Curriculum Vitae

Hung-Lung Allen Huang, Ph. D.

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Education:

1986-1989: **Ph.D.** in Meteorology, University of Wisconsin-Madison
Major: Meteorology; **Minor:** Civil Engineering
1984-1986: **M.S.** in Meteorology, University of Wisconsin-Madison
Major: Meteorology
1974-1978: **B.S.** in Atmospheric Science, National Taiwan University
Major: Atmospheric Science

Experience/Expertise:

Dr. Hung-Lung Huang, also known as **Allen Huang,** is a **distinguished scientist** of the **University of Wisconsin-Madison** and a **fellow** of International Society for Optical Engineering (**SPIE**) and **Adjunct professor** of many universities**.**

Since 1989, Dr. Huang has been with the SSEC/CIMSS of University of Wisconsin-Madison as a research scientist, conducting remote sensing research in the areas of atmospheric sounding retrieval, information content analysis, satellite and aircraft high-spectral resolution sounding instrument data processing, data compression, instrument design and performance analysis, cloud-clearing, cloud property characterization, synergistic imaging, and sounding data processing and algorithm development. He also advises and supports both national and international M.S. and Ph.D. students and visiting scientists.

Dr. Huang has supervised teams of engineers, programmers, researchers, scientists, graduate students, and visiting scientists for many past and ongoing projects such as the AIRS science team, the MURI hyperspectral research, the GIFTS algorithm demonstration, IMAPP direct broadcast packages and training workshops, the GOES-R risk reduction algorithm development, and the GOES-R Algorithm Working Group. He has won several awards to fund the building of the state-of-the-art hardware systems to support the center's multi-year projects.

Dr. Huang's current projects including:

- NOAA - CIMSS Research Activities in Support of the GOES-R Algorithm Working Group (AWG) Program
- NASA- International MODIS and AIRS Processing Package (IMAPP)
- NOAA - The Development of a Community Satellite Processing Package (CSPP) in support of NPP/JPSS Program
- NOAA – GRAFIIR: GOES-R Analysis Facility for Instrument Impacts on

Requirements
- NOAA – JAFIIR: JPSS Analysis Facility for Instrument Impacts on Requirements including conducting OSSE to define JPSS CrIS sensor specifications
- NOAA – Network of Direct Broadcast Antenna Systems to Provide Real-Time Infrared and Microwave Sounder Data to NOAA for Numerical Weather Prediction
- Internal Innovation – ABI/AHI 4D VAR Wind Retrieval
- International Sponsors – International TOVS Study Conference (ITSC) conference organization

Current/Past Positions, Academic, committee and Board Appointments:

- **Distinguished scientist** of UW-Madison – since 1 September 2006
- **Permanent Principal Investigator** (PI) of University of Wisconsin-Madison – since December 2007
- **Fellow** of International Society for Optical Engineering (SPIE) – Since December 2007
- **Adjunct Member of the Graduate Faculty** at Texas A&M University, USA – since May 2007
- **Adjunct professor** of Lanzhou University, China – since May 2007
- **Senior regional editor,** SPIE Journal of Applied Remote Sensing – Since 2007
- **Executive Committee member** of SPIE Optical Engineering + Applications 2008 Executive Committee
- **Science council member** of CIMSS - since 2002
- **Principal investigator** of NASA funded International MODIS/AIRS Processing Package (IMAPP) project – since 1999
- **Principal investigator** of NOAA JPSS Community Satellite Processing Package (CSPP) – since 2011
- **Principal investigator** of NOAA GOES-R Algorithm Working Group program
- **Technical Advisor**, Tempo Quest, Inc. – September 2014 to February 2015
- **Director, Board of Directors,** GeoMetWatch, USA – January 2012 to June 2014
- **Chief Information Officer,** GeoMetWatch, USA – April 2012 to June 2014
- **Committee member** of Space Studies Board Committee on Earth Studies, The National Academies – 2008-2011.
- **Council member** of the Space Science and Engineering Center (SSEC) – 2003-2012
- Program manager and lead scientist of algorithm development for NOAA GOES-R risk Reduction project – 2003-2008
- **Member of International Radiation Commission** (IRC) for the 2005 to 2008 term
- **Committee member** of Physical Sciences/Engineering Area Review Committee (ARC), University of Wisconsin-Madison for 2007 to 1010 term.
- **Chair and editor** of the SPIE Atmospheric and Environmental Remote Sensing

Data Processing and Utilization annual conference and proceedings – 2003-2010

- **General chair** of Hyperspectral Imaging and Sounding of the Environment topical conference of Optical Society of America: 2004-2008
- **Program Chair and organizing committee member** of 2003 Optical Remote Sensing of the Atmosphere (ORS) topical meeting of Optical Society of America
- **Co-chair** of International TOVS Working Group (ITWG) - 2006-2013
- **Financial Director** of International TOVS Working Group (ITWG) – since 2013
- **President** of Weather Or Knot, a scientific remote sensing consulting Wisconsin partnership company – since 1997
- **President and principal scientist** of Hyper Sensing, LLC, a federal small business scientific consulting limited liability company – since 2002
- **Science member and consultant** for Northrop Grumman Space Technology's NPOESS project – 2001-2008
- **Technical Advisory Committee member** of NOAA GOES-R Risk reduction project – 2006-2008
- **Advisor of Technical Advisory Committee** of NOAA GOES-R Algorithm Working Group – 2009
- **Committee member**, Distinguished Prefix Review Committee, University of Wisconsin-Madison – Since 2010.
- **Guest Research Scientist,** Institute of Remote sensing Applications, Chinese Academy of Sciences – Since August 2010.

Memberships:

International Society for Optical Engineering (SPIE)
American Meteorological Society (AMS)
American Geophysical Union (AGU)
Institute of Electrical and Electronics Engineers (IEEE)

Technical, Education, and Leadership Accomplishments and Contributions:

In 2007, Dr. Huang was elected as **the fellow of International Society for Optical Engineering (SPIE)** for his significant scientific and technical contributions in the multidisciplinary fields of remote sensing. Dr. Huang is selected for his technical achievement and service to the general optics community, and to SPIE in particular.

In 2007, Dr. Huang was also unanimously approved by the campus wide committee as **the Permanent Principal Investigator of University of Wisconsin-Madison**. Permanent Principal Investigator status is to confer Dr. Huang's solid record of research accomplishment that is highly regarded by their peers and his continuing outstanding research.

In 2006, Dr. Huang became **the first distinguished scientist of the Graduate School of the University of Wisconsin-Madison**. This award was unanimously recommended by all eleven (11) members of the Distinguished Prefix Review Committee (DPRC). This university-wide honor is to recognize Dr. Huang's achievement in research, leadership, education, and community services.

Dr. Huang has supervised teams of engineers, programmers, researchers, scientists, graduate students, and visiting scientists for many past and ongoing projects such as the AIRS science team, the MURI hyperspectral research, the GIFTS algorithm demonstration, IMAPP direct broadcast packages and training workshops, the GOES-R risk reduction algorithm development, and the GOES-R Algorithm Working Group. He has won several awards to fund the building of the state-of-the-art hardware systems to support the center's multi-year projects.

Dr. Huang has served a two years term as the chair of the Committee on Environmental Satellite Data Utilization (CESDU) of the National Research Council of the National Academies. While serving as the chair of the CESDU, he co-authored the article "Utilization of Operational Environmental Satellite Data – Ensuring Readiness for 2010 and Beyond". As the capacity of the chair, Dr. Huang has briefed administrators and managers of NOAA and NASA about the findings and recommendations of this Academy study report.

Dr. Huang has volunteered his time for many community services by serving as conference organizer, conference chair, committee chair and member, invited speaker and lecturer. For example, he is currently serving as a conference chair for the International Society for Optical Engineering, SPIE, annual meeting to be held each year in San Diego, California. He is serving as editor for Proceedings of SPIE since 2002. He is also acting as the general chair for the Optical Society of America, organizing and raising funds for the Hyperpsectral Imaging and Sounding for Environment (HISE) topic meeting, where international renown scientists are invited to discuss the state-of-the-art progress in the field of atmospheric, oceanic, land, and environmental remote sensing research.

He has also have organized and taught direct broadcast MODIS/AIRS training workshops in China, Taiwan, Norway, South Africa and Brazil. He has published many peer-reviewed papers in remote sensing and co-author a book chapter in remote sensing data compression.

Above all, Dr. Huang has managed and created a wide-range of very successful projects, including processing software package development, computing technology demonstration, hyperspectral remote sensing basic research, end-to-end system development, broad area of satellite data processing support, and providing expert consulting services to space industry. Many of his projects are multi-year in nature; for example: AIRS Science Team – ten years (ended), IMAPP – in ninth year, CWB wind project – in tenth year, IPOPP – a five year new project in the third year, GOES-R3 – an eight year project in fourth year, GOES-R AWG – a seven year project in its second year. His many achievements are perhaps best demonstrated by the awarding of the long-term funding for these projects.

In summary, the expertise and capabilities of Dr. Huang and his research team can be further states as:

- End-to-End remote sensing satellite, aircraft, and ground based data

processing, meteorological and environmental products and information generation and management
- Remote sensing sensor/instrument design performance analysis
- Visible, Infrared, and Microwave spectral measurements modeling, processing algorithm development, and product utilization
- Real time polar orbiting direct broadcast data processing package development
- Educating and training visiting scientists, graduate students, and professional remote sensing operators, researchers, and users
- Providing a turn key operational system to generate and manage multiple data/products for information analysis and decision making
- Actively contributing volunteer time and energy to serve the global remote sensing community though education, organizing scientific conferences and international project cooperation, and providing leadership in remote sensing research and applications.

Employment History:

September 2006 – Present: Distinguished Scientist, UW-Madison

November 1997 – Present: President, Weather Or Knot

February 2002 – Present: Principal Scientist & Managing Member, Hyper Sensing, LLC

October 2001 – August 2006: Senior Scientist, CIMSS/SSEC UW-Madison

March 1996 – September 2001: Associated Scientist, CIMSS/SSEC UW-Madison

February 1992 - March 1996: Assistant Scientist, CIMSS/SSEC UW-Madison

September 1989 - February 1992: Research Associate, CIMSS/SSEC UW-Madison

1984 - August 1989: Research Assistant, CIMSS/SSEC UW-Madison

1979 – 1984: Satellite Meteorologist, Satellite Ground Station, Central Weather Bureau, Taipei, Taiwan.

1978 – 1979: Research Specialist, Department of Atmospheric Science, National Taiwan University.

Awards, Honors, and Appointments:

Dr. Huang has received awards, honors, and appointments from government and academia for his contributions in community service, academic achievement and leadership:

1. Awarded the title of "Distinguished Scientist", the highest achievement for a scientist at the University of Wisconsin-Madison.
2. Fellow of SPIE.
3. Permanent Principal Investigator of University of Wisconsin-Madison.
4. The National Aeronautics and Space Administration Group Achievement

Award – Airborne Southern Hemisphere Ozone Experiment/Measurements for Assessing the Effects of Stratospheric Aircraft (ASHOE/MAESA) Experiment Team

5. The National Aeronautics and Space Administration Group Achievement Award – Aqua Mission Team
6. Goddard Space Flight Center – NASA Group Achievement Award – Outstanding Teamwork on Earth Observing System (EOS) Aqua Mission Team
7. Chair of Committee on Environmental Satellite Data Utilization of the National Research Council of the National Academies
8. US director of China-America Cooperative Remote Sensing Center, Nanjing University of Information Science and Technology
9. Elected member of International Radiation Commission (IRC)
10. Guest chief scientist of National Satellite Meteorological Center (NSMC) of China Meteorology Administration (CMA)
11. Adjunct professor of Nanjing University of Information Science and Technology
12. Co-chair of International TOVS Working Group (ITWG)
13. Co-chair of Advanced Sounder Working Group of International TOVS Working Group (ITWG)
14. Editor of SPIE Atmospheric and Environmental Remote Sensing Data Processing and Utilization annual conference and proceeding
15. Senior regional editor of SPIE Journal of Applied Remote Sensing
16. Technical Advisory Committee member of NOAA GOES-R Risk reduction project

Organized/Conducted International Educational/Training Workshops

As part of Dr. Huang's commitment to educate students and researchers in the area of satellite remote sensing he has organized and conducted training workshops around the world. Along with a team of remote sensing, data processing, and algorithm experts Dr. Huang has taught courses in remote sensing principal, satellite retrieval algorithm, processing approach, data calibration, product validation and applications of remote sensing products in atmospheric, oceanic, land, and general environmental applications.

10 Workshops conducted so far include:

1. June 2004 - Nanjing Institute of Meteorology, Nanjing, China – 5 days
2. January 2005 - National Central University, Chung-Li, Taiwan – 3 days
3. May 2005 - Beijing University, Beijing, China – 5 days
4. February 2006 - Andoya Rocket Range, Andenes, Norway – 3 days
5. April 2006 - South African National Biodiversity Institute, Pretoria, South Africa – 5 days
6. November 2007 – GEOSS Americas/Caribbean Remote Sensing Workshop: Transforming Data into Products – 5 days

7. July 2009 – IGARSS 2009 Short course on MODIS direct broadcast data for enhanced forecasting and real-time environmental decision making – 4 days
8. August 2009 – PICES International Summer School on Satellite Oceanography for the Earth Environment. – 7 hours.
9. June 2011 – DB Training Workshop, East China Normal University, Shanghai, China – 5 days
10. September 2011 – WMO RA V Training Workshop on Satellite Applications for Meteorology and Climatology, Citeko, Bogor, Indonesia – 3.5 Days

Dr. Huang's past and current efforts in education also include the advising and supervising the graduate students, post doctors, and visiting scientists from countries of

- United States
- Austria
- Australia
- China
- Hungary
- India
- Italy
- South Korea
- Singapore
- South Africa
- Taiwan

110 Invited/International Presentations, Lectures and Seminars made since 2004-2014

Dr. Huang has been invited to give presentations and seminars around the world to discuss, communicate and promote broader use of satellite remote sensing data in applications ranging from the weather prediction, atmospheric research, environmental monitoring, to the data processing technique, algorithm and system.

1. 3 April, 2014: Overview of SSEC GOES-R ABI Activities, Electronic and Telecommunications Research Institute (ETRI), DaeJeon, S. Korea
2. 2 April, 2014: Infrared Remote Sensing Science, Technology and Applications – An Overview, School of Earth and Environmental Sciences, Seoul National University, Seoul, S. Korea
3. 4 March 2014: GeoMetWatch-STORM Global Constellation: Science, Technology, Algorithm, Products Innovation, Aviation Applications & Benefits Presentation for VT FedEx, UW-Madison, USA
4. 17 December 2013: GeoMetWatch-STORM Global Constellation: Technology, Science, Products, and Applications, Presentation for VT Group, UW-Madison, USA
5. 22 October 2013: GeoMetWatch Sounding & Tracking Observatory for Regional Meteorology (STORM) Project Status & Ways Forward, US Consulate General Shanghai, Shanghai, China

6. 19 October 2013: A forthcoming first geostationary hyperspectral sensor system – Sounding & Tracking Observatory for Regional Meteorology (STORM) Constellation, International Workshop on Urban & Regional Air Quality, East China Normal University, Shanghai, China.
7. 10 October 2013: Overview of GeoMetWatch-STORM technology, Innovation & Market Prospects – Delivering Unprecedented Wx Information in Asia & Around the World, Global Forecast Center & Oklahoma Innovation Center, Weather News Inc, Norman, Oklahoma, USA
8. 8 October, 2013: GeoMetWatch-STORM Product Highleights, SDL/AWS, USU, Logan Utah, USA
9. 9 July 2013: GeoMetWatch-STORM Project and its Market Prospect, presentation to Michael Loeb, New York, New York USA
10. 29 January 2013: Towards the Development and Demonstration of an impactful infrastructure for the weather secured and environment protected Beijing Municipal & Beyond. Beijing City Science & Technology Council, Beijing, China.
11. 8 August 2013: The GMW STORM Sensor – its heritage, the science, the sensor, the products, the numerical modeling, the meteorological forecasts, and the societal benefits, Workshop on GeoMetWatch, Executive Briefing Center, Curtin University, Perth, Australia
12. 2 August 2013: Remote Sensing Science, Technology & Societal Benefits: GeoMetWatch Satellite Potential & Prospect, Institute of Remote Sensing and Digital Earth (RADI), China Academic of Sciences (CAS), Beijing, China
13. 1 August 2013, Remote Sensing Air Quality & Disaster Mitigation Applications: Towards the Development and Demonstration of an Impactful Infrastructure for the Weather Secured and Environment Protected Beijing Municipal & Beyond, Institute of Atmospheric Physics, Beijing, China
14. 29 July, 2013: GeoMetWatch Science, Products, Applications & Innovation: Delivering Unprecedented 4-D Weather Cube. Presentation to Boeing, Space Science Dynamic Lab., Utah, USA
15. 31 May 2013: GeoMetWatch-STORM Project and its Prospect in Renewable Energy Market, China Light & Power, Hung Hom, Kowloon, Hong Kong
16. 30 May 2013: GeoMetWatch-STORM Project and its Market Prospect in Greater Asia and Oceania Region, AsiaSat, Causeway Bay, Hong Kong
17. 30 May 2013, GeoMetWatch-STORM Project and its Market Prospect in Greater Asia and Oceania Region, HK Observatory, Kowloon, Hong Kong
18. 29 May 2013: GeoMetWatch-STORM Project and its Market Prospect in China, Greater Asia & Oceania Region, US Commercial Service, US Consulate General Guangzhou, Guangzhou, China
19. 27 May 2013: GeoMetWatch-STORM High Performance Data Center for Commercial & Societal Benefiting Services. AsiaSat, Tai Po, Hong Kong
20. 23 May 2013: GeoMetWatch-STORM Project and its Market Prospect in Asia and Oceania Region, SingTel, Signapore
21. 22 May 2013, GeoMetWatch-STORM Hyperspectral Science and Technology Mission for a Dedicated Weather, Environment and Natural Disaster Applications in Asia and Oceania Region, ST Electronics, Singapore

22. 10 May 2013: GeoMetWatch-STORM Hyperspectral Science and Technology Mission for a Dedicated Weather, Environment and Natural Disaster Applications in Asia and Oceania Region, Department of Atmospheric Sciences, National Central University, Jhongli, Taiwan
23. 9 May 2013: GeoMetWatch-STORM Hyperspectral Science and Technology Mission for a Dedicated Weather, Environment and Natural Disaster Applications in Asia and Oceania Region, Department of Atmospheric Sciences, National Taiwan University, Taipei, Taiwan
24. 23 January 2013: Overview of GeoMetWatch-STORM Technology, Science, Processing, Innovation, Societal Benefits & Partnership Opportunity, Mitsubishi Corporation, Tokyo, Japan
25. 7 December 2012: Brief Overview of Space Science & Engineering Center – Home to Father of Satellite Meteorology, presentation to Weather Central/Weather Channel, Madison, Wisconsin, USA
26. 30 September 2012: Leveraging GeoMetWatch-STORM Advanced Science & Technology – Filling CEMADEN's Mission and Responsibility, CEMADEN, Cachoeira Paulista, Sao Paulo, Brazil
27. 6 August 2012: Global Constellation of Next-Generation Ultra-Spectral Geostationary Observations: GeoMetWatch Six-Satellite-STORM-System (S4), International Radiation Symposium 2012, Dahlem Cube, Berlin, Germany
28. 5 July 2012: GeoMetWatch-STORM: American Partnership Initiative, Centro de Previsao de Tempo e Estudos Climaticos (CPTEC), Instituto Nacional de Pesquisas Espaciais (INPE), Cachoeira Paulista, Brazil
29. 20 June 2012: JPSS Analysis Facility for Instrument Impacts on Requirements (JAFIIR) – Concept, Vision & Way Forward, JPSS Program Office, Washington DC, USA
30. 18 May 2012: GeoMetWatch-STORM Project Overview: Science, Technology & Societal Benefits, Weather Services Department, Meteorological Service Singapore, Singapore
31. 16 May 2012: Highlight of GeoMetWatch Activities in Singapore, Economy Development Board, Singapore, Singapore
32. 15 May 2012: GeoMetWatch-STORM Project Overview: Secience, Technology & Societal Benefits. CAP VISTA Private Limited, Defense Science & Technology Agency, Singapore.
33. 3 May 2012: GeoMetWatch-STORM Project Overview – Science, Technology and Societal Benefits, Center for Earth Observation & Digital Earth, China Academy of Sciences, Beijing, China.
34. 27 April 2012: GeoMetWatch-STORM: Project Overview, Ground Processing System, Data Center, GPU Technology & Services, Sky Perfect JSAT, Tokyo, Japan
35. 9 March 2012: Implementation of GeoMetWatch-STORM: Science/Algorithm, Ground Processing System, Data Center, GPU Technology & Service, for Sky Perfect JSAT Corporation & Thales Alenia Space North America, Madison, WI, USA

36. 7 February 2012: Implementation of GeoMetWatch-STORM: Societal Benefit, Data Center, GPU Technology & Service, presentation to Griffin Financial Group & Interlink Capital Strategies, Madison, Wisconsin, USA
37. 7 December 2011: GeoMetWatch-STORM: Global Constellation of Next-Generation Ultra-Spectral Geostationary Observations, The Second Asia/Oceania Meteorological Satellite Users' Conference, Mita Kaigisho, Tokyo, Japan
38. 6 December 2011: Community Satellite Processing Package (CSPP) – A Level 0 to Level 2 Software System for NPP/JPSS Real Time Processing and Applications, The Second Asia/Oceania Meteorological Satellite Users' Conference, Mita Kaigisho, Tokyo, Japan
39. 22 November, 2011: GeoMetWatch-STORM: The Next-Generation Global Space-Based Disaster Information Observatories , United Nations Conference on Space-based Technologies for disaster management - Best Practices for Risk Reduction and Rapid Response Mapping, Beijing, China
40. 12 July, 2011: GeoMetWatch-STORM: Global Constellation of Next-generation Ultra-spectral Geostationary Observations, Hyperspectral Imaging and Sounding of the Environment (HISE), Optical Society of America, Toronto, Canada.
41. June 2011: Featuring GeoMetWatch's World Most Advanced Remote Sensing Science and Technology, Taipei, Hong Kong, Jakarta and Singapore
42. 31 May, 2011: Overview of Recent Advances in Infared Science and Applications, Eastern China Normal University, Shanghai China.
43. 30 May 2011: Satellite Remote Sensing Weather and Environmental Applications – Current Status and Future Prospects, Guangxi Weather Bureau, Naning, Guangxi, China.
44. 25 May 2011: Overview of Recent Advances in Infrared Imaging and Sounding Product Science and Environmental Applications, Advanced in Infrared Imaging and Applications, ISPDI 2011, Beijing China
45. 22 May 2011: Remote Sensing Science and Technology for "Time Critical" Aviation and Renewable Energy – Part III Advanced Geostationary Satellite Imaging Sounder, Institute of Remote Sensing Application, Chinese Academy of Sciences, Beijing, China
46. 22 May 2011: Prototyping of GPU-based High Performance Computing for Remote Sensing Applications, Part-II Remote Sensing Science and Technology for "Time Critical" Aviation and Renewable Energy Application, Institute of Remote Sensing Application, Chinese Academy of Sciences, Beijing, China
47. 3 May 2011: Space Science and Engineering Center- Using Satellite Technology, Optimists Club, Madison, Wisconsin
48. 5 April 2011: Current Status and Planned Activities of SSEC/UW-Madison-Direct Broadcaaast Processing Packages, Real-time Data Processing and Near Real-time Applications, 2011 NOAA Satellite Direct Readout Conference, Miami Florida.
49. 24 February 2011: Towards the Development of a GPU-based High-Performance Computing Infrastructure for Broad Uses of Satellite Data, Data Assimilation Group, MMM/NCAR, Boulder, Colorado.

50. 10 February 2011: Overview of Recent Advances in Infrared Imaging and Sounding Product Science and Environmental Applications. University of Texas A&M, College Station, Texas
51. 26 January 2011: Polar Orbiting Weather Satellite Proving Ground – Facilitating Broad and Optimal Use of Global Direct Broadcast Data, Seventh Annual Symposium on Future Operational Environmental satellite Systems, 2011 AMS annual meeting, Seattle, Washington.
52. November 2010: Recent Advancement in Meteorological Satellite Direct Broadcast Data Access, Processing and Applications, The First Asia/Oceania Meteorological Satellite Users' Conference, Beijing, China.
53. 13 October 2010: Recent Progress in Ultraspectral and Multispectral Data Processing and Real-time Applications, SPIE Asia-Pacific Remote Sensing Symposium, Incheon, Republic of Korea.
54. 22 September 2010: Direct Broadcast Data Access, Processing and Utilization: The Development of Processing Packages and an End-to-End System, 2010 EUMETSAT Meteorological Satellite Conference, Cordoba, Spain
55. 25 August 2010: Challenges in Hyperspectral Remote Sensing of the Atmospheric Properties: Information Versus Noise. The 3rd Asia Pacific Radiation Symposium Digital Library, Yonsei University, Seoul, South Korea
56. 24 August 2010: Hyperspectral Infrared Imaging and Sounding of the Environment: Opportunities and Challenges. Workshop on Remote Sensing from IR Hyperspectral Imager and Applications. Water Lily Hall, SNU Hoam Faculty House Convention Center, Seoul, South Korea
57. 19 August 2010: Status and Recent Advances in Earth Remote Sensing Science, Engineering and Applications: A SSEC/UW-Madison Perspective. Institute of Remote Sensing Application, Chinese Academy of Sciences, Beijing, China
58. 19 August 2010: Hyperspectral Imaging and Sounding of the Atmosphere: Opportunities and Challenges. Institute of Atmospheric Physics, Chinese Academy of Sciences, Beijing, China
59. 18 August 2010: Real-Time Remote Sensing of Environment Monitoring and Forecasting: The Development and Demonstration of the Innovated Processing and Modeling System. Beijing Normal University Beijing, China
60. 2 August 2010: The Development of a Turn-Key Direct Broadcast End-to-End System. Remote Sensing System Engineering III, SPIE, San Diego, CA
61. 1 August 2010: Recent Advances in Direct Broadcast Remote Sensing Science and Applications, Atmospheric and Environmental Remote Sensing Data Processing and Utilization VI: Readiness for GEOSS IV, SPIE, San Diego, CA
62. 20 May 2010: Building a Campus-wide Remote Sensing Infrastructure for Education, Research and Interdisciplinary Applications, Part 3: Hyperspectral Science. East China Normal University, Shanghai, China
63. 19 May 2010: Building a Campus-wide Remote Sensing Infrastructure for Education, Research and Interdisciplinary Applications, Part 2: Real-time Weather and Environmental Forecasting Systems. East China Normal University, Shanghai, China
64. 18 May 2010: Building a Campus-wide Remote Sensing Infrastructure for Education, Research and Interdisciplinary Applications, Part 1: An End-to-

End Environmental Satellite Receiving, processing and Distribution Data Center, East China Normal University, Shanghai, China

65. 18 May 2010: Environmental Satellite Science and Applications: An Overview. East China Normal University, Shanghai, China.
66. 2 April 2010:Towards Optimized Utilization of Meteorological Satellite Assets: Better World with Satellite Remote Sensing, National Satellite Meteorological Center, China Meteorological Administration, Beijing China.
67. 1 April 2010:International Feng Yun Processing Package (IFYPP): A Gateway to NSMC's Effective Contribution to the Direct Broadcast (DB) Community, National Satellite Meteorological Center, China Meteorological Administration, Beijing China
68. 1 April 2010:Prospect of Remote Sensing End-to-End Processing and Application System, National Satellite Meteorological Center, China Meteorological Administration, Beijing China
69. 1 April 2010: Prototyping of GPU-Based High Performance Data Processing System, National Satellite Meteorological Center, China Meteorological Administration, Beijing China
70. 25 March 2010:, Ground Processing Systems: LEOCAT/GEOCAT/DBPS/DBVM, National Satellite Meteorological Center, China Meteorological Administration, Beijing China.
71. 25 March 2010:GOES-R ABI simulation, modeling, and sensor impact on product analysis system and tools, National Satellite Meteorological Center, China Meteorological Administration, Beijing China.
72. 25 March 2010: Hyperspectral and Ultra-Spectral Lossless Data Compression, National Satellite Meteorological Center, China Meteorological Administration, Beijing China
73. 2 February 2010: Recent Advancement of Direct Broadcast Data Acquisition, Processing, Applications and Distributions and Overview of International (A)TOVS Working Group (ITWG) Activities and its Role in Coordinating Standardization and Optimal Use of Weather Satellite Information World Meteorological Organization (WMO), Geneva, Switzerland
74. 28 August 2009: Overview of Infrared Radiative Transfer Theory and Modeling, PICES international Summer School on Satellite Oceanography for the Earth Environment, Seoul National University, South Korea.
75. 27 August 2009: IMAPP Software Overview and Processing, PICES international Summer School on Satellite Oceanography for the Earth Environment, Seoul National University, South Korea.
76. 27 August 2009: Multiple and Hyperspectral Infrared Sensing of Sea Surface Temperature: Theory and Laboratory Exercise, PICES international Summer School on Satellite Oceanography for the Earth Environment, Seoul National University, South Korea.
77. 25 August 2009: Real-Time Remote Sensing of Environment Monitoring and Forecasting: The Development and Demonstration of the Innovated Processing and Modeling System. Korean Satellite Meteorological Center, Korean Meteorological Administration, Jincheon, South Korea

78. 6 August 2009: CIMSS participation in the GOES-R algorithm working group, risk reduction, proving ground, calibration/validation, and sensor tradeoff activities. Atmospheric and Environmental Remote Sensing Data Processing and Utilization V: Readiness for GEOSS III, Optical Engineering and Applications, SPIE Annual meeting, San Diego, CA.
79. 5 August 2009: Adaption of FPGA and GPU in real-time remote sensing, Remote Sensing System Engineering II, Optical Engineering and Applications, SPIE Annual meeting, San Diego, CA.
80. 4 August 2009: Direct Broadcast Satellite Data Assimilation and Numerical Weather Prediction System Using Laptop Computer, Remote Sensing Plenary Session, Optical Engineering and Applications, SPIE Annual meeting, San Diego, CA.
81. 23 July 2009: Development of a GPU-based High-Performance Radiative Transfer Model for the High-spectral Resolution Infrared Sounders, Global Modeling and assimilation Office, Goddard Space Flight Center, NASA
82. 19 June 2009: Real-time Remote Sensing of Environment Monitoring and Forecasting: Processing and Modeling System, The 3rd International Symposium on Photoelectronic Detection and Imaging, Beijing China.
83. 27 April 2009: Hyperspectral and Multispectral Infrared Sounding of the Environment: A Brief Overview. Advances in Imaging: Optical Society of America Optics & Photonics Congress and Tabletop Exhibit, Vancouver BC, Canada.
84. 12 February 2009: Recent Advances in Satellite Remote Sensing: The New Frontier for Atmospheric and Environmental Scientists. Florida State University, Tellahassee, Florida, USA.
85. 6 November 2008: Modern Satellite Remote Sensing Center: A Cooperative Science and Engineering Multi-Disciplinary Establishment for the Comprehensive Earth Study and Betterment of Our Society, Joint Laboratory for Environmental Remote Sensing and Data Assimilation, Center for Earth Observations and Digital Earth, East China Normal University Shanghai, China.
86. 4 November 2008: Environmental Satellite Remote Sensing at Its Best: Benefiting Society from Scientific Research to Weather Forecasting and Air Quality Monitoring, School of Remote Sensing, Nanjing University of Information Science and Technology, Nanjing, China.
87. 7 October 2008: From Data to Products to Weather Forecasting and Air Quality Monitoring: Direct Broadcast at Its Best, The 18th International SeaSpace Remote Sensing Conference, San Diego, CA, USA.
88. 16 September 2008: Recent Advances in Hyperspectral Infrared Sounding Retrieval Science at the CIMSS, Advanced High Spectral Resolution Infrared Observations Workshop EUMETSAT Darmstadt, Germany.
89. 11 September 2008: Comprehensive Training Workshops for International Direct Broadcast Users, *2008* EUMETSAT Meteorological Satellite Conference Darmstadt, Germany.
90. 12 August 2008: System Processing Approach in Analyzing the GOES-R Measurements Impacts on the Product Requirements, SPIE 2008 annual meeting: Remote Sensing System Engineering, San Diego, CA.

91. 12 August 2008: Direct broadcast activities in support of GEOSS – A CIMSS perspective, SPIE 2008 annual meeting: Atmospheric & Environmental Remote Sensing Data Processing & Utilization IV: Readiness for GEOSS II, San Diego, CA, USA
92. 27 March 2008: Modern Satellite Remote Sensing: The New Infrared Sounding and Imaging Capability for Atmospheric and Environmental Applications, Institute of Science and Engineering, National Defense University, Jhongli, Taiwan.
93. 26 March 2008: Overview of SSEC/CIMSS Infrastructure, Expertise and On Going Research Activities, Center for Space and Remote Sensing Research National Central University, Jhongli, Taiwan
94. 21 March 2008: Towards Optimizing Meteorological Satellite Center's Assets: Development of Applications of Satellite-Derived Products in Support of CWB Meteorological Satellite Center Weather and Environmental Monitoring and Forecasting, Meteorological Satellite Center, Central Weather Bureau, Taipei, Taiwan
95. 20 March 2008: CIMSS Regional Assimilation System (CRAS) - Assimilation of GOES & MODIS Products in CRAS, Meteorological Satellite Center, Central Weather Bureau, Taipei, Taiwan
96. 30 November 2007: AIRS Hyperspectral Sounder Overview**.** CPTEC/INPE Cachoeira Paulista, Sao Paulo, Brazil
97. 29 November 2007: Review of Remote Sensing Fundamentals – Infrared at High Spectral Resolution: Basic Principal & Limitations. CPTEC/INPE Cachoeira Paulista, Sao Paulo, Brazil
98. 28 November 2007: Review of Remote Sensing Fundamentals – Radiative Transfer Equation in the Infrared. CPTEC/INPE Cachoeira Paulista, Sao Paulo, Brazil
99. 28 November 2007: Overview of SSEC/CIMSS Remote Sensing Expertise. CPTEC/INPE Cachoeira Paulista, Sao Paulo, Brazil
100. 26 November 2007: Review of Geo/Leo Data/Products Receiving & Direct Broadcast Processing Systems. CPTEC/INPE Cachoeira Paulista, Sao Paulo, Brazil
101. 26 November 2007: Overview of GEOSS Americas/Caribbean Remote Sensing Workshop – Transforming Data into Products. CPTEC/INPE Cachoeira Paulista, Sao Paulo, Brazil
102. 6 September 2007: Modern Satellite Remote Sensing: The New Frontier for the Environmental Scientists and Engineer, CREST, The City University of New York, New York, USA
103. 16 August 2007: Overview of SSEC/CIMSS Remote Sensing Infrastructure, capabilities/activities & direct Broadcast, IDEA, and AERI Projects, East China Normal University, Shanghai, China
104. 10 August 2007: Overview of Atmospheric Emitted Radiance Interferometer (AERI) Capabilities, International Workshop on Semi-Arid Land Surface-Atmosphere Interaction, Lanzhou University, Lanzhou, China
105. 3 August 2007: Overview of SSEC/CIMSS Remote Sensing Infrastructure, capabilities, and Activities, Xinjiang University, Xinjiang, China

106. 31 July 2007: Overview of AERI and Mobil AERI Sensor System and their Applications, Institute of Atmospheric Physics, Chinese Academy of Sciences, Beijing, China
107. 30 July 2007: AERI/AERIBago and Its Applications, NSMC/CMA, Beijing, China
108. 15 May 2007: GOES-R Analysis Facility for Instrument Impacts on Requirements, Annual GOES-R AWG Conference, Advancing Product Algorithm Development, National Conference Center, Lansdowne, VA, USA.
109. 4 May 2007: Hyperspectral and Multispectral Infrared Sounding of the Environment, CPTEC, INPE, Cachoeira Paulista, Brazil.
110. 14 February 2007: Development of a Multispectral and Hyperspectral Proxy Data System, Hyperspectral Imaging and Sounding for the Environment (HISE), OSA Topical Meeting, Santa Fe, New Mexico,USA.
111. 14 November 2006: Overview of CIMSS Activities in Support of the U.S. GOES-R Program, GEOSS and Next Generation Sensors and Missions, SPIE Asia-Pacific Remote Sensing, Panaji, Goa, India.
112. 9 November 2006: Overview of SSEC/CIMSS Infrastructure, Capabilities, and Activities, Meteorology and Oceanography Group Seminar, India Space Research Organization, Bopal Campus, Ahmedabad, India.
113. 8 November 2006: Hyperspectral Remote Sensing of Atmosphere, Space Applications Center Lecture Series, India Space Research Organization, Bopal Campus, Ahmedabad, India.
114. 7 November 2006: Infrared Sounding Profile Retrieval, 5th United Nation Post Graduate Course in Satellite Meteorology and Global Climate, India Space Research Organization, Ahmedabad, India.
115. 7 November 2006: Radiation and the Radiative Transfer Equation, 5th United Nation Post Graduate Course in Satellite Meteorology and Global Climate, India Space Research Organization, Ahmedabad, India.
116. 6 November 2006: Characteristic of Multispectral and Hyperspectral Infrared Measurements. 5th United Nation Post Graduate Course in Satellite Meteorology and Global Climate, India Space Research Organization, Ahmedabad, India.
117. 3 November 2006: Modern Remote Sensing: The eyes and means for scientists and engineers. Nanjing University of Information Science and Technology, Nanjing, China.
118. June 2006: CIMSS Plan for the Direct Broadcast Processing of EOS, METOP, NPP and NPOESS, Meteorological Satellite Center, Central Weather Bureau, Taipei, Taiwan
119. March 2006: Ultraspectral Remote Sensing Science & Applications – A Brief Overview, University of Stellenbosch, Stellenbosch, South Africa
120. February 2006: The Earth Observing System - Prospect of Processing Packages for Direct Broadcast Users, MODIS Remote Sensing Workshop, Andoya Rocket Range, Andenes, Norway
121. December 2005: Prospects of International Processing Package for NPP, NPOESS and METOP, Second International Conference "Earth from Space – the Most Effective Solutions", Moscow, Russia

122. October 2005: Synergistic Sounding/Imaging and Infrared/Microwave Products Demonstration for EOS/NPOESS/NPP Direct Broadcast Users, International EOS/NPP Direct Readout Meeting, Mediterranean Agency for Remote Sensing & Environmental Control, Benevento, Italy
123. September 2005: Infrared Remote Sounding for Atmospheric Sciences, Department of Atmospheric Sciences, TA&M University, College Station, TX
124. August 2005: Evaluation of Cloud-Cleared Radiances for Numerical Weather Prediction and Cloud-contaminated Sounding Applications, SPIE annul meeting, San Diego, CA
125. July 2005: Development of a Value Added International NPOESS Processing Package (INPP) In Support of NPP Direct Broadcast Users, IEEE International Geoscience and Remote Sensing Symposium, Seoul Korea
126. June 2005: Hyperspectral Science at CIMSS, CIMSS Board of Directors Meeting, Madison, WI
127. May 2005: Remote Sounding of Trace Gases & Its Impact on T/Q Profile Retrieval from Advanced Sounders, National Satellite Meteorological Center, China Meteorological Administration, China
128. May 2005: Current Status & Future Prospects of UW's Polar Orbiting Satellite Direct Broadcast Packages, International Symposium of Remote Sensing Space Technology for Multi-disciplinary Research & Application, Peking University, China
129. March 2005: The development of a value added processing capability for direct broadcast users in support of the NPP/NPOESS mission application and validation activities, Integrated Program Office Splinter Meeting, NGST, LA, CA1
130. January 2005: Hyperspectral Infrared Sounding of the Atmosphere, MODIS Direct Broadcast & Remote Sensing Application Workshop, Taipei, Taiwan
131. January 2005: Wedge-filter Imaging Sounder for Humidity (WISH): A Practical Low Earth Orbit (LEO) & Geostationary Earth Orbit (GEO) High-Spatial Resolution Sensor, Meteorological Satellite Center, Central Weather Bureau, Taipei, Taiwan
132. December 2004: Polar Orbiting Satellite Direct Broadcast Processing Packages for Regional Users – An Value Added &Unique S/W System, Satellite Direct Readout Conference, Miami, Florida
133. October 2004: Apperception of AIRS Data for NPOESS Sounding Processing and GOES-R Sounder Design, Office of Research and Applications, NESDIS/NOAA, Washington D.C.
134. September 2004: Bridging the NPOESS and the International Polar Orbiting Direct Broadcast Community, IEEE International Geoscience and Remote Sensing Symposium, Anchorage, Alaska
135. September 2004: Utilization Of Operational Environmental Satellite Data: *Ensuring Readiness For 2010 And Beyond,* CESDU Final Report Briefing, Silver Spring, MD

136. August 2004: Direct Broadcast/Readout Processing Package: A Vital Step Towards Optimal Use of Environmental and Atmospheric Remote Sensing Data and Products, SPIE annual meeting, Denver, CO
137. August 2004: Direct Broadcast Real-Time Environmental Monitoring and Meteorological Applications, Meteorological Satellite Center, Central Weather Bureau, Taipei, Taiwan
138. August 2004: Atmospheric Applications of Ultraspectral Data – A CIMSS/SSEC Outlook, 4th NOAA Hyperspectral Workshop, Madison WI
139. June 2004: Apperception of Clouds in AIRS Data, Workshop on Assimilation of high spectral resolution sounders in NWP, ECMWF Reading, UK
140. June 2004: Direct Broadcast Outlook for the Future - NPP and NPOESS Missions, TeraScan 14th International Conference, Nanjing University of Information Science and Technology, Nanjing, China
141. May 2004: CIMSS/SSEC Effort on the Fast IR Cloudy Forward Model Development, 2nd Workshop on Advanced High Spectral Resolution Infrared Observations, Ravello, Italy
142. May 2004: End-To-End Utilization of Operational Environmental Satellite Data: A Vision for 2010 and Beyond, Third GOES-R Users Conference, Broomfield, CO

Book Chapter:

Dr. Huang has co-authored a book published in the data compression to improve the efficient communication of satellite in data down link and archive.

Huang, B., A. Ahuja, and H.-L. Huang, 2006: Hyperspectral Data Compression: Lossless Compression of Ultraspectral Sounder Data. G. Motta, F. Rizzo, and J.A. Storer**, Springer**, pp. 75-105.

The National Academies Committee Report:

Dr. Huang has been elected by National Academies to serve as the chair of the committee – "Committee on Environmental Satellite Data Utilization (CESDU)" to hold information gathering meetings, conduct interviews and report writings during 2003-2004 period. Along with 11 expert members selected from government, industry and academia a report (see below) is published to provide detail policy recommendations to our national agencies (NASA and NOAA) who are in charge of the designing, operating, and maintaining the satellite remote sensing resources to provide seamless global observations to support weather forecast, disaster management, home land security and other environmental applications. Dr. Huang has played a leadership role to ensure this report is well written, published on time and has briefed administrators and remote sensing community.

National Research Council of the National Academies, 2004: Utilization of Operational Environmental Satellite Data – Ensuring Readiness for 2010 and Beyond, The National Academies Press, 159 pp.

Peer-Reviewed Publications (89):
http://www.ssec.wisc.edu/~allenh/publications.html

The latest 25 publications are listed below

1. Mielikainen, Jarno; Huang, Bormin and Huang, Hung-Lung Allen. **Optimizing Purdue-Lin microphysics scheme for Intel Xeon Phi coprocessor.** IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing, Volume 9, Issue 1, 2016, pp.425-438. Reprint # 7568.

2. Mielikainen, Jarno; Price, Erik; Huang, Bormin; Huang, Hung-Lung Allen and Lee, Tsengdar. **GPU Compute Unified Device Architecture (CUDA)-based parallelization of the RRTMG shortwave rapid radiative transfer model.** IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing, Volume 9, Issue 2, 2016, pp.921-931. Reprint # 7569.

3. Greenwald, Thomas J.; Pierce, R. Bradley; Schaack, Todd; Otkin, Jason; Rogal, Marek; Bah, Kaba; Lenzen, Allen; Nelson, Jim; Li, Jun and Huang, Hung-Lung. **Real-time simulation of the GOES-R ABI for user readiness and product evaluation.** Bulletin of the American Meteorological Society, Volume 97, Issue 2, 2016, pp.245-261. Reprint # 7570.
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4. Zhai, Tianyong; Zhao, Qing; Gao, Wei; Shi, Runhe; Xiang, Weining; Huang, Hung-Lung Allen and Zhang, Chao. **Analysis of spatio-temporal variability of aerosol optical depth with empirical orthogonal functions in the changing River Delta, China.** Frontiers of Earth Science, Volume 9, Issue 1, 2015, pp.1-12. Reprint # 7365.

5. Liu, Yan-An; Huang, Hung-Lung Allen; Gao, Wei; Lim, Agnes H. N.; Liu, Chaoshun and Shi, Runhe.**Tuning of background error statistics through sensitivity experiments and its impact on typhoon forecast.** Journal of Applied Remote Sensing, Volume 9, Issue 1, 2015, doi:10.1117/1.JRS.9.096051. Reprint # 7412.

6. Mielikainen, Jarno; Huang, Bormin; Huang, Hung-Lung Allen and Lee, Tsengdar. **Performance and scalability of the JCSDA Community Radiative Transfer Model (CRTM) on NVIDIA GPUs.** IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing, Volume 8, Issue 4, 2015, pp.1519-1527. Reprint # 7448.

7. Huang, Melin; Huang, Bormin; Chang, Yang-Lang; Mielikeinen, Jarno; Huang, Hung-Lung Allen and Goldberg, Mitchell D. **Efficient parallel GPU design on WRF five-layer thermal diffusion scheme.**IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing, Volume 8, Issue 5, 2015, pp.2249-2259. Reprint # 7458.

8. Huang, Melin; Huang, Bormin; Li, Xiaojie; Huang, Hung-Lung Allen; Goldberg, Mitchell D. and Mehta, Ajay. **Massive parallelization of the WRF GCE model toward a GPU-based end-to-end satellite data simulator unit.** IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing, Volume 8, Issue 5, 2015, pp.2260-2272. Reprint # 7459.

9. Mielikainen, Jarno; Huang, Bormin and Huang, Hung-Lung Allen. **Optimizing Total Energy-Mass Flux (TEMF) planetary boundary layer scheme for Intel's Many Integrated Core (MIC) architecture.** IEEE Journal of Selected Topics in Applied Earth

Observations and Remote Sensing, Volume 8, Issue 8, 2015, pp.4196-4119. Reprint # 7493.

10. Huang, Melin; Huang, Bormin; Gu, Lingjia; Huang, H.-L. Allen and Goldberg, Mitchell D. **Parallel GPU architecture framework for the WRF single moment 6-class microphysics scheme.**Computers and Geosciences, Volume 83, 2015, pp.17-26. Reprint # 7494.

11. Huang, M.; Mielkainen, J.; Huang, B.; Chen, H.; Huang, H.-L. A. and Goldberg, M. D. **Development of efficient GPU parallelization of WRF Yonsei University planetary boundary layer scheme.**Geoscientific Model Development, Volume 8, Issue 9, 2015, pp.2977-2990. Reprint # 7511.
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12. Liu, Hongqing; Remer, Lorraine A.; Huang, Jingfeng; Huang, Ho-Chun; Kondragunta, Shobha; Laszlo, Istvan; Oo, Min and Jackson, John M. **Preliminary evaluation of S-NPP VIIRS aerosol optical thickness.** Journal of Geophysical Research-Atmospheres, Volume 119, Issue 7, 2014, pp.3942-3962. Reprint # 7196.

13. Lim, Agnes H. N.; Jung, James A.; Huang, Hung-Lung Allen; Ackerman, Steven A. and Otkin, Jason A. **Assimilation of clear sky Atmospheric Infrared Sounder radiances in short-term regional forecasts using community models.** Journal of Applied Remote Sensing, Volume 8, Issue 1, 2014, doi:10.1117/1.JRS.8.083655. Reprint # 7199.

14. Mielikainen, Jarno; Huang, Melin; Huang, Bormin and Huang, Allen H.-L. **Comments on the paper by Huandong Xiao, Jing Sun, Xiaofeng Bian and Zhijun Dai, 'GPU acceleration of the WSM6 cloud microphycis scheme in GRAPES model'.** Computers and Geosciences, Volume 72, 2014, pp.262-263. Reprint # 7283.

15. Price, Erik; Mielikainen, Jarno; Huang, Melin; Huang, Bormin; Huang, Hung-Lung Allen and Lee, Tsengdar. **GPU-accelerated longwave radiation scheme of the Rapid Radiative Transfer Model for General Circulation Models (RRTMG).** IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing, Volume 7, Issue 8, 2014, doi:10.1109/JSTARS.2014.2315771. Reprint # 7308.

16. Mielikainen, Jarno; Huang, Bormin; Wang, Jun; Huang, Hung-Lung Allen and Goldberg, Mitchell D.**Compute Unified Device Architecture (CUDA)-based parallelization of WRF Kessler cloud microphysics scheme.** Computers and Geosciences, Volume 52, 2013, pp.292-299. Reprint # 6950.

17. Quan, X.; Huang, H.-L.; Zhang, L.; Weisz, E. and Cao, X. **Sensitive detection of aerosol effect on simulated IASI spectral radiance.** Journal of Quantitative Spectroscopy and Radiative Transfer, Volume 122, 2013, pp.214-242. Reprint # 7036.

18. Mielikainen, J.; Huang, B.; Huang, H.-L. A.; Goldberg, M. D. and Mehta, A. **Speeding up the computation of WRF double-moment 6-class microphysics scheme with GPU.** Journal of Atmospheric and Oceanic Technology, Volume 30, Issue 12, 2013, 2896–2906. Reprint # 7134.
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19. Zhao, Qing; Gao, Wei; Xiang, Weining; Shi, Runhe; Liu, Chaoshun; Zhai, Tianyong; Huang, Hung-Lung Allen; Gumley, Liam E. and Strabala, Kathleen. **Analysis of air quality variability in Shanghai using AOD and API data in the recent decade.** Frontiers of Earth

Science, Volume 7, Issue 2, 2013, pp.159-168. Reprint # 7363.

20. Han, Hyo-Jin; Sohn, Byung-Ju; Huang, Hung-Lung; Weisz, Elisabeth; Saunders, Roger and Takamura, Tamio. **An improved radiance simulation for hyperspectral infrared remote sensing of Asian dust.** Journal of Geophysical Research-Atmospheres, Volume 117, 2012, doi:10.1029/2012JD017466. Reprint # 6725.

21. Mielikainen, Jarno; Huang, Bormin; Huang, Hung-Lung Allen and Goldberg, Mitchell D. **GPU acceleration of the updated Goddard shortwave radiation scheme in the Weather Research and Forecasting (WRF) model.** IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing, Volume 5, Issue 2, 2012, pp.555-562. Reprint # 6742.

22. Mielikainen, Jarno; Huang, Bormin; Huang, Hung-Lung Allen and Goldberg, Mitchell D. **GPU implementation of Stony Brook University 5-class cloud microphysics scheme in the WRF.** IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing, Volume 5, Issue 2, 2012, pp.625-633. Reprint # 6743.

23. Mielikainen, Jarno; Huang, Bormin; Huang, Hung-Long Allen and Goldberg, Mitchell D. **Improved GPU/CUDA based parallel Weather and Research Forecast (WRF) Single Moment 5-class (WSM5) cloud microphysics.** IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing, Volume 5, Issue 4, 2012, pp.1256-1265. Reprint # 6781.

24. English, Stephen and Huang, Allen. **A short report from the 18th International TOVS Study Conference.** JCSDA Quarterly, Volume 38, 2012, pp.2-3. Reprint # 6965.
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25. Yao, Zhigang; Li, Jun; Han, Hyo-Jin; Huang, Allen; Sohn, B. J. and Zhang, Peng. **Asian dust height and infrared optical depth retrievals over land from hyperspectral longwave infrared radiances.** Journal of Geophysical Research-Atmospheres, Volume 117, 2012, doi:10.1029/2012JD017799. Reprint # 6986

Other Publications/Gray Literature (453):
http://www.ssec.wisc.edu/~allenh/publications.html

The latest 25 publications are listed below:

1. Lim, Agnes; Li, Z.; Jung, J. A.; Huang, A.; Woolen, J.; Quinn, G.; Nagle, F. W.; Healy, S. B.; Otkin, J. A.; Goldberg, M. and Atlas, R. **Impact analysis of LEO hyperspectral sensor IFOV size on the next generation high-resolution NWP model forecast performance. Conference on Integrated Observing and Assimilation Systems for the Atmosphere, Oceans, and Land Surface (IOAS-AOLS), 20th, New Orleans, LA, 10-14 January 2016.** American Meteorological Society, Boston, MA, 2016, abstract only.

2. Strabala, Kathleen; Gumley, L.; Huang, H. L.; Cintineo, R. M.; Hoese, D.; Davies, J. E. and Pierce, B.**Aqua and Terra polar orbiter direct broadcast in support of operational environmental forecasters. Conference on Environmental Information Processing Techniques, 32nd, New Orleans, LA, 10-14 January 2016.** American Meteorological Society, Boston, MA, 2016, abstract only.

3. Lim, Agnes; Li, Z.; Jung, J. A.; Huang, A.; Woollen, J.; Quinn, G.; Nagle, F. W.; Healy, S. B.; Otkin, J. A.; Goldberg, M. and Atlas, R. **Analysis of CrIS FOV sizes on the next generation high-resolution NWP model forecast performance through an OSSE. AMS Symposium on the Joint Center for Satellite Data Assimilation (JCSDA), 4th, New Orleans, LA, 10-14 January 2016.** American Meteorological Society, Boston, MA, 2016, abstract only.

4. Mindock, Scott; Martin, G.; Garcia, R.; Strabala, K.; Cureton, G.; Gumley, L. and Huang, A.**Providing researchers and forecasters with Enterprise meteorological algorithms, CSPP SDR and ADL an operations to application success story. Annual Symposium on New Generation Operational Environmental Satellite Systems, 12th, New Orleans, LA, 10-14 January 2016.**American Meteorological Society, Boston, MA, 2016, abstract only.

5. Hoese, David; Strabala, K.; Gumley, L.; Huang, H. L. and Garcia, R. **Polar2Grid version 2.0: Reprojecting VIIRS satellite data made easy. Annual Symposium on New Generation Operational Environmental Satellite Systems, 12th, New Orleans, LA, 10-14 January 2016.**American Meteorological Society, Boston, MA, 2016, abstract only.

6. Gumley, Liam E.; Strabala, K.; Huang, A.; Mindock, S.; Martin, G.; Garcia, R.; Bearson, N.; Cureton, G.; Davies, J. and Braun, J. **The Community Satellite Processing Package (CSPP): Support for multiple sensors and satellites for real-time decisions. Annual Symposium on New Generation Operational Environmental Satellite Systems, 12th, New Orleans, LA, 10-14 January 2016.**American Meteorological Society, Boston, MA, 2016, abstract only.

7. Davies, James E.; Strabala, K.; Gumley, L.; Huang, A.; Grassotti, C.; Zhan, X.; Barnet, C. D.; Gambacorta, A.; King, T. and Stroup, J. **Recent updates to the Community Satellite Processing Package (CSPP) for three NOAA operational algorithms. Conference on Satellite Meteorology, Oceanography and Climatology, 21st, and Conference on Air-Sea Interaction, 20th, Madison, WI, 15-19 August 2016.** American Meteorological Society, Boston, MA, 2016, abstract only.

8. Davies, James E.; Strabala, K.; Smith, N.; Weisz, E.; Cintineo, R. M.; Schiffer, E.; Pierce, R. B.; Huang, A.; Hoese, D.; Parker, D.; Pavolonis, M. J.; Calvert, C. and Martin, G. **Product updates to International MODIS/AIRS Processing Package (IMAPP) and transition to JPSS. Conference on Satellite Meteorology, Oceanography and Climatology, 21st, and Conference on Air-Sea Interaction, 20th, Madison, WI, 15-19 August 2016.** American Meteorological Society, Boston, MA, 2016, abstract only.

9. Huang, Allen; Lim, A. and Wu, S. **Asynchronous assimilation of high temporal infrared imaging for wind profile retrieval - a pilot study. Conference on Satellite Meteorology, Oceanography and Climatology, 21st, and Conference on Air-Sea Interaction, 20th, Madison, WI, 15-19 August 2016.** American Meteorological Society, Boston, MA, 2016, abstract only.

10. Lim, Agnes; Li, Z.; Jung, J. A.; Huang, H. L.; Woollen, J.; Nagle, F. W.; Quinn, G.; Healy, S. B.; Otkin, J.; Goldberg, M. and Atlas, A. **Impact analysis of LEO hyperspectral sensor IFOV size on the next generation high-resolution NWP model forecast performance. Conference on Satellite Meteorology, Oceanography and Climatology, 21st, and Conference on Air-Sea Interaction, 20th, Madison, WI, 15-19 August 2016.** American Meteorological Society, Boston, MA, 2016, abstract only.

11. Strabala, Kathleen I.; Gumley, L.; Davies, J.; Mindock, S.; Hoese, D.; Garcia, R.; Martin, G.; Cureton, G.; Bearson, N. A.; Pierce, B.; Weisz, E.; Braun, J. and Huang, H. L. **You used polar orbiter direct broadcast data for what?. Conference on Satellite Meteorology, Oceanography and Climatology, 21st, and Conference on Air-Sea Interaction, 20th, Madison, WI, 15-19 August 2016.** American Meteorological Society, Boston, MA, 2016, abstract only.

12. Weisz, Elisabeth; Smith, W. L. Sr.; Schultz, R. E.; Strabala, K. and Huang, A. **Enhancing weather monitoring and forecasting with polar-orbiting high spectral resolution infrared sounders.Conference on Satellite Meteorology, Oceanography and Climatology, 21st, and Conference on Air-Sea Interaction, 20th, Madison, WI, 15-19 August 2016.** American Meteorological Society, Boston, MA, 2016, abstract only.

13. Huang, Allen; Huang, B.; Mielikainen, J. and Huang, M. **High-performance weather satellite data processing and forecasting model advancement at SSEC using accelerator technology - current status and ongoing endeavor. Symposium on High Performance Computing for Weather, Water, and Climate, 1st, Phoenix, AZ, 4-8 January 2015.** American Meteorological Society, Boston, MA, 2015, abstract only.

14. Lim, Agnes; Jung, J. A.; Huang, H. L.; Li, Z.; Otkin, J. and Goldberg, M. **Impact analysis of LEO hyperspectral sensor IFOV size on the next generation NWP model forecast performance.Conference on Integrated Observing and Assimilation Systems for the Atmosphere, Oceans, and Land Surface (IOAS-AOLS), 19th, Phoenix, AZ, 4-8 January 2015.** American Meteorological Society, Boston, MA, 2015, abstract only.

15. Cintineo, Rebecca M.; Strabala, K. I.; Gumley, L. E.; Huang, A.; Borbas, E.; Weisz, E. and Pierce, B.**IMAPP: Supporting the Aqua and Terra operational community. Conference on Satellite Meteorology and Oceanography, 20th, Phoenix, AZ, 4-8 January 2015.** American Meteorological Society, Boston, MA, 2015, abstract only.

16. Gumley, Liam E.; Huang, H. L.; Mindock, S.; Martin, G.; Garcia, R.; Cureton, G.; Davies, J. E. and Stabala, K. I. **Community Satellite Processing Package (CSPP): Recent progress and future updates. Conference on Satellite Meteorology and Oceanography, 20th, Phoenix, AZ, 4-8 January 2015.** American Meteorological Society, Boston, MA, 2015, abstract only.

17. Strabala, Kathleen I.; Gumley, L. E.; Huang, H. L.; Hoese, D.; Gerth, J.; Weisz, E.; Smith, W. L. Jr. and Smith, N. **CSPP: Direct broadcast software for operational environmental forecasters.Conference on Satellite Meteorology and Oceanography, 20th, Phoenix, AZ, 4-8 January 2015.**American Meteorological Society, Boston, MA, 2015, abstract only.

18. Gunshor, Mathew; Zhang, H.; Schiffer, E. and Huang, A. **GRAFIIR and JAFIIR - Efficient end-to-end semi automated GEO and LEO sensor performance analysis and verification systems.Conference on Satellite Meteorology and Oceanography, 20th, Phoenix, AZ, 4-8 January 2015.**American Meteorological Society, Boston, MA, 2015, abstract only.

19. Huang, Allen; Gumley, Liam; Strabala, Kathy; Mindock, Scott; Martin, Graeme; Garcia, Ray; Cureton, Geoff; Davies, Jim; Bearson, Nick; Weisz, Elisabeth; Smith, Nadia and Smith, Bill Sr.**Community Satellite Processing Packages - Facilitating improvements in real-time satellite data applications. CSPP/IMAPP Users' Group Meeting, Eumetsat, Darmstadt, Germany, 14-16 April 2015.** University of Wisconsin-Madison, Space Science

and Engineering Center, Madison, WI, 2015, Powerpoint presentation.

20. Strabala, Kathleen; Gumley, Liam and Huang, Allen. **IMAPP: Supporting Aqua and Terra direct broadcast users for 15 years. CSPP/IMAPP Users' Group Meeting, Eumetsat, Darmstadt, Germany, 14-16 April 2015.** University of Wisconsin-Madison, Space Science and Engineering Center, Madison, WI, 2015, Powerpoint presentation.

21. Gumley, Liam; Huang, Allen; Strabala, Kathy; Mindock, Scott; Garcia, Ray; Martin, Graeme; Cureton, Geoff; Weisz, Elisabeth; Smith, Nadia; Bearson, Nick; Davies, James and Braun, Jessica.**Community Satellite Processing Package (CSPP) polar-orbiting satellite software and products. CSPP/IMAPP Users' Group Meeting, Eumetsat, Darmstadt, Germany, 14-16 April 2015.** University of Wisconsin-Madison, Space Science and Engineering Center, Madison, WI, 2015, Powerpoint presentation.

22. Gumley, Liam; Huang, Allen; Strabala, Kathy; Mindock, Scott; Garcia, Ray; Martin, Graeme; Cureton, Geoff; Weisz, Elisabeth; Smith, Nadia; Bearson, Nick; Davies, James and Braun, Jessica.**Community Satellite Processing Package (CSPP) polar-orbiting satellite software and products. STAR JPSS 2015 Annual Science Team Meeting, College Park, MD, 24-28 August 2015.** National Oceanic and Atmospheric Administration (NOAA), 2015, Powerpoint presentation.

23. Lim, Agnes; Jung, J. A.; Li, Z. and Huang, A. **Initial attempt to assess the impact of geostationary hyperspectral data using Observing Simulation System Experiment (OSSE).Conference on Integrated Observing and Assimilation Systems for Atmosphere, Oceans, and Land Surface (IOAS-AOLS), 18th, Atlanta, GA, 2-6 February 2014.** American Meteorological Society, Boston, MA, 2014, abstract only.

24. Cintineo, Rebecca M.; Strabala, K. I.; Gumley, L. E.; Huang, A.; Davies, J. E.; Borbas, E.; Weisz, E. and Pierce, B. **IMAPP: Supporting the Aqua and Terra operational community. Annual Symposium on New Generation Operational Environmental Satellite Systems, 10th, Atlanta, GA, 2-6 February 2014.** American Meteorological Society, Boston, MA, 2014, abstract only.

25. Mindock, S.; Garcia, R.; Martin, G.; Strabala, K.; Schiffer, E.; Cureton, G.; Gumley, L. and Huang, H. L. **CSPP NPP SDR (poster presentation). International TOVS Study Conference, 19th, Jeju Island, Republic of Korea, 26 March-1 April 2014.** University of Wisconsin-Madison, Space Science and Engineering Center, Cooperative Institute of Meteorological Satellite Studies (CIMSS), Madison, WI, 2014. 1p,
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