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Research Application Laboratory (RAL) Records

RAL

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Describing Archives: A Content Standard

National Center for Atmospheric Research (NCAR) Archives

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Journal of Atmospheric and Oceanic Technology (J-Tech) - American Meteorological Society	43
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Summary Information

Repository:	National Center for Atmospheric Research (NCAR) Archives
Title:	Research Applications Laboratory (RAL) Records
ID:	RAL
Date [inclusive]:	1960-2015
Physical Description:	28 Boxes 25 record cartons, 2 letter-size archival boxes, 1 archival film reel box
Language of the Material:	English

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Biographical / Historical

The Research Applications Laboratory (RAL) RAL has grown from a small research and development program (Research Applications Program, or RAP as it was then known) at NCAR in the early 1980s to its current status as an NCAR laboratory with six divisions focused on specific applications areas. The staff is currently comprised of over 200 persons with a diverse set of skills and experience in the physical sciences, social sciences, mathematics, software engineering, project management and administration.

The Research Applications Laboratory is one of five laboratories within NCAR. Its mission is to conduct directed research that contributes to fundamental understanding of the atmosphere and related physical, biological, and social systems; to support, enhance, and extend the capabilities of the scientific community; and to develop and transfer knowledge and technology for the betterment of life on Earth.

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Content Description

This collection consists of records created by the Research Applications Laboratory. This collection was processed with support from the Center for History of Physics, American Institute of Physics.

Administrative records include various NCAR reports, committee meeting minutes, company retreat and workshop summaries, and review materials.

Aviation industry records include correspondence and reports, including ALPA (Airline Pilot Association), AIAA (American Institute of Aeronautics and Astronautics), and various aircraft incident reports and investigations.

Field Project records include reports, log books, graphs, data printouts, photographs and correspondence.

In addition, the collection contains onference and congressional hearing materials, grey literature, white papers, research materials, and general correspondence.

Some of the materials also include computer discs, video tapes, and films.

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Arrangement

The materials have been arranged into 9 series. 1) Administrative Records; 2) Aviation Industry; 3) General Correspondence; 4) Conferences and Congressional hearings; 5) Field Projects; 6) Publications; 7) Research Materials; 8) Miscellaneous Files & Correspondence; 9) Audio- Visual Materials.

All materials have been arranged chronologically within the series as much as possible. Filed projects are arranged alphabetically within the series.

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Administrative Information

Publication Statement

National Center for Atmospheric Research (NCAR) Archives

Immediate Source of Acquisition

Roughly 20 standard banker's boxes of RAL materials were returned from the Iron Mountain storage facility when NCAR's contract with them ended around 2010.

Inger Barron, RAL secretary, submitted an additional 6 boxes of RAL grey literature, field project documentation, and administrative materials in July of 2015.

Corinne Morse, project Software Engineer on the JAWS Juneau project, submitted a box full of logbooks in September of 2015.

Inger Barron also submitted materials from Dan Breed upon his retirement. These materials consist of a project manual and microfilm from the Convection and Precipitation Electrification Experiment (CaPE) in October of 2016.

Lisa Goodrich, Research Assistant & Computer Tech, submitted four (4) films that were digitized; and 8mm videotapes that were not digitized; as well as 1 film called "July Hailstorm", which has subsequently been digitized in 2018.

Material was also transferred from Bob Barron, Kathleen Miller, William Mahoney, and Bruce Carmichael in 2017 and 2018.

Conditions Governing Access

Not all of the material in this collection is in the public domain. It is the responsibility of the researcher to determine copyright and obtain permission to use materials.

All records must be viewed in the Archives. The Archives does not have playback capability for some materials.

Processing Information

All original materials were removed from ringbinders, folders, plastic fasteners, envelopes etc., and paper clips, rubber bands etc. were removed. All materials were re-housed in acid-free folders where appropriate. Duplicates were weeded.

As much as possible, the original arrangement of the files was maintained. Materials under one subject matter - e.g. Field Projects - were gathered and re-housed together, in a chronological order where the date was known.

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Controlled Access Headings

- Aeronautics in meteorology
- Aircraft accidents--Investigation--United States
- Atmosphere--Research
- Atmosphere--Research
- Atmospheric turbulence
- Climate--observations
- Cloud physics
- Earth science instruments
- Earth sciences
- Fieldwork

- Hailstorms
- Meteorological stations
- Meteorology in aeronautics
- National Center for Atmospheric Research (U.S.)
- Nowcasting (Meteorology)
- Precipitation variability
- Wind forecasting

Collection Inventory

Administrative Records, 1988-2011

General

Various NCAR reports, committee meetings, company retreats, summaries, review materials and workshops.

Title/Description	Instances
RAL Hierarchy Charts, Personnel, Staff Directories, 1990-2004	Box 1
NCAR Technical Software Workshop, Black Canyon Inn, Estes Park, Colorado, 1988-08-21-1988-08-23	Box 1
NCAR Fall Planning Retreat, 1989-10-25-1989-10-27	Box 1
NCAR Committee on Intellectual Property - Meeting Minutes, Correspondence, 1989	Box 1
Field Systems Advisory Panel – 47th Regular Meeting, 1989-04-17-1989-04-18	Box 1
Field Systems Advisory Panel – 48th Regular Meeting, 1989-10-24-1989-10-25	Box 1
NCAR - Atmospheric Technology Division - User Questionnaire, 1988	Box 1
NCAR - Atmospheric Technology Division – Materials for ATD Spec Review Panel, Part I, 1989-04-04-1989-04-06	Box 1
NCAR - Atmospheric Technology Division – Materials for ATD Spec Review Panel - Part II, 1989-04-04-1989-04-06	Box 1
NCAR - Atmospheric Technology Division – Materials for ATD Spec Review Panel Part III, 1989-04-04-1989-04-06	Box 1
NCAR - Atmospheric Technology Division – Materials for ATD Spec Review Panel - Part IV, 1989-04-04-1989-04-06	Box 1
NCAR - Annual Report, Covering Fiscal Year 1989, 1988-10-01-1989-11-30	Box 1
The Najeab E. Halaby Distinguished Fellow at NCAR – documentation re: fellowship, 2005	Box 1

"Science in Service to Society" – Strategic Plan for the Research Applications Laboratory, 2000-2016	Box 1
Laboratory Report - NSF Science Review, 2011	Box 1
General Data Requests, 1985-1989	Box 1
Pilot Study on NCAR/UCAR Information Transfer - Final Report, + Correspondence Sally Bay Cornwell, 1984-1988	Box 1

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Aviation Industry, 1982-1989

Box 2

General

Air Line Pilots Association (ALPA) papers, American Institute of Aeronautics and Astronautics (AIAA) papers, Aircraft Incidents / Accidents, Aviation-related airline correspondence and reports

Airline Pilots Association (ALPA)

Box 2

Title/Description	Instances
Airline Pilots Association (ALPA) Wind Shear Update - literature, NASA report, workshop notes, 1982	Box 2
Airline Pilots Association (ALPA) - General Correspondence , 1983-1989	Box 2
Airline Pilots Association (ALPA) - Patrick Clyne Correspondence, 1986-1989	Box 2
Airline Pilots Association (ALPA) Weather Avoidance Conference, Washington DC, 1987-01-29	Box 2
Airline Pilots Association (ALPA) Air Safety Forum / Conference, 1987-08-18-1987-08-20	Box 2
Airline Pilots Association (ALPA) - Correspondence re: video tape "Weather Avoidance" , 1987-1989	Box 2
Airline Pilots Association (ALPA) - Aviation Weather Committee Meeting Minutes, Notes, Correspondence, 1988-1989	Box 2
Aviation Weather Forecasting Task Force - Final Report, 1986-11	Box 2
Congressional Correspondence - Workshop on Technology in Commercial Aviation Safety, 1987-06-1987-07	Box 2
AMMORA – Adaption of Mesa-Beta-Scale Models for Operational and Research Applications, 1988	Box 2

American Institute of Aeronautics and Astronautics (AIAA)		Box 2
Title/Description	Instances	
Airborne Infrared Low Level Wind Shear Predictor, 1984	Box 2	
Various Meetings: Aircraft Design, Systems and Operations Meeting, October 31-November 02, 1984 Shuttle Environment and Operations II, November 13-15, 1985 Wind Shear Symposium, May 10, 1986, 1984-1986	Box 2	
22nd Aerospace Sciences Meeting, 1984-01-09-1984-01-12	Box 2	
23rd Aerospace Sciences Meeting, 1985-01-14-1985-01-17	Box 2	
24th Aerospace Sciences Meeting, 1986-01-06-1986-01-09	Box 2	
25th Aerospace Sciences Meeting, 1987-01-12-1987-01-15	Box 2	
26th Aerospace Sciences Meeting, 1988-01-11-1988-01-14	Box 2	
27th Aerospace Sciences Meeting, 1989-01-09-1989-01-12	Box 2	
Strategic Plan, 1984-1989	Box 2	
Technical Committee on Atmospheric Environment, 1983-1986	Box 2	
Losey Atmospheric Sciences Award, 1985-1987	Box 2	
Miscellaneous Correspondence, 1984-1988	Box 2	
Air, Inc. Product Literature, 1989	Box 2	
Aircraft Accidents		Box 3
Title/Description	Instances	
Trammel, Kentucky - American Airlines Flight 63, 1943-07-28	Box 3	
Atlanta, Georgia - Delta Airlines Flight 134x, 1954-06-15	Box 3	
Marseille - Marignane, Air France, 1969-11-09	Box 3	
Bathurst, New South Wales, Australia, East-West Airlines, 1974-05-31	Box 3	
John F. Kennedy Airport, Jamaica, NY - Eastern Airlines Flight 66, 1975-06-24	Box 3	
Valley, Nebraska - Air Wisconsin Flight 965, 1980-06-12	Box 3	
Chihuahua City, Aeronaves de Mexico Flight AM230, 1981-07-27	Box 3	
Boston, Massachusetts - TWA Flight 753, 1981-08-03	Box 3	
United Airlines Flight 663 (UA663), Stapleton International Airport, Denver, 1984-05-31	Box 3	

National Transportation Safety Board (NTSB) Report - US Air Flight 183, 1984-06-13	Box 3
Trans World Airlines (TWA) - Wind Shear Encounter, Stapleton International Airport, Denver, 1984-06-21	Box 3
Delta Air Lines Flight 191, Dallas-Fort Worth International Airport, Texas, 1985-08-02	Box 3
Beach Queen Air N306D - Incident near Bryce Canyon, Utah, 1985-10-08	Box 3
NorthWest Airlines Flight 255, Detroit Metropolitan Airport, 1987-08-16	Box 3
Pan Am World Airways Flight 759, New Orleans International Airport, 1982-07-09	Box 3
Being 747, Rome, Italy, 1983-11-30	Box 3
Airline Correspondence - American Airlines, 1987	Box 3
Airline Correspondence - Continental Airlines, 1985-1989	Box 3
Airline Correspondence - Delta Airlines, 1964-1989	Box 3
Airline Correspondence - Trans World Airlines (TWA), 1985-1989	Box 3
Airline Correspondence - United Airlines, 1984-1989	Box 3
Airline Correspondence - Various Airlines, 1983-1989	Box 3
NorthWest Airlines - Review of Meteorology - Final Report, 1988-02	Box 3
United Airlines - Observer Member Crew Reports, 1984-1990	Box 3
United Airlines Flight Safety Investigation 88-46: Microburst Encounter, 1988-07-11	Box 3
United Airlines - Wind Shear Materials, 1986-1989	Box 3

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Correspondence, 1974-1989

Box 4

General

These files contain general correspondence, ranging from internal NCAR exchanges to international correspondence between NCAR employees and other scientists and government agencies.

Title/Description	Instances
General Correspondence, 1988-01	Box 4
General Correspondence, 1988-02	

	Box 4
General Correspondence, 1988-03	Box 4
General Correspondence, 1988-04	Box 4
General Correspondence, 1988-05	Box 4
General Correspondence, 1988-06	Box 4
General Correspondence, 1988-07	Box 4
General Correspondence, 1988-08	Box 4
General Correspondence, 1988-09	Box 4
General Correspondence, 1988-10	Box 4
General Correspondence, 1988-11	Box 4
General Correspondence, 1988-12	Box 4
General Correspondence, 1989-01	Box 4
General Correspondence, 1989-02	Box 4
General Correspondence, 1989-03	Box 4
General Correspondence, 1989-04	Box 4
General Correspondence, 1989-05	Box 4
General Correspondence, 1989-06	Box 4
General Correspondence, 1989-07	Box 4
General Correspondence, 1989-08	Box 4
General Correspondence, 1989-09	Box 4
General Correspondence, 1989-10	Box 4
General Correspondence, 1989-11	Box 4
General Correspondence, 1989-12	Box 4
John McCarthy - General Correspondence, 1985-1986	Box 4
John McCarthy - General Correspondence, 1987	Box 4
John McCarthy - General Correspondence, 1988	Box 4
John McCarthy - General Correspondence, 1989	Box 4
Outside Consulting Work, 1984-1989	Box 4
Cleon J. Biter Correspondence , 1974-1984	Box 17

General

Cleon J. Biter was a research meteorologist at NCAR for 29 years, until retirement in 1995. These are approximately 2 boxes worth of his correspondence.

Title/Description	Instances
Aircraft Data Corrections NHRE – InterAircraft Comparisons (IAC's) and Tower Fly-by's (TFB's) – 1974	Box 17
InterAircraft Comparisons (IAC's) Input , 1976	Box 17
InterAircraft Comparisons (IAC's) Program Output , 1976	Box 17
Tower Fly-By's, General Summaries, Calibrations, Data , 1976	Box 17
InterAircraft Comparisons (IAC's) Analysis , 1976	Box 17
Aircraft Flight Tracks, 1976 + 1978	Box 17
InterAircraft Comparisons (IAC's) Program, Jim Anderson , 1977-07-28	Box 17
Aircraft Data, Calibrations, Computer Printouts , 1978	Box 17
InterAircraft Comparisons (IAC's) Input , 1978	Box 17
InterAircraft Comparisons (IAC's) Output , 1978	Box 17
InterAircraft Comparisons (IAC's) and Tower Fly-By's (TFB's) - Analysis , 1978	Box 17
Sailplane N9929J "R" Test Data, 1978-07-26	Box 17
Sailplane N9929 J Temperature Data & Fly-By Data, 1979-01-09	Box 17
SESAME - Severe Environmental Storms and Mesoscale Experiment, 1979	Box 17
Johnson - Williams Liquid Water Content Meter – Articles, Correspondence, Notes, 1980	Box 17
Particle Measuring Systems	Box 17
Particle Measuring Systems (PMS) – 2D Grey Optical Imaging Probes, Models OAP-2D-G2, OAP-2D-G3, PDPS 11-C, 1983	Box 17
Particle Measuring Systems – PMS Probes (Sampling Volumes), 1984	Box 17
Particle Measuring Systems (PMS) – 2D Particle Data Acquisition System Manual (Undated)	Box 17
Particle Measuring Systems (PMS) – Forward Scattering Spectrometer Probe, PMS Model FSSP-100 Operating Manual (Undated)	Box 17

Particle Measuring Systems (PMS) – OAP-2D-G64/OAP-2D-C64 Operating Manual (Undated)	Box 17
Miscellaneous Temperature Measurement Systems	Box 17
Articles re: Temperature Measurement Systems, Instruments and Sensors – Part 1 of 2	Box 17
Articles, Notes & Correspondence re: Temperature Measurement Systems and Sensors – Part 2 of 2	Box 17
Doppler Navigator – Notes and Publications (Undated)	Box 17
307D Instrumentation – Notes, Correspondence, Negative, Publications, 1976	Box 17
Inertial Navigation Platform – Articles, Notes (Undated)	Box 17
Temperature Measurements – Technical Articles & Publications (NCAR Library Office Copies) – from 1955 to 1979	Box 17
Vertical Wind Measurements – Notes, Articles, Correspondence , 1978-1984	Box 17
"Explorer" Sailplane Data – Articles, Correspondence, Notes , 1976-1983	Box 17

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Conferences and Congressional Hearings , 1978-2007

Conference Materials, 1984-1989

Box 13

Scope and Contents

These are materials from conferences and congressional hearings where NCAR staff attended or presented.

Title/Description	Instances
2nd Aviation Workshop, Melbourne, Australia, 20 and 21 March 1984, 1984-03-20-1984-03-21	Box 13
International Air Transport Association, 6th General Flight Crew Training Meeting, The Queen Elizabeth Hotel, Montreal, Canada, 1984-05-14-1984-05-18	Box 13
14th Conference on Severe Local Storms, Indianapolis, 1985-10	Box 13
Various Miscellaneous Conferences, Symposia, Seminars, Meetings, Workshops & Speaking Engagements, 1987-1989	Box 13
Montview Presbyterian Church Speakers Forum, Denver, CO , 1986-02-16	Box 13

AOCI 16th Annual Asia-Pacific Basin Regional Airport Conference, San Diego, CA. Herman C. Bliss Presentations, 1986-04-28-1986-05-01	Box 13
National Oceanic and Atmospheric Administration (NOAA) and Environmental Research Laboratories (ERL) Workshop on Artificial Intelligence Research in Environmental Science (AIRIES), Boulder, CO, 1986-05	Box 13
National Business Aircraft Association (NBAA) Annual Meeting and Convention, Anaheim, CA, 1986-09-30-1986-10-02	Box 13
Institute of Electrical and Electronics Engineers (IEEE) Annual Briefing for the Media, New York City, NY, 1986-10-06-1986-10-08	Box 13
2nd International Symposium on Aviation Safety, Palais de Congres, Toulouse, France, 1986-11-17-1986-11-21	Box 13
Society of Automotive Engineers (SAE) Aerospace Technology Conference & Exposition (Aerotech '86), Long Beach Convention Center, CA, 1986-10-13-1986-10-16	Box 13
National Meteorological Centre (NMC) Internal Training Program for Professional Development, Camp Springs, MD , 1987-01-07	Box 13
33rd Annual Tri-Service Radar Symposium, Hyatt Regency Convention Center, Monterey, California, 24 June 1987	Box 13
International Association of Meteorology and Atmospheric Physics (IAMAP) Symposium on Mesoscale Analysis and Forecasting, Vancouver, BC, Canada, August 1987	Box 13
Aircraft Builders Counsel (ABC) Annual Meeting & Fall Seminar, Mark Hopkins Hotel, San Francisco, California, September 28, 29 1987	Box 13
2nd Aviation Problems Seminar on Low Level Wind Shear, Holiday Inn, San Antonio, Texas, December 2-3, 1987	Box 13
American Geophysical Union (AGU) Conference, San Francisco, California, December 6-11, 1987	Box 13
Aviation Insurance Association (AIA) Annual Convention, Omni Hotel, Charleston, South Carolina, 1988-05-15-1988-05-17	Box 13
National Conference on Strategic Management of Research and Development, Hyatt Regency Crystal City, Arlington, Virginia, 1988-06-14-1988-06-16	Box 13
Technology Transfer – A New Contact Sport, Conference, Holiday Inn, Northglenn, Colorado, 1988-07-08	Box 13
Aviation System Concepts for the 21st Century, Symposium at Transportation Systems Centre, Cambridge, Massachusetts, 1988-09-28-1988-09-29	Box 13

New Technology and the Aviation System, Stouffer Concourse Hotel, Los Angeles, California, 1988-11-16-1988-11-18	Box 13
International Civil Aviation Organisation (ICAO) First Asia / Pacific Seminar on Wind Shear and Weather Related Aeronautical Problems, Bangkok, Thailand , 1988-12-12-1988-12-16	Box 13
American Geophysical Union (AGU) Front Range Branch Annual Conference, Green Centre, Colorado School of Mines, Golden, Colorado, 1989-02-13-1989-02-14	Box 13
3rd Interagency Airborne Geoscience Workshop, La Jolla, California, 1989-02-21-1989-02-24	Box 13
Professional Pilot Meteorology Training Standards Conference, Air Force Academy, Colorado Springs, Colorado, 1989-04-13-1989-04-14	Box 13
Air Transport Association Meteorological Committee Meeting, Seattle, Washington, 1989-05-16-1989-05-18	Box 13
Tactical Planning and Team Building Seminar, Clarion Harvest House, Boulder, 1989-05-30-1989-05-31	Box 13
Airshow Canada Symposium "Looking to 2020", Vancouver, BC, Canada, 1989-08-08-1989-08-10	Box 13
2nd Annual Rocky Mountain Technology Transfer Exposition, Marriott Hotel, Denver, Colorado, 1989-10-30	Box 13
Congressional Hearings, 1978-2007	Box 13
Title/Description	Instances
Aviation Weather Service Hearings (Committee of Science & Technology: Transportation, Aviation and Materials; and Investigation and Oversight Subcommittees Hearings), 1982-08-11	Box 13
Impact of Weather on Aviation Safety – Correspondence, Presentation and Testimony, 1983-08	Box 13
Wind Shear Detection Technology Hearing – Testimonies and Technology Literature, 1984-07-25	Box 13
Congressional Report on the Impact of Weather on Aviation Safety, by the Subcommittee on Investigations and Oversight and the Committee on Public Works and Transportation, (1984-11)	Box 13
Doppler Radar Systems and the Wind Shear Problem – Statements and transcript, 1985-09-17	Box 13
Aviation Safety Hearing – Testimonies, 1985-10-01	Box 13
Status of Federal Programs to Improve the Detection of Hazardous Aviation Weather – Statements and Transcript, 1985-10-02	Box 13

House Budget Committee Field Hearing , 1986-02-13	Box 13
Aviation Safety Forum – Statements and Reports, 1986-04-04	Box 13
Re-authorization of Airport and Airways Improvement Trust Fund – Statements and Testimonies, 1987-04-20	Box 13
Detection and Dissemination of Hazardous Weather Data to Pilots - Testimonies and Statements, 1987-06-30	Box 13
Transcript: Committee Hearing of the U.S. House of Representatives – On the Joint Planning and Development Office and the Next Generation Air Transportation System: Status and Issues, Thursday March 29, 2007, Subcommittee on Space and Aeronautics , 2007-03-29	Box 13
Congressional Hearing: Progress in Aviation weather Prediction and Reporting , 30 September 1987	Box 13
Congressional Assessment of Aviation Safety in a Competitive Environment – Draft of Chapter 7 – technologies and Aviation Safety., 1987-12	Box 13
The Impact of Weather on Aviation Safety - Hearings before the Subcommittee on Investigations and Oversight of the Committee on Public Works and Transportation, House of Representatives; combined book: March 24, 26 and May 19-20, 1981, and August 18, December 6-7, 1983. Printed for the use of the Committee on Public Works and Transportation	Box 13
Weather Modification: Programs, Problems, Policy and Potential. Prepared at the request of Hon. Howard W. Cannon, Chairman of the Committee on Commerce, Science and Transportation, US Senate. , 1978-05	Box 13

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Field Projects

Airport of the Future

Box 14

General

NCAR was hired to consult on the development of a new international airport outside of Denver to replace the old Stapleton International Airport. NCAR was to develop a plan to implement weather research and data into the planning of the new airport.

Title/Description	Instances
Airport of the Future - Contract	Box 14
Airport of the Future - Consulting, 1987-1988	Box 14
Airport of the Future - Correspondence, 1986-1989	Box 14

Airport of the Future - Bi-Weekly Reports, 1987-1988	Box 14
Airport of the Future - Various Meetings, 1986-1988	Box 14
Airport of the Future - Meeting 28-29 August 1986	Box 14
Airport of the Future - Meeting May 11-12, 1987	Box 14
Airport of the Future - Meeting January 20, 1988	Box 14
Airport of the Future - Meeting May 12-13, 1988	Box 14
Airport of the Future - WINDAS (Weather Information and Decision Assistance System, 1989	Box 14
Airport of the Future - Weather Studies, Part 1, 1988	Box 14
Airport of the Future - Weather Studies, Part 2, 1988	Box 14

**CAPE - Convection and Precipitation /
Electrification Experiment, 1991**

Box 15

General

July 8, 1991 to August 18, 1991, Project Location: East-Central Florida. Project Description: The Convection and Precipitation/Electrification Experiment (CaPE) was conducted in the central Florida region during the period 8 July through 18 August, 1991. The CaPE was a cooperative multi-agency field project sponsored by the National Science Foundation (NSF), Federal Aviation Administration (FAA), National Aeronautics and Space Administration (NASA), National Oceanic and Atmospheric Administration (NOAA), and the United States Air Force (USAF).

The CaPE focused on five main objectives that have been the basis of extensive research activity in recent years: Identification of the relationships among the co-evolving wind, water, and electric fields within convective clouds; determination of the meteorological and electrical conditions in which natural and triggered lightning can (and cannot) occur, and understanding the initiation and propagation of lightning; development of mesoscale numerical forecasts (2-12 hour) of wind, clouds, and thunderstorms, employing data assimilation; improving techniques for performing short period forecasts (nowcasts under 2 hours) of convection initiation, downbursts, and tornadoes; and the characterization of precipitation particles and remote estimation of rainfall.

Scope and Contents

This project consists of 3 files, one printed report in book format, and 26 microfilms of data, all labeled.

Title/Description	Instances
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CAPE – Project Documentation Summary - Convection and Precipitation Electrification Experiment, 15 July-11 August 1991. James Frankhauser et al, NCAR. Research Aviation Facility, Atmospheric Technology Division, NCAR.	Box 15
Scientific Overview and Preliminary Experimental Design, 1990-08	Box 15
Scientific Overview and Operations Plan, to be conducted in East Central Florida 8 July to 18 August 1991. Editor: G. Brant Foote. , 1991-06	Box 15
Book: Operations Summary and Data Inventory, prepared by Steven F. Williams, NCAR; Kathy Caesar, Sate University of New York at Brockport; and Kendall Southwick, NCAR. , 1992-07	Box 15
CAPE - Microfilms	Box 15
276 RF1 - 12:41:12-15:27:27 EDT; CK-9878, CK-9999, 1991-07-15	Box 15
276 RF2 12:26:37 – 15:21:53 EDT; CK-0117, CK-0444, 1991-07-16	Box 15
276 RF3 10:32:43 – 15:08:15 EDT; CK-0227, 1991-07-18	Box 15
276 RF4 10:39:19 – 13:44:14 EDT, 1991-07-19	Box 15
276 RF5 08:38:31 – 09:53:41 EDT, 1991-07-20	Box 15
276 RF6 10:11:16 – 12:55:21 EDT; CK-0559, 1991-07-22	Box 15
276 RF7 14:21:45 – 15:57:27 EDT, 1991-07-22	Box 15
276 RF8 13:39:32 – 16:30:24 EDT; CK-6160, 1991-07-23	Box 15
276 RF9 11:56:53 – 13:56:47 EDT, 1991-07-24	Box 15
276 RF10 14:23:33 – 16:19:31 EDT; CK-0886, 1991-07-25	Box 15
276 RF11 13:35:26 – 16:16:02 EDT, 1991-07-26	Box 15
276 RF12 06:50:06 – 08:18:06 EDT, 1991-07-27	Box 15
276 RF13 12:41:51 – 15:54:54 EDT; CK-1235 , 1991-07-27	Box 15
276 RF14 12:27:48 – 15:23:15 EDT; CK-1368, 1991-07-29	Box 15
276 RF15 11:01:22 – 13:08:25 EDT; CK-1488, CK-9999, 1991-07-30	Box 15
276 RF16 10:59:05 – 14:25:53 EDT, 1991-07-31	Box 15
276 RF17 10:59:36 – 14:23:39 EDT, 1991-08-02	Box 15
276 RF18 15:41:19 – 18:59:19 EDT, 1991-08-02	Box 15
276 RF19 13:41:55 – 17:19:21 EDT; CK-1123, CK-2101, CK-0559, 1991-08-03	Box 15
276 RF20 17:42:59 – 18:27:43 EDT, 1991-08-04	Box 15

276 RF21 13:47:11 – 17:03:20 EDT, 1991-08-05	Box 15
276 RF24 13:47:58 – 16:26:33 EDT; CK-2371, CK-2527, 1991-08-08	Box 15
276 RF25 13:00:12 – 15:22:50 EDT, 1991-08-09	Box 15
276 RF26 11:31:18 – 15:16:48 EDT, 1991-08-10	Box 15
Temple - RL3, Project 9780, Sequence 9775, Date 04.03.1984 – 22 June from PAM Film	Box 15
Robert - RL 3, Sequence 3383, Date June 10, 1985 – 22 June Soundings	Box 15

CCOPE - Cooperative Convective Precipitation Experiment

Box 14

General

Project Description: The Bureau of Reclamation (BuREC) and the National Center for Atmospheric Research (NCAR) collaborated in a joint field program called the Cooperative Convective Precipitation Experiment (CCOPE) that was conducted near Miles City, Montana (18 May - 7 August 1981). CCOPE was a coordinated measurement program on convective clouds and storms carried out to study the processes that create convective clouds, rain, hail and high winds, and to elucidate how the microphysical processes and the air motions interact in the formation and development of precipitation. Operations were comprised of coordinated measurements taken from aircraft, radar, and ground-based weather stations, supplemented by satellite data.

Scope and Contents

Almost all of the CCOPE materials were found in the Cleon J. Biter Papers. Cleon Biter was one of the principal researchers on that project. The materials originally were all grouped together in two large boxes marked as Cleon Biter papers, with no clear distinction which folders were part of the CCOPE project and which ones weren't. Those files that pertained to the CCOPE project are now housed in RAL Box 14 under the CCOPE collection. The original folder assignments have been preserved as much as possible during the re-housing process. The materials are now separated into what was clearly marked as CCOPE, and what wasn't explicitly marked as such, but may however still be a part of CCOPE.

Title/Description	Instances
CCOPE - Newsletters (1981-1983), Group Discussions, Study Group Reports, Workshops, Analyses, Abstracts & Correspondence, 1978-1981	Box 14
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Original Tower Fly-By Results , 1981	Box 14
Inter-Aircraft Comparisons (IAC's) - Part 1 of 2, 1981	Box 14
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InterAircraft Comparisons (IAC's) - Notes, 1982	Box 14
Clean Air IAC's Parameter Lists, 1982	Box 14
Aircraft Genre Formats , 1982	Box 14
InterAircraft Comparisons (IAC's) , 1982	Box 14
The CCOPE Tower Fly-By and Aircraft Intercomparison Data Set , 1983-06	Box 14

CINDE - Convection Initiation and Downburst Experiment, 1987

Box 12

Scope and Contents

Original contents of box marked by Debbie Henson as 91-1 and dated 02/15/1991, and labeled "RAP Files on Microfiche. Boeing – Congression House Hearing". CINDE June 22, 1987 to August 7, 1987 Project Location: Denver, Colorado

Project Description: The Convection Initiation and Downburst Experiment (CINDE) was conducted in the Denver, Colorado area from 22 June to 7 August 1987 to study processes leading to the formation of deep convection and the physics of downbursts. A total of 6 Doppler radars, 87 mesonet stations, 3 research aircraft, 8 sounding systems and numerous photographic facilities were deployed within an 85 km x 85 km area. A comprehensive data set was obtained including measurements of convergence lines, downbursts, and tornadoes that occurred on 35, 22, and 11 days, respectively. CINDE: General Correspondence, 1986-1988; CINDE: Preliminary Experimental Design, 1986; CINDE Meeting Announcements & Minutes, 1986-1987; CINDE Operations Plan (Draft), 1987; CINDE

Site Observations, 1987; CINDE Data Output (Print-outs), 1988.

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CINDE - Preliminary Experimental Design, 1986	Box 12
CINDE - Meeting Announcements & Minutes, 1986-1987	Box 12
CINDE - Operations Plan and Data Summary, 1987	Box 12
Scientific Objectives for CINDE 1987 - NCAR-RAP Applied Science Group, 1987	Box 12
CINDE - Site Observations, 1987	Box 12
CINDE - Data Output (print-outs), 1988	Box 12
CINDE - Proposal for Studies of Kinematics and Thermodynamics of Convection Initiation and Microburst Downdrafts in CINDE, 1987	Box 12

General

Proposal by Alfred R. Rodi, Department of Atmospheric Science, University of Wyoming, Laramie, WY

CSAP - Climate Science Applications Program

Box 28

Scope and Contents

CSAP is a program for interdisciplinary research on social, economic, and health activities related to climate and weather at local, regional and global scales. Research areas include natural resource governance, dynamics of urban systems, weather climate and health, GIS and regional climate for adaptation. RAL scientists address adaptation to climate change by generating scenarios of projected climate change, developing scientific tools and methods for analyzing current and future vulnerability, and conducting integrated analyses of climate change impacts and adaptation.

AWWARF - American Water Works Association Research Foundation

Box 28

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Workshop – Climate Projections, Uncertainty and Scenarios for Impacts Assessment at NCAR, Boulder, CO, 2002-07-17-2002-07-19	Box 28
Workshop – Climate Change Impacts, Adaptation and Vulnerability (IAV) Community Coordination, NCAR, Boulder, CO, 2009-01-08-2009-01-09	Box 28
Workshop – The Impact of Global Climate Change on Aquatic Resources, Food and Income Security of Fishing Dependent Populations at University of California, San Diego (Includes CDRM), 2005-08-23-2005-08-26	Box 28
Water and Climate Change – Science / Vulnerability – Viewgraphs, ca. 1996	Box 28
SWANS – Society, Water, the Atmosphere and Natural Systems – A Proposed Issue-led Water "Umbrella" Program, 2007	Box 28
CWAP – Climate and Weather Assessment Program – Meeting , 2006-05-23	Box 28
IPCC – Intergovernmental Panel on Climate Change – Working Group II: Impacts, Adaptation, and Vulnerability. First Lead Authors Meeting, Geneva, Switzerland (Includes 5 1/4 Computer Disc), 1999-01-05-1999-01-08	Box 28
Idaho Streamflow and Reservoir Data – Snake, Boise & Payette Rivers, 1993	Box 28
Water Banks Project – Proposal, Data and Notes, 1991	Box 28
Marine Fisheries, Tuna Management – Proposals and Presentations, 2002-2003	Box 28

Colorado Rocky Mountains Snowpack Formation, Evolution and Watershed Management, Collaborative Proposal to NSF (National Science Foundation), 2008	Box 28
Climate and Ecosystem Community Planning Meeting, NCAR Mesa Lab – Agenda, Notes & Presentation Materials, 2005-11-02-2005-11-03	Box 28
Human Dimension Initiative – Initial Planning Meeting Minutes, Notes, 1998-01-09	Box 28
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Upper Colorado River Basin Project (UCRB) Materials , 2008-2009	Box 28
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Hong Kong Lantex Project - L01501-L01592: RAW Format (1 April 1994- 6 October 1995) <u>Material Specific Details:</u> 8mm Data Tapes	Box 20
Hong Kong Lantex Project - L04501-L04513 & L04599 - Shalowan Wind Profiles (14 Tapes), 1994-04-08-1995-01-16	Box 21
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Hong Kong Lantex Project - L06501-L06535 – LIDAR (05/05/1994 – 07/03/1994) – 35 tapes, 1994-05-05-1994-07-03	Box 21
Hong Long Lantex Project - Shalowan Wind Profiler – 22 Optical Disks (Panasonic Optical Disk Cartridge LM-D501W, 940MB Double Sided, 470MB/Side) , 1994-04-08-1995-01-16	Box 21

JAWS - Joint Airport Weather Studies (NOT Juneau)

Scope and Contents

The Jaws Project is a joint research and technology transfer effort of NCAR and the University of Chicago. The project began on October 1, 1981 and continued for three years. The principal focus of JAWS was on the convective microburst event, a small region of intense downflow and associated outflow which occurs in the convective boundary layer, usually, but not always, associated with thunderstorms. JAWS conducted research on the fine-scale structure of thunderstorm kinematics in the vicinity of Denver's Stapleton International Airport during the summer of 1982. JAWS facilities included three NCAR Doppler radars, the Portable Automated Mesonet, or PAM, two research aircraft, three rawinsonde units, and a lightning detection system. During this project, close working relationships existed between JAWS, PROFS (NOAA's Prototype Regional Observing and Forecasting Service), the FAA, DOD Next Generation Doppler Radar Program (NEXRAD) and NASA's Office of Aviation Technology (OAST).

Title/Description	Instances
"The Jaws Project – The Joint Airport Weather Studies Project", a Proposal for Joint Partnership by the National Science Foundation, the FAA, NOAA, and NASA. John McCarthy, James W. Wilson and T. Theodore Fujita (University of Chicago), 1980-12	Box 12
"The Jaws Project – The Joint Airport Weather Studies Project", paper by John McCarthy, James W. Wilson and T. Theodore Fujita (University of Chicago), 1981-09	Box 12
Operations Summary 1982, Bound Copy, printed in February of 1983	Box 12
Operations Summary 1982, Unbound Copy, printed in February of 1983	Box 12
Data Sheets, Computer Print-outs Wind Data Print-outs, 1982-1985	Box 12
Research from the JAWS Project at NCAR – Preprints from the American Meteorological Society's 21st Conference on Radar Methodology, Edmonton, Alberta, Canada 19-23 September 1983. (Printed June 1983)	Box 12
Preliminary Data Description, 1983-09	Box 12
Interim Report for Third Year's Effort (FY-1984) – Recent Reports from the JAWS Project, 1984-10-31	Box 12

Gust Front Truth Verifications, 1984-1985	Box 12
Surface Measurements of Gust Fronts and Microbursts during the Jaws Project: Statistical Result and Implications for Wind Shear detection, prediction, and modeling, 1986-08	Box 12

JAWS - Juneau Airport Wind System

Biographical / Historical

Pilots landing and departing from Juneau, Alaska face some of the nation's most challenging navigational conditions, and the airport has a history of turbulence-related incidents involving passenger jets. In the aftermath of a 737 aircraft nearly being lost upon encountering severe turbulence, the Federal Aviation Administration (FAA) imposed restrictive rules of operation that were to be maintained until a new warning system could be developed for the airport. Because the airport provides the only non-waterway entry into and out of the city, air traffic tends to be heavy, averaging more than 400 flights daily. Additionally, with the city's economy largely tied to tourism, government-related work, and retail sales, safe, reliable air transit is critical. However, the northerly and southeasterly wind regimes led to enough passenger jet and private aircraft turbulence-related incidents that Mark Air and Delta Airlines stopped serving Juneau. Alaska Airlines remains as the only commercial air carrier serving the city. Unlike the Hong Kong project, in which RAL provided only the alert-system software, the plan for Juneau included responsibilities for creating the prototype in its entirety. This expanded role meant that the team would have to identify best placement of weather profiling stations in order to pinpoint areas of greatest turbulence, then design, build and maintain the sensor sites that provided information about wind speed, wind direction, air temperature, etc. Initially, RAL purchased equipment that Alaska Airlines installed and used to enhance flight safety. Then, from this initial equipment suite, RAL expanded monitoring to include additional sites and new types of hardware, including wind profilers. Begun in 1997, JAWS evolved greatly over the past decade, steadily improving and refining system capabilities with the goals of increased flight operational safety and alert system availability, meeting the needs of pilots, flight service specialists, and the flying public, and ensuring that a repeat of past significant encounters with turbulence no longer occur. By FY2007 a JAWS prototype, tested and validated by the FAA, was operating with alerts. Shortly thereafter the FAA commenced development of its own "end-state" (JAWS-E) version of the system. The FAA development strategy included incorporation of NCAR's algorithms, display technology, and most remote site hardware. In FY2010 maintenance of the mountaintop sites transitioned to the FAA, followed by wind profiler site maintenance in FY2011. In early FY2012 the FAA commenced an Operational Readiness Demonstration of their system, following which they commenced formal operation of JAWS-E. At this time parallel operation of the NCAR prototype ceased, the prototype was shut down and dismantled. Formal commissioning of the JAWS-E occurred in July 2012, following which Alaska Airlines, the only commercial carrier operating in Juneau, will change their Operations Specification to use JAWS alerts for making go/no go decisions at the Juneau International Airport.

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JAWS - Project Schedule, 1998	Box 8
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JAWS - Aircraft Data - February 19th-Flight 1 +2; 24th-25th; 28th-Flight 1 +2, 1998	Box 8
JAWS - Aircraft Data - March 04, 07-08, 14 & 17, 1998	Box 8
JAWS - Aircraft Data - UND Citation - March 27 & 29, April 1, 1998	Box 8
JAWS - Aircraft Data - Flights of No Value - Short Summaries, 1998-02-1998-03	Box 8
JAWS - Correspondence, Maps, Graphs, Notes, Presentations, Data Sheets, QC Paper, Flow Charts, 2001-2003	Box 8

JAWS Cases - Notes, Data Sheets, Graphs, Correspondence (Undated)	Box 8
JAWS - Data Columns, Notes, Graphs, Maps, Drawings, Presentation Materials (Undated)	Box 8
JAWS - Data Sheet Print Outs (PAM Print) Regarding Data of 22 June, 1982, printed in, 1984	Box 8
JAWS - Morphology of Microburst Outflows Observed in JAWS - Notes, Graphs, Data, 1982	Box 8
JAWS - Microburst Doppler Syntheses - Charts, Graphs, Notes, Data Sheets, 1982	Box 8
JAWS - Radar Analysis, Handwritten Notes, Graphs, Data, 1982-06-22	Box 8
JAWS - Structure & Life Cycle of Microburst Overflows Observed in Jaws, 1982-1986	Box 8
JAWS - Synoptic & Mesoscale Analysis - Notes, Graphs, Charts, Data, and Radar Slides	Box 8
JAWS - "The Jaws Project - Operations Summary 1982", by NCAR & University of Chicago, printed on , 1983-02	Box 8
JAWS - "The Juneau Terrain-induced Turbulence Alert System", by Marcia K. Politovich, R. Kent Goodrich, Corrine S. Morse, Alan Yates, Robert Barron, and Steven A. Cohn. Publisher unknown, although it does mention American Meteorological Society in the footer – Brochure, 2011-03	Box 8
JAWS - Memento Photobook, Al Yates & Bob Barron, date unknown, publisher unknown	Box 8
JAWS - Capital Investment Team (CIT) Brief, Butch Quallich, ATO-T, JAWS Program Lead, 2007-04-03	Box 8
JAWS - Pictures (Mostly radar images)	Box 8
JAWS - Log/Record Books by Corinne S. Morse. Continuously, from 14 May 1990 to May 2014, last entry September 29, 2015, 1990-2015	Box 9
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JAWS - Correspondence, Reports, Field program Guide, Software Requirements, Diagrams, 1997-2004	Box 9
Juneau FY 98 End Report - A Preliminary Report on the Role of Remote Sensors in the Juneau Turbulence Report, 1998	Box 27
Implementation Plan for the Juneau, Alaska Airport Wind Hazard Information System, 1998-11-01	Box 27
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Juneau Wind Hazard Information System – Wind Profiler Algorithm and Analysis Documentation. (Print-out from CD ROM), 1999-09-30	Box 27
Juneau Wind Hazard Information System – User Display Manual, Operators Manual (Print-out from CD ROM), 1999-09-30	Box 27
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Juneau Alert Generation System – Feasibility Study, 2000-09-29	Box 27
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Aircraft Flight Tick Lists, Procedures, 2002	Box 27
Initial Hazard Evaluation and Report Review, 2002-02	Box 27
Science and Technical Interchange Meeting, Washington DC, 2002-06-11-2002-06-12	Box 27
Processes & Data Architecture, Flight Data Archives, Daily Task Lists, Software Development, 2002	Box 27
Flight Logs, 1 of 2, 2002-2003	Box 27
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JAWS EDR Thresholds and Calibration, Bob Barron Presentation, 2004	Box 27
JAWS Operational Prototype, Technical Interchange Meeting, Boulder, Colorado, 2004-06-15-2004-06-16	Box 27
End State, Technical Interchange Meeting, "The Blue Print", 2004-09-20-2004-09-22	Box 27
Wind Sensor Severe Weather Performance Test – March 13 & July 11, 2001; Terrain Induced Wind Shear and Turbulence (TWIT) – October 09, 2001; Prototype OpEval Technical Interchange Meeting, April 06, 2005	Box 27
Wind Regime Algorithm Analysis Workbook, 2005-02	Box 27
FY06 Algorithm Design Description, (ADD), 2005-12-15	Box 27
Operational Prototype Evaluation Alert Accuracy Analysis, 2006-08-25	Box 27
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CDROM - Juneau FY00 Year End Report. Contains "Juneau Aviation Hazard Identification Using Mobile Scanning Doppler Radar" word.doc, and "Juneau Alert Generation Systems Feasibility Study" word.doc., 2000-09-29	Box 27
CDROM - NCAR/RAP FY 1999 Juneau Deliverables. Includes Web Display, User Display Manual, Operators Manual, Wind Profiler Algorithms and Analysis Documentation, 2000-09-29	Box 27
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MWISP - Mount Washington Icing Sensors Project, Mount Washington Observatory, New Hampshire

Scope and Contents

The detection of aircraft icing conditions is a major goal of the FAA-funded aircraft icing work at RAP. Current remote sensing systems operationally deployed such as the National Weather Service WSR-88D radars are not able to detect supercooled liquid water in the form of cloud droplets, nor are they able to tell whether radar backscatter is due to snow or freezing drizzle. A number of recently developed systems, however, show promise of being able to unambiguously detect supercooled liquid water and freezing drizzle. In order to evaluate their potential, the Mount Washington Icing Sensors Project was conducted during the month of April 1999 in the vicinity of Mt. Washington in New Hampshire, a region with significant amounts of icing and freezing drizzle. This was the first major field program ever conducted to test the ability of remote sensing devices to measure SLW and freezing drizzle. The program was organized and managed by RAP and included participants from government agencies, universities, and other research institutions.

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MWISP - Photographs of Mount Washington Observatory Area, by Roy Rasmussen, ca. 1998-1999, 1 of 2	Box 22
MWISP - Photographs of Mount Washington Observatory Area, by Roy Rasmussen, ca. 1998-1999, 2 of 2	Box 22

OWWS - Operational Windshear Warning System

Scope and Contents

Hong Kong was building the world's largest public works [back then], a new airport at Chek Lap Kok (CLK), which opened in 1998. Located on partly reclaimed land at the base of Lantau Island, it was near a rugged mountain with an elevation of nearly 1000 m. Roughly (US) \$20 billion was spent on construction of the airport and associated infrastructure projects. Due to the close proximity of the New Airport to Lantau Island, the New Airport would be affected by significant terrain-induced windshear and turbulence when certain meteorological

conditions exist. In order to enhance flight safety and operational efficiency at CLK during such conditions, the Operational Windshear Warning System (OWWS) program was created. Weather Information Technologies, Inc. (WITI) together with the National Center for Atmospheric Research (NCAR), the University of Wyoming (UW) and the Hong Kong University of Science and Technology (HKUST), under the sponsorship of the Hong Kong Observatory (HKO), participated in the OWWS program. The program was managed by B. Donaldson (WITI), R. Wagoner and W. Mahoney (NCAR) and J. Chen (HKUST). The major objective of the program was to develop and implement a Windshear and Turbulence Warning System (WTWS) for the new airport. On 17 July 1997, after 44-months of research and development, the WTWS system was accepted by the Hong Kong Government. One of the first major tasks of NCAR, primarily the Research Applications Program (RAP) and the Mesoscale and Microscale Meteorology (MMM) divisions, was to perform a detailed meteorological review of historical data and perform analyses to better understand the flow conditions near CLK. This component of the research program was primarily conducted by B. Foote, P. Neilley, T. Keller, T. Clark, H.M. Hsu, and C. Wade. The First Meteorological Report included: a) a review of scientific theory on flow around complex terrain; b) an analysis and identification of conditions which could cause Terrain-Induced Windshear and Turbulence (TIWT) near CLK; c) numerical experiments aimed at gaining additional insight on conditions that produce TIWT; and d) an estimate of the timing and location of significant TIWT at the new airport. Knowledge gained from the first meteorological study was used, along with other information, to design a scientific field experiment to understand the fine-scale flow in the vicinity of CLK. The scientific field program, called LANTEX, began in March 1994 and concluded in September 1995. The scientific field study was performed by scientists at RAP (Neilley, D. Blanchard, Cornman and Keller), MMM (Clark, J. Coen, and Hsu) and UW (A. Rodi). The results of the scientific studies coupled with feedback were used to develop an operational concept for the WTWS. The WTWS concepts and user needs were established by NCAR/RAP (C. Biter, Mahoney, T. Lindholm, Neilley and Cornman) over a two-year period culminating with a demonstration of a prototype WTWS in October 1995. The WTWS was designed by staff at RAP (G. Wiener, Mahoney, D. Albo, Neilley, Cornman, C. Morse, L. Carson, M. Dixon, D. Fletcher, M. Limber, K. Goodrich, G. Cuning), and MMM (S. Low-Nam, D. Gill, and W. Kuo), and by staff at HKUST (Chen, A. Lau, D. Yeung, A. Kwok and J. Ho). The WTWS provides alerts for terrain- and convective-induced windshear and turbulence. The system, developed by Weather Information Technologies Inc. (WITI), has been utilized by air traffic controllers and pilots since opening day, 6 July 1998. The 44-month project was under the sponsorship of the Hong Kong Observatory. The WTWS development team included WITI, the National Center for Atmospheric Research (NCAR), Hong Kong University of Science and Technology (HKUST), and the University of Wyoming. Note: The WTWS was previously known as the OWWS – the Operational Windshear Warning System.

LANTEX: Lantau Experiment (LANTEX) April 15, 1994 to September 30, 1995 Summary Surface & Sounding Systems Facility (SSSF) provided an Integrated Sounding System (ISS) from April through mid-August 1994 for the LANTEX OWWS study of the site of the new airport at Chek Lap Kok, Hong Kong. The OWWS provides real-time turbulence alerts and warnings, using real-time sensor data in conjunction with special algorithms. The ISS furnished measurements to help characterize the effects of the local topography on the weather and wind patterns of the area. The ISS was sited at an upstream location to measure atmospheric conditions that were undisturbed by either Lantau Island or other nearby islands.

The field observation program, known as LANTEX, made use of the NCAR King Air instrumented aircraft, two doppler wind profilers, a RASS sounding system, about 20 automatic surface observing stations, a Doppler lidar and two radiosonde sites over a sixteen-month period ending 30 September 1995.

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OWWS - Hong Kong Airport - Correspondence , 1992-1998	Box 10
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OWWS - Hong Kong Airport – Lantex Operations Summary Reports – October 1994 -> February 1995, 1994-10-1995-02	Box 10
OWWS - Registration of Interest to the Royal Observatory, Hong Kong, for Consultancy Services for the Terminal Doppler Weather Radar System for the new Hong Kong Chek Lap Kok Airport. Prepared by The Ambidji Group, Ltd. In association with Greiner International Ltd. and Weather information Technologies Inc., 1992-08	Box 10
OWWS - Proposal to the Royal Observatory, Hong Kong, for Provision of Consultancy Services for a Terminal Doppler Weather Radar System for the new Hong Kong Chek Lap Kok Airport. Prepared by The Ambidji Group, Ltd. In association with Greiner International Ltd. and Weather information Technologies Inc., 1992-11	Box 10
OWWS - Request for information - Provision of Consultancy Services for the Setting Up of an Operational Warning System for Windshear and Turbulence for the new Airport at Chek Lap Kok. Prepared by Weather information Technologies Inc. in association with the university of Wyoming and the Hong Kong University of Science and Technology, 1992-12	Box 10
OWWS - Revised Proposal – Consultancy Services for an Operational Windshear Warning System for the New Airport at Chek Lap Kok, Prepared by Weather Information Technologies, Inc. in association with The University Corporation for Atmospheric Research, The Hong Kong University of Science and Technology, and the University of Wyoming, 1993-08	Box 10
OWWS - Project Review for the Period of 01 October 1993 through 31 October 1994, printed by Weather Information Technology, 1994-11-10-1994-11-11	Box 10
OWWS - Related Papers, 1993-1995	Box 10
OWWS - Design of the Airborne Meteorological Measurement Program, contributed as part of the Consultancy for an Operational Windshear Warning System. Participants: Coherent Technologies, Inc., Hong Kong University of Science and Technology, National Centre for Atmospheric	Box 10

Research, University of Wyoming, and Weather Information Technologies, Inc. , (1994-01-31-1994-04-01)

OWWS - Report on Lower Tropospheric Wind Profiler and Rass Site Selection Assessment and Recommendations, scheduled for 31 December 1993, First Draft Delivered on 13 January 1994, Second Draft delivered on 18 February 1994. Weather Information Technologies, Inc. , 1994	Box 10
OWWS - First Meteorological Report, by Brant Foote & Peter P. Neilley, Editors. Weather Information Technology, 1994-04-20	Box 10
OWWS - Feasibility and Concept Development Study, Phase I Report. A status report covering the period 01 October 1993 through September 1994. Weather Information Technology, Inc, 1993-10-1994-09	Box 10
OWWS - Working Papers contributed as part of the Consultancy for an Operational WindShear Warning System, 1995-01-05	Box 10
<p>General</p> <p>An Updated Recommendation for the Use and Siting of Lower Tropospheric Wind and Temperature Profilers, Weather information Technologies, Inc.</p>	
OWWS - Working Papers contributed as part of the Consultancy for an Operational WindShear Warning System, 1995	Box 10
<p>General</p> <p>Recommendations for the Use and Siting of Automated Weather Stations to Support an Operational Windshear Warning System, Weather Information Technologies, Inc., 1 May 1995</p>	
OWWS - Working Papers contributed as part of the Consultancy for an Operational WindShear Warning System, 1995-06-23	Box 10
<p>General</p> <p>Wind Profiler Data Requirements to Support an Operational Windshear Warning System, Weather information Technologies</p>	
OWWS - Project Review: Clark modeling by Terry Clark, 1995-03-23-1995-03-24	Box 10
OWWS - Second Meteorological Report, contributed as part of the Consultancy for an Operational Windshear Warning System. Peter P. Neilley, editor, Weather information Technology, Inc, 1995-09-30	Box 10
OWWS - Project Review, 1995-03	Box 11
OWWS - Weather Information Technologies, Inc. (WITI) - Various Company Reports, 1995	Box 11

OWWS - Feasibility and Concept Development Study, Phase II Report - A Presentation of Findings Report covering the period of 01 October 1994 through September 30, 1995., 1995	Box 11
OWWS -World Aviation Safety , 1996	Box 11
OWWS - Weather Information Technologies, Inc. (WITI) - Re-structure, 1996	Box 11
OWWS Requirements Specification + Computer and Communications Equipment Specifications , 1996	Box 11
OWWS Design Specification Document - Introduction to Chapter 10 - Algorithms. Part 1 of 2., 1996-04-30	Box 11
OWWS Design Specification Document - Chapter 11: Displays, until Appendices at end. Part 2 of 2., 1996-04-30	Box 11
Live Input Data Available to OWWS System during SAT Testing, 1996-1997	Box 11
OWWS Project Overview - Hong Kong View graph Presentation (Undated)	Box 11
OWWS Parallel Development Study (PDS), 1997-03	Box 11
OWWS Miscellaneous - Directories, Published Articles, WITI Training Proposal, Correspondence, even some Poetry, 1994-1997	Box 11
OWWS - Weather Information Technologies, Inc. (WITI) - Financial Statements and Independent Auditor's Response., 1994-1998	Box 11
OWWS - Weather Information Technologies, Inc. - Board of Directors Meeting Minutes, 1991-1994	Box 11
OWWS Weather Information Technologies, Inc (WITI) Board of Directors Meeting Minutes, 1995	Box 11
OWWS Weather Information Technologies, Inc (WITI) Board of Directors Meeting Minutes, 1996	Box 11
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OWWS Weather Information Technologies, Inc (WITI) Board of Directors Meeting Minutes, 1999	Box 11
Weather Information Technologies, Inc (WITI) - State-of-the-Art Weather Products and Services (Brochure, undated)	Box 11
PARC - Program for the Augmentation of Rain in Coahuila , 1996-1998	Box 25

General

The Program for the Augmentation of Rainfall in Coahuila (PARC) was proposed as a four-year program consisting of a randomized seeding experiment, physical studies, and collaboration with and training of Mexican scientists and students. The overall objective of PARC was to develop, test, implement, and transfer the technology of hygroscopic seeding in Coahuila. The first step in achieving this broad objective was to characterize the development of convection and precipitation in central Coahuila, and compare them to storm characteristics in other regions where cloud seeding has been successfully evaluated. In particular, the measurements taken during the first-year field project (PARC-96) were compared with those taken in South Africa, where seeding with newly developed hygroscopic flares has met with some success. During the summers of 1997 and 1998, the field project focused on a randomized seeding experiment as well as continuing to collect meteorological data for further evaluation of the randomized experiment and other physical studies. The PARC program was planned for four years and the fourth year would probably have provided a sufficient number of cases. However, due to funding problems the fourth year of the experiment could not be completed. Therefore, caution should be exercised in interpreting the results as unambiguous proof of success. This series consists of aircraft video and documentation. The series is arranged according to the date reflected on the original labeling. (eg 970724 is July 24, 1997)

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24 May 1998 AGS FH#1 Severe Cloud Pen; + Part of FH# 2 – Maxell 8mm MP120	Box 25
25 May 1998 2 flights, Smoke & clouds – Maxell 8mm MP120	Box 25
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970914.002 Aircraft Video – Sony MP120	Box 25
970921.001 Video – Sony MP120	Box 25
970925.001 Flight Video 09/25/97 - Sony	Box 25
970929 Video – Parc – Sony MP120	Box 25
970930.001 Video - Sony MP120	Box 25
971997 19 July – TDK 8mm E-HG	Box 25

TDWR - Terminal Doppler Weather Radar

Material Specific Details: Terminal Doppler Weather Radar Nowcasting Experiment was organized in association with the TDWR program to make forecasts of convective weather within 10km of Denver's Stapleton International Airport. Results showed that forecast accuracy went beyond simple extrapolation to include instances of storm initiation and dissipation. Necessary for this success was a Doppler radar that could detect boundary-layer convergence lines and a prototype workstation that could combine and display mesoscale and synoptic scale data.

Origin of TDWR – A Chronological Summary: 1976: Scientists investigate role of wind shear in crashes of Eastern, Continental & Allegheny; 1977: FAA supports LLWAS development and shows interest in wind-shear detection with Doppler radar; 1978: NIMROD – First authenticated detection of microburst with Doppler; 1979: SESAME – Doppler used to try to detect wind shear in glide path; 1979: MIT Lincoln Lab starts work on detection of turbulence with Doppler radar; 1980: JAWS concept concocted; 1982: JAWS demonstrates the feasibility of using Doppler radar to detect wind shear; 1982: Lincoln Lab proposes building a Doppler system for the FAA for studying wind shear at airports; 1983: Boston area NEXRAD demonstration (BAND); 1984: CLAWS demonstrates feasibility of real-time operational use of Doppler radar for wind-shear detection and warning; 1985: Data collection at Memphis with FAA Lincoln Lab Operational Weather System (FL-2) radar, University of North Dakota radar and mesonet; 1985: FAA asks NCAR and Lincoln Lab to develop a joint R&D program to demonstrate automated Doppler weather radar system; 1986: Cooperative Huntsville Meteorological Experiment (COHMEX) – FL2 radar used as part of large-scale field project; 1987: TDWR begins, off-line testing with FL-2; 1988: TDWR Field program- operational demonstrations to see how well the system works, with feedback from controllers and pilots.

Title/Description	Instances
"The Day All Hell Broke Loose", 1989	Box 5
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Correspondence regarding the videotape "The Day All Hell Broke Loose", describing Doppler radar system and the experiences of crew and personnel during microburst event at Stapleton International Airport in Denver.	
TDWR Display System, 1985-1986	Box 5
TDWR Display System, 1987	Box 5
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TDWR Display System, 1989	Box 5
TDWR - FAA Correspondence, 1985-1989	Box 5
TDWR - FAA Program Review , 1986-11-25-1986-11-26	Box 5
TDWR - FAA Request for Proposal, 1987	Box 5

TDWR - FAA Test Plans, 1988	Box 5
TDWR - FAA Engineering Reports, 1989	Box 5
TDWR - FAA Specifications, 1989	Box 5
Final Report, Martin Marietta Air Traffic Division, 1985	Box 5
Integrated Wind Shear Systems - Cost / Benefit and Deployment Study. Draft Copy-limited distribution, Volume 2 - Appendices. Martin Marietta , 1991-10-1991-11	Box 5
Huntsville Visits and Weekly Field Data Summaries, Lincoln Lab Field Site, 1986-1987	Box 5
Information Packages, Background Materials, Press releases, media articles, 1985-1988	Box 5
Integration - Meeting Minutes, Memo's, Correspondence, 1987-1990	Box 5
Kansas City Travel Reports, Correspondence & Data Collection, 1989	Box 5
Letters to Airmen – Kansas City & Denver Air Traffic Control Tower letters to Airmen, re: Doppler Radar, 1989	Box 5
User Working Group Meeting, TDWR/LLWAS, NCAR , 1986-06-04-1986-06-05	Box 5
User Working Group Meeting, TDWR/LLWAS, Huntsville, Alabama , 1986-09-08-1986-09-09	Box 5

Lincoln Laboratory - Correspondence and Meeting Minutes with NCAR

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Lincoln Lab - NCAR Correspondence, 1985-1986	Box 6
Lincoln Lab - NCAR Correspondence, 1987-1989	Box 6
Meeting Minutes - Lincoln Lab / NCAR, Lexington, 1985-10-10-1985-10-11	Box 6
Meeting Minutes - Lincoln Lab / NCAR , Boulder , 1985-12-17	Box 6
Meeting Minutes - Lincoln Lab / NCAR , Boulder, 1986-03-16-1986-03-17	Box 6
Meeting Minutes - Lincoln Lab / NCAR, Lexington, 1987-11-22-1987-11-23	Box 6
Meeting Minutes - Lincoln Lab / NCAR, Boston, 1988-01-26	Box 6
Meeting Minutes - Lincoln Lab / NCAR, 1987	Box 6
Meeting Minutes - Lincoln Lab / NCAR, Boulder, 1989-01-18-1989-01-19	Box 6

Meeting Minutes - Lincoln Lab / NCAR, Kansas City (Tested Radar Site FL-2), 1989-04-20

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Meeting Minutes - Lincoln Lab / NCAR, Boulder, 1989-09-18-1989-09-19

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Lloyd Stevenson, Transportation Systems Centre, US Department of Transportation

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Lloyd Stevenson - Correspondence, 1985-1988	Box 6
Lloyd Stevenson - Data Collection Plans, Evaluations Assessments, Case Studies & Correspondence with Clean Biter, 1986-1989	Box 6
Lloyd Stevenson - Air Traffic Control (ATC) Case Studies (27), Stapleton International Airport, Denver, CO, 1987-05-1987-09	Box 6
Lloyd Stevenson - Operational Observation Reports, 1988	Box 6
Lloyd Stevenson - Observation Reports, Operational Descriptions, 1989	Box 6
Lloyd Stevenson - A Pirep-based Analysis of the Candidate TDWR-based Products and Services Evaluated at Stapleton International Airport during the Summer of 1988, 1989-05	Box 6
Lloyd Stevenson - A Pirep-based Analysis of an Integrated Wind Shear System Concept Evaluated at Stapleton International Airport during the Summer of 1988, 1990-09	Box 6
General Meeting Minutes, Agenda's, Notes, 1985-1989	Box 6
Microburst at Stapleton International Airport, Denver, CO, 1988-07-11	Box 6
Microburst at Stapleton International Airport, Denver, CO, 1989-07-08	Box 6
LLWAS – Integration Microburst Plots, 1993-06-21	Box 6
Lincoln Lab Reports - Microburst Observability & Algorithm Performance, 1988-08-11-1988-10-21	Box 6
Windshear Case Study: Stapleton International Airport, Denver, CO - Final Report, US Department of Transportation and Federal Aviation Administration - Herbert W. Schlickemaier, 1988-07-11	Box 6
Final Project Report – The 1993 Demonstration and Evaluation of an Integrated Wind Shear and Gust Front Detection and Warning System based on the Integration of a Prototype Terminal Doppler Weather Radar System (TDWR) with the Operational Low-Level Wind Shear Alert System (LLWAS) at Stapleton International Airport, Denver, CO. Study to determine Nexrad to replace TDWR (ended up with TDWR), 1994-01-15	Box 6

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Nowcasting Experiment - Correspondence, 1986-1989	Box 7
TDWR /LLWAS - Windshear Wind Fields, 1988	Box 7
TDWR - Airport Wind Plot Examples, Stapleton International Airport, Denver, CO, 1988-1989	Box 7
TDWR - Airport Wind Plot Examples, Stapleton International Airport, Denver, CO (Undated)	Box 7
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Questionnaires for Pilots, Stapleton International Airport, Denver, CO, Summer, 1987	Box 7
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Questionnaires for Air Traffic Control Tower Personnel, 1989	Box 7
Questionnaire Data Analysis - TDWR / T-NEXRAD Evaluation / Report, 1990-02-26	Box 7
Scanning Strategies, 1986-1988	Box 7
Seiko Plots, 1988-06-10	Box 7
TDWR/LLWAS – Doppler Radar Images – Print-outs (in colour), August 02nd & 16th , 1989	Box 7
Summary of TDWR / LLWAS User Working Group Meeting, 1989-02-15-1989-02-17	Box 7
Truthing Correspondence, Data, Random Notes & Tape Lists, 1988	Box 7

TDWR / LLWAS – Airport Wind Plots and wind shear Wind Fields – Truth and Alarm Comparisons, Data Printouts, 1992-07-15	Box 7
University of North Dakota Radar Scanning Correspondence, 1987-1988	Box 7
Verification Team Correspondence, 1988	Box 7
Visitors, Tours, Site Visits, 1988	Box 7
Work Statements, Memo of understanding - NCAR, FAA, Lincoln Labs, 1985-1986	Box 7

WiSP - Winter Icing and Storms Project

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WISP - Scientific Overview, 1989-08	Box 14
<p>General</p> <p>Final Draft, by Dr. Roy Rasmussen, WISP Scientific Coordinator, and Dr. Marcia K. Politovich, Field Operations Coordinator.</p>	
WISP - Scientific Overview, 1990-03	Box 14
<p>General</p> <p>Dr. Roy Rasmussen, WISP Scientific Coordinator, and Dr. Marcia K. Politovich, Field Operations Coordinator.</p>	
WISP - Scientific Overview, 1990-06	Box 14
<p>General</p> <p>Dr. Roy Rasmussen, WISP Scientific Coordinator, and Dr. Marcia K. Politovich, Field Operations Coordinator.</p>	
WISP - Data Catalog, 15 January - 05 April 1991. Printed July 31, 1991, 1991	Box 14
WISP - Article, Bulletin American Meteorological Society, Volume 73, Nr. 7, 1992-07	Box 14
<p>General</p> <p>Roy Rasmussen, Marcia Politovich, et al.</p>	
WISP - Scientific Overview of WISP 94 - Field Project Focused on Ice Initiation, 1993-02	Box 14

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Publications, 1982-1992

Scope and Contents

Collection of various printed publications by either NCAR or its associates and collaborators.

Title/Description	Instances
"Safe Skies for Tomorrow" – Aviation Safety in a Competitive Environment. Congress of the United States, Office of Technology Assessment. , 1988-07	Box 18
"Microbursts – A Handbook for Visual Identification". US Department of Commerce, NOAA, Environmental Research Laboratories, National Severe Storms Laboratory. Second Edition., 1990-02	Box 18
"DFW Microburst" – Dallas-Fort Worth Airport crash on August 2, 1985. T. Theodore Fujita, The University of Chicago. Published by Satellite and Mesometeorology Research Project (SMRP), Department of Geophysical Sciences, University of Chicago, 1986	Box 18
"The Downburst" – Microburst and Macrobust". T. Theodore Fujita, The University of Chicago, Report of Projects NIMROD and JAWS. Published by Satellite and Mesometeorology Research Project (SMRP), Department of Geophysical Sciences, University of Chicago, 1985	Box 18
"Enhancing U.S. Army Range Meteorological Capabilities. Edited by Arthur A. Shantz, Research Applications Program, NCAR. (Undated)	Box 18
STORM – Stormscale Operational and Research Meteorology – The National Storm Program – Framework for a Plan. Publication by UCAR, 1982-09-20	Box 18
STORM – Stormscale Operational and Research Meteorology – The National Storm Program – Scientific and Technology Bases – Major Objectives - Draft. Publication by UCAR, 1982-05-01	Box 18
STORM – Stormscale Operational and Research Meteorology – The National Storm Program – Scientific and Technology Bases – Major Objectives - Publication by UCAR, 1983-01	Box 18
STORM – Stormscale Operational And Research Meteorology – The National Storm Program – A Call to Action. Publication by UCAR, 1983-02	Box 18
STORM – Stormscale Operational And Research Meteorology – The National Storm Program – Storm Central Phase – Preliminary Program Design - Draft. Publication by UCAR, 1984-01	Box 18
STORM – Stormscale Operational and Research Meteorology – The National Storm Program – Storm Central Phase – Preliminary Program Design. Publication by UCAR, 1984-05	Box 18
GALE- Genesis of Atlantic Lows Experiment – Book prepared by GALE Project Office and the Gale Experimental Design Panel, 1985	Box 18

Aviation Weather Forecasting Taskforce – Final Report. Publication by NCAR, 1986-09	Box 18
ERICA – Experiment on Rapidly Intensifying Cyclones over the Atlantic - Overview booklet, Field Research Project, Version 1. Published by the Office of the Chief of Naval Research, U. S. Navy, 1987-03	Box 18
Scientific Justification and Development Plan for a Mid-Sized Jet Research Aircraft. Publication by NCAR, 1987-06	Box 18
Review of the FAA Research, Engineering and Development Program. R & D Plan Review Panel of the FAA Research, Engineering & Development Committee, 1991-11	Box 18
Eldora – Electra Doppler Radar – Draft Design Plan, 1985-08	Box 18
Eldora – Electra Doppler Radar Correspondence, Proposals, Plans, 1985-1989	Box 18
"Braving the Storms" Newspaper Article - Denver Post, Section B, Tuesday, July 14, 1992. Featuring article by Bill McBean, Denver Post Staff Writer, entitled "NASA Pilots Brave Storm", re: wind shear flights	Box 18
Project Reports	Box 18
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Project Report: A Study and Ranking of 120 Flight Service Stations in the United States according to Selected Aviation Variables, 1991-10	Box 18
Summary Report - Draft - Demonstration and Evaluation of a Wind Shear and Gust Front Detection and Warning System in 1989 Using the Terminal NEXRAD (Raytheon Nexrad Prototype) Radar and Operational Low-Level Wind Shear Alert System at Stapleton International Airport, Denver, 1990-06-01	Box 18
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Summary Project Report - The Summer 1993 Demonstration and Evaluation of the Aviation Weather Products Generator (AWPG) Capabilities at the Denver Air Route Traffic Control	Box 18

Centre (ARTCC), Traffic Management Unit (TMU), the Denver Automated Flight Service Station (AFSS), the National Aviation Weather Advisor Unit (NAWAU), and United Airlines Meteorology / Dispatch Office (ORD/EXO), 1993-10-27

Journal of Atmospheric and Oceanic Technology (J-Tech) - American Meteorological Society, 2006-2007

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General

Manuscripts submitted for publication in the Journal of Atmospheric and Oceanic Technology (J-Tech)

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<p>"Issues with Identification of Trends in the 20th Century U.S. Snowfall", by Kenneth E. Kunkel, Michael Palecki, Kenneth G. Hubbard, David Robinson, Kelly Redmond, David Easterling. JTECH # A-838-W; 2006. Submitted 20 March 2006, Finalized 18 October 2006, Published online in Volume 24, Nr. 1, on 01 January 2007 under the title "Trend Identification in Twentieth-Century U.S. Snowfall: The Challenges</p>	Box 19
<p>"Application of a differential fuel-cell analyzer for measuring atmospheric oxygen variations", by Britton Stephens, Peter Bakwin, Pieter Tans, Ron Teclaw, and Daniel Baumann, JTECH #A811-W, Submitted 19 December 2005, Finalized 10 May 2006, Published online in Volume 24, issue Nr. 1, on 01 January 2007</p>	Box 19
<p>"Intercomparisons of Stratospheric Water Vapor Sensors: FLASH-B and NOAA/CMDL Forst-Point Hygrometer", by H. Vomel, JTECH #A 827-W, submitted 2 February 2006, finalized 30 August 2006, published online 1 June 2007 in Volume 24, Nr. 6</p>	Box 19
<p>"On the use of hot-wire anemometers for turbulence measurements in clouds" by Holger Siebert, Katrin Lehmann and Raymond A, Shaw, JTECH # A 828-W, submitted February 7, 2006, finalized 18 September 2006, published online June 1st, 2007 in Volume 24, Nr. 6</p>	Box 19
<p>"Portable Automated Research Micrometeorological Stations (PARMS) Designed for Enhanced Monitoring and Research Capabilities in Oklahoma", by Jeffrey B. Basara, David Grimsley, Bradley G. Illston, and Daniel R. Cheresnick, JTECH # A 812-W, submitted December 2005, Rejected for publication by Journal of Atmospheric and Oceanic Technology March 23, 2006</p>	Box 19
<p>"Statewide Monitoring of the Mesoscale Environment: A Technical Update on the Oklahoma Mesonet", by Renee A. McPherson, Christopher Fiebrich, Kenneth C. Crawford, Ronald L. Elliot, James R. Kilby, David L. Grimsley, Janet E. Martinez, Jeffrey B. Basara, Bradley G. Illston, Dale A. Morris, Kevin A. Kloesel, Stephen J. Stadler, Andrea D. Melvin, Albert J.</p>	Box 19

Sutherland, Himanshu Shrivastava, J.D. Carlson, J. Micheal Wolfinbarger, Jared P. Bostic, and David B. Demko, JTECH # A819-W, submitted January 2006, finalized 27 June 2006, published online March 1, 2007 in Volume 24, Nr. 3

<p>"A Video controlled RPV as sensor platform within atmospheric sciences", by Holger Fritsch, JTECH #A 769-W. Submitted 16 September 2005, Rejected for publication by Journal of Atmospheric and Oceanic Technology 24 February 2006. "Retrieving Storm Electric fields from aircraft field mill data: Part 1: Theory", and "Retrieving Storm Electric fields from aircraft field mill data: Part 2: Applications", by William J. Koshak, JTECH # A 773-W. Submitted October 2005, Finalized March 23, 2006, published online October 1, 2006, in Volume 23, Nr. 10</p>	<p>Box 19</p>
<p>"Analysis of Radiosonde and Ground-Based Remotely Sensed PWV Data from the 2004 North Slope of Alaska Arctic Winter Radiometric Experiment", by V. Mattioli, E. R. Westwater, D. Cimini, J.S. Liljegren, B.M. Lesht, S. I. Gutman, and F.J. Schmidlin. JTERCH # A 783-W. Submitted December 2005, Finalised 11 July 2006, published online March 1, 2007 in Volume 24, Nr. 3</p>	<p>Box 19</p>
<p>"High-Resolution Measurement of Size Distributions of Asian Dust Particles Using a Coulter Multisizer", by Hiroshi Kobayashi, Kimio Arao, Toshiyuki Murayama, Kengo Iokibe, Ryuji Koga, and Masataka Shiobara. JTECH # A785-W. Submitted October 2005, Finalized 6 June 2006, published online February 2007 in Volume 24, Nr. 2</p>	<p>Box 19</p>
<p>"Measurement of Total Water with a Tunable Diode Laser Hygrometer: Inlet Analysis, Calibration Procedure, and Ice Water Content Determination", by Sean M. Davis, A. Gannet Hallar, Linnea M. Avallone, and William Engblom, JTECH A 796-W. Submitted December 2005, Finalized 27 June 2006, published online March 2007 in Volume 24 Nr. 3</p>	<p>Box 19</p>
<p>"Design of the AmeriFlux portable eddy-covariance system and uncertainty analysis of CO2 measurements", by T.W. Oechltree and H.L. Loescher. JTECH A-806-W. Withdrawn from publication – missed deadline. June 2006</p>	<p>Box 19</p>
<p>"The new version of the Eta regional forecast model developed for climate-change simulations", by I.A. Pisnichenko and T.A. Tarasova, JTECH A 1033-W. May 30, 2007. Transferred to JAMC June 19, 2007</p>	<p>Box 19</p>
<p>"Coastal Monitoring in the Gulf of Manfredonia (Southern Adriatic Sea): New Observational Techniques and Instrumentations", by Frederica Fiesoletti, Federico Spagnoli, Antonietta Specchiulli, and Giuseppe Zappala. JTECH A 1043-W. August 2007 – transferred from JTECH Atmospheric Section to JTECH Oceanic Section</p>	<p>Box 19</p>
<p>Wind Shear Paraphernalia - Includes brochure from Silicon Graphics re: Onyx at NCAR, three (3) stickers and a badge</p>	<p>Box 18</p>

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Ericsson Radio Systems - Doppler Weather Radar System. Technical Description Manual & Correspondence, 1984-1986	Box 22
Federal Aviation Administration Terminal Doppler Radar Program – Some Comments by John McCarthy , 1985-08-20	Box 22
The Stapleton Microburst Advisory Service Project - An Operational Viewpoint, 1985-09	Box 22
Coupled Climate Systems: A New Initiative in Atmospheric Science at NCAR, Draft & Correspondence, 1986-06	Box 22
TDWR: FAA/NASA/NCAR Meetings re: Airborne Wind Shear - Detection and Avoidance Program, 1987-1988	Box 22
F-Factor - A Cursory Study of F-Factor applied to Doppler Radar. Correspondence & Draft Paper, Kimberly L. Elmore, 1988	Box 22
Preliminary Results of the 1983 Coordinated Aircraft - Doppler Weather Radar - Turbulence Experiment, Volume 1. Lincoln Laboratories - July 26, 1988, 1988-07-26	Box 22
Proposed China Trip - People to People Program - John McCarthy, 1988	Box 22
Correspondence & Proposals between Boeing & NCAR, 1984-1988	Box 22
General Correspondence between Canadian Scientists & NCAR, 1988-1989	Box 22
Wyoming Snow Enhancement Project – Daily Summaries, Flight Logs, Data Sheets , 2005-2007	Box 22
United Arab Emirates Rainfall and Atmospheric Chemistry Project – Data Sheets, Reports, Correspondence & Summaries, 2001-2003	Box 22
United Arab Emirates Rainfall and Atmospheric Chemistry Project – 2001 Report Atmospheric Chemistry, Climatology Research Group, University of Witwatersrand, Johannesburg, SA. , 2001	Box 22
Drafts: 1. Paper for Inclusion in Airman's Information Manual re: Microbursts, 1986. 2. FAA Briefing Paper on TDWR, 1988	Box 22
Colorado State University (CSU) Request for Funding / Partnership with RAP / NCAR, 1989-04	Box 22
Cooperative Huntsville Meteorological Experiment (COHMEX), 1986	Box 22

Paper: "Microburst Forcing and Precursors", Anonymous & Undated.	Box 22
Unsolicited Proposal to Department of Supply and Services, Canada; by Natural Resources Division, Alberta Research Council re: Development of a Prototype Wind Shear Warning System for Canadian Aviation Users, 1985-1987	Box 22

Mountain Induced Aeronautical Hazards Program, 1997

General

Video produced by NCAR, written by Dr. Peter Neilly, and narrated by David Hartley. It talks about improving mountain flying safety, and deals with understanding the hazards, and educating the community, as well as how to improve detection & forecasting. The aviation accident rate is 40% higher in mountainous states compared to the rest of the country. In 1991, there was a wind rotor crash in Colorado Springs, prompting a field data study in Colorado Springs using LIDAR, profiler, surface weather stations, and weather balloons to better understand rotor winds. The video mentions the LWAS system in Hong Kong, and the Hazardous Mountain Winds and Their Visual Indicators training manual is featured. (This manual is in our collection.)

Processing Information:

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OpenSky Repository Link: <http://n2t.net/ark:/85065/d7tq64hg>

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Research Materials - By Author

General

These are the files, results, findings, reports, publications and papers of mostly NCAR employees and colleagues, alphabetically arranged by last name of the first scientist mentioned as author on the paper. Many are undated.

Title/Description	Instances
Albo, David – Enhancements to the Microburst Automatic Detection Algorithm, 1996-02-01	Box 16
Albo, David – Microburst Detection using Fuzzy Logic. Prepared for the Terminal Area Surveillance System Program, 1994-10-03	Box 16
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Audiovisual Materials

General

Some of the material has been digitized, but most is not.

Title/Description	Instances
"JAWS" Sync (Approximately 400 ft of 16 mm film) 1 of 2	Box 23
"JAWS" Sync (Approximately 400 ft of 16 mm film) 2 of 2	Box 23
"JAWS" Mag Trks - "Alone at Last" Mag Trks Cue Sheet 1 of 2	Box 23
"JAWS" Mag Trks - "Alone at Last" Mag Trks Cue Sheet 2 of 2	Box 23
JAWS Western Cine Workprint WO# 33145	Box 23

"JAWS TITLE" Tails	Box 23
"PAM Sites"	Box 23
<p><u>Digital Object:</u> RAL Joint Airport Weather Studies (JAWS) Portable Automated Mesonet (PAM) Sites.</p> <p><u>Processing Information:</u> Processing Information</p> <p>OpenSky Repository Link: http://n2t.net/ark:/85065/d7z03c2d</p>	
<p>"PAM Base" - RAL Joint Airport Weather Studies (JAWS) Portable Automated Mesonet (PAM) Base</p> <p><u>Digital Object:</u> RAL Joint Airport Weather Studies (JAWS) Portable Automated Mesonet (PAM) base</p> <p><u>Processing Information:</u> Processing Information</p> <p>OpenSky Repository Link: http://n2t.net/ark:/85065/d7z89g9t</p> <p>Scope and Contents</p> <p>PAM Stations were set up around the airport to monitor weather conditions. Approximately 1:19 minutes of footage of meetings, scientists at work. No audio.</p>	
"JAWS - NCAR" 33136 Tails	Box 23
<p>Scope and Contents</p> <p>JAWS film segments were produced by Marsh Louvrein for NCAR.</p>	
JAWS	Box 23
<p>Scope and Contents</p> <p>Undated. Approximately 50 ft of 16 mm film, no audio.</p>	
"JAWS - NCAR"	Box 23
<p>Scope and Contents</p> <p>Notes from cannister: ECN Orig. 32527 33145 Tail R-1 Marsh Louvrein</p>	
"Wind Shear: A Technical Report"	Box 23
"Probable Cause"	Box 23
<p>General</p> <p>Label provided from RAL: "16mm is labelled edit master. Digitized from beta. New Orleans Pan Am 759 crash</p>	

within 8 minutes of takeoff. Wind shear suspected in 11-22 accidents. In New Orleans wind shear reported throughout the airport. Flight was unaware of the severity. Large turbo jets operating at maximum weight are most susceptible. 3:51 John McCarthy JAWS interview. Doppler radars in a triangle surrounding Stapleton Airport to study wind shear. Explanation of different wind shears. Convective wind shear (microbursts), downdrafts are what we studied. Can be lethal if 1000 feet off the ground. Look for blowing dust, precip trails, trees blowing, heavy rain. Study over the summer expected to see 20 microbursts over 75 were recorded. 85 Knot differential on the runways. Anemometers set up along the flight path. If the differential exceeds a certain threshold an alert shows up in the control tower. Pilot reports help too. Some techniques to help survive getting caught in a microburst. Pilot Nice. Timely go around or delayed take offs are best. 19:06 video hiccups. Pilot lingo V2 to stick shaker for wind shear. Use intermediate flap setting on landing. Be suspicious if descent is too high or low. Same with speed, it could be wind shear. Be aware of wind shear possibilities."

"July Hailstorm" , 1990-07-11

Box 23

Digital Object: [July Hail Storm](#)

Processing Information:

Processing Information

OpenSky Repository Link: <http://n2t.net/ark:/85065/d7319zr8>

Scope and Contents

16mm film. "As observed on NCAR NOAA NWS Mile High Radar. Denver, CO hailstorm. Filmed at NCAR by Dan Megenhardt." Shows radar images of a hailstorm at various degrees of magnification, reflectivity and velocity.

"JAWS" Sync Mag

Box 24

"JAWS" Sync Pix

Box 24

"JAWS - NCAR" 33136

Box 24

"JAWS" 33355

Box 24

JAWS - MOS Outs

Box 24

JAWS - NCAR

Box 24

Scope and Contents

Notes on canister: 32527 ECN Orig. 33145 Tail R-2 Marsh Louvrein

CINDE - Convection Initiation and Downburst Experiment - Highlights field experiment, 1987

Box 24

General

CINDE Convection Initiation and Downburst Experiment. The field campaign was cleverly named by Cindy Mueller. Dates: 22 June – 7 Aug 1987 near Denver, CO. Participants: NCAR, NOAA, FAA, MIT, LL, U of N. Dakota, U of Wyoming, U of CA at LA & CO State University. Initiation of storms along a stationary convergence line 07/24/87. Photos by Jeff Lew from Lookout Mountain 1200-1900 MDT. The film is dirty and scratched. No sound. 2:57 CP3 Radar Reflectivity 1200-1900 MDT. 3:35 PAM winds & rainfall 1200-1900 MDT. 4:14 Downbursts U of North Dakota citation aircraft 07/09/87. 5:33 Downburst from virga at Byers photographic site 07/09/87. 6:20 tornado development along a convergence line 07/02/87. 7:22 Steve Krueger NOAA D radar site. Slow motion tornado. 7:47 Robert Shaw & Kendall Crager NOAA video tornado. 8:20 radar reflectivity. 8:30 Doppler velocity.

Film digitized in 2017 and saved at smb://qnap-28/qnap-28/video/cinde_highlights_field_experiment_video_1987.mp4

"Low-Level Wind Shear"

Box 26

Scope and Contents

Federal Aviation Administration ARD-480. "Low-Level Wind Shear", Film Number FA-03-78. Running time 16 minutes, dated April 1978.

Existence and Location of Copies:

Existence and Location of Copies

This film was digitized in 2017 by RAL. RAL maintains custody of the digital object. Location: smb://qnap-28/qnap-28/video/low_level_wind_shear_video_1978.mp4

Full description provided by RAL: Low Level Wind Shear Film Mod A Tinsley #11 – 16 mm film in brown case #FA-03-78 JAWS Wind Shear Film Master Tape 8. Cockpit/ Simulator footage for low-level wind shear. Film footage has faded. Most of it is pink. Thunderstorms, frontal zones & low-level jets are varieties of wind shear. Similar footage to wind shear – a technical report film. NASA Ames flight simulation, pilot briefing helped. Flight director system and ground speed vs. air speed improved successful approaches. Pilot data was collected during the simulation. Collecting ground speed wind in additional locations around the runways. If the combined wind speeds exceed a certain threshold, it would trigger an alert in the air traffic control tower. 12:35 film skips. Doppler laser effect dome to detect wind speeds. Data collection on special airplane.

Three Dimensional Terminal Viewer Display, Part 1 of 2, 1993

Digital Object: [Three Dimensional Terminal Viewer Display, Part 1 of 2](#)

General

John McCarthy, Director, Research Applications Program, explains the new three-dimensional terminal viewer display. It is a virtual reality system, with weather and air-traffic graphics running in real time. The Terminal Doppler Radar information with 3D terrain and air traffic are all on one display. The first demonstration shows Denver International Airport from a point looking down from space. He shows the air traffic live view added to the traditional view, and then the landsat background gets added. Subsequently, the weather precipitation from TDWR is added. This feature hides the airport & planes. The light rain is then removed, leaving only the moderate to heavy rain on the screen. At 5:20, microburst & gust front information is added. At 5:40, only heavy precipitation is shown. These are all 2D images. At 6:23, the circle terminal control area is the new 3D image, from about 50 miles away from the airport with the same features. Points of the compass are shown on the edges.

Processing Information:

Processing Information

OpenSky Repository Link: <http://n2t.net/ark:/85065/d7pz5ct6>

Three Dimensional Terminal Viewer Display, Part 2 of 2, 1993

Digital Object: [Three Dimensional Terminal Viewer Display, Part 2 of 2](#)

General

Part 2 starts with an overhead view. It then shows an airplane making a landing on runway 08, from a SE arrival gate approach. The 3D view shows the plane missing the bad weather further off and having no hazards on approach. In contrast, runway 26 shows an approach complete with flying through bad weather, through a micro-burst. This can be deadly, and the display strongly suggests to not go through this. Finally, one of the aircraft is selected approaching the airport at 15,000 Feet. It shows a 3D view of the precipitation out the cockpit window. The image will move in real time as updates become available. In this case, the pilot can see what can't be seen with the naked eye, and can make make decisions to avoid hazardous weather in real time. This demonstration shows the first time air traffic and hazardous weather have been combined in a real time system to improve safety.

Processing Information:

Processing Information

OpenSky Repository Link: <http://n2t.net/ark:/85065/d76w9f16>

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