

CURRICULUM VITAE

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Short Biographical Sketch

Dr Amitai is a Research Associate Professor at the Center for Earth Observing and Space Research (CEOSR) within the School of Computational Sciences at George Mason University. Since 1990 he has been collaborating on the Tropical Rainfall Measuring Mission (TRMM) satellite ground validation (GV) algorithms and spaceborne precipitation radar (PR) algorithms for accurate measurements of rainfall from Space. He is the lead scientist of the TRMM GV Climatological Processing and Product Development Group at NASA Goddard Space Flight Center (GSFC), and was a member of the NASA TRMM Science Team. He is a Principal Scientist in a European Commission Fifth Framework project for validation of multisensors precipitation fields and numerical modeling in Mediterranean test sites in preparation for the GPM mission (VOLTAIRE). He is currently also a PI of an NSF collaborative research entitled 'Spatial averaging of oceanic rainfall variability using underwater sound'.

Employment Eligibility: U.S. citizen as of December 2003 (U.S. permanent resident was received on September 1997 under the U.S. National Interest Category).

DEGREES:

- 1996: Ph.D. degree from The Hebrew University of Jerusalem, Israel. Title of thesis: "The relation between rain rate and radar observed reflectivity and its dependence on the three-dimensional precipitation field properties". Thesis advisor: Prof. Daniel Rosenfeld.
- 1991: M.Sc. degree with distinction (Summa Cum Laude) from the Department of Atmospheric Sciences at The Hebrew University of Jerusalem, Israel. Thesis Advisor: Prof. Daniel Rosenfeld.
- 1989: B.Sc. degrees with distinction (Cum Laude) in Atmospheric Sciences and in Physics from The Hebrew University of Jerusalem, Israel.

SCHOLARSHIPS AND AWARDS:

- The NASA Group Achievement Award to Fourth Convection and Moisture Experiment (CAMEX 4) Science Team. In recognition of outstanding accomplishments and contributions to the extremely successful CAMEX 4 conducted from Florida in August and September 2001.
- Recognized as the most outstanding Ph.D. student (rated first) for the academic year 1992/93 at the Hebrew University Institute of Earth Sciences, which includes the Department of Atmospheric Sciences, the Department of Geology, the Department of Physical Geography and the Department of Oceanography, and was the recipient of the Wolf Foundation Scholarship for the most outstanding Ph.D. students in Israel.
- Dean's List for academic years: 1985/86, 1986/87 and 1987/88.

PROFESSIONAL EMPLOYMENT:

- 1/2003- Senior Research Scientist/ Research Associate Professor with the Center for Earth Observing and Space Research (CEOSR), School of Computational Sciences at George Mason University. Research is performed at the NASA Goddard Space Flight Center (GSFC), Laboratory for Atmospheres, Tropical Rainfall Measuring Mission (TRMM) Satellite Validation Office.
- 8/1998-12/2002: Faculty position as Assistant Research Scientist with the Joint Center for Earth Systems Technology (JCET) at the University of Maryland Baltimore County (UMBC). Research performed at the NASA/GSFC, Laboratory for Atmospheres, TRMM Satellite Validation Office.
- 5/1996-8/1998: Postdoctoral Research Scientist (Visiting Fellow) with the Universities Space Research Association (USRA) at the NASA/GSFC, TRMM Office.
- 10/1988-4/1996: Teaching Assistant at the Institute of Earth Sciences, The Hebrew University of Jerusalem, Israel.
- 10/1987-4/1996: Graduate Research Assistant at the Laboratory for Rain and Cloud Physics, Institute of Earth Sciences, The Hebrew University of Jerusalem, Israel.
Area of research:
Radar Meteorology (1989-1996) - quantitative measurement of rainfall with radar.
Cloud Physics (1988-1989) - the research included participation in cloud research flights over Israel.
The research is conducted as a part of the Israeli rain enhancement project.
Radiative Transfer (1987-1988).

In addition, while graduate student employed by USRA and by Woodley Weather Consultants (Littleton, Colorado) through short term consulting appointments (see under special research activities/field experiments).

TEACHING EXPERIENCE:

10/2003- : Ph. D. thesis advisor of a graduate student, Xavier Llord, of Universitat Politecnica de Catalunya (UPC), Barcelona, Spain. Llord came to NASA/GSFC, under the

GSFC/GEST Visiting Scientist Program, for a 10-week period (10-12/2003) to develop his graduation thesis in radar meteorology under Dr. Amitai supervision.

5/2001-7/2002: Master thesis advisor of a graduate student, Mr. Marco Marcovina, of Politecnico di Torino, Department of Electronics, Turin, Italy. Marcovina came to NASA/GSFC, under the GSFC/GEST Visiting Scientist Program, for a 6-month period to develop his graduation thesis in radar meteorology under Dr. Amitai supervision. He graduated on July 2002 with distinction (Magna Cum Laude).

6-8/1998, and 6-8/2002: Advisor/mentor, Summer Institute on Atmospheric and Hydrospheric Sciences, NASA/GSFC. Designed educational and research program of an undergraduate student in the area of satellite and radar meteorology (Mr. Scott Steiger; Mr David Robin).

10/1988-4/1996: Teaching Assistant in the following courses at The Hebrew University:

- Introduction to Climatology
- Climate Change
- Dynamic Meteorology
- Radar Meteorology
- Cloud Microphysics
- Fluids Dynamics: Laminar Flow
- Rain Enhancement in Israel - an invited lecture to Prof. R. Ikan's course: Science and Technology in Israel.

SPECIAL RESEARCH ACTIVITIES / FIELD PROGRAM EXPERIENCE:

NASA / GSFC

Since 1990 - Collaborating on the TRMM ground validation (GV) algorithms and spaceborne precipitation radar (PR) algorithms for accurate measurement of rainfall from ground-based and spaceborne radars.

- Coordinating the TRMM Satellite-TRMM GV comparison effort at NASA/GSFC.
- Lead Scientist of the NASA/TRMM GV Climatological Processing and Product Development Group (2000-present). Leading the algorithm development and processing effort, and responsible for the evaluation of the TRMM GV rainfall products.
- A member of the NASA/TRMM Science Team (1998-2002).
- PI on the NASA/TRMM post-launch research program, NRA-98-OES-02 (1998-2002). Research title: *TRMM Precipitation Radar: Development of a rain retrieval algorithm using ground validation data and validation of day-1 products* (NASA's grant NAG5-7909).
- Co-PI on the NASA/TRMM post-launch research program, NRA-98-OES-02 (1998-2001). Research title: *Validation of Acoustical Rainfall Measurements* (NASA's grant NAG5-7886). PI: Dr. J. Nystuen of the University of Washington / Applied Physics Laboratory. NASA has issued a Press Release on the collaboration on 2/28/00.
- Responsible for one of the four TRMM GV primary sites- Melbourne, Florida PI site (1998-2001).

1996: The Window Probability Matching Method (WPMM) for ground-based radar rainfall measurement is selected by NASA as their principal (Day-1) TRMM GV rain retrieval algorithm. This technique, developed as part of Dr. Amitai's Ph.D. work, was selected based upon two consecutive intense scientific algorithm inter-comparison workshops, held in the University of Washington during December 1994 and September 1996.

Following is a list of NASA/TRMM related activities prior to Dr. Amitai's Postdoctoral Research Scientist position with the USRA Goddard Visiting Scientist Program (May 1996):

- USRA Temporary Consulting appointment (August 1, 1995 until December 31, 1995) for consulting on effort relating to the PR algorithm development for TRMM, and USRA invitation to participate in the TRMM PR Science Team Meeting, NASA/GSFC, October 1995.
- USRA invitation to attend the Fifth International Conference on Precipitation, Elounda, Crete, Greece, June 1995.
- USRA Temporary Consulting appointment (July 1, 1994 until December 31, 1994) for the purpose of participating in related TRMM Ground Truth Project research activities, and invitation to attend the TRMM GV Science Team Algorithm Intercomparison Workshop (AIW), Seattle, Washington, December 1994. The purpose of the workshop was to compare products derived by candidate algorithms developed by different investigators.
- Co-PI on the TRMM NASA-NASDA joint research program, NRA-94-MTPE-01 for the 3-year period (1994-1997) preceding TRMM launch. Research title: *Improving radar rainfall estimation algorithms with Israel as a ground truth and validation site*.
- USRA invitation to attend the Forth International Conference on Precipitation, Iowa City, Iowa, April 1993.
- USRA Visiting Scientist Program Summer Visitor positions at the NASA/GSFC (July 1990, 1990, July-September 1992).

Europe

1. Principal Scientist on an awarded proposal submitted to the European Commission Fifth Framework Program for Energy, Environmental and Sustainable Development: Global Change, Climate and Biodiversity (2002-2005), by a research consortium of nine principal contractors which includes UMBC (till 12/31/02), GMU (as of 01/01/03) and eight European institutions. Proposal title: *Validation of multisensors precipitation fields and numerical modeling in Mediterranean test sites (VOLTAIRE)*. Status: Accepted; award period: 11/1/02-10/31/05.

VOLTAIRE attempts to integrate, in a unified measuring methodology, all rain-data as derived from: traditional observational systems (like rain gauge networks), mature technology instruments (like adjusted radar-derived estimates), advanced spaceborne instruments (like the TRMM satellite precipitation radar), and to compare them with numerically modeled fields. This project would permit: validation of TRMM precipitation data in a European land (Cyprus) for the first time; improved accuracy of surface-radar-derived precipitation fields based on the experience gained from the TRMM Validation Program; and preparation for European participation in Global Precipitation Measurement (GPM) mission. The latter includes preparation of a validation supersite for GPM mission in the Western Mediterranean with an innovative hydrological validation concept.

2. PI on an awarded proposal submitted to NSF as a collaborative effort between three universities (Univ. of Washington, Univ. of Connecticut and GMU) and the National Observatory of Athens (Greece). Proposal title: *Collaborative research: Spatial averaging of oceanic rainfall variability using underwater sound* (2003-2005). Status: Accepted; award period: 4/1/03-3/31/06.

Proposes a field experiment in Greece in which for the first time underwater acoustic rain gauges, a high-resolution dual-polarization radar, a dense rain gauge network, and a disdrometer, will be deployed to investigate a comprehensive set of objectives associated with underwater acoustic rainfall measurements, and to permit an examination of the validation potential of acoustic measurements for rainfall estimates derived from other remote sensing data (e.g., radar and satellite sensors). It will also permit to examine the spatial averaging of rainfall variability by deploying several acoustic gauges vertically separated on a mooring placed in deep water.

LBA- TRMM/Brazil

Participated as a Radar Scientist (Jan.-Feb., 1999) at the NASA/TOGA (C-band, Doppler) radar site, organized in a dual-Doppler configuration in Rondonia, Brazil. Operated the radar to sample continental convective systems, and coordinated dual-Doppler scanning. TRMM/Brazil is a major ground validation program under support from NASA/TRMM. The program carried out in parallel with the wet season component of the Large Scale Biosphere-Atmosphere Experiment in Amazonia (LBA). This program is focused on the dynamical, microphysical, electrical and diabatic heating characteristics of tropical convection in this region.

Thailand

Participated in the 1993 and 1994 Thai Exploratory Cloud Seeding Experiment, a component of the Applied Atmospheric Resources Research Program (AARRP) of the Royal Rainmaking Research and Development Institute - Kingdom of Thailand (RRRDI). Working visits at Omkoi radar site (Northern Thailand) and at the Royal Rainmaking Field Research Center, Chiang-Mai, for 8 weeks (May-June 1993; May 1994). Served as a radar site leader and as an instructor to the Thai operation scientists. Operated the 10-cm Doppler radar and coordinated radar operations with the cloud seeding aircraft missions. Participated in cloud research and seeding flights, and data analyzing. The work was performed through short term consulting appointments with Woodley Weather Consultants (Littleton, Colorado).

SPECIAL CONFERENCE ACTIVITIES

- Member, Scientific Committee of the VOLTAIRE Workshop (European Commission sponsored project for validation of multisensors precipitation fields and numerical modeling in Mediterranean test sites) Oct. 2003, Barcelona, Spain. Chairing the session on "Applications".
- Co-Convended and Co-Chaired of special hydrology session on "Remote Sensing of Precipitation" at the AGU 2002 Spring Meeting, May 28 - June 1, 2002, Washington, DC (with Matthias Steiner, Princeton University). Served as a judge for the outstanding student paper/poster award.
- Member, International Scientific Committee of the Fifth International Symposium on Hydrological Applications of Weather Radar, Nov. 2001, Kyoto, Japan.
- Co-Chaired the session "Tropical Rainfall Measuring Mission (TRMM)" at the *30th Int. Conf. on Radar Meteorology*, July 19-25, 2001, Munich, Germany (with Robert Meneghini, NASA/GSFC).
- Co-Chaired the session "Hydrologic Applications and TRMM" at the *28th Int. Conf. on Radar Meteorology*, Sept. 7-12, 1997, Austin, Texas (with David Short, NASA/GSFC).
- For a list of papers presented at conferences and **invited** presentations and lectures - see the section "OTHER PUBLICATIONS and PRESENTATIONS"

PEER REVIEW SERVICES

Journal Manuscripts

- American Water Resources Association: *J. American Water Resources Association*
- Wiley (John Wiley & Sons Ltd.): *Hydrological Processes*
- Elsevier Science: *Atmospheric Research*
- Taylor & Francis LTD: *Int. J. Remote Sensing.*
- The Royal Meteorological Society: *Meteorological Applications.*
- American Meteorological Society: *J. Atmos. Ocean. Technol., J. Appl. Meteor.*
- IEEE: *Trans. on Geoscience and Remote Sensing.*
- Canadian Meteorology and Oceanographic Society: *Atmos.-Ocean.*
- American Geophysical Union: *J. Geophys. Res. - Atmospheres, J. Geophys. Res. - Oceans., Water Resources Research.*

Research proposals submitted to government agencies

- NSF: Division of Atmospheric Sciences, Physical Meteorology Program.
- NASA-HQ: proposals in response to 1) TRMM NASA Research Announcements (NRAs), 2) CAMEX NRA, and 3) Precipitation Measurement Missions NRA.

International Conferences

- Abstracts submitted for the Fifth International Symposium on Hydrologic Applications of Weather Radar.

SCIENTIFIC AFFILIATIONS:

- Faculty Member, SCS/GMU, 2003-present.
- Member, International Association of Hydrological Sciences (IAHS), 2000-present.
- Faculty Member, JCET/UMBC, 1998-2002.
- Member, NASA/TRMM Science Team, 1998-2002.
- Member, American Geophys. Union (AGU), Atmos. Sci. section, 1996-present.
- Member, American Meteorological Society (AMS), 1994-present.
- Member, Israel Meteorological Society (IMS), 1991-present.

PEER REVIEWED PUBLICATIONS:

Submitted papers:

Amitai E., L. Liao, and X. Lloret, 2004: Accuracy Verification of Spaceborne Radar Estimates of Rain Rate. *Atmospheric Sciences Letters.*

Wolff D. B., D. A. Marks, E. Amitai, B. L. Fisher, D. S. Silberstein, A. Tokay, J. Wang, and J. L. Pippitt, 2004: Ground Validation for the Tropical Rainfall Measuring Mission (TRMM), *J. Atmos. Ocean. Technol.*

Amitai E., E. Morin, M. Marcovina, and D. C. Goodrich, 2003: Sensitivity of the distribution of radar derived rain rates to different gauge adjustment techniques. *J. Hydrology.*

Published papers:

Amitai E., J. A. Nystuen, L. Liao, R. Meneghini, and E. Morin, 2004: Uniting space, ground and underwater measurements for improved estimates of rain rate. *IEEE Geoscience and Remote Sensing Letters*, Vol 1, No. 2, 35-38.

Nystuen A. J., and E. Amitai, 2003: High temporal resolution of extreme rainfall rate variability and the acoustic classification of rainfall. *J. Geophys. Res.-Atmos.*, **108**(D8), 8378-8388.

Amitai E., D. B. Wolff, D. A. Marks, and D. S. Silberstein, 2002: Radar rainfall estimation: Lessons learned from the NASA/TRMM validation program. *Second European Conference on Radar Meteorology (ERAD)*, November 18-22, Delft, The Netherlands. ERAD Publication Series, **1**, 255-260 (Copernicus GmbH peer reviewed publication, ISBN 3-936586-04-7).

Amitai E., D. B. Wolff, M. Robinson, D. A. Marks, M. S. Kulie, and B. S. Ferrier, 2001: Systematic variations of Z_e -R relations: Implications to Hydrology. *Remote Sensing and Hydrology 2000*, edited by M. Owe, K. Brubaker, J. Richtie and A. Rango, IAHS Publ. no. 267, 43-45, ISBN 1-901502-46-5.

Fisher B, D. B. Wolff, and E. Amitai, 2001: Analytical software for validating time synchronous radar and rain gauge data. *Remote Sensing and Hydrology 2000*, edited by M. Owe, K. Brubaker, J. Richtie and A. Rango, IAHS Publ. no. 267, 27-31, ISBN 1-901502-46-5.

Amitai E., 2000: Systematic variation of observed radar reflectivity-rainfall rate relations in the tropics. *J. Appl. Meteor. (TRMM Special Issue)*, **39**, 2198-2208.

Robinson M., M. S. Kulie, D. Silberstein, D. A. Marks, D. B. Wolff, E. Amitai, B. S. Ferrier, B. L. Fisher, and J. Wang, 2000: Evolving Improvements to TRMM Ground Validation Rainfall Estimates. *Phys. Chem. Earth (B)*, **25**, 971-976.

Marks, D. A., M. S. Kulie, M. Robinson, D. Silberstein, D. B. Wolff, B. S. Ferrier, E. Amitai, B. Fisher, J. Wang, D. Augustine, and O. Thiele, 2000: Climatological processing and product development for the TRMM Ground Validation Program. *Phys. Chem. Earth (B)*, **25**, 871-875. And, a Keynote presentation, *First European Conference on Radar Meteorology (ERAD)*, September 4-8, Bologna, Italy.

Gabella M., and E. Amitai, 2000: Radar rainfall estimates in an alpine environment using different gage-adjustment techniques. *Phys. Chem. Earth (B)*, **25**, 927-931.

Atlas D., C. W. Ulbrich, F. D. Marks Jr., R. A. Black, E. Amitai, P. T. Willis, and C. E. Samsury, 2000: Partitioning tropical oceanic convective and stratiform rains by draft strength. *J. Geophys. Res.*, **105**, 2259-2267.

Atlas D., C. W. Ulbrich, F. D. Marks Jr., E. Amitai, and C. Williams, 1999: Systematic variation of drop size and radar-rainfall relations. *J. Geophys. Res.*, **104**, 6155-6169.

Amitai E., 1999: Relationships between radar properties at high elevations and surface rain rate: potential use for spaceborne rainfall measurements. *J. Appl. Meteor.*, **38**, 321-333.

Rosenfeld D., and E. Amitai, 1998: Comparison of WPMM versus regression for evaluating Z-R relationships. *J. Appl. Meteor.*, **37**, 1241-1249.

Morin J., D. Rosenfeld, and E. Amitai, 1995: Radar rain field evaluation and possible use of its high temporal and spatial resolution for hydrological purposes. *J. Hydrology*, **172**, 275-292.

Rosenfeld D., E. Amitai, and D. B. Wolff, 1995: Improved accuracy of radar WPMM estimated rainfall upon application of objective classification criteria. *J. Appl. Meteor.*, **34**, 212-223.

Rosenfeld D., E. Amitai, and D. B. Wolff, 1995: Classification of rain regimes by the 3-dimensional properties of reflectivity fields. *J. Appl. Meteor.*, **34**, 198-211.

Rosenfeld D., D. B. Wolff, and E. Amitai, 1994: The window probability matching method for rainfall measurements with radar. *J. Appl. Meteor.*, **33**, 682-693.

Woodley W. L., E. Amitai, and D. Rosenfeld, 1994: Comparison of cloud tower and updraft radii with their internal temperature excesses relative to their environments. *J. Wea. Mod.*, **26**, 125-128.

Rosenfeld D., D. Atlas, D. B. Wolff, and E. Amitai, 1992: Beamwidth effects on Z-R relations and area-integrated rainfall. *J. Appl. Meteor.*, **31**, 454-464.

OTHER PUBLICATIONS and PRESENTATIONS:

(Paper- paper published; Abstract- abstract/extended abstract published; O-oral presentation; P-poster presentation; INVITED- invited talk)

Amitai E., L. Liao, X. Llort, and R. Meneghini, 2004: Accuracy Verification of Space and Ground-Based Radar Estimates of Rain Rate. Proceedings, *Sixth International Symposium on Hydrological Applications of Weather Radar*, February 2-4, Melbourne, Australia (Abstract, O)

Amitai E., J. A. Nystuen, and L. Liao, 2004: Listening to the Rain. Invited summary of the AMS 2003 Radar Conference paper. *Bulletin of the American Meteorology Society*, January 2004, p. 15.

Amitai E., 2003: NASA's Precipitation Measurement Missions and Validation from Ground and Below. *Departmental Seminar*, Department of Geophysics, Tel Aviv University, December 29, Tel-Aviv, Israel (INVITED, O)

Sempere-Torres D. and E. Amitai, 2003: Current Implementation of VOLTAIRE Project's Precipitation Ground Validation (GV) Research Program. *First Int. GPM GV Requirements Workshop*, November 4-7, Abingdon, U.K. (O, INVITED, presented by Amitai & Sempere-Torres). http://www.voltaireproject.org/paper/Sempere_Amitai_UK_GV.pdf

Amitai E., 2003: New NASA Radar-Gauge Adjusted Rain Fields and Comparison with TRMM. Proceedings, *VOLTAIRE Workshop*, October 6-8, Universitat Politecnica de Catalunya,

Barcelona, Spain, ISBN 961-212-150-8 (Abstract, O, by invitation only). Member, Scientific Committee, and chairing the session on *Applications*.

Amitai E., J. A. Nystuen, and L. Liao, 2003: Uniting space, ground and underwater measurements for better estimation of rain rates. Preprints, *31st Int. Conf. Radar Meteorology*, August 6-12, Seattle, Washington, AMS 761-764 (Abstract, paper, O).

Marks D. A., D. S. Silberstein, D. B. Wolff, E. Amitai, J. L. Pippitt, and R. J. Lawrence, 2003: The TRMM Ground Validation effort at NASA-GSFC: Validating surface rainfall estimates. *31st Int. Conf. Radar Meteorology*, August 6-12, Seattle, Washington AMS 415-418 (Abstract, paper, P).

Amitai E., L. Liao, D. B. Wolff, D. A. Marks, and D. S. Silberstein, 2003: Challenges and proposed solutions for validation of rain rate estimates from space. *IEEE International Geosciences and Remote Sensing Symposium 2003 Special Session on TRMM and GPM*, July 21-26, Toulouse, France, Vol 3, 1966-1968 on ISBN CD-ROM: 0-7803-7930-6. (Abstract, O, paper).

Amitai E., 2003: NASA's precipitation measuring missions and validation studies. Seminar at the Universitat Politecnica de Catalunya, July 18, Barcelona, Spain (INVITED, O)

Amitai E., 2003: Methodology and observational strategy for reducing uncertainties in rain rate estimates from space. *IUGG2003*, June 30-July 11, Sapporo, Japan (Abstract, O).

Amitai E., T. Einfalt, M. Gabella, U. Germann, S. Michaelides, G. Monacelli, G. Perona, D. Sempere-Torres, A. Speranza, and T. Vrhovec, 2003: VOLTAIRE: a 5th Framework Programme project for Validation of Precipitation Fields in Preparation for the GPM Mission. *ESA-NASA-NASDA 3rd Global Precipitation Measurement (GPM) Mission Workshop*, 24-26 June, ESTEC, Noordwijk, The Netherlands (Abstract, P).
http://www.voltaireproject.org/home_fr.htm

Wolff D. B., E. Amitai, D. A. Marks, D. S. Silberstein, and A. Tokay, 2003: Validation for the Tropical Rainfall Measuring Mission and evolution towards a Global Precipitation Mission. *ESA-NASA-NASDA 3rd Global Precipitation Mission (GPM) Workshop*, 24-26 June, ESTEC, Noordwijk, The Netherlands (Abstract).

Sempere-Torres D., X. Lloret, M. Franco, M. Berenguer, R. Sánchez-Diezma, R. Uijlenhoet, H. Stricker, E. Amitai, and I. Zawadzki, 2003: A methodological simulation framework to design a GPM validation supersite at Catalunya. *ESA-NASA-NASDA 3rd Global Precipitation Mission (GPM) Workshop*, 24-26 June, ESTEC, Noordwijk, The Netherlands (Abstract, P).
http://www.voltaireproject.org/home_fr.htm

Amitai E., 2002: NASA's precipitation measurement missions. *VOLTAIRE Kick Off Meeting, (A European Commission Fifth Framework Programme RTD Project)*, Politecnico di Torino, Turin, Italy, November 14-15 (INVITED, O).

Amitai E., J. A. Nystuen, L. Liao, R. Meneghini, E. Morin, and D. C. Goodrich, 2002: Rain rate distributions from underwater, ground-based and spaceborne observations. *TRMM*

International Science Conference, July 22-26, 2002, Honolulu, Hawaii. Abstracts in NASA/TM-2002-211605 report, available from the NASA Center for AeroSpace Information, 7121 Standard Drive, Hanover, MD 21076 (Abstract, P).

Marks D. A., D. Silberstein, D. B. Wolff, E. Amitai, B. L. Fisher, J. Wang, B. L. Kelley, and R. J. Lawrence, 2002: Improvements and validation techniques for TRMM ground validation products. *TRMM International Science Conference*, July 22-26, 2002, Honolulu, Hawaii. Abstracts in NASA/TM-2002-211605 report, available from the NASA Center for AeroSpace Information, 7121 Standard Drive, Hanover, MD 21076 (Abstract, P).

Wolff D., E. Amitai, A. Tokay, D. Marks, B. Fisher, D. Silberstein, J. Wang, K. Wolff, D. Augustine, and D. Makofski, 2002: Status and future plans of the TRMM ground validation program. *TRMM International Science Conference*, July 22-26, 2002, Honolulu, Hawaii. Abstracts in NASA/TM-2002-211605 report, available from the NASA Center for AeroSpace Information, 7121 Standard Drive, Hanover, MD 21076 (Abstract, P).

Wolff, D. W., E. Amitai, and B. L. Fisher, 2002: GPM White Paper: TRMM Ground Validation at Melbourne, Florida, and lessons learned. *GPM Validation Workshop*, Feb. 6-8, University of Washington, Seattle, Washington (Paper).

Amitai E., E. Morin, and M. Marcovina, 2001: Sensitivity of the distribution of radar derived rain rates to different gauge adjustment techniques. Proceedings, *Fifth International Symposium on Hydrological Applications of Weather Radar*, November 19-22, Kyoto, Japan, 239-244 (Paper, O&P, Member of the Int. Scientific Committee for the conference).

Amitai E., 2001: New Goddard algorithms for validation data sets. *NASA TRMM Science Team Meeting*, October 28-November 1, Ft. Collins, Colorado (INVITED, O).

Amitai E., E. Morin, and M. Marcovina, 2001: Scale dependence of rain rate distributions: Implications to TRMM Algorithms. *NASA TRMM Science Team Meeting*, October 28-November 1, Ft. Collins, Colorado (P).

Amitai E., 2001: NASA's validation programs for the Tropical Rainfall Measuring Mission (TRMM) and the Global Precipitation Measurement (GPM) Mission. *Department of Electronics Seminar*, Politecnico di Torino, Turin, Italy, July 26 (INVITED, O).

Amitai E., D. B. Wolff, M. Robinson, D. S. Silberstein, D. A. Marks, M. S. Kulie, and B. Fisher, 2001: Methodologies for evaluating the accuracy of TRMM ground validation rainfall products. Preprints, *30th Int. Conf. on Radar Meteorology*, July 19-25, Munich, Germany, AMS 363-365 (Paper, O, Chaired the session on TRMM).

Tokay A., R. Meneghini, J. Kwiatkowski, E. Amitai, T. Kozu, T. Iguchi, C. Williams, M. Kulie, and C. Wilson, 2001: On the role of drop size distribution in TRMM rain profiling algorithm. Preprints, *30th Int. Conf. on Radar Meteorology*, July 19-25, Munich, Germany, AMS 345-347 (Paper, O).

Amitai E., and E. Morin, 2001: In search of the "true" rain rate distribution. Preprints, *Seventh Int. Conf. on Precipitation*, June 30-July 3, Rockport, Maine (Abstract, O&P).

Nystuen A. J., and E. Amitai, 2001: High temporal resolution of extreme rainfall rate variability using underwater sound. Preprints, *Seventh Int. Conf. on Precipitation*, June 30-July 3, Rockport, Maine (Abstract, O&P).

Amitai E., 2001: Spain/Catalunya's provisional interest/role in GPM. *First Global Precipitation Measurement (GPM) Mission Partners Planning Workshop*, May 16-18, University of Maryland, College Park, Maryland. Summary in NASA/CP-2002-210012 report, available from the NASA Center for Aerospace Information, 7121 Standard Drive, Hanover, MD 21076. (O, INVITED by NASA and UPC, Catalunya, Spain).

Amitai E., 2001: Rainfall studies for the TRMM validation program. *Microwave Sensors Branch Seminar*, Laboratory for Hydrospheric Processes, NASA-Goddard Space Flight Center, February 20, Greenbelt, Maryland (O, INVITED).

Amitai E., 2001: Acoustical Rainfall Measurements. *NOAA/Atlantic Oceanographic and Meteorological Laboratory (AOML) Seminar*, January 26, Miami, Florida (O, INVITED).

Amitai E., 2001: TRMM satellite validation program: Three years after launch. *NOAA/Atlantic Oceanographic and Meteorological Laboratory (AOML) Seminar*, January 25, Miami, Florida (O, INVITED).

Amitai E., 2001: TRMM Ground Truth rainfall products: what is the truth? *Joint Center for Earth System Technology (JCET) Faculty Meeting*, January 10, University of Maryland Baltimore County (UMBC), Baltimore, Maryland (O).

Wolff D. B., R. Cifelli, E. Anagnostou and E. Amitai, 2000: A statistical comparison of R/V Ronald H. Brown and Kwajalein radar reflectivities during KWAJEX. Preprints, *AGU Fall Meeting*, December 15-19, San Francisco, California (Abstract, P).

Amitai E., D. B. Wolff, M. Robinson, D. S. Silberstein, D. A. Marks, M. S. Kulie, and B. Fisher, 2000: Rainfall product evaluation for the TRMM ground validation program.

1. *NASA/TRMM Science Team Meeting*, October 30-November 2, Greenbelt, Maryland (P).

2. *AGU Fall Meeting*, December 15-19, San Francisco, California (Abstract, O).

Amitai E., 2000: Stratiform/Convective/Transition rain type classification. *NASA TRMM Science Team Meeting*, October 30-November 2, Greenbelt, Maryland (O).

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