**. 2003. Synergy of optical and radar remote sensing in agricultural applications. *Proc. SPIE*, 5153, 153-158.

Reddy, K.R., S. Koti, D. Zhao, V.G. Kakani, and **W. Gao**. 2003. Interactive effects of atmospheric carbon dioxide and ultraviolet-B radiation on cotton growth and physiology, *Proc. SPIE*, 5156, 262-272.

**Slusser, J.R.**, D. Bigelow, W. Gao, G.R. Scott, and B. Olson. 2003. Comparison of UV synthetic spectra with broadband and spectral irradiances, *Proc. SPIE*, 5156, 403-408.

Wetzel, M.A., and **J.R. Slusser**. 2003. Mesoscale distribution of UV spectral irradiance obtained by merging satellite remote sensing and ground based measurements, *Proc. SPIE*, 5156, 291-302.

Zhan, X.W., **W. Gao**, J. Qi, P.R. Houser, **J.R. Slusser**, X. Pan, Z.Q. Gao, and Y. Ma. 2003. Remote sensing and modeling the dynamics of soil moisture and vegetative cover of arid and semiarid areas. *Proc. SPIE*, 5153, 51-60.

Zhang, J., X. Pan, Z.Q. Gao, **W. Gao**, S. Zhao, Q. Shi, and G. Lu. 2003. Landscape heterogeneity and net primary productivity (NPP) of mountain-oasis-desert ecosystems in western China. *Proc. SPIE*, 5153, 302-312.

Zheng, Y., Gao, C.H. Wang, W. Xiao, and R.H. Zhang. 2003. Effect of increased UV-B on weeds and big worms in farmland ecological system, *Proc. SPIE*, 5156, 273-280.

## 2002

[↑ Back to the top](#)

### Refereed

Gao, W., R.H. Grant, G.M. Heisler, and **J.R. Slusser**, 2002, A Geometric Ultraviolet-B Radiation Transfer Model Applied to Vegetation Canopies. *Agronomy Journal*, Vol 94, 475-482.

Grant, R.H., G.M. Heisler, and **W. Gao**. 2002. Estimation of Pedestrian Level UV Exposure Under Trees. 2002 *Photochem Photobiol.* 75:369-376.

Lantz, K., P. Disterhoft et al. The 1997 North American Interagency Intercomparison of Ultraviolet Spectroradiometers Including Narrowband Filter Radiometers, *J. Res. Natl. Inst. Stand. Technology*, 107, 19-62, 2002.

Wang, S., and **W. Gao**. 2002. La Nina and its impacts on China 's climate. In La Nina and Its Impacts: Facts and Speculation, 186-189, United Nations University Press, Tokyo , Japan .

### Non-Refereed

**Gao, W.**, Z. Gao, **J.R. Slusser**, X. Pan, and Y.J. Ma. 2002. The responses of net primary production (NPP) to different climate scenarios with Biome-BGC model in oasis areas along the Tianshan Mountains in Xingjiang , China . *Proc. SPIE*, Vol. 4890, 141-150.

**Gao, W.**, Y. Zheng, **J.R. Slusser**, G.M. Heisler, J. Xu, and D. He. 2002. Impact of enhanced ultraviolet-B irradiance on maize yield and its seed qualities: A field evaluation. *Proc. SPIE Vol. 4896*, 159-164.

Gao, Z.Q., **W. Gao**, **J.R. Slusser**, X. Pan, and Y.J. Ma. 2003. The sensitivity of NPP to climate controls in northern China estimated by CLM model coupled with RS and GIS technology. *Proc. SPIE*, 4890, 299-305.

Grant, R.H., and **J.R. Slusser**. 2002. Spatial correlations of daily and weekly maximum day exposure of solar UV radiation in the continental United States . *Proc. SPIE Vol. 4896*, 52-61.

Heisler, G.M., R.H. Grant, **W. Gao**, **J.R. Slusser** and C. Ehrlich. 2002. Solar ultraviolet-B radiation in urban environments: Baltimore , Maryland . *Proc. SPIE Vol. 4896*, 62-69.

Liang, X.Z., **W. Gao**, K. Kunkel, **J.R. Slusser**, X. Pan, H. Liu, and Y.J. Ma. 2002. Sustainability of vegetation over Northwest China , Part 1: Climate Response to Grassland. *Proc. SPIE*, 4890, 29-44.

Pan, X., **W. Gao**, F.X. Gu, W.Q. Li, S.L. Chang, Y.D. Zhang, Q. Ye, and S. Anabiek. 2002. The evaluation on interaction between structures and succession of vegetation/ecosystems and arid land environment in western China . *Proc. SPIE*, 4890, 45-57.

Pan, X., F.X. Gu, **W. Gao**, W. Li, S. Anabiek, and M. Glantz. 2002. Stability study of oasis ecosystems in arid land areas of western China . *Proc. SPIE*, 4890, 19-28.

- Qi, Y., S. Bai, **W. Gao**, and G.M. Heisler. 2002. Intra- and inter-specific comparisons of leaf UV-B absorbing-compound concentration of southern broadleaf tree in the United States . *Proc. SPIE Vol. 4896*, 120-129.
- Sullivan, J.H., D.C. Gitz, A.E. Stapleton, **W. Gao**, and **J.R. Slusser**. 2002. Short-term responses of barley to changes in ambient levels of UV-B radiation and their role in UV protection. *Proc. SPIE Vol. 4896*, 135-143.
- Wang, C., Y. Zheng, **W. Gao**, **J.R. Slusser**, and D. He. 2002. Responses of winter wheat growth and production under sub-ambient UV-B irradiance. *Proc. SPIE Vol. 4896*, 219-222.
- Ye, Q., M.H. Glantz, X. Pan, **W. Gao**, and Y. Ma. 2002. Desert Affairs Program: An initiative on intergrating research education and application for sustainable development in arid and semi-arid lands. *Proc. SPIE Vol. 4890*, 230- 236.
- Zhan, X.W., **W. Gao**, X. Pan, and Y.J. Ma. 2002. Monitoring the hydrologic and vegetation dynamics of arid land with satellite remote sensing, and mathematic modeling. *Proc. SPIE, 4890*, 115-127.
- Zhao, S.L., J. Qi, R. Baumeister, **W. Gao**, X. Pan, and Y.J. Ma. 2002. Remote sensing land use and land cover dynamics of Zhangye region in western China . *Proc. SPIE, 4890* , 245-253.
- Zheng, Y., **W. Gao**, **J.R. Slusser**, He Y., and Grant R.H. 2002. Growth analytic simulation of soybean and winter wheat crops under different doeses of UV-B irradiance. *Proc. SPIE, Vol. 4896*, 130-134.

## 2001

[↑ Back to the top](#)

### Refereed

- Gao, W., J.R. Slusser**, J.H. Gibson, G. Scott, D.S. Bigelow, J. Kerr and B. McArthur, **2001**, Direct-Sun Column Ozone Retrieval by the Ultraviolet Multi-filter Rotating Shadow-band Radiometer and Comparison with Those From Brewer and Dobson Spectrophotometers, *Applied Optics*, Vol 40, No 19, 3149-3155
- Michalsky, J.J., J.A. Schlemmer, W.E. Berkheiser, J.L. Berndt, L.C. Harrison, N.S. Laulainen, N.R. Larson and J.C.Barnard, 2001, Multiyear Measurements of Aerosol Optical Depth in the Atmospheric Radiation Measurement and Quantitative Links Programs, *Journal of Geophysical Research*, 106(D11), pp 12099-12107.
- Vuilleumier, L., R.A. Harley, N.J. Brown, **J.R. Slusser**, D. Kolinski, and D.S. Bigelow, **2001**, Variability in Solar Ultraviolet Irradiance During the Southern California Ozone Study (SCOS97), *Atmos. Environ.*, 35 (2001) 1111-1122.

### Non-Refereed

- Estupinan, J.G., M.H. Bergin, **J.R. Slusser**, and R.S. Meltzer. 2001. Measurement of aerosal optical depths in the UV-A: A comparison between a USDA yankee environmental systems UV-multifilter rotating shadowband radiometer and an EPA brewer spectrophotometer. *Proc. SPIE, Vol. 4482*, 212-223.
- Gao, W.**, R.H. Grant, G.M. Heisler, and **J.R. Slusser**. 2001. Modeling ultraviolet-B radiation in a maize canopy. *Proc. SPIE, Vol. 4482*, 395-407.
- Gao, W., **J.R. Slusser**, L.C. Harrison, P. Disterhoft, Q. Min, B. Olson, K. Lantz and B. Davis. 2001. Comparisons of UV Synthetic Spectra Retrieved from the USDA UV Multi-filter Rotating Shadow-band Radiometer with Collocated USDA Reference UV Spectroradiometer and NIWA UV Spectroradiometer. *Proc. SPIE, Vol. 4482*, 408-414.
- Gao, W., Y. Zheng, **J.R. Slusser**, and G.M. Heisler. 2001. Impact of enhanced ultraviolet-B irradiance on cotton yield and qualities. *Proc. SPIE, Vol. 4482*, 381-387.
- Grant, R.H., and **W. Gao**. 2001. Estimating the UV diffuse fraction of solar radiation under partly cloudy skies. *Proc. SPIE, Vol. 4482*, 160-168.
- Heisler, G.M., R.H. Grant, and **W. Gao**. 2001. Urban tree influences on ultraviolet irradiance. *Proc. SPIE, Vol. 4482* , 277-290.
- Slusser, J.R., N. Krotkov, **W. Gao**, J.R. Herman, G. Labow, and G. Scott. 2001. Comparisons of USDA UV shadow-band irradiance measurements of TOMS satellite and DISORT model retrievals under all sky conditions. *Proc. SPIE, Vol. 4482*, 56-63.
- Zheng, Y., **W. Gao** and G. Shi. 2001. Calculating Solar Ultraviolet Radiation by Computational Models in Nanjing Region. *Proc. SPIE, Vol. 4482*, 455-459.
- Zheng, Y., **W. Gao**, **J.R. Slusser**, R.H. Grant, and C. Wang. 2001. Yield and yield formation of winter wheat in response to enhanced solar ultraviolet-B radiation. *Proc. SPIE, Vol. 4482*, 335-340.

## 2000

[↑ Back to the top](#)

## Refereed

Bigelow, D.S. and **J.R. Slusser**, 2000, Establishing the Stability of Multi-filter UV Rotating Shadowband Radiometers, *J. Geophys. Res.* 105, 4833-4840.

Frederick, J.E., **J.R. Slusser**, and D.S. Bigelow, 2000, Annual and Interannual Behavior of Solar Ultraviolet Irradiance Revealed by Broadband Measurements, *Photochem. and Photobiology*, 72(4), 488-496.

**Slusser, J.R.**, J.H. Gibson, D.S. Bigelow, D. Kolinski, P. Disterhoft, K. Lantz and A. Beaubien, 2000, Langley Method of Calibrating UV Filter Radiometers, *J. Geophys. Res.* 105, 4841-4849.

## 1999

[↑ Back to the top](#)

## Refereed

Bodhaine, B.A., E.G. Dutton, N.B. Wood, and **J.R. Slusser**. 1999. Note on Rayleigh Optical Depth Calculations, *J. Atmos. and Oceanic Technol.*, 16, 1854-1861.

Chameides, W.L., M. Bergin, X. Zhou, L. Mearns, **W. Gao**, C.S. Kiang, R.D. Saylor, A. Steiner, and F. Fiorgi. 1999. Case study of the effects of atmospheric aerosols and regional haze on agriculture: An opportunity to enhance crop yields in China through emission controls? *National Academy of Sciences*. Vol. 96, 13626-13633.

Kaye, J.A., B.B. Hicks, E.C. Weatherhead, C.S. Long, and **J.R. Slusser**. 1999. US Interagency UV Monitoring Program Established and Operating, *EOS*, 80 (10), 114-116.

Lantz, K.O., P. Disterhoft, J.J. Deluisi, E.A. Early, A. Thompson, D. Bigelow, and **J. Slusser**. 1999. Methodology for Deriving Clear-Sky Erythema Calibration Factors for UV Broadband Radiometers of the US Central UV Calibration Facility, *J. Atmos. and Oceanic Technol.*, 16, 1736-1752.

**Slusser, J.R.**, J.H. Gibson, D.S. Bigelow, D. Kolinski, M. Wanfeng, Koenig, and A. Beaubien, 1999, Comparison of Column Ozone Retrievals by Use of an UV Multi-filter Rotating Shadow-band Radiometer with those from Brewer and Dobson Spectrophotometers, *Appl. Opt.*, 38, 1543-1551.

## 1998

[↑ Back to the top](#)

## Refereed

Bigelow, D.S., **J.R. Slusser**, A.F. Beaubien and J.H. Gibson. 1998. The USDA Ultraviolet Radiation Monitoring Program, *Bull. Amer. Meteorol. Soc.*, (79), 601-615.

**Gao, W.**, T. Mavoromatis, and L.O. Mearns. 1998. Validation and soil sensitivity tests with CERES-Wheat, and -Rice in the southeastern United States . In: Modeling for Crop-Climate-Soil-Pest system and its application in sustainable crop production. *JAAS* 220-228.

Early E., A. Thompson, and P. Disterhoft. 1998. Field Calibration Unit for Ultraviolet Spectroradiometers, *Appl. Opt.*, 37, 6664-6670.

Early, E., A. Thompson, C. Johnson, J. DeLuisi, P. Disterhoft, D. Wardle, E. Wu, W. Mou, J. Ebrahimian, J. Tusson, T. Mestechkina, M. Beaubien, J. Gibson, D. Hayes. 1998. The 1996 North American Interagency Intercomparison of Ultraviolet Monitoring Spectroradiometers, *NIST Technical Journal of Research*, 103, 449-482.

Early, E., A. Thompson, C. Johnson, J. DeLuisi, P. Disterhoft, D. Wardle, E. Wu, W. Mou, Y. Sun, T. Lucas, T. Mestechkina, L. Harrison, J. Berndt, D. Hayes. 1998. The 1995 North American Interagency Intercomparison of Ultraviolet Monitoring Spectroradiometers, *NIST Technical Journal of Research*, 103, 15-58.

Min, Q. and L. Harrison. 1998. Synthetic Spectra for Terrestrial Ultraviolet from Discrete Measurements, *J. Geophys. Res.*, 105, 17,033-17,039.

## Non-Refereed

Grant, R.H., G.M. Heisler, **W. Gao**, and W. King. 1998. Multiple waveband solar irradiance in an open tree canopy: measurement and modeling. In: Proceedings, 2nd Urban Environment Symposium, Albuquerque. *AMS*, 202-205.

## 1997

[↑ Back to the top](#)

### Refereed

Early, E., A. Thompson, P. Disterhoft et al. 1997. The 1994 North American Interagency Intercomparison of Ultraviolet Monitoring Spectroradiometers, *NIST Technical Journal of Research*, 102, 279-322.

Grant, R.H., G.M. Heisler, and **W. Gao**. 1997. Clear sky radiance distributions in ultraviolet wavelength bands. *J. Theor. and Applied Climatol.* Vol. 56, 123-135

Grant, R.H., **W. Gao**, and G.M. Heisler. 1997. Ultraviolet sky radiance distributions of translucent overcast skies. *J. Theor. and Applied Climatol.* Vol. 58, 129-139.

### 1996

[↑ Back to the top](#)

### Refereed

Grant, R.H., W. Gao, and G.M. Heisler. 1996. Photosynthetically-active radiation: sky radiance distributions under clear and overcast conditions. *Agric. Forest Meteorol.* Vol. 82, 267-292.

### Non-Refereed

**Gao, W.**, J.H. Siefker, and J.M. McKinion. 1996. The effects of water stress and other environmental variables on the temperature of sunlit pima cotton leaves. *Proc. 22nd Conf. on Agric. and Forest Meteorology*, Amer. Met. Soc., 161-162.

**Gao, W.**, and R.H. Grant. 1996. Spectral radiative properties of various tree species in ultraviolet wavelengths and the impacts on irradiance modeling. *Proc. 22nd Conf. on Agric. and Forest Meteorology*, Amer. Met. Soc., 417-418.

Grant, R.H., **W. Gao**, and G.M. Heisler. 1996. The distribution of photosynthetically-active radiance and its influence on shadowband corrections under clear and overcast sky conditions. *Proc. 22nd Conf. on Agric. and Forest Meteorology*, Amer. Met. Soc., 157-160.

Heisler, G.M., R.H. Grant, and **W. Gao**. 1996. UVB and PAR in the vicinity of urban trees and buildings. *Proc. 12th Conf. on Biometeorol. and Aerobiology*, Amer. Met. Soc., 460-461.

### 1995

[↑ Back to the top](#)

### Refereed

Michalsky, J.J., L.C. Harrison and W.E. Berkheiser III. 1995. Cosine Response Characteristics of Some Radiometric and Photometric Sensors, *Solar Energy*, (54), 397-402.

### 1994

[↑ Back to the top](#)

### Refereed

Harrison, L. and J. Michalsky. 1994. Objective Algorithms for the Retrieval of Optical Depths from Ground-Based Measurements, *Appl. Opt.*, 33, 5126-5132.

Harrison, L., J. Michalsky and J. Berndt. 1994. Automated Multi-Filter Rotating Shadowband Radiometer: An Instrument for Optical Depth and Radiation Measurements, *Appl. Opt.*, 33, 5118-5125.

### Design Documents

[↑ Back to the top](#)

Farrell, M.P. (ed). **1993**. *UV-B Critical Issues Workshop*. Center for Global Environmental Studies, Oak Ridge National Laboratory, Oak Ridge TN. p34.

Gibson, J.H., *Criteria for the Status and Trends Monitoring of Ultraviolet (UV) Radiation: Recommendations of the UV-B Monitoring Workshop*, Natural Resource Ecology Laboratory, Colorado State University, Fort Collins, CO 80523, p6. **1992**



- Gibson, J.H., [1992](#). *Criteria for the Status and Trends Monitoring of Ultraviolet (UV) Radiation: Recommendations of the UV-B Monitoring Workshop*. Natural Resource Ecology Laboratory, Colorado State University , Fort Collins , CO 80523, p6.
- Science and Policy Associates. 1992. *UV-B Monitoring Workshop: A Review of the Science and Status of Measuring and Monitoring Programs*. Science and Policy Associates, Inc., Washington D.C. 354p.
- Gibson, J.H., *Justification and Criteria for the Monitoring of Ultraviolet (UV) Radiation: Report of the UV-B Measurements Workshop*, Natural Resource Ecology Laboratory, Colorado State University , Fort Collins , CO 80523, p21. [1991](#)

## Reports

[↑](#) [Back to the top](#)

- **Janson, George, John Davis, Bill Durham, Bruce Hundermark, Scott Janssen, Becky Olson, Xinli Wang** 2007 *Data/Web Usage Statistics* , UV-B Monitoring and Research Program, Fort Collins, CO. March [2007](#)
- **Slusser, J.R. and W. Gao**, *Interim Report: USDA Ultraviolet Radiation Monitoring and Research Program, 2004*. Natural Resource Ecology Laboratory, Fort Collins, CO. March [2005](#).
- **Slusser, J.R. and W. Gao**, *Interim Report: USDA Ultraviolet Radiation Monitoring and Research Program, 2003*. Natural Resource Ecology Laboratory, Fort Collins, CO. March [2004](#).
- **Slusser, J.R. and W. Gao**, *Annual Report(Brochure): USDA Ultraviolet Radiation Monitoring and Research Program, 2003*. Natural Resource Ecology Laboratory, Fort Collins, CO. March [2004](#).
- **Slusser, J.R. and W. Gao**, *Interim Report: USDA Ultraviolet Radiation Monitoring and Research Program, 2002*. Natural Resource Ecology Laboratory, Fort Collins, CO. March [2003](#).
- **Slusser, J.R. and W. Gao**, *Interim Report: USDA Ultraviolet Radiation Monitoring and Research Program, 2001*. Natural Resource Ecology Laboratory, Fort Collins, CO. February [2002](#).
- Madronich, S., S. Britz, J. Frederick and R. Grant, *Panel Report: Review of the USDA Ultraviolet Radiation Monitoring and Research Program*, Natural Resource Ecology Laboratory, Fort Collins, CO, April [2001](#).
- **Slusser, J.R. and W. Gao**, *Interim Report: USDA Ultraviolet Radiation Monitoring and Research Program, 2000*. Natural Resource Ecology Laboratory, Fort Collins, CO. February [2001](#).
- **Slusser, J.R.** and D.S. Bigelow, *Interim Report: USDA Ultraviolet Radiation Monitoring Program, 1999*. Natural Resource Ecology Laboratory, Fort Collins, CO. May [2000](#).
- Bigelow, D.S., **J.R. Slusser** and J.H., Gibson. *Interim Report: USDA Ultraviolet Radiation Monitoring Program, 1998*. Natural Resource Ecology Laboratory, Fort Collins, CO. May [1999](#).
- Gibson, J.H., *Data Workshop: USDA UVB Monitoring Program*, Natural Resource Ecology Laboratory, Colorado State University, Fort Collins, CO 80523, p5. [1998](#)
- Gibson, J.H., D.S. Bigelow and **J.R. Slusser**. *Interim Report: USDA Ultraviolet Radiation Monitoring Program, 1997*. Natural Resource Ecology Laboratory, Fort Collins, CO. February [1998](#).
- Bigelow, D.S., **J.R. Slusser** and J.H., Gibson. *Interim Report: USDA Ultraviolet Radiation Monitoring Program, 1996*. Natural Resource Ecology Laboratory, Fort Collins, CO. January [1997](#).