









WEATHER MODIFICATION OUTLOOK - 1995 PROJECTION .....	1	A. Gagin and J. Neumann	
James E. Justo		THE ROLE OF SOLID PRECIPITATION ELEMENTS IN NATURAL AND ARTIFICIAL PRODUCTION OF RAIN IN ISRAEL .....	216
TRENDS IN WEATHER MODIFICATION LEGISLATION .....	17	A. Gagin and I. Steinhorn	
Ray Jay Davis		CUMULUS CONGESTUS GROWTH DOWNWIND OF ST. LOUIS MISSOURI: CASE STUDY .....	229
PRESENT-DAY STATE OF THE THEORETICAL INVESTIGATIONS ON THE HETEROGENEOUS ICE NUCLEATION .....	28	August H. Auer, Jr.	
L. Krastanov and G. Miloshev		FLAME TEMPERATURE EFFECTS ON AgI NUCLEI PRODUCED FROM ACETONE GENERATORS .....	238
SNOWFALL ENHANCEMENT .....	48	Donald N. Blair	
Helmut K. Weickmann		HAIL SUPPRESSION EFFECTS FROM SEEDING WITH SILVER IODIDE IN WESTERN NORTH DAKOTA .....	246
ICE NUCLEI GENERATOR TECHNOLOGY .....	68	E. I. Boyd, J. R. Miller, Jr., and R. A. Schleusener	
Norihiko Fukuta		THE ANTI-HAIL CAMPAIGN IN ARGENTINA.....	260
IDENTIFICATION OF QUICK LIME AS ICE NUCLEANT .....	79	Daniel Gomez	
A. S. Ramachandra Murty and Bh. V. Ramana Murty		A RANDOMIZED CLOUD SEEDING EXPERIMENT IN THE DECCAN PLATEAU, INDIA -- PRELIMINARY RESULTS.....	266
THE MECHANIZATION OF MULTIPLICATION PROCESS OF GLACIATION IN THE ATMOSPHERE .....	87	K. Krishna, R. K. Kapoor, A. S. Ramachandra Murty, A. M. Selvam, K. K. Kanuga, L. T. Khemani, B. K. Bukherjee, S. K. Paul, R. Vijaya Kumar, and Bh.K. Ramana Murty	
Roger Cheng		THE EFFECT OF OZONE ON LEAD AND SILVER IODIDE.....	278
CLIMATOLOGICAL ASSESSMENT OF EXTRA- AREA SEEDING EFFECTS .....	92	Vincent J. Schaefer	
Paul T. Schickedanz		FIELD MIXING PROCEDURES FOR AgI-NH <sub>4</sub> - ACETONE SOLUTIONS .....	286
RHODESIAN NATIONAL DROUGHT RELIEF CLOUD SEEDING OPERATION.....	109	R. L. Wheeler	
J. E. Stevens		MONITORING OF CLOUD CONDENSATION NUCLEI AT THE ARCATA-EUREKA AIRPORT, CALIFORNIA.....	289
REPORT ON CLOUD SEEDING OPERATION -- KYLE AND BANGALA CATCHMENT AREA, NOVEMBER 1972 - APRIL 1973 .....	130	L. A. Mathews	
J. E. Stevens		A REVIEW OF SURFACE HAIL SENSORS.....	304
POTENTIAL VALUE OF SATELLITE CLOUD PICTURES IN WEATHER MODIFICATION PROJECTS .....	134	Neil J. Towery and Stanley A. Changnon, Jr.	
Kumud R. Biswas		WEATHER MODIFICATION ACTIVITY REPORTS -- NOVEMBER 1, 1972 TO DECEMBER 31, 1973.....	318
REVIEW OF A MOLECULAR MODEL APPLIED TO PRENUCLEATION WATER CLUSTERS.....	161	Mason T. Charak and Mary T. DiGiulian	
P. L. M. Plummer and B. N. Hale		INTERNATIONAL CONFERENCE ON WEATHER MODIFICATION -- OCTOBER 1-7, 1973 -- TASHKENT, USSR.....	343
A UNIQUE PHYSICALLY RESPONSIVE METHOD OF ENTRAINMENT FOR ONE-DIMENSIONAL CUMULUS MODELS.....	171	H. Weickmann	
David A. Matthews		RESEARCH NEEDS FOR LARGE-SCALE, APPLIED WEATHER MODIFICATION PROGRAMS.....	354
USE OF CONDENSED WATER-PRECIPITATION RELATIONSHIPS IN ANALYZING EFFECTS OF CLOUD SEEDING.....	182	Merlin C. Williams and D. Ray Booker	
Gerard E. Klazura		AN INTERESTING EARLY REFERENCE: ARTIFICIAL RAINMAKING IN KANSAS; THE RAINMAKERS AT WORK. RECEIVED FROM: .....	360
PRACTICAL USE OF TIME-LAPSE PICTURES OF RADAR ECHOES TO ESTIMATE AREAS AFFECTED BY SEEDED CLOUDS .....	196	Arnold Court	
Ray E. Telfer			
MODIFICATION OF SUBTROPICAL WINTER CUMULUS CLOUDS -- CLOUD SEEDING AND CLOUD PHYSICS IN ISRAEL.....	203		





























PRESIDENT'S MESSAGE .....	vi	THE HAIL SUPPRESSION PROGRAM IN GREECE ..	51
R. Lynn Rose		Thomas J. Henderson	
SPECIAL NOTE - FIRST EUROPEAN CONFERENCE OF THE WMA .....	vii	RESULTS OF AN EXPLORATORY EXPERIMENT WITHIN THE GREEK NATIONAL HAIL SUPPRESSION PROGRAM.....	57
John W. James		John A. Flueck, Mark E. Solak, and Theodore S. Karacostas	
<b>- REVIEWED SECTION -</b>			
A PERSPECTIVE ON WEATHER MODIFICATION EVALUATION.....	1	THE USE OF BIPLOTS TO EVALUATE SPATIAL EFFECTS OF WEATHER MODIFICATION.....	64
A KIND OF SEEDING AGENT FOR DRAWING HIGH LIQUID WATER CONTENTS OFF CONVECTIVE CLOUDS: REALITY OR NOTE? .....	6	K. Ruben Gabriel and Division of Biostatistics, Univ. of Rochester	
R. Serpolay		APPLICATION OF CONTACT-FREEZING NUCLEI IN CONVECTIVE CLOUD SEEDING .....	70
OBSERVATIONS CARRIED OUT IN AN EQUATORIAL FOREST AFTER SILVER IODIDE SEEDINGS FROM A GROUND GENERATOR .....	10	N. Fukuta	
G.J.R. Baudet, J. Dessens and J.P. Lacaux		PRECIPITATION GAUGE SITING FOR EVALUATION OF AN OROGRAPHIC CLOUD SEEDING DEMONSTRATION PROJECT IN THE CENTRAL ROCKY MOUNTAINS .....	75
STORM TYPING AND SEEDABILITY IN OROGRAPHIC SNOW/RAIN AUGMENTATION IN THE SIERRA NEVADA OF CALIFORNIA.....	14	Gerard E. Klazura, Arlin B. Super, and Jonnie G. Medina	
John W. James		THE OBJECTIVE ANALYSIS OF HAILPADS USING A COMPUTERIZED VIDEO SCANNING SYSTEM.....	81
EVALUATION STUDIES OF LONG-TERM HAIL DAMAGE REDUCTION PROGRAMS IN NORTH DAKOTA.....	17	Thomas J. Henderson and Rand B. Allan	
R.L. Rose and T.C. Jameson		MIDWESTERN CONVECTIVE CLOUDS: A REVIEW .....	87
GROUND SEEDING: A VERY POWERFUL TECHNOLOGY FOR THE FUTURE OF HAIL SUPPRESSION.....	21	Bernice Ackerman and Nancy E. Westcott	
P. Admirat and R. Caponigro		SOME CHARACTERISTICS OF RADAR FIRST ECHOES IN THE HIGH PLAINS .....	95
THE VALUE OF EXAMINING ECONOMIC IMPACTS OF WINTER CLOUD SEEDING.....	25	James R. Miller, Jr., and Paul L. Smith	
Barbara C. Welles		WINTERTIME CHARACTERISTICS OF SUPERCOOLED LIQUID WATER OVER THE GRAND MESA OF WESTERN COLORADO .....	102
THE ITALO-YUGOSLAV ANTI-HAIL DEFENSE.....	28	Bruce A. Boe and Arlin B. Super	
Fedrico Primozic and Domenico Vento		AIRCRAFT PENETRATIONS OF SWISS HAILSTORMS -- AN UPDATE .....	108
RELIABLE VERIFICATION METHODS IN HAIL PREVENTION .....	30	Dennis J. Musil and Paul L. Smith	
W.A. Muller		THE THEMATIC DIMENSION IN WEATHER MODIFICATION, PAST AND FUTURE .....	112
EXPERIMENT OF SUPERCOOLED FOG DISPERSAL AT SARAJEVO AIRPORT AND SKIING SLOPES OF THE 14TH WINTER OLYMPIC GAMES .....	34	Wallace E. Howell	
D. Milosevic, S. Bajic, Z. Radonjic, and N. Fukuta		COMMENTS ON TECHNOLOGY TRANSFER IN WEATHER MODIFICATION .....	117
PRELIMINARY RADAR RESULTS FROM THE 1984/85 SEEDING EXPERIMENT.....	40	Thomas J. Henderson	
G.K. Mather and M.J. Dixon		WEATHER MODIFICATION, DROUGHT, AND PUBLIC POLICY: A CASE HISTORY.....	119
COMPARISON BETWEEN SEEDED AND UNSEEDED STORMS IN ALBACETE (SPAIN).....	43	W. Henry Lambright, Susan E. Sheehan	
J.L. Sanchez, A. Castro, M.L. Sanchez and M. Davila		<b>- NON-REVIEWED SECTION -</b>	
THE LIGHTNING TRIGGERING: A TECHNIQUE FOR ACTIVE PROTECTION OF A SITE .....	46	HOW CALIFORNIA HANDLED TWO WEATHER MODIFICATION PERMIT APPLICATIONS FROM NEVADA, AN ADJOINING STATE .....	127
Paul Perroud and Andre Eybert-Berard		Maurice Roos	
WORLDWIDE EVALUATION FOR CREDIBILITY .....	49	PRELIMINARY DATA ON REPORTED WEATHER MODIFICATION ACTIVITIES IN THE U.S. FOR CY 1985 .....	129
Clement J. Todd		Harold A. Corzine	









THE APPLICATION OF GEOSTATIONARY SATELLITE IMAGERY FOR DECISION-MAKING IN CONVECTIVE CLOUD SEEDING IN NORTH DAKOTA.....	73	Harold D. Orville	CALIFORNIA WEATHER MODIFICATION PROJECTS 1989-90.....	163
Bruce A. Boe and James A. Jung			A SUMMARY OF WEATHER MODIFICATION ACTIVITIES REPORTED IN THE UNITED STATES DURING 1988 WITH TRENDS FROM 1978 .....	164
ONE EVIDENCE OF THE HAIL SUPPRESSION EFFICIENCY DERIVED FROM RADAR MEASUREMENTS .....	79		CURRENT AMERICAN AND CANADIAN WEATHER MODIFICATION REGULATION .....	168
Mladjen Curic			LETTER - JIM WILSON TO V. SCHAEFER - 1951.....	172
ON THE DAMAGE REDUCTION IN BULGARIAN AND HUNGARIAN HAIL SUPPRESSION PROJECTS .....	82		C.W. POST ARTICLE IN HARPER'S WEEKLY FEB. 1912 .....	174
Marko Tamas and Petio Simeonov			HISTORIC QUOTATIONS .....	175
DENSITY OF HAIL SUPPRESSION ROCKET NETWORK .....	90		AN ABBREVIATED HISTORY OF THE WEATHER MODIFICATION ASSOC. ....	177
Zlatko Vukovic and Nenad Aleksic			ARTICLES OF INCORPORATION OF THE WEATHER MODIFICATION ASSOC. ....	184
A SOURCE OF DATA FOR HAIL SUPPRESSION STUDIES .....	94		WEATHER MODIFICATION CAPABILITY STATEMENT .....	187
Roger K. Sandness			WEATHER MODIFICATION ASSOCIATION STATEMENT ON STANDARDS AND ETHICS FOR WMA OPERATORS.....	188
ANALYSIS OF THE CHARACTERISTICS OF STORMS LOCATED IN THE MIDDLE EBRO VALLEY (SPAIN): PREPARATION FOR A NEW STAGE OF HAIL SUPPRESSION .....	98		QUALIFICATIONS AND PROCEDURES FOR CERTIFICATION BY THE WMA.....	190
J.L. Sanchez and A. Castro			WMA CERTIFIED WEATHER MODIFICATION OPERATORS AND MANAGERS, WMA HONORARY MEMBERS.....	192
WINTER OROGRAPHIC CLOUD SEEDING STATUS IN THE INTERMOUNTAIN WEST .....	106		WEATHER MODIFICATION ASSOCIATION OFFICERS AND COMMITTEES .....	193
Arlin B. Super			WEATHER MODIFICATION ASSOCIATION LIST OF PAST OFFICERS .....	194
SEEDING SUMMERTIME CONVECTIVE CLOUDS TO INCREASE BLACK HILLS RAINFALL .....	117		WMA AWARDS - THUNDERBIRD AWARD, BLACK CROW AWARD, SCHAEFER AWARD, INTERNATIONAL AWARD .....	195
A.S. Dennis			WMA MEMBERSHIP DIRECTORY INDIVIDUAL AND CORPORATE MEMBERS .....	197
ATMOSPHERIC TESTS OF AN ORGANIC NUCLEANT IN A SUPERCOOLED FOG.....	127		JOURNAL OF WEATHER MODIFICATION - 24 AVAILABLE Publications .....	203
William A. Woodley and Thomas J. Henderson			HISTORIC INDEX OF PUBLISHED PAPERS IN JWM VOL. 1, NO. 1, THROUGH VOL. 22, NO. 1 .....	205
SOME CHARACTERISTICS OF AERIALLY-RELEASED AgI PLUMES IN ALBERTA .....	133		HISTORIC AUTHOR INDEX FOR ALL PUBLISHED PAPERS IN JWM VOL. 1, NO. 1, THROUGH VOL. 22, NO. 1.....	227
James A. Heimbach, Jr.			JOURNAL NOTES, ADVERTISEMENT INFORMATION, SCHEDULED WMA MEETINGS - 1990/91 .....	231
THE USES OF CLOUD MODELS IN WEATHER MODIFICATION .....	137		ADVERTISEMENTS	
Harold D. Orville				
A STATE PERSPECTIVE ON THE DEVELOPMENT OF WEATHER MODIFICATION: THE CASE OF ILLINOIS.....	143			
W. Henry Lambright				
<b>- NON-REVIEWED SECTION -</b>				
TIME FOR A CHANGE .....	152			
Vincent J. Schaefer				
PRELIMINARY FIELD EXPERIMENTS OF SNOMAX™ ON CUMULUS MEDITERRANEAN CLOUDS TO ARTIFICIALLY INDUCE THE PRODUCTION OF ICE PARTICLES .....	153			
James A. Jung and Snomax Technologies				
A REPORT ON THE CONFERENCE ON THE SCIENCE AND TECHNOLOGY OF CLOUD SEEDING IN THE BLACK HILLS.....	158			







WEATHER MODIFICATION ASSOCIATION OFFICERS AND COMMITTEES – 1991-92 ..... 141

WEATHER MODIFICATION ASSOCIATION AWARDS..... 142

WEATHER MODIFICATION ASSOCIATION – INDIVIDUAL MEMBERS ..... 144

WEATHER MODIFICATION ASSOCIATION – CORPORATE MEMBERS ..... 149

JOURNAL OF WEATHER MODIFICATION – 27 AVAILABLE PUBLICATIONS..... 150

SPECIAL OFFER ON PAST JOURNAL ISSUES ..... 153

HISTORIC INDEX OF PUBLISHED PAPERS IN JWM VOL. 1, NO. 1, THROUGH VOL. 24, NO. 1..... 153

JOURNAL NOTES, ADVERTISEMENT INFORMATION, SCHEDULED WMA MEETINGS – 1992/93 ..... 158

ADVERTISEMENTS



**-THE JOURNAL OF WEATHER MODIFICATION - WEATHER MODIFICATION ASSOCIATION VOLUME 25**

**Number 1 April 1993**

**TABLE OF CONTENTS PAGE**

THE WEATHER MODIFICATION ASSOCIATION ..... iv

PRESIDENT'S MESSAGE/EDITOR'S MESSAGE ..... v

NOTES FROM THE WILBUR E. BREWER APPRECIATION/RETIREMENT DINNER ..... vi

WMO STATEMENT ON THE STATUS OF WEATHER MODIFICATION ..... 1

PLANNED AND INADVERTENT WEATHER MODIFICATION ..... 7

WEATHER MODIFICATION CAPABILITY STATEMENT..... 11

**- REVIEWED SECTION -**

EVALUATION OF ECHO CORE RESPONSES IN THE 1989 ILLINOIS EXPLORATORY CLOUD SEEDING EXPERIMENT USING A SEEDABILITY INDEX ..... 12  
 Robert R. Czys, Stanley A. Changnon, Nancy E. Westcott, Mary Schoen Petersen and Robert W. Scott

RESULTS OF THE 1989 EXPLORATORY CLOUD SEEDING EXPERIMENT IN ILLINOIS BASED ON SYNOPTIC WEATHER CONDITIONS ..... 26  
 N.E. Westcott, S.A. Changnon, Jr., R.R. Czys, R.W. Scott and M.S. Petersen

NUMERICAL SIMULATION OF THE CLOUD SEEDING OF A WARM BASE ILLINOIS CONVECTIVE CLOUD WITH AND WITHOUT ICE MULTIPLICATION ACTIVE..... 50  
 Harold D. Orville, Fred J. Kopp

Richard D. Farley, and Robert R. Czys

AN EVALUATION OF HAIL SUPPRESSION CLOUD SEEDING EFFECTS ON FREQUENCIES OF WEATHER PHENOMENA IN SERBIA..... 57  
 Djuro Radinovic

PRELIMINARY ESTIMATES OF INCREASED RUNOFF FROM ADDITIONAL HIGH ELEVATION SNOWFALL IN THE UPPER COLORADO RIVER BASIN ..... 74  
 Arlin B. Super and Jack T. McPartland

RELATIONSHIPS BETWEEN STORM TOTAL SUPERCOOLED LIQUID WATER FLUX AND PRECIPITATION ON FOUR MOUNTAIN BARRIERS..... 82  
 Arlin B. Super and Arlen W. Huggins

THE AFTERMATH OF THE 1972 RAPID CITY FLOOD..... 93  
 Arnett S. Dennis

**- NON-REVIEWED SECTION -**

DESCRIPTION OF FIRST NATIONAL RAIN ENHANCEMENT PROJECT (FINREP) IN ISTANBUL..... 104  
 Ismail Gultepe

A SUMMARY OF WEATHER MODIFICATION ACTIVITIES REPORTED IN THE UNITED STATES DURING 1991 ..... 107  
 William H. Blackmore III

**-WEATHER MODIFICATION ASSOCIATION- GENERAL INFORMATION-**

ARTICLES OF INCORPORATION OF THE WEATHER MODIFICATION ASSOCIATION ..... 109

STATEMENT ON STANDARDS AND ETHICS FOR WEATHER MODIFICATION OPERATORS ..... 112

QUALIFICATIONS AND PROCEDURES FOR CERTIFICATION ..... 114

WMA CERTIFIED WEATHER MODIFICATION OPERATORS/MANAGERS AND HONORARY MEMBERS..... 116

WEATHER MODIFICATION ASSOCIATION OFFICERS AND COMMITTEES ..... 117

WMA AWARDS – THUNDERBIRD AWARD, BLACK CROW AWARD, SCHAEFER AWARD, INTERNATIONAL AWARD..... 118

WMA MEMBERSHIP DIRECTORY – INDIVIDUAL AND CORPORATE MEMBERS ..... 120

JOURNAL OF WEATHER MODIFICATION – 27 AVAILABLE PUBLICATIONS ..... 126

HISTORIC INDEX OF PUBLISHED PAPERS IN *THE JOURNAL OF WEATHER MODIFICATION* VOL. 19, NO. 1, (Apr 1987) THROUGH VOL. 24, NO. 1 (Apr 1992) ..... 128

JOURNAL NOTES, ADVERTISEMENT





















CLOUD SEEDING EXPERIMENTS ON WARM CLOUDS IN PAKISTAN .....	33
Qamar Z. Chaundhry, Muhammad M. Munir, and Anjum Bari	
ICE NUCLEATING BEHAVIOUR OF AQUEOUS AND ALCOHOLIC SOLUTION OF PHLOROGLUCINOL: A LABORATORY STUDY .....	41
Sahana Paul, Anupam Hazra, Dhruvajyoti Roy, U.K. De, S. Bhar, and K. Goswami	
ON THE CONTRASTIVE NATURE OF WEATHER MODIFICATION KNOWLEDGE: COMMONSENSE REASONING AND COMMONSENSE KNOWLEDGE .	47
Arquimedes Ruiz-Columbié	
THE WEATHER MODIFICATION ASSOCIATION'S RESPONSE TO THE NATIONAL RESEARCH COUNCIL'S REPORT TITLED: "CRITICAL ISSUES IN WEATHER MODIFICATION RESEARCH" REPORT OF A REVIEW PANEL .....	53
Bruce Boe, George Bomar, William R. Cotton, Byron L. Marler, Harold D. Orville (Chair), and Joseph A. Warburton	
PROCEEDINGS OF THE JEMEZ Y SANGRE WATER PLANNING COUNCIL CLOUD SEEDING WORKSHOP .....	83
Sigmund Silber	
<b>- WEATHER MODIFICATION ASSOCIATION - GENERAL INFORMATION</b>	
ARTICLES OF INCORPORATION OF THE WEATHER MODIFICATION ASSOCIATION .....	95
CODE OF ETHICS: STANDARDS OF CONDUCT IN PROJECTS AND PROCEDURES FOR INVESTIGATING MISCONDUCT OF MEMBERS .....	98
QUALIFICATIONS AND PROCEDURES FOR CERTIFICATION .....	105
WMA CERTIFIED WEATHER MODIFICATION OPERATORS/MANAGERS AND HONORARY MEMBERS .....	107
WEATHER MODIFICATION ASSOCIATION OFFICERS AND COMMITTEES .....	108
WMA AWARDS .....	109
WMA MEMBERSHIP DIRECTORY – INDIVIDUAL AND CORPORATE MEMBERS .....	113
JOURNAL OF WEATHER MODIFICATION – 38 AVAILABLE PUBLICATIONS .....	119
HISTORIC INDEX OF PUBLISHED PAPERS IN <i>THE JOURNAL OF WEATHER MODIFICATION</i> , VOL. 1, NO. 1 (March 1969) THROUGH VOL 35, NO. 1 (Apr 2003) .....	121
JOURNAL NOTES, ADVERTISEMENT INFORMATION, SCHEDULED WMA MEETINGS – 2002/2003 .....	156
AUTHOR'S GUIDE .....	157
ADVERTISEMENTS	