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A Technical Memorandum NESDIS 33



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## PUBLICATIONS AND FINAL REPORTS ON CONTRACTS AND GRANTS, 1990

Washington, D.C.  
May 1991



NOAA Technical Memorandum NESDIS Series

National Environmental Satellite, Data, and Information Service

The National Environmental Satellite, Data, and Information Service (NESDIS) manages the Nation's civil Earth-observing satellite systems, as well as global national data bases for meteorology, oceanography, geophysics, and solar-terrestrial sciences. From these sources, it develops and disseminates environmental data and information products critical to the protection of life and property, national defense, the national economy, energy development and distribution, global food supplies, and the development of natural resources.

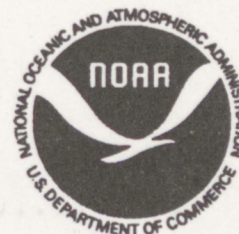
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- NESDIS 5 A Tropical Cyclone Precipitation Estimation Technique Using Geostationary Satellite Data. Leroy E. Spayd Jr. and Roderick A. Scofield, July 1984. (PB84 226703)
- NESDIS 6 The Advantages of Sounding with the Smaller Detectors of the VISSR Atmospheric Sounder. W. Paul Menzel, Thomas H. Achtor, Christopher M. Hayden and William L. Smith, July 1984. (PB851518/AS)
- NESDIS 7 Surface Soil Moisture Measurements of the White Sands, New Mexico. G.R. Smith, September 1984. (PB85 135754)
- NESDIS 8 A Technique that Uses Satellite, Radar, and Conventional Data for Analyzing and Short-Range Forecasting of Precipitation from Extratropical Cyclones. Roderick A. Scofield and Leroy E. Spayd, Jr., November 1984. (PB85 164994/AS)
- NESDIS 9 Surface Cyclogenesis as Indicated by Satellite Imagery. Frank Smigielski and Gary Ellrod, March 1985. (PB85 191815/AS)
- NESDIS 10 Detection of High Level Turbulence Using Satellite Imagery and Upper Air Data. Gary Ellrod, April 1985. (PB85 208452/AS)
- NESDIS 11 Publications and Final Reports on Contracts and Grants, 1984. Nancy Everson, April 1985. (PB85 208460/AS)
- NESDIS 12 Monthly Infrared Imagery Enhancement Curves: A Tool for Nighttime Sea Fog Identification off the New England Coast. E.M. Maturi and Susan J. Holmes, May 1985. (PB85 237725/AS)
- NESDIS 13 Characteristics of Western Region Flash Flood Events in GOES Imagery and Conventional Data. Eric Fleming and Leroy Spayd Jr., May 1986. (PB86 209459/AS)
- NESDIS 14 Publications and Final Reports on Contracts and Grants, 1985. Nancy Everson, June 1986. (PB86 232477/AS)



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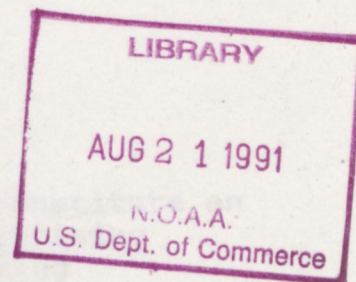
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## PREFACE

This technical memorandum is one of a series (see inside covers) containing lists of articles and reports published by or for the National Environmental Satellite, Data and Information Service (NESDIS). To date, the series consists of NESCTM 1 (for 1958-1966), 2 (1967), 11 (1968), and 22 (1969) NOAA TM NESS 31 (1979), 38 (1971), 46 (1972), 55 (1973), 69 (1975), 79 (1976), 97 (1977), 104 (1978), 108 (1979), 115 (1980), 117 (1981); NOAA TM NESDIS 1 (1982), 4 (1984), 11 (1985), 14 (1986), 22 (1987), 24 (1988), and 32, (1989).

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The technical reports and technical memorandums listed in this report are available from the National Technical Information Service (NTIS), Department of Commerce, Sills Bldg., 5285 Port Royal Road, Springfield, VA 22161 (prices on request for paper copies or microfiche), or by contacting Nancy Everson, NOAA/NESDIS, World Weather Building, Room 703, Washington, DC 20233 (when extra copies are available).

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PUBLICATIONS BY NESDIS STAFF MEMBERS, 1990

Abel, P., 1990: Prelaunch calibration of the NOAA-11 AVHRR visible and near IR channels. Remote Sensing of the Environment, 31, 227-229.

Abel, P., 1990: Report of the workshop on radiometric calibration of satellite sensors of reflected solar radiation, March 27-28, 1990, Camp Springs, Maryland. NOAA Technical Report NESDIS 55, Department of Commerce, Washington, DC, 33 pp.

Alishouse, J.C., R.R. Ferraro and S.A. Snyder, 1990: A further look at SSMI retrievals of water vapor and cloud liquid water. Proceedings of 10th Annual Remote Sensing Science for the Nineties, IGARSS '90, May 20-24, 1990, University of Maryland, College Park, MD, 839-841.

Alishouse, J.C., R.R. Ferraro and J.V. Fiore, 1990: Inference of oceanic rainfall properties from the Nimbus 7 SMMR. Journal of Applied Meteorology, 29 (7), 551-560.

Alishouse, J.C., S.A. Snyder, J. Vogsathorn and R.R. Ferraro, 1990: Determination of oceanic total precipitable water from the SSM/I. IEEE Transactions on Geoscience and Remote Sensing, 28 (5), 811-816.

Alishouse, J.C., J.B. Snider, E.R. Westwater, C.T. Swift, C.S. Ruf, S.A. Snyder J. Vongsathorn and R.R. Ferraro, 1990: Determination of cloud liquid water content using the SSM/I. IEEE Transactions on Geoscience and Remote Sensing, 28 (5), 817-822.

Ambrose, S.D., and M.O. Perkins, 1990: Modernization interactive flash flood analyzer (IFFA) in the GOES-I era. Proceedings of the 6th International Conference on Interactive Information Processing Systems, February 5-9, 1990, Anaheim, CA, American Meteorological Society, Boston, MA, 256-259.

Anderson, R.K., 1990: Weather satellite observations in the mesoscale forecasting era. Satellite Applications Information Note 90/5, Preprint from the 3rd Workshop on Operational Meteorology, May 2-4, 1990, Montreal, Quebec, 10 pp.

Andreas, M.W., M.W. Miles, R.G. Barry and R.C. Schnell, 1990: Lidar-derived particle concentrations in plumes from arctic leads. Annals. Glaciol., 14, 9-12.

Armstrong, R.L., 1990: Monitoring snow grain size for passive microwave studies. EOS Transactions, American Geophysical Union, 71 (43), 1333.



Armstrong, R.L., S. Colbeck, E. Akitaya, H. Gubler, J. Lafeuille, K. Lied, D. McClung and E. Morris, 1990: International classification for seasonal snow on the ground. IASH/ICSU and the World Data Center-A for Glaciology, Boulder, CO, 30 pp.

Armstrong, R.L., D.C. Trabant and D.M. McClung, 1990: Snow avalanches. Cold Region Hydrology and Hydraulics Monograph. (Editors) W.L. Ryan and R.D. Crissman, American Society of Civil Engineers, NY, 147-168.

Armstrong, R.L., and the Panel on Snow Avalanches (B. Voight, Chair.) 1990: Snow Avalanche Hazards and Mitigation in the United States. Committee on Ground Failure Hazards, National Research Council, National Academy Press, Washington, DC, 89 pp.

Armstrong, R.L., 1990: The mass balance of Blue Glacier, Washington, U.S.A., 1956-1986. Annals of Glaciology, 14, 329.

Barry, R.G., 1990: Changes in mountain climate and glacio-hydrological responses. Mountain Research Development, 10 (2), 161-170.

Barry, R.G., 1990: Evidence of recent changes in global snow and ice cover. Geojournal, 20 (2), 121-127.

Barry, R.G., 1990: A commentary on Oeschger's paper "Long-term climate stability: Environmental system studies." The Ocean in Human Affairs (Editor) S.F. Singer, Paragon House Publishers, New York, 81-86.

Barry, R.G., 1990: Arctic sea ice and its variability. (Editors) V.M. Kotlyakov and V.E. Sokolov, Arctic Research, Advances and Prospects, Part 1, Proceedings of the Conference of Arctic and Nordic Countries on Coordination of Research in the Arctic, Nauka, Moscow, 91-101.

Bloom, H.J., and L.M. McMillin, 1990: An analysis of temperature initial approximations utilizing a radiance classification procedure. Proceedings of the 5th Conference on Satellite Meteorology and Oceanography, September 3-7, 1990, London, England, American Meteorological Society, Boston, MA, 165-168.

Bodin, P., M. Wyss, and R.E. Habermann, 1990: Seismic quiescence: A test of the hypothesis and a precursor to the next Parkfield, California earthquake. EOS Transactions, American Geophysical Union, 71 (43), 1474.

Bostater, C., R. Geider, V. Klemas, W. Esaias, L. Harding, E. Itsweire, F. Hoge, B. Swift, A.E. Strong and J. Zaitzeff, 1990: Selection of optical bands from aircraft and in-situ optical data for remote sensing of Chesapeake Bay coastal waters. EOS Transactions, American Geophysical Union, 71, 531.



Caldwell, P., S. Nakahara, and K. Wyrski, 1990: TOGA Sea Level Center: Data from the Indian Ocean. Joint Institute for Marine and Atmospheric Research, Contribution No. 91-233, Data Report No. 8, University of Hawaii, Honolulu, HI, 35 pp.

Chandra, S., R.D. McPeters, R.D. Hudson and W. Planet, 1990: Ozone measurements from the NOAA-9 and the Nimbus-7 satellites: Implications of short and long term variabilities. Geophysical Research Letters, 17 (10), 1573-1576.

Change, T.T., and D.W. Hillger, 1990: Analysis of upper atmospheric waves using enhanced VAS imagery. Proceedings of the 5th Conference on Satellite Meteorology and Oceanography, September 3-7, 1990, London, England, American Meteorological Society, Boston, MA, 404-407.

Changery, M.J., C.N. Williams, M.L. Dickenson and B.L. Wallace, 1990: Joint U.S. Navy/U.S. Air Force Climatic Study of the Upper Atmosphere. Volume 1-January NAVAIR 50-1C-1; AWS/TR-89/001-Volume 12-December NAVAIR 50-1C-12; AWS/TR-89/012.

Chinnery, M.A., 1990: The Impact of CD-ROM on the dissemination of scientific data. Scientific and Technical Data in a New Era, (Editor) P.S. Glaeser, Hemisphere Publishing, London, 283-286.

Chinnery, M.A., J.J. Kineman, D.A. Hastings and H. Meyers, 1990: The global change database project: A pilot diskette project for Africa. Proceedings of the 12th International CODATA Conference, July 15-19, 1990, Columbus, OH, 6 pp.

Coffey, H.E. (Editor), 1990: Solar-Geophysical Data: Parts I and II, Number 558. National Geophysical Data Center, Boulder, CO., January-December 1990.

Coffey, H.E., and D.C. Wilkinson, 1990: Some comparisons of the 24-25 April 1984 Forbush decrease period with the March 1989 period. Bulletin of the American Astronomical Society, 22 (2), 852.

Crosby, D.S., 1990: Effect of calibration errors on minimum variance temperature retrievals. Contributions of NESDIS Authors to the International Workshop on Remote Sensing Retrieval Methods, Held December 15-18, 1987, Williamsburg, VA.

Daughtry, C.S.T., and K.P. Gallo, 1990: Spectral estimates of absorbed radiation and phytomass in plant canopies. Proceedings of the Remote Sensing for Agriculture Symposium XV, May 16-18, 1990, NASA-GSFC, USDA, Beltsville, MD, p. 18.



Daughtry, C.S.T., K.P. Gallo, S.N. Goward, S.D. Prince and W.P. Kustas, 1990: Absorbed photosynthetically active radiation and phytomass production in corn and soybean. Agronomy Abstracts, 82, p. 15.

Davidson, K., 1990: The Global Climate System in 1989. WMO Annual Report 1989. WMO-No. 734.

Davidson, K., 1990: Report of the expert group on Global Baseline Datasets, 22-26 January 1990. World Meteorological Organization. WDCP-No. 11; WMO/TD-No. 359.

Davidson, K., P. David, K. Dawson and M. Dengo, 1990: Report of Meeting of CLICOM Experts. World Meteorological Organization, WDCP-No. 9; WMO/TD-No. 342.

Davidson, K., N. Guttman, C. Ropelewski, N. Canfield, E. Spackman and D. Gullett, 1990: Calculation of monthly and annual 30-year standard normals. World Meteorological Organization, WDCP-No. 10; WMO-TD/No. 341.

Davidson, K., C. Kecskemeti and A. Aureli, 1990: Report of the Meeting on Archival Survey for Climate History. World Meteorological Organization, WDCP-No. 12; WMO/TD-No. 372.

Davidson, K., and A. Laptev, 1990: CLICOM Project, Climate Data Management System World Meteorological Organization, WDCP-No. 6; WMO/TD-No. 299.

Davidson, K., P. Schoelfield, A. Chowdhury and C. Ropelewski, 1990: The Global Climate System, 1986-1988. World Meteorological Organization, WDCP-CSM R 84/86/88.

Davis, S.D., and C. Frohlich, 1990: Regional differences in aftershock statistics among ocean ridges and subduction zones. EOS, Transactions, American Geophysical Union, 71 (43), 1469.

DeAngelis, R. (Editor), 1990: Mariners Weather Log, 34 (1-4).

Ellrod, G.P., 1990: Objective forecasts of clear air turbulence potential based on deformation and wind shear. Satellite Applications Information Note 90/4, Preprint from the 3rd Workshop on Operational Meteorology, May 2-4, 1990, Montreal, Quebec, 9 pp.

Ellrod, G.P., 1990: Applications of future GOES multispectral imagery. Satellite Applications Information Note 90/5, Preprint from the 3rd Workshop on Operational Meteorology, May 2-4, 1990, Montreal, Quebec, 5 pp.



Ellrod, G.P., 1990: Use of water vapor imagery to identify clear air turbulence. Satellite Applications Information Note 90/8, Department of Commerce, Washington, DC, 9 pp.

Ellrod, G.P., 1990: Applications of GOES water vapor imagery to severe storms analysis. Proceedings of the 16th Conference on Severe Local Storms and the Conference on Atmospheric Electricity, October 22-26, 1990, Kananaskis Park, Alta. Canada, American Meteorological Society, Boston, MA, 154-159.

Ellrod, G.P., 1990: The assessment of microburst potential using GOES - VAS sounder data. Proceedings of the 16th Conference on Severe Local Storms and the Conference on Atmospheric Electricity, October 22-26, 1990, Kananaskis Park, Alta. Canada, American Meteorological Society, Boston, MA, 161-166.

Elms, J.D., T.R. Karl, A.L., McNab, J.R. Christy and R.W. Spencer, 1990: A Preliminary Analysis of the Covariation of Surface and Midtropospheric Temperatures. The 41st Congress of the International Astronautical Federation, IAF-90-152, 4 pp.

Eneva, M., and R.E. Habermann, 1990: Man-made changes in the earthquake catalog of the Garm Region, Soviet Central Asia. EOS Transactions, American Geophysical Union, 71 (43), 1453.

Everson, N.A., 1990: Publications and final reports on contracts and grants, 1989. NOAA Technical Memorandum NESDIS 32, Department of Commerce, Washington, DC, 23 pp.

Ewing, J.A., and R.G. Quayle, 1990: Wind, wave and current data for the design of ships and offshore structures. Marine Structures, 3, 421-459.

Ferraro, R.R., J.C. Alishouse and N.C. Grody, 1990: The development of a pre-launch AMSU precipitation algorithm. Proceedings of the 5th Conference on Satellite Meteorology and Oceanography, September 3-7, 1990, London, England, American Meteorological Society, Boston, MA, 451-454.

Fiore, J.V., Jr., and N.C. Grody, 1990: A classification algorithm for monitoring snow cover and precipitation using SSM/I measurements. Proceedings of the 5th Conference on Satellite Meteorology and Oceanography, September 3-7, 1990, London, England, American Meteorological Society, Boston, MA, 237-240.

Fleming, H.E., 1990: Equivalence of regularization and truncated iteration in the solution of ill-posed image reconstruction problems. Linear Algebra and Its Applications, 130, 133-150.



- Fleming, H.E., and L.L. Barnes, 1990: Satellite tomographic remote sensing by frequency scanning. Contributions of NESDIS Authors to the International Workshop on Remote Sensing Retrieval Methods, December 15-18, 1987, Williamsburg, VA.
- Fleming, H.E., N.C. Grody and E.J. Kratz, 1990: Correcting the forward problem in a physical temperature retrieval algorithm for SSM/T. Proceedings of the 10th Annual International Geoscience & Remote Sensing Symposium, May 20-24, 1990, University of Maryland College Park, MD, 1173-1176.
- Folland, C.K., T.R. Karl and K. Vinnikov (Editors) and R.G. Barry (Contributor), 1990: Observed climate variations and change. J.T. Houghton, G.J. Jenkins and J.J. Ephraums (Editors), Climate Change: The IPCC Scientific Assessment. Intergovernmental panel on climate change, World Meteorological Organization/U.N. Environment Programme, Cambridge University Press, 194-238.
- Folland, C.K., T.R. Karl and K. Vinnikov, 1990: Observed climate variations and change. Inter-governmental Panel on Climate Change, (Editors), J.T. Houghton, G.J. Jenkins and J.J. Ephraums, Cambridge University Press, NY, 362 pp.
- Forsthooff, G.M., and T.L. Holcombe, 1990: Quaternary turbidities of the Muertos Trough, Northeastern Caribbean Sea -- composition, source, and dispersal patterns. Transactions of the 10th Caribbean Geological Conference, Cartagena, Columbia, 16 pp.
- Franklin, J.L. C.S. Velden, J. Kaplan and C.M. Hayden, 1990: Some comparisons of VAS and drop windsonde data over the subtropical Atlantic ocean. Monthly Weather Review, 118, 1869-1887.
- Frohlich, C., and S.D. Davis, 1990: How do differences properties of mainshocks and aftershocks affect b-values earthquake catalog? EOS Transactions, American Geophysical Union, 71 (43), 1457.
- Gabriel, P.M., and J.F.W. Purdom, 1990: Deconvolution of GOES infrared data. Proceedings of the 5th Conference on Satellite Meteorology and Oceanography, September 3-7, 1990, London, England, American Meteorological Society, Boston, MA, 181-184.
- Gallo, K.P., 1990: Satellite-derived vegetation indices: A new climatic variable? Proceedings of the Symposium on Global Change Systems and the Special Sessions on Climate Variations and Hydrology, February 5-9, 1990, Anaheim, CA, American Meteorological Society, Boston, MA, 133-137.



Gallo, K.P., J.A. Andresen and C.S.T. Daughtry, 1990: Combining satellite, meteorological, and geographic information for monitoring crop and climatic conditions in the midwest United States. Proceedings of the 2nd Annual Indiana GIS Conference, Nov. 15-16, 1990, Indianapolis, IN, Indiana State Univ., Terre Haute, IN, 54-63.

Gallo, K.P., and J.F. Brown, 1990: Evaluation of data reduction and compositing of the NOAA global vegetation index product: A case study. NOAA Technical Report NESDIS 54, Department of Commerce, Washington, DC, 25 pp.

Gallo, K.P., and J.F. Brown, 1990. Satellite-derived indices for monitoring global phytoclimatology. Proceedings of the 10th Annual International Geoscience and Remote Sensing Symposium (IGARRS), May 20-24, 1990, College Park, MD, IEEE, New York, NY, 261-264.

Gallo, K.P., and C.S.T. Daughtry, 1990: The use of remotely sensed data in computation of crop radiation utilization. Proceedings of the Remote Sensing for Agriculture Symposium XV, May 16-18, 1990, NASA/GSFC, USDA, Beltsville, MD, p. 39.

Goldberg, M.D., C.M. Hayden and D.G. Gray, 1990: The operational processing of GOES I-M sounding products. Proceedings of the 5th Conference on Satellite Meteorology and Oceanography, September 3-7, 1990, London, England, American Meteorological Society, Boston, MA, 481-483.

Grody, N.C., and J.V. Fiore, 1990: A microcomputer image analysis and display program for use with SSM/I data. Proceedings of the 6th International Conference on Interactive Information Processing Systems, February 5-9, 1990, Anaheim, CA, American Meteorological Society, Boston, MA, 308-313.

Gruber, A., P. Ardanuy, M. Weiss, S.K. Yang, R.G. Ellingson and S.N. Oh, 1990: A comparison of ERBE and AVHRR longwave flux estimates. NOAA Technical Report NESDIS 50, Department of Commerce, Washington, DC, 88 pp.

Gruber, A., R. Ellingson, S. Oh, P. Ardanuy, M. Weiss and S.K. Yang, 1990: A comparison of AVHRR and ERBE outgoing longwave radiation estimates. Proceedings of the 5th Conference on Satellite Meteorology and Oceanography, September 3-7, 1990, London, England, American Meteorological Society, Boston, MA, 50-54.

Gruber, A., and A. Thomasell, 1990: Cloud radiative forcing obtained from NOAA OLR data. Proceedings of the Symposium on Global Change Systems and the Special Sessions on Climate Variations and Hydrology, February 5-9, 1990, Anaheim, CA, American Meteorological Society, Boston, MA, 146-148.



Gruber, A., and W. Zonghao, (Co-Principal Investigators) 1990: The impact of NOAA satellite soundings on the numerical analysis and forecast system of the People's Republic of China. NOAA Technical Report NESDIS 51, Department of Commerce, Washington, DC, 136 pp.

Gutman, G.G., 1990: Towards monitoring droughts from space. Journal of Climate, 3 (2), 282-295.

Gutman, G.G., 1990: Review of the workshop on the use of satellite-derived vegetation indices in weather and climate prediction model. Bulletin of the American Meteorological Society, 71 (10), 1458-1463.

Guttman, N.B., 1990: Data management to reduce uncertainties of greenhouse effect prognostications and to validate climate change models. Proceedings of a Research Symposium, October 12-13, 1990, Phoenix, AZ, 19-21.

Guttman, N.B., and R.G. Quayle, 1990: A review of cooperative temperature data validation. Journal Atmospheric and Oceanic Technology, 7, 334-339.

Habermann, R.E., and F. Creamer, 1990: Prediction of large aftershocks on the basis of quiescence. Proceedings of the Workshop of the 7th U.S.-Japan Seminar on Earthquake Prediction, U.S.G.S. Open File Report 90-98, 93-98.

Hadeen, K.D., 1990: Climate data sets. Proceedings of the 14th Annual Climate Diagnostics Workshops, October 16-20, 1989, Scripps Institution of Oceanography, La Jolla, CA, 6 pp.

Hadeen, K.D., and R.M. Davis, 1990: Data availability at the National Climatic Data Center. Proceedings of the 1st NASA Climate Data System Workshop, March 1990, Goddard Space Flight Center, Greenbelt, MD, 6 pp.

Hadeen, K.D., and R.J. Snodgrass, 1990: Data availability at the National Climatic Data Center. Earth System Monitor, 1 (1), 3.

Hadsell, P.R., and P.J. Topoly, 1990: CD-ROM of Pacific Ocean temperature and salinity profiles. Proceedings of MTS '90, September 26-28, 1990, Washington, DC, Marine Technology Society, Washington, DC, 200-203.

Hamilton, D., 1990: On-line directories, inventories, and data sets in the National Oceanic and Atmospheric Administration. Proceedings of MTS '90, September 26-28, 1990, Washington, DC, Marine Technology Society, Washington, DC, 107-110.



Harris, M.J., and L.M. McMillin, 1990: Toward a correction procedure for radiosonde long-wave radiation errors. Contributions of NESDIS Authors to the International Workshop on Remote Sensing Retrieval Methods, December 15-18, 1987, Williamsburg, VA.

Hastings, D.A., 1990: Automated satellite-based fire alarms. 2nd NASA EOCAP Review, June 20, 1990, Annapolis, MD.

Hastings, D.A., 1990: GRASS for hydrologic modeling: U.S. Army Corps of Engineers Construction Engineering Research Laboratory, Grassclippings, 4 (2), 1.

Hasting, D.A., and D.M. Clark, 1990: GIS in Africa: Problems, challenges and opportunities for co-operation. International Journal of Geographical Information Systems, 5 (1), 29-39.

Hennig, L.M. (Compiler/Editor) 1990: The Natural Hazards Data Resources Directory. National Geophysical Data Center, Boulder, CO, 247 pp.

Herman, L.D., S.A. Ackerman, F. Chen and G. Wade, 1990: Observations of the daily radiative energy budget at the top of the atmosphere from the earth radiation budget experiment. Proceedings of the 7th Conference on Atmospheric Radiation, July 23-27, 1990, San Francisco, CA, American Meteorological Society, Boston, MA, 153-154.

Hillger, D.W., and J.F.W. Purdom, 1990: Clustering of satellite sounding radiances to enhance mesoscale meteorological retrievals. Journal of Applied Meteorology, 29 (12), 1344-1351.

Hillger, D.W., and J.F.W. Purdom, 1990: Mesoscale thermodynamic soundings from satellite data. Proceedings of the 16th Conference on Severe Local Storms with Special Sessions on Artificial Intelligence, Alberta, Canada, October 22-26, 1990, American Meteorological Society, Boston, MA, 171-173.

Hillger, D.W., J.F.W. Purdom and D.S. Lubich, 1990: An optimal spin budget as determined from special VAS data. Proceedings of the 5th Conference on Satellite Meteorology and Oceanography, September 3-7, 1990, London, England, American Meteorological Society, Boston, MA, 169-172.

Hillger, D.W., J.S. Snook and J.F.W. Purdom, 1990: A case study analysis of clustering applied to VAS measurements. Proceedings of the 5th Conference on Satellite Meteorology and Oceanography, September 3-7, 1990, London, England, American Meteorological Society, Boston, MA, 354-359.



- Hittelman, A.M., J.O. Kinsfather, and H. Meyers, 1990: Compiling North America geology on compact disc. Geotimes, 16-17.
- Hittelman, A.M. and H. Meyers, 1990: Regional geophysical data on-a compact disc. Microcomputer Applications in Geology, II, (Editors) J.T. Hanley and D.F. Merriam, Pergamon Press, 137-145.
- Holcombe, T.L., J.W. Ladd, G.K. Westbrook, N.T. Edgar and C.L. Bowland 1990: Caribbean marine geology; ridges and basins of the plate interior. The Geology of North America, Vol. H., The Caribbean Region (Editors) J.E. Case and G. Dengo, The Geological Society of America, 231-260.
- Hussey, W.J., and D.J. Cotter, 1990: Consistent monitoring of the Earth system: NOAA's operational polar satellite program. Proceedings of the 41st Congress of the International Astronautical Federation, October 10-12, 1990, Dresden, Germany.
- Jacobowitz, H., and A. Gruber, 1990: Estimation of the broadband planetary albedo from narrowband NOAA satellite observations. Proceedings of the 7th Conference on Atmospheric Radiation, July 23-27, 1990, San Francisco, CA, American Meteorological Society, Boston, MA, 161-163.
- Jacobowitz, A., and A. Gruber, 1990: Estimation of the broadband planetary albedo from narrowband NOAA satellite observations. Proceedings of Remote Sensing Science for the Nineties, IGARSS '90, May 20-24, 1990, University of Maryland, College Park, MD, IEEE Cat. No. 90CH2825-8, 249-252.
- Jacobowitz, H., A. Gruber and R. Hucek, 1990: Estimation of the outgoing longwave flux from NOAA AVHRR satellite observations. Proceedings of the 7th Conference on Atmospheric Radiation, July 23-27, 1990, San Francisco, CA, American Meteorological Society, Boston, MA, 107-110.
- Jacobs, C.L., N.T. Edgar, L.M. Parsons, W.P. Dillon, K.M. Scanlon and T.L. Holcombe, 1990: A Revised Bathymetry of the Mid-Cayman Rise and Central Cayman Trough using Long Range Side Scan Sonar. Institute of Oceanographic Sciences Deacon Laboratory Report No. 272, 11 pp, map.
- Jiankang, W., R.R. Ferraro, R. Scofield and J.C. Alishouse, 1990: A preliminary NESDIS tri-spectral rainfall algorithm. Proceedings of the Conference on Operational Precipitation Estimation and Prediction, February 7-8, 1990, Anaheim, CA, American Meteorological Society, Boston, MA, 24-31.
- Jones, P.D., P. Ya. Groisman, M. Coughlan, N. Plummer, W.C. Wang and T.R. Karl, 1990: Assessment of urbanization effects in time series of surface air temperature over land. Nature, 347, 169-172.



Karl, T.R., 1990: Climatological drought prediction. Proceedings of the Seminar and Workshop, Drought Management and Planning, (Editors) Wilhite, Wood, and Kay, Institute of Agriculture and Natural Resources, University of Nebraska-Lincoln.

Karl, T.R., 1990: Global warming: Are we being misled by the averaged means. Proceedings of the Beijing International Symposium on Climate Change, Aug 9-12, 1990.

Karl, T.R., R. Bradley and K. Ya. Vinnikov, 1990: Recent Global Climate Trends. Prospects for Future Climate, (Editors) M.C. MacCracken, A. D. Hecht, M.I. Budyko, and Y.A. Izrael. Lewis Publishers Inc., 270 pp.

Karl, T.R., and R.R. Heim, Jr., 1990: Are droughts becoming more frequent in the U.S.? Geophysical Research Letters, 17.

Karl, T.R., and P.M. Steurer, 1990: Increased cloudiness in the United States during the first half of the twentieth century: Fact or Fiction? Geophysical Research Letters, 17 (11), 1925-1928.

Karl, T.R., and W.C. Wang, 1990: Urban warming in global data sets: A current assessment. Proceedings of the Beijing International Symposium on Climatic Change, Aug. 9-12, 1990.

Karl, T.R., W.C. Wang, M. Schlesinger, R.W. Knight and D.A. Portman, 1990: A method of relating general circulation model simulated climate to the observed local climate. Part I: seasonal statistics. Journal of Climate, 3.

Kineman, J.J., D. Clark and H. Croze, 1990: Data integration and modeling for global change: An international experiment. Proceedings of the International Conference and Workshop on Global Natural Resource Monitoring and Assessments: Preparing for the 21st Century, September 1989, Bethesda, MD, American Society of Photogrammetry and Remote Sensing, 2, 260-269.

Kleepies, T.J., and L.M. McMillin, 1990: An extension of the split window technique for the retrieval of precipitable water: Experimental verification. Contributions of NESDIS Authors to the International Workshop on Remote Sensing Retrieval Methods, December 15-18, 1987, Williamsburg, VA.

Kleepies, T.J., and L.M. McMillin, 1990: Retrieval of precipitable water from observations in the split window over varying surface temperatures. Journal of Applied Meteorology, 29 (9), 851-862.



- Koffler, R., and L. Spayd, 1990: 30 Years of operational environmental satellites: A retrospective and future view of the United States program. Proceedings of the 23rd International Symposium on Remote Sensing of Environment, April 18-15, 1990, Bangkok, Thailand, 87-105.
- Kogan, F., 1990: Remote sensing of droughts. Proceedings of the 10th International Geoscience Remote Sensing Symposium, IGARSS'90, Vol. 1, May 20-24, 1990, College Park, MD, 591-594.
- Kogan, F., 1990: Monitoring the 1988 U.S. drought from satellites. Proceedings of the 5th Conference on Satellite Meteorology and Oceanography, September 3-7, 1990, London, England, 186-189.
- Kogan, F., 1990: Remote sensing of weather impact on vegetation in non-homogeneous areas. International Journal of Remote Sensing, 11 (8), 1405-1419.
- Kusselson, S.J., 1990: Using satellite imagery and instability bursts to forecast a wide-spread flood event in the Northeastern United States. Proceedings of the 8th Conference on Hydrometeorology, October 22-26, 1990, Kananaskis Park, Alta. Canada, American Meteorological Society, Boston, MA, 118-123.
- Ladd, J.W., T.L. Holcombe, G.K. Westbrook and N.T. Edgar, 1990: Caribbean marine geology: Active margins of the plate boundary. The Geology of North America, Vol. H., The Caribbean Region (J.E. Case and G. Dengo, Editors), The Geological Society of America, 261-290.
- Lander, J.F., 1990: Observations of Tsunamis on the West Coast of the United States. Proceedings of the 21st Joint UJNR Panel on Wind and Seismic Effects Joint Meeting, National Institute of Standards and Technology, NSF ENG3-07, 247-255.
- Langel, R.A., R.T. Baldwin, J.R. Ridgeway and W.M. Davis, 1990: A compressed marine data set for geomagnetic field modeling. Journal of Geomagnetism and Geoelectricity, 42 (9), 989-1000.
- Lee, T.J., J.F. Weaver and R.A. Pielke, 1990: Numerical predictions and nowcasting of downslope windstorms along the Colorado front range. Proceedings of the 5th Conference on Mountain Meteorology, June 25-29, 1990, Boulder, CO, American Meteorological Society, Boston, MA, 81-84.
- Levitus, S., 1990: Interpentadal variability of steric sea level and geopotential thickness of the North Atlantic Ocean, 1970-74 versus 1955-59. Journal of Geophysical Research, 95, 5233-5238.



Levitus, S., 1990: Temporal variability of steric sea level of the North Atlantic Ocean, 1970-74 versus 1955-59'. Towards an Integrated System for Measuring Long Term Changes in Global Sea Level, Report of a Workshop held at Woods Hole Oceanographic Institution, Joint Oceanographic Institutions, Washington, DC, 11-16.

Lienesch, J.H., R. Xie and W.Y. Ramsey, 1990: Evaluation of the GOES I-M normalization technique with the visible images of GOES-7. NOAA Technical Memorandum NESDIS 31, Department of Commerce, Washington, DC, 19 pp.

Lockridge, P., 1990: Non-seismic phenomena in the generation and augmentation of Tsunamis. Natural Hazards, 3 (4), 403-412.

Lyles, N.L., 1990: Comparing the convective stratiform technique with the Scofield-Oliver technique for estimating rainfall. Proceedings of the 8th Conference on Hydrometeorology, October 22-26, 1990, Kananaskis Park, Alta. Canada, American Meteorological Society, Boston, MA, 207-212.

Maslanik, J.A., and R.G. Barry, 1990: Remote sensing in Antarctica and the Southern Ocean: Applications and development. Antarctic Sciences, 2, 105-121.

Maslanik, J.A., and R.G. Barry, 1990: Variability of sea ice concentration in the Canada Basin and associated atmospheric forcings: 1979-1984. (Editors) S.F. Ackley and W.F. Weeks, Sea Ice Properties and Processes, Monograph 90-1, U.S. Army Corps of Engineers, CRREL, Hanover, NH, 181-184.

McClain, E.P., C.C. Walton and L.L. Stowe, 1990: Clavr cloud/clear algorithms and non-linear atmospheric corrections for multi-channel sea surface temperatures. Proceedings of the 5th Conference on Satellite Meteorology and Oceanography, September 3-7, 1990, London, England, American Meteorological Society, Boston, MA, 133-138.

McCormack, R.C., and A.E. Strong, 1990: Correlations between sea surface temperature trends and Caribbean coral bleaching events. EOS Transactions, American Geophysical Union, 71, 104.

McKinnon, J.A., 1990: Solar astronomy data base: Packaged information on diskette. NASA Conference Publication 3086, Proceedings of Climate Impact on Solar Variability, NASA/GSFC, April 24-27, 1990, Greenbelt, MD, 117.

McLaren, A.S., R.G. Barry and R.H. Bourke, 1990: Could Arctic ice be thinning? Nature, 345 (6278), 762.



- McMillin, L.M., 1990: The use of Huffman coding to compress satellite data. Contributions of NESDIS Authors to the International Workshop on Remote Sensing Retrieval Methods, December 15-18, 1987, Williamsburg, VA.
- Menzel, W.P., and A. Chedin, 1990: Summary of the Fifth International TOVS Study Conference. Bulletin of American Meteorological Society, 71, 691-693.
- Menzel, W.P., T.J. Schmit and D.P. Wylie, 1990: Cloud characteristics over central Amazonia during GTE/ABLE IIB derived from multispectral VAS observations. Journal of Geophysical Research, 95, 17,039-17,042.
- Meyers, H., 1990: The World Data Center System. Proceedings of the 4th International Conference on Geoscience Information, June 25-29, Ottawa, Ontario, Canada.
- Meyers, H., and W.M. Davis, 1990: A profile of geomagnetic users and abusers. Journal of Geomagnetism and Geoelectricity, 42 (9), 1079-1086.
- Meyers, H., and A.M. Hittelman, 1990: Definitive data sets require easy access--An experiment in compact disc technology. Proceedings of the 4th International Conference on Geoscience Information, June 25-29, Ottawa, Ontario, Canada.
- Meyers, H., A. Hittelman, R. Buhmann, R. Macnab, K.G. Shih and J. Verhoef, 1990: A detailed magnetic anomaly map of the USSR produced from digital data. EOS Transactions, American Geophysical Union, 71 (43), 1644.
- Moeller, C.C., W.P. Menzel and K.I. Strabala, 1990: High resolution atmospheric and surface variability from combined MAMS and VAS radiances. Optical Remote Sensing of the Atmospheres, Technical Digest Series, Vol.4, Incline Village, NV, February 12-15, 1990.
- National Geophysical Data Center, 1990: Programs and Services. National Geophysical Data Center, Boulder, CO, 96 pp.
- Neuendorffer, A.C., 1990: The feasibility of 1-DEG/1-KM tropospheric retrievals. Contributions of NESDIS Authors to the International Workshop on Remote Sensing Retrieval Methods, Held December 15-18, 1987, Williamsburg, VA.
- Ohring, G., 1990: The 1989 IAMAP symposium of the Earth's radiation budget. Bulletin of the American Meteorological Society, 71 (10), 1455-1457.



Pielke, R.A., G. Dalu, J. Weaver, J. Lee and J. Purdom, 1990: Influence of land use on mesoscale atmospheric circulation. Proceedings of the 4th Conference on Mesoscale Processes, June 25-29, 1990, Boulder, CO, American Meteorological Society, Boston, MA, 226-227.

Pielke, R.A., T.J. Lee, J.F. Weaver and T.G.F. Kittel, 1990: Influence of vegetation on the water and heat distribution over mesoscale sized areas. Proceedings of the 8th Conference on Hydrometeorology, October 22-26, 1990, Kananaskis Park, Canada, American Meteorological Society, Boston, MA, 46-49.

Pielke, R.A., J.F. Weaver, T. Kittel and J. Lee, 1990: Use of NDVI for mesoscale modeling. Proceedings of the Workshop on the Use of Satellite-Derived Vegetation Indices in Weather and Climate Prediction Models February 26-27, 1990, Camp Springs, MD, 83-85.

Pinker, R.T., and L.L. Stowe, 1990: Modelling planetary bidirectional reflectance over land. International Journal of Remote Sensing, 11 (1), 113-123.

Planet, W.G., (Editor) 1990: NOAA-9 solar backscatter ultraviolet (SBUV/2) instrument and derived ozone data: A status report based on a review on January 29, 1990. NOAA Technical Report NESDIS 53, Department of Commerce, Washington, DC, 233 pp.

Plantico, M.S., T.R. Karl, G. Kukla and J. Gavin, 1990: Is recent climate change across the United States related to rising levels of anthropogenic greenhouse gases? Journal Geophysical Research, 95, 16617-16637.

Preston, L.D. and P.M Steurer 1990: The National Climatic Data Center Library: A treasure trove for data archaeologists. NOAA Earth System Monitor, 1 (4), 3-4.

Purdom, J.F.W., and D.W. Hillger, 1990: Satellite data and convective development. Proceedings of the 5th Conference on Satellite Meteorology and Oceanography, September 3-7, 1990, London, England, American Meteorological Society, Boston, MA, 179-180.

Purdom, J.F.W., and P.C. Sinclair, 1990: Convective scale interaction as observed using satellite data. Proceedings of the 5th Conference on Satellite Meteorology and Oceanography, September 3-7, 1990, London, England, American Meteorological Society, Boston, MA, 378-383.



Purdom, J.F.W., and J.F. Weaver, 1990: A satellite perspective of the June 15, 1988, tornado outbreak in Denver, Colorado. Proceedings of the 16th Conference on Severe Local Storms and the Conference on Atmospheric Electricity, October 22-26, 1990, Kananaskis Park, Alta. Canada, American Meteorological Society, Boston, MA, 167-170.

Reale, A.L., H.E. Fleming, D.Q. Wark, C.S. Novak, F.S. Zbar, J.R. Neilon, M.E. Gelman and H.J. Bloom, 1990: Baseline upper air network (BUAN) final report. NOAA Technical Report NESDIS 52, Department of Commerce, Washington, DC, 57 pp.

Revercomb, H.E., H. Buijs, H.B. Howell, R.O. Knuteson, D.C. LaPorte, W.L. Smith, L.A. Sromovsky and H.W. Woolf, 1990: Radiometric Calibration of IR Interferometers: Experience from the high-resolution interferometer sounder (HIS) aircraft instrument. Contributions of NESDIS Authors to the International Workshop on Remote Sensing Retrieval Methods, December 15-18, 1987, Williamsburg, VA.

Revercomb, H.E., R.O. Knuteson, W.L. Smith, H.M. Woolf and H.B. Howell, 1990: Optical spectroscopic inferences from HIS measurements of atmospheric thermal emission. Optical Remote Sensing of the Atmospheres, Technical Digest Series, Vol.4, February 12-15, 1990, Incline Village, NV.

Riebsame, W.R., S.A. Changnon, Jr, and T.R. Karl, 1990: The 1987-89 drought in the United States: Lessons for the future. Proceedings of the Seminar and Workshop, Drought Management and Planning, (Editors) Wilhite, Wood, and Kay, Institute of Agriculture and Natural Resources, University of Nebraska-Lincoln.

Robinson, J., and R. Scofield, 1990: Backward propagating mesoscale convective systems (MCSs) and flash floods. Satellite Applications Information Note 90/6, Preprint from the 3rd Workshop on Operational Meteorology, May 2-4, 1990, Montreal, Quebec, 6 pp.

Rostotsky, S.B., and D. Clark, 1990: A bank of databases. EGIS '90 Proceedings: First European Conference on Geographical Information Systems. EGIS Foundation, Utrecht, 2, 939-947.

Schnell, R.C., R.G. Barry, M.W. Miles, E.L. Andreas, L.F. Radke, C.A. Brock, M.P. McCormick and S.L. Moore, 1990: Lidar detection of leads in arctic sea ice. (Editors) S.F. Ackley and W.F. Weeks, Sea Ice Properties and Processes, Monograph 90-1, U.S. Army Corps of Engineers, CRREL, Hanover, NH, 119-123.



Schmit, T.J., K.F. Brueske, W.L. Smith and W.P. Menzel, 1990: Visible and infrared spin scan radiometer atmospheric sounder water vapor and wind fields over Amazonia. Journal of Geophysical Research, 95, 17,031-17,038.

Schwartz, M., and T.R. Karl, 1990: Spring phenology: Nature's experiment to detect the effect of "green-up" on maximum surface temperature. Monthly Weather Review, 118, 883-890.

Scofield, R., 1990: Instability bursts associated with extratropical cyclone systems (ECSS) and a forecast index of 3-12 hour heavy precipitation. NOAA Technical Memorandum NESDIS 30, Department of Commerce, Washington, DC, 77 pp.

Scofield, R., and J. Robinson, 1990: Using instability bursts and satellite imagery to analyze and NOWCAST heavy snow. Satellite Applications Information Note 90/1, Department of Commerce, Washington, DC, 6 pp.

Scofield, R.A., and J. Robinson, 1990: The "water vapor imagery/Theta-E connection" with heavy convective rainfall. Satellite Applications Information Note 90/7, Department of Commerce, Washington, DC, 7 pp.

Scofield, R., J. Robinson and D. Yang, 1990: A scheme for nowcasting heavy rainfall from mesoscale convective systems (MCSS). Proceedings of the 8th Conference of Hydrometeorology, October 22-26, 1990, Kananaskis Park, Alta, Canada, American Meteorological Society, Boston, MA, J13-J19.

Scofield, R., J. Robinson and N. Lyles, 1990: Satellite estimates and forecasts of heavy rainfall from mesoscale convective systems (MCSS). Proceedings of the Conference on Operational Precipitation Estimation and Prediction, February 7-8, 1990, Anaheim, CA, American Meteorological Society, Boston, MA, 5-12.

Serreze, M.C., R.G. Barry and A.S. McLaren, 1990: Reversals of the Beaufort Gyre sea ice circulation and effects on ice concentration in the Canada Basin. S.F. Ackley and W.F. Weeks (Editors) Sea Ice Properties and Processes, Monograph 90-1, U.S. Army Corps of Engineers, CRREL, Hanover, NH, 185-188.

Sherman, J.W., III, 1990: Climate and global change research contributions by developing countries. Proceedings of the 23rd International Symposium on Remote Sensing of Environment, April 18-15, 1990, Bangkok, Thailand, ERIM, 169-179.



Sinclair, P.C., and J.F.W. Purdom, 1990: Possible effects of thunderstorm outflow transport of enriched ice nuclei on cloud development and precipitation events. Proceedings of the 16th Conference on Severe Local Storms, October 22-26, 1990, Kananaskis Park, Canada, American Meteorological Society, Boston, MA, 639-642.

Smith, W.L., H.L. Huang, H.E. Revercomb and H.M. Woolf, 1990: On the combination of passive and active sensing for achieving very high resolution atmospheric profiles. Optical Remote Sensing of the Atmospheres, Technical Digest Series, Vol.4, February 12-15, 1990, Incline Village, NV, 198-201.

Smith, W.L., H.E. Revercomb, H.B. Howell, H.M. Woolf, R.O. Knuteson, R.G. Decker, M.J. Lynch, E.R. Westwater, R.G. Strauch, K.P. Moran, B. Stankov, M. McBeth, G. Albright, C. Paneitz, G. Wriht, P.T. May and M.T. Decker, 1990: GAPEX: A ground-based atmospheric profiling experiment. Bulletin of American Meteorological Society, 71, 310-318.

Smith, W.L., H.M. Woolf, H.B. Howell, H.-L. Huang and H.E. Revercomb, 1990: The simultaneous retrieval of atmospheric temperature and water vapor profiles - application to measurements with the high spectral resolution interferometer sounder (HIS). Contributions of NESDIS Authors to the International Workshop on Remote Sensing Retrieval Methods, December 15-18, 1987, Williamsburg, VA.

Stephens, G., and M. Matson, 1990: Fire detection using the NOAA-N satellites. Proceedings of the 10th Conference on Fire and Forest Meteorology, April 17-21, 1989, Ottawa, Ontario, 346-350.

Strong, A.E., 1990: EOS Transactions, American Geophysical Union, (cover), 71 (2).

Strong, A.E., 1990: Global, regional, and zonal sea surface temperature signals from satellite and in-situ observations during the 1980's. Proceedings MTS'90, Marine Technology Society, September 26-28, 1990, Washington, DC, 6 pp.

Strong, A.E., and D.C. Reed, 1990: Global SST variability during the 1980s as revealed by satellite MCSST and verified by in-situ data. EOS Transactions, American Geophysical Union, 71, 536.

Stowe, L.L., P. Abel, H. Jacobowitz, P. Ardanuy, R. Hucek, and R. Joyce, 1990: Accuracy of ERB measurements from the clouds and the Earth's radiant energy system instrument (CERES-I). Proceedings of SPIE 1990 Technical Symposium on Optical Engineering and Photomes in Aerospace Sensing, April 16-20, 1990, Orlando, FL, 7 pp.



Stowe, L.L., R. Hitzenberger and A. Deepak (Editors), 1990: Experts meeting on space observations of tropospheric aerosols. World Climate Programme Research, WCPR-48, WMO/TD-No. 389, November 15-18, 1989, Hampton, VA, 51 pp.

Sullivan, J., and A. Gruber, 1990: Horizontal covariance of NOAA-10 satellite temperature errors. Proceedings of the 5th Conference on Satellite Meteorology and Oceanography, September 3-7, 1990, London, England, American Meteorological Society, Boston, MA, 408-413.

Sullivan, J., and A. Gruber, 1990: Statistical assessment of NOAA-10 collocated soundings using a physical retrieval system. Proceedings of the 10th Annual International Geoscience and Remote Sensing Symposium, IGARSS'90, May 20-24, 1990, College Park, MD, IEEE, New York, NY, 1193-1195.

Tarpley, J.D., and K.P. Gallo, 1990: The NOAA global vegetation index product. Proceedings of the Remote Sensing for Agriculture Symposium XV, May 16-18, 1990, NASA/GSFC, USDA, Beltsville, MD, 51.

Taylor, V.R., 1990: Implementation of reflectance models in operational AVHRR radiation budget processing. NOAA Technical Report NESDIS 47, Department of Commerce, Washington, DC, 14 pp.

Thomasell, A., 1990: Evaluation of cloud motion vectors. Proceedings of Remote Sensing Science for the Nineties, IGARSS '90, May 20-24, 1990, University of Maryland, College Park, MD, IEEE Cat. No. 90CH2825-8, 541-543.

Walsh, J.E., and R.G. Barry, 1990: Cryospheric data for studies of global change. Proceedings of the Symposium on Global Change Systems, American Meteorological Society, Boston, MA, 127-132.

Walton, C.C., E.P. McClain and J.F. Sapper, 1990: Recent changes in satellite-based multichannel sea surface temperature algorithms. Proceedings of the Marine Technology Society, September 1990, 1, 245-250.

Wang, W.C., Z. Zeng and T.R. Karl, 1990: Urban heat islands in China. Geophysical Research Letters, 17.

Weaver, J.F., and N.J. Doesken, 1990: Recurrence probability - A difference approach. Weather, 45 (9), 333-339.



Weaver, J.F., and R.S. Phillips, 1990: An expert system application for forecasting severe downslope winds at Fort Collins, Colorado, USA. Proceedings of the 16th Conference on Severe Local Storms and the Conference on Atmospheric Electricity, October 22-26, 1990, Kananaskis Park, Alta. Canada, American Meteorological Society, Boston, MA, 37-39.

Weaver, J.F., and J.J. Toth, 1990: The use of satellite imagery and surface pressure-gradient analysis modified for sloping terrain to analyze the mesoscale events preceding the severe hailstorms of 2 August 1986. Weather and Forecasting, 5 (2), 279-298.

Weinreb, M.P., G. Hamilton, S. Brown and R.J. Koczor, 1990: Nonlinearity corrections in calibration of advanced very high resolution radiometer infrared channels. Journal of Geophysical Research, 95 (C5), 7381-7388.

Weinreb, M.P., R. Xie, J.H. Lienesch, and D.S Crosby, 1990: Destriping GOES images by matching empirical distribution functions. Remote Sensing Environment, 29, 185-195.

Wesley, D.A., R.A. Pielke, J.F. Weaver and R.L. McAnelly, 1990: Low-level stable layers, blocking, and locally heavy snowfall. Proceedings of the 16th Conference on Severe Local Storms and the Conference of Atmospheric Electricity, October 22-26, 1990, Kananaskis Park, Canada, American Meteorological Society, Boston, MA, 84-89.

Westley D.A. J.F. Weaver and R.A. Pielke, 1990: Heavy snowfall during an arctic outbreak along the Colorado front range. National Weather Digest, 15 (3), 2-19.

Wiegand, C.L., A.H. Gerbermann, K.P. Gallo, B.L. Blad and D. Dusek, 1990: Multisite analyses of spectral-biophysical data for corn. Remote Sensing of Environment, 33, 1-16.

Wilkinson, D.C., 1990: NOAA's spacecraft anomaly data base. Proceedings of the 28th Aerospace Sciences Meeting, January 8-11, 1990, Reno, NV, American Institute of Aeronautics and Astronautics, Washington, DC, 5 pp.

Wilkerson, J.C., and M.D. Earle, 1990: A study of differences between environmental reports by ships in the voluntary observing program and measurements from NOAA buoys. Journal of Geophysical Research, 95 (C3), 3373-3385.

Wyss M., P. Bodin, and R.E. Habermann, 1990: Seismic quiescence at Parkfield: An independent indication of an imminent earthquake. Nature, 345 (6274), 426-428.







## CONTRACTS AND GRANTS SPONSORED BY NESDIS, 1990

Lipton, A.E., and T.H. Vonder Haar, 1990: Mesoscale by numerical modeling coupled with sounding retrieval from satellites. Monthly Weather Review, 118, 1308-1329.

Lipton, A.E., and T.H. Vonder Haar, 1990: Pre-convective mesoscale analysis over irregular terrain with a satellite/model coupled system. Monthly Weather Review, 118, 1330-1358.

SMSRC User's Manual for the NOAA-K, L & M Environmental Image Products. S M Systems and Research Corporation, Landover, MD, Contract No. 52-DDNE-9-00018, 90 pp.

SMSRC User's Manual SSM/I Orbit-by-Orbit Products. S M Systems and Research Corporation, Landover, MD, Contract No. 52-DDNE-9-00018, 32 pp.

Vonder Haar, T., and J. DiVico (Editors), 1990: Annual report on Cooperative Institute for Research, 1 July 1989 - 30 June 1990. Cooperative Institute for Research in the Atmosphere, Colorado State University, Ft. Collins, CO.



## APPENDIX A

### NESDIS SATELLITE TRAINING MATERIALS

#### FILMS/VIDEOTAPES

- WAB 376: Advances in the Understanding of Weather Systems  
(Sound Film: 12 Minutes)
- WAB 390: Oceanic and Related Atmospheric Phenomena as Viewed from Environmental Satellites  
(Silent Film: 20 Minutes)
- WAB 409: The Initiation of Convection  
(Sound Film: 19 Minutes)
- WAB 410: The Global Weather Experiment (FGGE) Special Observing Period -1  
(Silent Film: 14 Minutes)
- WAB 411: The Global Weather Experiment (FGGE) Special Observing Period -2  
(Silent Film: 14 Minutes)
- WAB 447: The Global Weather Experiment - North Atlantic Hurricanes  
(Silent Film: 16 Minutes)
- WAB 456: The Importance of Thunderstorm Outflow Boundaries in the Development of Deep Convection  
(Sound Film: 29 Minutes)
- WAB 467: El Chichon/Volcanic Eruption  
(Silent Film: 10 Minutes)
- WAB 474: Basic Cloud Identification And Interpretation From Weather Satellite Imagery In Motion  
(Sound Film: 22 Minutes)
- WAB 487: The Extraordinary El Nino Event of 1982-83 Equatorial Atlantic  
(Silent Film: 12 Minutes)
- WAB 492: Fog Identification and Interpretation  
(Sound Film: 24 Minutes)
- WAB 495: Relative Motions Associated With Moving Cloud Systems  
(Sound Film: 22 Minutes)
- WAB 499: The Cloud Features of Cold-Frontal Zones Over Oceanic Regions  
(Sound Film: 28 Minutes)



These films/videos were developed in conjunction with the Walter A. Bohan Company (WAB) and the Satellite Applications Laboratory (NOAA/NESDIS) for the purpose of providing training in the interpretation of satellite imagery in motion.

U.S. Federal agencies requesting to borrow films/videos at no cost for viewing may contact:

Nancy Everson, E/RA22  
World Weather Building, Room 703  
Washington, DC 20233  
Phone (301) 763-8204

Others within the United States (e.g. universities) wishing to view these films/videos should contact:

NOAA/NESDIS/Satellite Data Services Division  
Princeton Executive Square, Suite 100  
Washington, DC 20233  
Phone (301) 763-8400

A nominal \$35.00 fee (not including handling cost) is charged for one week rentals. Due to projected high demand and limited supply for films, please request films/videos as far in advance as possible.

**TECHNICAL REFERENCE HANDBOOKS - for information contact:**

American Meteorological Society  
45 Beacon Street  
Boston, MA 02108  
(617) 227-2425

**- Weather Satellites: Systems, Data, and Environmental Applications**

National Weather Association  
4400 Stamp Road, Room 404  
Temple Hills, MD 20748  
(301) 899-3784

- Weather Service Forecasting Handbook #6 - "Satellite Imagery Interpretation for Forecasters"
- Workbook on Tropical Clouds and Cloud Systems Observed in Satellite Imagery

**LEARNING PROGRAMS (SCRIPT-SLIDE SETS)**

- Polar Orbiter Satellite Imagery Interpretation
- Winds of the World
- Satellite Imagery Indicators of Turbulence



## Satellite Applications Information Notes (SAINS)

The **Satellite Applications Information Notes (SAINS)** are short applied research papers focusing on meteorological events where satellite imagery aided in the explanation or prediction of the event. These notes are designed to improve satellite imagery interpretative skills by transferring NESDIS research to NWS field operations and sharing existing field forecast techniques that are derived from satellite imagery.

- 89/1 - A water vapor image feature related to severe thunderstorms. Gary Ellrod
- 89/2 - Instability bursts and mesoscale convective system development and propagation. Rod Scofield and Jacob Robinson
- 89/3 - Analysis of stratiform precipitation with enhanced infrared and visible imagery. Gary Ellrod
  
- 90/1 - Using instability bursts and satellite imagery to analyze and NOWCAST heavy snow. Rod Scofield and Jacob Robinson
- 90/2 - One-dimensional anvil growth as a severe storm indicator. Gary Ellrod
- 90/3 - Beware of the initial analysis. Kenneth Mielke
- 90/4 - Objective forecasts of clear air turbulence potential based on deformation and wind shear. Gary Ellrod
- 90/5 - Applications of future GOES multispectral imagery. Gary Ellrod  
Weather satellite observations in the mesoscale forecasting era. Ralph Anderson
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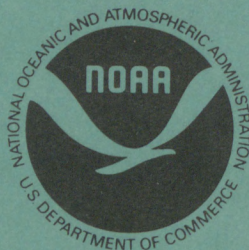
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