

UNITED STATES
DEPARTMENT OF
COMMERCE
PUBLICATION



NOAA Technical Memorandum NESS 31

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Environmental Satellite Service

QC
879.5
.U4
no. 31
c. 2

Publications and Final Reports
on Contracts and Grants,
1970 - NESS

WASHINGTON, D.C.
DECEMBER 1971

NOAA TECHNICAL MEMORANDA

National Environmental Satellite Service Series

The National Environmental Satellite Service (NESS) is responsible for the establishment and operation of the National Operational Meteorological Satellite System and of the environmental satellite systems of NOAA. The three principal Offices of NESS are Operations, Systems Engineering, and Research.

NOAA Technical Memoranda NESS series facilitate rapid distribution of material which may be preliminary in nature and which may be published formally elsewhere at a later date. Publications 1 to 25 are in the former series, ESSA Technical Memoranda, National Environmental Satellite Center Technical Memoranda (NESCTM). Beginning with 26, publications are now part of the series, NOAA Technical Memoranda National Environmental Satellite Service (NESS).

Publications listed below are available from the National Technical Information Service, U.S. Department of Commerce, Sills Bldg., 5285 Port Royal Road, Springfield, Va. 22151. Price: \$3.00 paper copy; \$0.95 microfiche. Order by accession number shown in parentheses at end of each entry.

ESSA Technical Memoranda

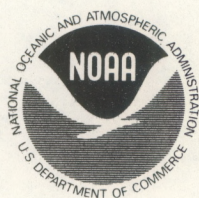
- NESCTM 1 Publications by Staff Members, National Environmental Satellite Center and Final Reports on Contracts and Grants Sponsored by the National Environmental Satellite Center 1958-1966, March 1967. (PB-174 606)
- NESCTM 2 Publications by Staff Members, National Environmental Satellite Center and Final Reports on Contracts and Grants Sponsored by the National Environmental Satellite Center 1967. January 1968. (PB-177 189)
- NESCTM 3 Computer Processing of Satellite Cloud Pictures. C. L. Bristor, April 1968. (PB-178 319)
- NESCTM 4 Modification of the APT Ground Station Recorder for Increasing the Size of Recorded DRIR Data. Arthur S. Vossler, May 1968. (PB-179 322)
- NESCTM 5 NESC Digital Formatting System (DFS). Randall G. Hill, October 1968. (PB-180 588)
- NESCTM 6 Computer Processing of TOS Attitude Data. J. F. Gross, November 1968. (PB-182 125)
- NESCTM 7 The Improved TIROS Operational Satellite. Edward G. Albert, August 1968. (PB-180 766)
Supplement No. 1. Characteristics of Direct Scanning Radiometer Data, Edward G. Albert, April 1969. (PB-183 965)
- NESCTM 8 Operational Utilization of Upper Tropospheric Wind Estimates Based on Meteorological Satellite Photographs. Gilbert Jager, Walton A. Follansbee, and Vincent J. Oliver, October 1968. (PB-180 293)
- NESCTM 9 Meso-Scale Archive and Products of Digitized Video Data From ESSA Satellites. Arthur L. Booth and V. Ray Taylor, October 1968. (PB-180 294)
- NESCTM 10 Annotated Bibliography of Reports, Studies, and Investigations Relating to Satellite Hydrology. D. R. Baker, A. F. Flanders, and M. Fleming, June 1970. (PB-194 072)

(Continued on inside back cover)

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Environmental Satellite Service

NOAA Technical Memorandum NESS 31

PUBLICATIONS AND FINAL REPORTS ON
CONTRACTS AND GRANTS, 1970 - NESS



WASHINGTON, D.C.
December 1971

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
National Environmental Satellite Service

NOAA Technical Memorandum NMSS-71

PUBLICATIONS AND FINAL REPORTS ON
CONTRACTS AND GRANTS 1973-74

UDC 551.507.362.2:016(73)

551.507.362.2	Weather Satellites
016	Subject Bibliography
(73)	United States



WASHINGTON, D.C.
December 1974

Preface

This memorandum is one of a series containing lists of articles and reports published by or for the National Environmental Satellite Service. To date the series consists of NESCTM-1, 2, 11, and 22, for 1958-66, 1967, 1968, and 1969, respectively. The current issuance lists items published or received during 1970.

In this memorandum many entries are followed by an identification enclosed in parentheses. Use of these numbers will facilitate ordering copies of a report from the National Technical Information Service (NTIS) (see inside front cover) or the Superintendent of Documents, U. S. Government Printing Office. Items with identification numbers prefixed by PB or COM are ordered from the NTIS; items identified by a number and a price, e.g., (COM-71-00132) (GPO \$.50), are available in microfiche from the NTIS, or in hard copy, at the price shown, from the Superintendent of Documents. Reprint copies of articles listed in Publications by Staff Members, NESS will be furnished free of charge as long as supplies are on hand; copies of books listed must be obtained from the publishers; copies of reports on contracts or grants will be supplied to qualified requesters when available.

CONTENTS

Preface.....iii

Publications by Staff Members, NESS, 1970..... 1

Final Reports on Contracts and Grants
Sponsored by the NESS, 1970..... 4

PUBLICATIONS BY STAFF MEMBERS, NESS, 1970

- Anderson, Ralph K., "From Above: Lubbock Tornadoes," Weatherwise, Vol. 23, No. 4, Aug. 1970, p. 197.
- Anderson, Ralph K., "Picture of the Month - An Atlantic Cold Front, Satellite Infrared and Visual Data Compared," Monthly Weather Review, Vol. 98, No. 12, Dec. 1970, pp. 934-935.
- Baker, Donald R., Flanders, Alan F., Fleming, Michael H., "Annotated Bibliography of Reports, Studies, and Investigations Relating to Satellite Hydrology," ESSA Technical Memorandum NESCTM 10, June 1970, 28 pp.
- Braun, Walter C., "The Effects of Diffraction on the Field of View of an Optical Instrument," Applied Optics, Vol. 9, No. 8, Aug. 1970, pp. 1862-1867.
- Cochran, Henry, Thomas, Norman, and Parmenter, Frances C., "Picture of the Month - Rope Cloud," Monthly Weather Review, Vol. 98, No. 8, Aug. 1970, pp. 612-613.
- Doolittle, R. C., Bristor, C. L., and Lauritson, L., "Mapping of Geostationary Satellite Pictures - An Operational Experiment," ESSA Technical Memorandum NESCTM 20, Mar. 1970, 28 pp. (PB-191-189)
- Eckardt, Matthias, and Parmenter, Frances C., "Picture of the Month - ITOS Views," Monthly Weather Review, Vol. 98, No. 9, Sept. 1970, p. 664.
- Ferguson, Edward W., "Picture of the Month - Snowstorm in the Central Plains," Monthly Weather Review, Vol. 98, No. 4, Apr. 1970, p. 321.
- Fritz, Sigmund, "Earth's Radiation to Space at 15 Microns: Stratospheric Temperature Variations," Journal of Applied Meteorology, Vol. 9, No. 5, Oct. 1970, pp. 815-824.
- Fritz, Sigmund, and Soules, S. D., "Large-Scale Temperature Changes in the Stratosphere Observed from Nimbus III," Journal of Atmospheric Sciences, Vol. 27, No. 7, Oct. 1970, pp. 1091-1097.
- Hayden, C. M., "An Objective Analysis of Cloud Cluster Dimensions and Spacing in the Tropical North Pacific," Monthly Weather Review, Vol. 98, No. 7, July 1970, pp. 534-540.
- Leese, John A., Booth, Arthur L., and Godshall, Frederick A., "Archiving and Climatological Applications of Meteorological Satellite Data," ESSA Technical Report NESCTM 53, July 1970, 125 pp. (COM-71-00076) (GPO \$1.25)
- MacDonald, Torrence H., "Data Reduction Processes for Spinning Flat-Plate Satellite-Borne Radiometers," ESSA Technical Report NESCTM 52, July 1970, 38 pp. (COM-71-00132) (GPO \$.50)

McClain, E. Paul, "Applications of Environmental Satellite Data to Oceanography and Hydrology," ESSA Technical Memorandum NESCTM 19, Jan. 1970, 12 pp. (PB-190-652)

McClain, E. Paul, and Strong, Alan E., "On Anomalous Dark Patches in Satellite-Viewed Sunglint Areas," Monthly Weather Review, Vol. 97, No. 12, Dec. 1969, pp. 875-884.

Parmenter, Frances C., "Picture of the Month - Pacific Cyclones Viewed by ATS 1," Monthly Weather Review, Vol. 98, No. 1, Jan. 1970, pp. 83-84.

Parmenter, Frances C., "Picture of the Month - Trans-Canada Highway," Monthly Weather Review, Vol. 98, No. 3, Mar. 1970, p. 252.

Parmenter, Frances C., "Picture of the Month - A Tehuantepecer," Monthly Weather Review, Vol. 98, No. 6, June 1970, p. 479.

Parmenter, Frances C., "Picture of the Month - A Scalloped Squall Line," Monthly Weather Review, Vol. 98, No. 11, Nov. 1970, p. 860.

Parmenter, Frances C., "From Above: Christmas Storms," Weatherwise, Vol. 23, No. 1, Feb. 1970, p. 37.

Parmenter, Frances C., "From Above: Solar Eclipse--7 March 1970," Weatherwise, Vol. 23, No. 2, Apr. 1970, pp. 98-100.

Parmenter, Frances C., "From Above: An Early Spring Storm," Weatherwise, Vol. 23, No. 3, June 1970, pp. 142-143.

Planet, W. G., "Some Comments on Reflectance Measurements of Wet Soils," Remote Sensing of Environment, Vol. 1, No. 2, Mar. 1970, pp. 127-129.

"Publications and Final Reports on Contracts and Grants, 1969-NESC," ESSA Technical Memorandum NESCTM 22, Jan. 1970, 7 pp. (PB-190-632)

Ramey, E. H., "Study of the Use of Aerial and Satellite Photogrammetry for Surveys in Hydrology," ESSA Technical Memorandum NESCTM 14, Mar. 1970, 22 pp. (PB-191-735)

Rao, P. K., "The ITOS-I View of the Eastern United States," Bulletin of the American Meteorological Society, Vol. 51, No. 2, Feb. 1970, p. 176.

✓ Rao, P. K., "Estimating Cloud Amount and Height from Satellite Infrared Radiation Data," ESSA Technical Report NESC 54, July 1970, 11 pp. (PB-194-685)

Saha, K. R., Sikka, D. R., and Rao, P. K., "Some Flow Features of the Indian Summer Monsoon Deduced from Nimbus II Radiation Data," Tellus, Vol. 21, No. 6, June 1969, pp. 806-813.

- Smigelski, Frank J., and Mace, Lee M., "Estimating Mean Relative Humidity from the Surface to 500 Millibars by Use of Satellite Pictures," ESSA Technical Memorandum NESCTM 23, Mar. 1970, 12 pp. (PB-191-741)
- Smith, W. L., "Iterative Solution of the Radiative Transfer Equation for the Temperature and Absorbing Gas Profile of an Atmosphere," Applied Optics, Vol. 9, No. 9, Sept. 1970, pp. 1993-1999.
- Smith, W. L., Rao, P. K., Koffler, R., and Curtis, W. R., "The Determination of Sea-Surface Temperature from Satellite High Resolution Infrared Window Radiation Measurements," Monthly Weather Review, Vol. 98, No. 8, Aug. 1970, pp. 604-611.
- Smith, W. L., Woolf, H. M., and Jacob, W. J., "A Regression Method for Obtaining Real-Time Temperature and Geopotential Height Profiles from Satellite Spectrometer Measurements and Its Application to Nimbus 3 'SIRS' Observations," Monthly Weather Review, Vol. 98, No. 8, Aug. 1970, pp. 582-603.
- Soules, S. D., "Sun Glitter Viewed from Space," Deep-Sea Research, Vol. 17, No. 1, Feb. 1970, pp. 191-195.
- Strong, Alan E., and Fleming, Michael H., "Aircraft Microwave Measurements of the Arctic Ice Pack," ESSA Technical Memorandum NESCTM 25, Aug. 1970, 16 pp. (PB-194-588)
- Strong, Alan E., and Ruff, Irwin S., "Utilizing Satellite-Observed Solar Reflections from the Sea Surface as an Indicator of Surface Wind Speeds," Remote Sensing of Environment, Vol. 1, No. 3, Summer 1970, pp. 181-185.
- Taylor, V. R., "Operational Brightness Normalization of ATS-1 Cloud Pictures," ESSA Technical Memorandum NESCTM 24, Aug. 1970, 15 pp. (PB-194-638)
- Wark, D. Q., "SIRS: An Experiment to Measure the Free Air Temperature from a Satellite," Applied Optics, Vol. 9, No. 8, Aug. 1970, pp. 1761-1766.
- Winston, J. S., "Global Distribution of Cloudiness and Radiation as Measured from Weather Satellites," Climate of the Free Atmosphere: World Survey of Climatology, Vol. 4, Amsterdam 1969, pp. 247-280.
- Yates, Harold W., "A General Discussion of Remote Sensing of the Atmosphere," Applied Optics, Vol. 9, No. 9, Sept. 1970, pp. 1971-1975.
- Yates, Harold W., "Results and Status of Indirect Satellite Instrumentation Development," Meteorological Monographs, Vol. 11, No. 33, Oct. 1970, pp. 421-432.

FINAL REPORTS ON CONTRACTS AND GRANTS
SPONSORED BY THE NESS, 1970

Barnes, James C., and Bowley, Clinton J., "The Use of Environmental Satellite Data for Mapping Annual Snow-Extent Decrease in the Western United States," Final Report under ESSA Contract E-252-69(N) (ARA Report 8G76-F) Allied Research Associates, Inc., Concord, Mass., June 1970, 105 pp. (PB-194-004)

Barnes, James C., Chang, D. T., and Willand, J. H., "Improved Techniques for Mapping Sea Ice from Satellite Infrared Data," Final Report under ESSA Contract E-67-70(N), Allied Research Associates, Concord, Mass., Dec. 1970, 95 pp. (COM-71-00271)

Bradbury, D. L., "Development of a Dry Line as Shown by ATS Cloud Photography and Verified by Radar and Conventional Aerological Data," Report under ESSA Grants E-41-22-69(G) and E-198-68(G), SMRP Research Paper No. 80, Mesometeorology Project, University of Chicago, Nov. 1969, 16 pp. (PB-190-948)

Dean, G. A., and Astling, F. G., "Case Study of a Non-Deepening Disturbance in the Caribbean Sea," Report No. 70-3 under ESSA Grant WBG-658 /WBG-587, Department of Meteorology, Florida State University, Aug. 1970, 43 pp. (COM-71-00069)

Dirks, R. A., "A Theoretical Investigation of Convective Patterns in the Lee of the Colorado Rockies," Report under ESSA Grant E-10-68(G), Atmospheric Science Paper No. 145, Colorado State University, Dec. 1969, 122 pp. (PB-190-631)

Dreyfus, M. G., "Analysis of Polarization Effects in the SIRS B Satellite Spectrometer," Final Report under ESSA P.O. 0-11424, BAI Report No. 691018, BAI Corporation, Glenbrook, Conn., 1970, 24 pp. (PB-192-130)

Fraser, A. B., and Scorer, R. S., "Research on Cloud Formations," Final Report under ESSA Contract Cwb-11254, New York University (with Imperial College, London), June 1968, 27 pp., and app. (PB-182-074)

Fujita, Tetsuya T., "Lubbock Tornadoes of May 11, 1970," Report under ESSA Grant E-198-68(G) and NASA Grant NGR-14-001-008, SMRP Research Paper No. 88, Mesometeorology Project, University of Chicago, July 1970, 23 pp. (PB-193-717)

Fujita, Tetsuya T., and Bradbury, D. L., "Determination of Mass Outflow from a Tunderstorm Complex Using ATS-III Pictures," Report under ESSA Grants E-22-45-68(G), E-198-68(G), and NASA Grant NGR-14-001-008, SMRP Research Paper No. 79, University of Chicago, Apr. 1969, 15 pp. (PB-190-913)

Horn, L. H., and Johnson, D. R., "Studies of Large Scale Atmospheric Energetics," Final Report under ESSA Grant WBG-52, Department of Meteorology, University of Wisconsin, June 1969, 114 pp. (PB-192-129)

House, F. B., "The Reduction, Analysis and Interpretation of Radiation Balance Measurements from ESSA Weather Satellites," Final Report under ESSA Contract E-119-68(N) (GCA-TR-69-17-G), GCA Corporation, Bedford, Mass., Apr. 1970, 63 pp. (PB-192-427)

Kuo, H. L., "Axisymmetric Flows in the Boundary Layer of a Maintained Vortex," Report under ESSA Grant E-259-68(G) and NSF GA-1339-RES., Research Paper No. 15, University of Chicago, Apr. 1969, 57 pp., and app. (PB-191-223)

Kuo, H. L., "Research on Low Latitude Thermal Circulations," Final Report under ESSA Grant WBG-71, University of Chicago, Apr. 1969, 138 pp. (PB-180-781)

Lethbridge, M., and Panofsky, H. A., "Satellite Radiation Measurements and Synoptic Data," Final Report under ESSA Grant WBG-48, Pennsylvania State University, Dec. 1969, 35 pp. (PB-191-102)

Ninomiya, Kozo, "Dynamical Analysis of Outflow from Tornado-Producing Tunderstorms as Revealed by ATS-III Pictures," Report under ESSA Grants E-22-41-69(G), E-198-68(G), and NASA Grant NGR-14-001-008, SMRP Research Paper No. 81, Mesometeorology Project, University of Chicago, Dec. 1969, 43 pp. (PB-190-918)

Ninomiya, Kozo, "Mesoscale Modification of Synoptic Situations over the Area of Thunderstorms' Development as Revealed by ATS-III and Aerological Data," Report under ESSA Grants E-198-68(G) and E-22-41-69(G), SMRP Research Paper No. 85, Mesometeorology Project, University of Chicago, Apr. 1970, 41 pp. (PB-193-951)

Serebreny, S. M., Wiegman, E. J., and Hadfield, R. E., "Further Comparison of Cloud Motion Vectors with Rawinsonde Observations," Report under ESSA Contract E-219-68(N), Stanford Research Institute, Aug. 1970, 60 pp. (PB-194-208)

Suomi, V. E., "Studies in Atmospheric Energetics Based on Aerospace Probing," Annual Report under ESSA Grant E-232-68(G), University of Wisconsin, Nov. 1969, 261 pp. (PB-192-447)

Vukovich, Fred M., "Physical Oceanography Feasibility Study Utilizing Satellite Data: Part II, Detailed Sea-Surface Temperature Analysis Utilizing Nimbus HRIR Data," Final Report under ESSA Contract E-236-69(N)-1, Research Triangle Institute, Oct. 1970, 81 pp. (COM-71-00041)

Wallace, J. M., "Time-Longitude Sections of Tropical Cloudiness (December 1966-November 1967)," ESSA Technical Report NESC 56, July 1970, 38 pp. (COM-71-00131) (GPO \$.50) (Report under ESSA Contract E-161-70(N) to Michigan University)

Wilkins, Eugene M., "Hot-Film Anemometer Measurements of Velocity Decay in Karman Trail Vortexes," Report under ESSA Grant E-41-67(G), Journal of Geophysical Research, Vol. 75, No. 6, Feb. 1970, pp. 1033-1039. (PB-191-186)

Yamamoto, G., and Aida, M., "Transmission in a Non-Homogenous Atmosphere with an Absorbing Gas of Constant Mixing Ratio," Report under ESSA Contract E-24-69(N), Journal of Quantitative Spectroscopy and Radiative Transfer, Vol. 10, No. 6, June 1970, pp. 593-608.

(Continued from inside front cover)

- NESCTM 11 Publications by Staff Members, National Environmental Satellite Center and Final Reports on Contracts and Grants Sponsored by the National Environmental Satellite Center 1968. January 1969. (PB-182 853)
- NESCTM 12 Experimental Large-Scale Snow and Ice Mapping With Composite Minimum Brightness Charts. E. Paul McClain and Donald R. Baker, September 1969. (PB-186 362)
- NESCTM 13 Deriving Upper Tropospheric Winds by Computer From Single Image, Digital Satellite Data. Charles S. Novak, June 1969. (PB-185 086)
- NESCTM 14 Study of the Use of Aerial and Satellite Photogrammetry for Surveys in Hydrology. Everett H. Ramey, March 1970. (PB-191 735)
- NESCTM 15 Some Aspects of the Vorticity Structure Associated With Extratropical Cloud Systems. Harold J. Brodrick, Jr., May 1969. (PB-184 178)
- NESCTM 16 The Improvement of Clear Column Radiance Determination With a Supplementary 3.8μ Window Channel. William L. Smith, July 1969. (PB-185 065)
- NESCTM 17 Vidicon Data Limitations. Arthur Schwalb and James Gross, June 1969. (PB-185 966)
- NESCTM 18 On the Statistical Relation Between Geopotential Height and Temperature-Pressure Profiles. W. L. Smith and S. Fritz, November 1969. (PB-189 276)
- NESCTM 19 Applications of Environmental Satellite Data to Oceanography and Hydrology. E. Paul McClain, January 1970. (PB-190 652)
- NESCTM 20 Mapping of Geostationary Satellite Pictures - An Operational Experiment. R. C. Doolittle, C. L. Bristor and L. Lauritson, March 1970. (PB-191 189)
- NESCTM 21 Reserved.
- NESCTM 22 Publications and Final Reports on Contracts and Grants, 1969--NESC. Staff Members, January 1970. (PB-190 632)
- NESCTM 23 Estimating Mean Relative Humidity from the Surface to 500 Millibars by use of Satellite Pictures. Frank J. Smigielski and Lee M. Mace, March 1970. (PB-191 741)
- NESCTM 24 Operational Brightness Normalization of ATS-1 Cloud Pictures, V. Ray Taylor. August 1970. (PB-194 638)
- NESCTM 25 Aircraft Microwave Measurements of the Arctic Ice Pack. Alan E. Strong and Michael H. Fleming, August 1970. (PB-194 588)

NOAA Technical Memoranda

- NESS 26 Potential of Satellite Microwave Sensing for Hydrology and Oceanography Measurements. John C. Alishouse, Donald R. Baker, E. Paul McClain, and Harold W. Yates, March 1971. (COM-71-00544)
- NESS 27 A Review of Passive Microwave Remote Sensing. James J. Whalen, March 1971.
- NESS 28 Calculation of Clear-Column Radiances Using Airborne Infrared Temperature Profile Radiometer Measurements Over Partly Cloudy Areas. William L. Smith, March 1971. (COM-71-00556)
- NESS 29 The Operational Processing of Solar Proton Monitor and Flat Plate Radiometer Data. Henry L. Phillips and Louis Rubin, November 1971.
- NESS 30 Limits on the Accuracy of Infrared Radiation Measurements of Sea-Surface Temperature From a Satellite. Charles Braun, December 1971.