

UNEP/WG.26/8

WORLD METEOROLOGICAL ORGANIZATION

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ENVIRONMENT PROGRAMME

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REPORT
of
WMO/UNEP MEETING OF EXPERTS DESIGNATED BY GOVERNMENTS
ON THE
LEGAL ASPECTS OF WEATHER MODIFICATION
(Geneva, 17-21 September 1979)



Na.79-1655

1. OPENING OF THE MEETING

1.1 The meeting was called to order at 10,00 hours on 17 September 1979. On behalf of the Secretary-General of WMO, Dr. D.A. Davies, Mr. Veranneman welcomed the participants* to the WMO Headquarters. The Secretary-General's address noted that WMO has been active for many years in the field of cloud physics and weather modification. In 1971 WMO issued a Statement on the Present State of Knowledge and Possible Practical Benefits in Some Fields of Weather Modification for the guidance of Members' activities, and since 1975 WMO has had a specific Weather Modification Programme guided by an Executive Committee Panel of leading world experts. The address further quoted the view of the Seventh WMO Congress (May 1975) which "was of the opinion that international legal principles and guidelines on weather modification should be developed hand in hand with the scientific progress in this field, and that better understanding of the physical basis of weather modification was needed before WMO would be in a position to provide definitive advice to Members on this aspect of weather modification experiments and operations". It was emphasized that the Eighth WMO Congress (May 1979) was of the opinion that since the scientific progress in understanding the processes involved in weather modification would inevitably be slow, there was no great urgency in codifying these general principles and guidelines into firm legal regulations. They could, however, serve as the basis for such regulations at some time in the future when, and if, scientific developments so warrant.

1.2 The Secretary-General's address noted with satisfaction that with regard to the possible environmental effects and the legal aspects of weather modification close collaboration existed between WMO and UNEP and the co-operative spirit on these difficult issues motivating the two organizations would continue.

1.3 Mr. R.S. Mikhail, Director of the Division of Environmental Assessment of the UNEP Secretariat, conveyed the greetings of the Executive Director of UNEP and his best wishes for the success of the meeting. He also expressed his gratitude to the World Meteorological Organization for hosting the meeting and paid tribute to the spirit of co-operation that existed between the two organizations.

1.4 He went on to remind the meeting of the historical basis for UNEP's concern in the area of weather modification starting at the 1972 Stockholm Conference on the Human Environment and elaborated and refined by subsequent Governing Council's of UNEP. He pointed out that UNEP recognized that weather modification may have a beneficial potential but believed that extensive research was needed on the scientific aspects of the subject; particularly on extra area effects. The inadequacy of the present state of scientific knowledge makes it too early to consider the development of international regulations for weather modification. He concluded by saying that legal aspects at this moment should be limited to promotion of exchange of information, consultation and joint and unrestricted participation between countries in good faith and suggested that this could best be done by a declaration of flexible principles rather than by a formal multi-lateral convention.

2. ELECTION OF THE CHAIRMAN

The meeting elected Mme Martin-Sané (France) as chairman.

* See Appendix A

3. APPROVAL OF THE AGENDA

3.1 The representative of Brazil reiterated the views of his Government that it does not recognize to UNEP any mandate to elaborate, by its own initiative and without specific authorization from the Governing Council, draft principles of conduct for the guidance of States in any field of environmental protection. It is not sufficient that the Governing Council has approved the convening of this meeting within the general work plan; this in his view required a specific decision of the Governing Council. The representative of Brazil expressed also his view that the present state of knowledge does not permit the elaboration of principles of conduct for weather modification. He therefore proposed that item No. 5 of the Provisional Agenda (see Appendix B) be amended to read "Draft General Guidelines for States concerning weather modification".

3.2 On the first point, the representative of UNEP informed the meeting that UNEP had already replied to the earlier communication of the Government of Brazil enumerating the decisions of the Governing Council which gives UNEP the mandate to elaborate such principles. Not wishing to take the time of the meeting he simply referred to the goal which was approved by the Governing Council to be achieved by the year 1982 which requires UNEP, inter alia, to reach agreement on principles which guide States in their inter-relations in respect of certain activities including weather modification.

3.3 The amendment to item 5 of the Provisional Agenda proposed by the representative of Brazil as mentioned above, was supported by several participants. It was, however, agreed to approve the agenda as reproduced in Appendix B on the understanding that the title of whatever provisions the meeting finally approved would be considered after the discussions of the draft principles, bearing in mind the Brazilian proposal.

4. REVIEW OF THE STATE OF THE ART OF WEATHER MODIFICATION

4.1 At the request of UNEP the WMO arranged for a paper describing the state of the art of weather modification as related to economic, legal and environmental aspects to be prepared and presented by Professor R. List and Dr. A. Gagin. The paper was introduced by Professor List who emphasized the validity of the WMO Statement and WMO Congress view on the inevitably slow scientific progress in understanding processes involved in weather modification.

4.2 He pointed out that - within economic bounds - fog can be dissipated and that precipitation (snow and rain) can be increased from single cumulus clouds and stratus decks, under certain orographic conditions or from some well defined winter continental cloud systems.

4.3 Precipitation enhancement from more complex cloud systems, hail suppression and moderation of tropical cyclones, however, cannot be carried out easily at the present time at a desirable confidence level. Much has been learned during the past decades but many years of continuing research efforts are required to appropriately cope with the more complex systems.

4.4 The importance of the science of weather modification cannot be over-estimated since beyond its direct benefits for many nations, it may also improve the prediction of precipitation, the understanding of basic climatic relationships and clarify the effects of inadvertent weather modification.

5. DRAFT PRINCIPLES OF CONDUCT FOR THE GUIDANCE OF STATES
CONCERNING WEATHER MODIFICATION

5.1 This item was introduced by Mr. R.S. Mikhail who described the background concerning the joint WMO/UNEP meetings and discussions of the legal aspects of weather modification. He went on to say that two extreme courses of action could be envisaged, namely, the development of binding international treaties on the one hand and doing nothing on the other. Neither of these approaches appeared appropriate and taking into account the present state of the art in weather modification, it seemed logical that a middle course be steered between these two extremes. The answer, in his view, was to set a limit at this time to promoting exchange of information, consultation and joint participation and this could be done by agreement between governments on a set of general principles for the guidance of States in the area of weather modification.

5.2 A general discussion on the agenda item ensued. It was felt by several delegations that in discussing this item, the meeting should take into account the various WMO Congress and Executive Committee resolutions and comments on the subject. The views expressed by the Eighth WMO Congress (May 1979) that there is no great urgency nor adequate scientific basis for codifying into firm legal regulations the general principles and guidelines considered by past and future WMO/UNEP meetings was recalled. One delegation however said that the present effort should be regarded as an extension of Principle No.21 as adopted by the United Nations Conference on the Human Environment (Stockholm, 1972) which invited States, inter alia, to ensure that activities within their jurisdiction or control do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction.

5.3 Differing views were expressed regarding the nature of the conclusions that might be arrived at by the meeting and the desirability of a possible change of title of this item was discussed. In this connexion, the content of the preamble to the proposed draft principles as contained in a document submitted to the meeting was questioned. It was pointed out that distinctions should be drawn between weather modification experiments and operations and also between advertent and inadvertent weather modification.

5.4 The meeting agreed that the term "weather modification", as used herein, means any action performed with the intention of producing artificial changes in the properties of the atmosphere for purposes such as increasing, decreasing or redistributing precipitation or cloud coverage, moderating severe storms and tropical cyclones, decreasing or suppressing hail or lightning or dissipating fog.

5.5 The representative of one country, remarking on the extensive number of weather modification projects taking place at present, put forward the view that the public perception of the impacts of weather modification was as important as the scientific uncertainties surrounding the subject of weather modification. Another delegate informed the meeting of the licensing regulations for weather modification operators which had recently been formulated in his country.

5.6 The meeting agreed that nothing in the provisions nor the related discussions is to be interpreted as prejudicing in any way meetings to be convened in the near future by UNEP concerning environmental assessment.

5.7 The meeting agreed that nothing in the provisions should be interpreted in any manner such as to prejudice or adversely affect the legitimate rights of peoples under foreign occupation, domination or oppression.

5.8 The meeting then gave careful consideration to the proposed principles. It reached a consensus that the word "principles" be replaced by "provisions" in the text of the "Draft Document Concerning Co-operation Between States Regarding Weather Modification" reproduced as Appendix C.

5.9 The view was expressed that, while the use of the phrases "significant effects" or "adverse effects" should not be used in the provisions given the state of the art, the phrase "likely to have an effect on" should not be interpreted to include effects which could reasonably be determined to be unappreciable.

5.10 The delegate of Brazil expressed the reservation of his Government concerning the Draft Document reproduced in Appendix C. He specifically stated that Brazil considers that no provision of the Document could be interpreted as having any element of restriction on the sovereign rights of States over their natural resources and their exploitation.

6. GUIDELINES FOR NATIONAL LEGISLATION CONCERNING WEATHER MODIFICATION

6.1 The meeting had before it a document entitled Draft Guidelines for National Legislation Concerning Weather Modification Experiments and Operations which was prepared by a UNEP consultant and revised in the light of comments made on it by the WMO/UNEP Informal Meeting on Legal Aspects of Weather Modification in April 1978. Another document entitled Comparative Studies of National Legislation in the Area of Weather Modification was also available. The meeting had no time to discuss these documents and suggested that this aspect of the subject be examined in more detail by another meeting of experts to be organized in the future jointly by WMO and UNEP. It was further recommended that in preparation for such a meeting the views of governments on this aspect of the subject should be sought at an appropriate time.

7. APPROVAL OF THE REPORT

7.1 The report of the meeting was approved with the understanding that it would be submitted to the Governing Council of UNEP and the Executive Committee of WMO for further action.

8. CLOSURE OF THE MEETING

8.1 Commending the Chairman on her sterling work, the meeting expressed its gratitude to her for her very able guidance. A vote of particular thanks for the efficient support was expressed to the WMO/UNEP Secretariat.

8.2 The Chairman closed the meeting at 4 p.m. on Friday, 21 September 1979.

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ON THE LEGAL ASPECTS OF WEATHER MODIFICATION
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LIST OF PARTICIPANTS

<u>Country</u>	<u>Delegates</u>
ANGOLA	- A.L. Sousa-Andrade
AUSTRALIA	- M. A. Landale
BENIN	- L. Sebo I. E. Yabi
BRAZIL	- G. Saboia
BULGARIA	- I. Kotzev
CANADA	- L. Clark
CHILE	- R. Plaza
EGYPT	- T. Dinana
FRANCE	- M. A. Martin-Sané (Mme) - Chairman - D. Avram A. Durget
GERMANY, Federal Republic of	- H. Graumann

<u>Country</u>	<u>Delegates</u>
GHANA	- J. B. Buah - B.K. Nketiah
GREECE	- E. Danellis
HONDURAS	- M. Aguilera-Aguilar G. Castro-Alvarado (Mrs)
ITALY	- L. Santomauro
KENYA	- A. Alusa F. Muslim
LIBYAN ARAB JAMAHIRIYA	- A. Sergiwa
MEXICO	- S. Aguilar Anguiano H. Diaz-Thomé
NIGER	- H.H. Cisse
OMAN	- A. L. Huneidi M. A. Juma
PERU	- A. Gálvez de Rivero
SAUDI ARABIA	- M. A. El-Dogaither M. N. Al-Ahmadi A. H. Kamas

<u>Country</u>	<u>Delegates</u>
SYRIAN ARAB REPUBLIC	- A. Hanna
UNION OF SOVIET SOCIALIST REPUBLICS	- I.I. Burtsev V.B. Sakharov
UNITED KINGDOM	- P. J. Széll
UNITED STATES OF AMERICA	- J.R. Arbogast E. Bolley J.S. Brookbank R.J. Davis G. Cartwright
URUGUAY	- J.J. Real A. Moerzinger
<u>WMO Secretariat</u>	- A.S. Zaitsev R.D. Bojkov R. List J. Warner A. Gagin P.R. Dupertuis
<u>UNEP Secretariat</u>	- R. Mikhail K.J. Macleod

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AGENDA

1. OPENING OF THE MEETING
 2. ELECTION OF THE CHAIRMAN
 3. APPROVAL OF THE AGENDA
 4. REVIEW OF THE STATE OF THE ART OF WEATHER MODIFICATION
 5. DRAFT PRINCIPLES OF CONDUCT FOR THE GUIDANCE OF STATES
CONCERNING WEATHER MODIFICATION
 6. GUIDELINES FOR NATIONAL LEGISLATION FOR WEATHER
MODIFICATION
 7. APPROVAL OF THE REPORT
 8. CLOSURE OF THE MEETING
-

DRAFT DOCUMENT CONCERNING CO-OPERATION
BETWEEN STATES IN WEATHER MODIFICATION*

prepared by

WMO/UNEP Meeting of Experts Designated by Governments on the
Legal Aspects of Weather Modification held in Geneva, 17-21 September 1979

- RECOGNIZING that the atmosphere is a natural resource of the Earth,
- NOTING the possible benefits which weather modification may hold for mankind and the environment,
- DESIRING that weather modification should serve the interests of international understanding and co-operation,
- DESIRING further that the provisions set out below should be interpreted in such a way as to promote the improvement of weather modification technology and its beneficial use,
- RECALLING the declaration of the United Nations Conference on the Human Environment approved at Stockholm on 16 June 1972, inter alia, Principles Nos. 1, 2, 20 and 21.
- RECALLING further the relevant decisions of the Seventh and Eighth World Meteorological Congresses (1975, 1979) and those of the Governing Council of UNEP,
- BEARING IN MIND Resolution 31/72 of the General Assembly of the United Nations - Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques (10 December 1976),
- RECOGNIZING that the application and further development of the following provisions has to be closely related to the existing state of scientific and technical knowledge in the field of weather modification,
- RECOMMENDS that States take into account the following:

* The term "weather modification", as used herein, means any action performed with the intention of producing artificial changes in the properties of the atmosphere for purposes such as increasing, decreasing or redistributing precipitation or cloud coverage, moderating severe storms and tropical cyclones, decreasing or suppressing hail or lightning or dissipating fog.

I

Weather modification should be dedicated to the benefit of mankind and the environment.

II

Exchange of information, notification, consultation and other forms of co-operation regarding weather modification should be carried out on the basis of good faith, in the spirit of good neighbourliness and in such a way as to avoid any unreasonable delay either in such forms or in carrying out weather modification activities.

III

States should gather and record technical and scientific information on weather modification activities. They should ensure that such information is made available to WMO which should continue to prepare and distribute appropriate reports on weather modification activities.

IV

States should, either directly or through WMO, and to the extent possible, give adequate and timely notification to all concerned States of prospective weather modification activities under their jurisdiction or control, which are likely to have an effect on areas within the national jurisdiction of such concerned States.

V

States should ensure that an assessment is made of the environmental consequences of prospective weather modification activities under their jurisdiction or control which are likely to have an effect on areas outside their national jurisdiction, and, either directly or through WMO, make the results of such an assessment available to all concerned States.

VI

Weather modification activities should be conducted in a manner designed to ensure that they do not cause damage to the environment of other States or of areas beyond the limits of national jurisdiction.

VII

A State under whose jurisdiction or control weather modification activities are planned or are taking place which are likely to have an effect on areas outside its national jurisdiction should, upon the request of a concerned State, either directly or through WMO, enter into timely consultation concerning such activities.

VIII

States should encourage and facilitate international co-operation in weather modification activities, including research, and, as may be appropriate, conclusion of bilateral, regional or multi-lateral agreements.

21 September 1979
