No. 18895

UNITED STATES OF AMERICA
and
INDIA

Agreement on co-operation in the conduct of the Monsoon Experiment (MONEX-79) (with appendices). Signed at New Delhi on 24 May 1979

Authentic texts: English and Hindi.

Registered by the United States of America on 30 May 1980.

ÉTATS-UNIS D'AMÉRIQUE
et
INDE

Accord de coopération relatif au Projet d'expérimentation (MONEX-79) concernant la mousson (avec appendices). Signé à New Delhi le 24 mai 1979

Textes authentiques: anglais et hindi.

Enregistré par les États-Unis d'Amérique le 30 mai 1980.

AGREEMENT[1] BETWEEN THE GOVERNMENT OF THE UNITED STATES OF AMERICA AND THE GOVERNMENT OF INDIA ON COOPERATION IN THE CONDUCT OF THE MONSOON EXPERIMENT (MONEX-79)

The Government of the United States of America and the Government of India,

Considering that the World Meteorological Organization (WMO) is planning a regional scientific research project, known as "The Monsoon Experiment", relating to the study of monsoon circulation within the framework of the Global Atmospheric Research Programme,

Considering further that the purpose of the Monsoon Experiment is to acquire reliable and comprehensive data for research and improved understanding of the southwest monsoon, particularly to ascertain the effect of the monsoon on the earth-atmosphere-ocean system, and

Being conscious of the fact that bilateral cooperation between the two countries in certain programmes of the Experiment shall contribute significantly to its success,

Have agreed as follows:

1. During their participation in the Monsoon Experiment (hereinafter referred to as the "Experiment" or "MONEX-79"), the Government of the United States of America and the Government of India shall cooperate with each other, in the scientific plans relating to the following programmes:

i. Aircraft programme;

ii. Boundary Layer programme;

iii. Satellite programme; and

iv. Aerosol monitoring programme.

Scientific plans for Programmes (ii), (iii) and (iv) above have been set out in detail in appendix III to this Agreement, which appendix forms an integral part hereof.

2. Cooperation between the United States of America and India in the programmes mentioned in paragraph 1 of this Agreement shall be directed toward recording meteorological observations, in and around India, for increasing understanding of the structure of the atmosphere during different phases of the southwest monsoon and analysing the data thus collected in order to improve the predictability of both monsoonal and global weather.

3. The two Governments shall implement cooperation referred to above in accordance with the provisions of this Agreement and in keeping with the principles of each other's sovereign equality, security and territorial integrity.

4. *Duration of the Experiment.* The observational phase of the Experiment shall extend over the period from approximately 1 May 1979 to 1 September 1979.

5. *U.S. MONEX-79 personnel in India.* Responsibility for coordinating the logistics and field operations of all United States personnel and equipment

[1] Came into force on 24 May 1979 by signature.

involved in MONEX-79 is vested in the United States MONEX Project. The U.S. MONEX Project is operated by the National Centre for Atmospheric Research (NCAR). NCAR is a private, non-profit organization that is managed by the University Corporation for Atmospheric Research under contract with the National Science Foundation (NSF), a civilian agency of the United States Government.

5.1. *Entry/ Re-entry.* 5.1.1. United States personnel, scientific and technical, participating in MONEX-79 will be granted permission to enter and work in India. The U.S. MONEX Project will submit a consolidated personnel list for this purpose.

5.1.2. During the conduct of the Experiment, it may be necessary for United States personnel—scientific and technical—temporarily to leave and re-enter India on work connected with the execution of the MONEX-79 programme. Therefore, multiple entry visas will be granted to specified personnel who may have to perform such duties. Such personnel will carry proper identification from the U.S. MONEX Project and will be exempted, for the duration of their stay in India in connection with the Experiment, from complying with Foreigners Regional Registration formalities if their stay does not exceed 90 days. Their movements will, however, be notified to the Director General of Meteorology, New Delhi, who, in turn, will notify the Ministry of Home Affairs about such movements.

5.2. *Security procedures.* Scientific and technical personnel of the U.S. MONEX Project working at the international airports at Bombay, Calcutta, Madras and New Delhi for MONEX-79 scientific programmes will be issued suitable identity cards and clearance by the Director of Civil Aviation Security in the Office of the Director General of Civil Aviation (DGCA).

6. *Utilization of U.S.-owned-India rupee funds for the United States scientific programme.* The Government of India approves the use of U.S.-owned-India rupee funds to the extent of Rs.15.3 million for expenditure in India in connection with the scientific programmes of the United States to be conducted during MONEX-79.

7. *Equipment, stores and other goods required in connection with MONEX-79.* 7.1. The U.S. MONEX Project will be permitted to bring into India equipment, materials, stores and other goods required in connection with the scientific programmes of MONEX-79. Customs Clearance Permits, as appropriate, will be provided by the Chief Controller of Imports and Exports, India, for the capital equipment and expendables to be brought into the country by the U.S. MONEX Project.

7.2. *Fiscal exemptions.* 7.2.1. *Customs duty.* 7.2.1.1. Capital equipment including that placed on board aircraft, scientific and maintenance equipment, stores and other goods required by the U.S. MONEX Project for use during the Experiment shall be permitted to be brought into India free of customs and other import duties subject to these being used purely for research purposes and subsequently re-exported after conclusion of the Experiment.

7.2.1.2. Items of a consumable nature and spare parts required by the U.S. MONEX Project in connection with MONEX-79 will be exempted from customs and other import duties as are actually shown to have been consumed or used up during the Experiment.

7.2.1.3. The U.S. MONEX Project shall comply with such customs formalities as are stipulated in appendix I to this Agreement.

7.2.2. *Excise duty.* 7.2.2.1. The U.S. MONEX Project will be exempted from payment of excise duty on aviation fuel, lubricants and such other excisable products which are drawn from non-duty paid stock of manufacturers or from bonded warehouses, subject to compliance with such formalities as are stipulated by the Government of India.

7.2.2.2. The U.S. MONEX Project shall comply with such excise formalities as are stipulated in appendix II to this Agreement.

7.3. *Sales Tax.* The U.S. MONEX Project shall pay sales tax, as necessary, on purchases made by it in India as referred to in paragraph 7.2.2 above as well as any other purchases that it may have to make during its observational programmes for MONEX-79.

8. *Matters relating to the conduct of the Experiment.* 8.1. *Aircraft Programme.* During the scientific programme for MONEX-79, the U.S. MONEX Project will be permitted to deploy three types of aircraft—the NASA convair 990, NCAR Lockheed/Electra, and NOAA Lockheed P-3 belonging to the National Aeronautics and Space Administration (NASA), the National Science Foundation (NSF) and the National Oceanic and Atmospheric Administration (NOAA), respectively—civilian government research agencies of the United States.

8.1.1. *General considerations.* 8.1.1.1. Permission will be accorded for entry into Indian international airports of aircraft referred to in paragraph 8.1.

8.1.1.2. The main bases of operation of these three aircraft will be Bombay, Calcutta and possibly New Delhi and Madras.

8.1.1.3. The United States aircraft operating as a part of the scientific programme over Indian territory will adhere to routes and flight plans as approved by the Director General of Civil Aviation.

8.1.1.4. Flight plans for each scientific research mission will be filed by the Commander of the aircraft at least two hours in advance.

8.1.2. *Ground operational facilities for United States research aircraft.* 8.1.2.1. The U.S. MONEX Project will be exempted from payment of landing and parking charges for about 125 landings for the 3 aforementioned aircraft at all the four international airports and designated alternate airports connected with their scientific missions during MONEX-79.

8.1.2.2. In addition, facilities with regard to navigational and other aids at the airport and en route will be made available free of charge.

8.1.2.3. The handling agents identified by the U.S. MONEX Project for handling its aircraft during MONEX-79 will be permitted to do so.

8.1.2.4. Apart from the normal facilities given to United States aircraft by Indian handling agents, parking facilities will be provided as necessary, subject to availability, by the International Airport Authority of India and the designated handling agent, at Bombay (Santacruz), Calcutta (Dum Dum), Madras (Meenambakkam), and New Delhi (Palam).

8.1.2.5. Storage space, open and covered, as required, shall be provided, subject to availability, in the above Indian airports or in their vicinity at fees or charges normally levied for such arrangements.

8.1.3. *Inspection of aircraft.* 8.1.3.1. Inspection of all three United States aircraft will be carried out by an Indian team authorized to do so, notwithstanding the right of Indian customs to inspect at the time of entry and departure of the aircraft.

8.1.3.2. The Indian Officer and other experts detailed by the Indian Government will be fully briefed by the American team on the various sensors and systems and their operation. All assistance will be provided to India for examination and familiarization of the sensors and systems on board the aircraft. These details will also be furnished in the form of a technical document to India for study on or about 1 May 1979.

8.1.4. *Indian personnel on board United States aircraft.* The CV 990 and Electra, on each of their scientific missions, shall carry three Indian scientists/representatives including a security officer. The P-3 aircraft on each of its scientific missions shall carry two Indian scientists/representatives including a security officer. However, on missions that require an ovenight stay at a secondary airport, the need for additional flight and ground crew will restrict the available space to only one representative from India. The Indian scientists/representatives will participate in the scientific work done on board the research aircraft.

8.2. *Other scientific programmes.* The U.S. MONEX Project is permitted to carry out the ground observational programmes as listed in paragraph 1 of this Agreement with their own equipment set up in India as listed in appendix III to this Agreement. A scientist coordinator and a group of Indian scientists will be associated with each programme in data acquisition and analysis work. A joint research programme for each research area will be formulated in consultation with the U.S. MONEX Project.

9. *Data exchange procedures.* 9.1. *Exchange during MONEX-79.* 9.1.1. *United States to India.* 9.1.1.1. Copies of magnetic tapes of all raw data recorded by United States aircraft during their missions pursuant to this Agreement and by equipment installed on the ground in India for other U.S. MONEX-79 programmes shall be made available to India. India will provide blank tapes and qualified support personnel and meet the expenses involved in making such copies. Copies of all such recorded tapes shall be made jointly by United States and Indian experts aboard the United States aircraft or at other tape copying facilities, the Tata Institute of Fundamental Research, Bombay, or Jadavpur University, Calcutta. The United States team will make available to India software programmes as required to reduce and process the raw data on the copied tapes. The raw data tapes shall be serially numbered as and when they are produced and a catalogue thereof filed on completion of the aircraft missions and other scientific programmes and before the United States team leaves India. All original raw data tapes will be returned to the United States team prior to its departure from India.

9.1.1.2. Copies of all films taken during the aerial missions pursuant to this Agreement shall be made available to India. Film to be used in such missions shall be serially numbered and initialled by an Indian security officer before commencement of the missions. When the Indian security officer on board the

aircraft so requests for reasons of Indian national security, all cameras used in such missions, including side and forward looking, shall be switched off. A catalogue of these films will be filed on completion of the subject missions and before the United States team leaves India.

9.1.1.3. Data available to the MONEX Level II-a/Quick Look Data Centre shall be given to India by the Chief Scientist of the U.S. MONEX Project at the site of the Technical MONEX Operational Planning Centres at Bombay and Calcutta. So far as United States aircraft programmes are concerned, these will include copies of dropwindsonde and flight level data processed either on board the United States aircraft or after landing.

9.1.1.4. Copies of all other raw and processed data recorded during the other scientific programmes of the U.S. MONEX Project and by equipment installed on the ground in India shall be given to India.

9.1.2. *India to United States.* 9.1.2.1. One complete set of all processed meteorological data including special upper air soundings from land stations and Indian aircraft and all meteorological data recorded by Indian ships shall be given to the United States. These data will be exchanged at the same time and place as the exchange specified in paragraph 9.1.1.3.

9.2. *Exchange of processed data.* 9.2.1. One complete set of all processed data taken during United States-India scientific programmes of MONEX-79 will be made available to India.

9.2.2. All exchanges of processed data taken during MONEX-79 shall be carried out according to the internationally agreed upon procedures set out in the International Data Management Plan for Summer MONEX. The Plan calls for the following:

9.2.2.1. Complete copies of Level II-a, Quick Look Data and final Level II-b data sets will be given to India free of charge;

9.2.2.2. All near real time or operational data will go to the International MONEX Level II-a Data Centre located at the Meteorological Office, New Delhi; these data will be available to specified research workers during the Field Phase of the Experiment;

9.2.2.3. International exchange of data will be through the World Data Centres A and B located in the United States and USSR respectively.

10. *Joint research efforts.* In accordance with the aims of the WMO and participating nations in MONEX the United States and India are encouraged to set up specific cooperative research programmes for the analysis of MONEX-79 data. These efforts will be coordinated by the National Science Foundation for the United States and the Ministry of Tourism and Civil Aviation (Meteorological Department) and the Department of Science and Technology for India.

11. *Duration of the Agreement.* The Agreement shall come into force upon signature of both the Parties and shall remain in force until both Parties mutually determine that MONEX-79 has been completed and in all events will be operative until 15 September 1979 in so far as the observational phase is concerned. In so far as the data exchange is concerned, the Agreement shall remain in force until such time as the exchanges are fully completed to the satisfaction of the two Parties.

12. *Provision for amendments to the Agreement.* This Agreement may be amended by mutual agreement of the two Parties.

13. *Settlement of differences.* Any differences concerning the interpretation or application of the provisions of this Agreement shall be settled through consultations between the Parties.

14. *Settlement of claims.* If any injury is caused to any Indian citizen or other person, or any damage is caused to the property of the Indian Government or any Indian citizen or other person, by United States Government aircraft or personnel participating in the Experiment in connection with the implementation of the Experiment as provided for in this Agreement, the two Governments shall enter into consultations in order to compensate adequately any meritorious claims of the affected parties. Similarly, the two Governments shall enter into consultations in order to compensate adequately any meritorious claims for injury to United States citizens or damage to United States property arising from Indian participation in activities under this Agreement.

DONE at New Delhi, India, on 24 May 1979 in two originals, in the English and Hindi languages, both texts being equally authentic, provided that in the event of any discrepancy, the English text shall prevail.

For the Government
of the United States of America:
[*Signed*]
ROBERT F. GOHEEN
Ambassador

For the Government
of India:
[*Signed*]
S. M. L. BHATNAGAR
Chairman
MONEX Management Committee
Secretary,
Ministry of Tourism and Civil Aviation

APPENDIX I

(reference paragraph 7.2.1.3)

UNITED STATES-INDIA AGREEMENT FOR MONEX-79: PROCEDURE FOR CUSTOMS CLEARANCE

A. *Importation into India*

1. The importers or their authorized agent shall file with the Customs House at the port or airport of entry a bill of entry in the usual prescribed form and subscribe on copies of the same in bold red letters "GOODS FOR MONSOON EXPERIMENT—MONEX-79".

2. The bill of entry shall also show the detailed particulars of such goods such as description, markings, number and value.

3. At the same time as above, such undertaking as acceptable to the Collector of Customs of the port or airport of importation will be furnished to the effect that re-export of the goods (excluding items of a consumable nature and spare parts which will be consumed or used up during the Experiment) will be made immediately after experiments are over and satisfactory evidence as acceptable to the Collector of Customs provided that the goods have either been re-exported or consumed or used up during the experiments, and failing that to pay the duty leviable thereon.

4. Clearance from customs would be given after usual examination/inspection by Customs.

B. *Re-export from India*

5. The importer or its authorized agent will also file a shipping bill in the usual manner for re-export.

6. The shipping bill shall clearly mention the particulars of the bill of entry under which the goods being re-exported were originally imported.

7. Re-export of the goods should preferably take place through the port or airport of importation.

C. *General instructions*

8. The importers shall adhere to any procedure laid down by the Collector of Customs of the port or airport of importation for proper listing and identification to ensure re-export of the goods imported in connection with the Experiment.

APPENDIX II

(reference paragraph 7.2.2.2)

UNITED STATES-INDIA AGREEMENT FOR MONEX-79: PROCEDURAL FORMALITIES TO BE FOLLOWED TO QUALIFY FOR THE EXEMPTION FROM PAYMENT OF THE EXCISE DUTY ON AVIATION FUEL, LUBRICANTS AND SUCH OTHER EXCISABLE PRODUCTS WHICH WILL BE DRAWN FROM NON-DUTY PAID STOCKS OF MANUFACTURERS OR FROM BONDED WAREHOUSES

1. The Liaison Officer in India of the U.S. MONEX Project must identify and report to the Under-Secretary (CX) 3, Ministry of Finance (Department of Revenue), New Delhi, the excisable products in respect of which they propose to claim the exemption.

2. The Liaison Officer in India of the U.S. MONEX Project may detail the locations of factories or bonded warehouses from where it proposes to draw supplies of non-duty paid stock of products identified for exemption as per Sr. No. 1 and to be used for MONEX-79 operations. The names of the Jurisdictional Collectorates/Divisions of Central Excise wherein the above factories or warehouses are situated may be reported along with the locations of factories or warehouses to the Under-Secretary (CX) 3, Ministry of Finance (Department of Revenue), North Block, New Delhi.

3. The maximum requirements of the goods listed as per Sr. No. 1 with respect to quantity and value and the period during which there will be off-take from the above locations may also be reported to the Under-Secretary (CX) 3, Ministry of Finance (Department of Revenue).

4. The current rate of excise duties chargeable on such goods may also be indicated along with the tariff items (if possible), by the Liaison Officer to the Under-Secretary (CX) 3 of Ministry of Finance.

5. The Liaison Officer in India of the U.S. MONEX Project will be the competent authority or nominate the competent authority to certify that the excisable goods drawn for use for MONEX-79 operations have in fact been so used.

6. The above-named authority may also give the necessary authorisation to the manufacturer to enable him to produce it to the competent excise authority to satisfy him that the drawal of the excisable goods for use in the MONEX-79 operations is itself for such purpose.

7. To facilitate easy operation of the procedure, the list of excisable goods shall be limited to bulk items involving substantial amount of revenue to be foregone and will not include sundry items.

APPENDIX III

(reference paragraph 8.2)

UNITED STATES-INDIA AGREEMENT FOR MONEX-79: UNITED STATES MONEX-79 PROGRAMMES FOR INDIA IN ADDITION TO THE AIRCRAFT PROGRAMME

1. *Introduction*

There are four main programmes referred to the Indian National MONEX Project for inclusion in the bilateral Agreement between the United States and India concerning MONEX-79. This document briefly describes the scientific programmes in India, other than the aircraft programme, sponsored by the United States Government as part of its support to MONEX-79.

Each programme will be described using the following format:

— United States agency sponsor;
— Chief scientific contact in United States (in all cases contact with this person must be made through the U.S. MONEX Project Office);
— Scientific objectives of the Project;
— Observations to be made;
— Method of data dissemination;
— Location of equipment and time period for operation;
— Equipment specifications;
— United States personnel needed.

2. *The United States MONEX-79 programmes in India*

2.1. *Boundary layer Programme*

a) Sponsor. National Science Foundation, Department of Energy.

b) Chief Scientific Contact. Dr. S. Sethuraman, Brookhaven National Laboratory, Long Island, New York.

c) Scientific objectives. To measure characteristics of surface layer atmospheric turbulence in order to

— Determine exchange coefficients for use in numerical models of the planetary boundary layer;
— Determine surface layer turbulent flux profiles for use in numerical models;
— Determine physical characteristics of surface layer turbulence in order to improve numerical models and parameterization of surface layer fluxes in terms of large scale meteorological variables.

d) Observations to be made

— Water vapour flux;
— Sensible heat flux;
— Momentum flux;
— Mean wind speed;
— Mean wind direction;
— Turbulence;

— Air Temperature;

— Mean relative humidity.

These observations will be made from a 20 meter tower located on beach. A possibility exists that similar measurements will be made from a special moored buoy located offshore of the beach (to include surface wave height measurements).

e) Method of data dissemination. Raw data will be reduced and processed in the United States then transferred to India and the World Data Centres A and B in accordance with the internationally agreed upon procedures in the International Data Management Plan for Summer MONEX.

f) Location of equipment and time period of operation. The exact site of operations will be the result of collaboration between Dr. Sethuraman and Dr. Roddam Narasimha of the Indian Institute of Science, Bangalore. Suggested site is Digha.

Observations will be made from 1 July to 31 July, 1979.

g) Equipment specifications. 20 m tower and moored spar buoy fitted with fast response wind measuring devices (3 dimensional), temperature probes and humidity instrument. Possible use of hot film anemometer. The moored buoy will have accelerometers to monitor buoy motion.

h) United States personnel needed. Approximately 4 to 6.

2.2 *Aerosol monitoring programme*

a) Sponsor. National Science Foundation, National Oceanic and Atmospheric Administration, University of Miami.

b) Chief Scientific Contact. Dr. Joseph Prospero, School of Marine and Atmospheric Science, University of Miami, Florida.

c) Scientific objectives. To determine

— The transport characteristics of dust outbreaks over the Arabian Sea and Bay of Bengal during the monsoon in order to relate these outbreaks to meteorological factors.

— The radiative characteristics associated with these dust outbreaks and their effects on the dynamics of the monsoon circulation.

d) Observations to be made

— Aerosol sampling;

— Atmospheric turbidity measurements.

e) Method of data dissemination. Raw data will be reduced in the United States then transferred to India and the World Data Centres A and B in accordance with the internationally agreed upon procedures in the International Data Management Plan for Summer MONEX.

f) Location of equipment and time period of operation. Equipment will be located on all Indian ships participating in MONEX-79, and observations will be made for the duration of the Experiment.

g) Equipment specifications

1. Aerosol sampler:
   — High volume air pump (1 m^3/min) with an 8″×10″ Whatman No. 41 filter attached;
   — Dimensions: 90 cm × 40 cm × 40 cm with filter head about 1.8 m above pump module;
   — Weight: 25 kg;

— Power: 110 or 220 VAC, 50-60 Hz, 400 VA;
— Cost: unknown at present;

2. Sun photometer (for turbidity measurements):
— Similar to WMO standard Volz. photometer;
— Peak reading indicator;
— Three filters (band pass 10 to 40 /um): 300 /um, 500 /um, 800 /um;
— Digital clock;
— Power: unknown at present;
— Dimensions and weight: unknown except equipment designed to be hand held.

h) United States personnel needed. Three to four (at present no United States personnel are needed to make observations on Indian ships).

2.3 *Geostationary satellite imagery programme*

a) Sponsor. National Science Foundation, United States MONEX Project.

b) Chief Scientific Contact. Dr. J. P. Kuettner, Director, United States MONEX Project.

c) Scientific objectives. The use of high quality geostationary satellite (visible and infra-red) imagery is very important to the various operational programmes in MONEX-79. This imagery will be used to support operational scientific decisions. The major programmes this Project will support will be:
— Aircraft programme;
— Ship operations;
— Radiometersonde intensive observation programme.

d) Observations to be made. High quality visible and infra-red cloud imagery at least four times a day in the field phase. Observations will be made available, one to two years after the field phase. The equipment also can receive TIROS-N, METEOR and GMS imagery.

e) Method of data dissemination. During the field phase, copies of the photographs will be made available to the International Level II, a Data Management Centre in New Delhi. These copies will be microfilmed and become part of the Quick-look Data Set which will be made available to India and the World Data Centres A and B according to internationally agreed upon procedures set out in the International Data Management Plan for Summer MONEX.

f) Location of the equipment. Bombay near the Santacruz Airport (exact spot not yet decided).

g) Equipment specifications
— Manufacturer: EMR Inc. (USA);
— Receiving frequency: S-Band: 1697. 5 MHz; VHF: 137.50 MHz; 137.62 MHz; 137.15 MHz; 137.30 MHz; 136.00 MHz; 139.50 MHz;
— Band width: approx., 10 KHz;
— Dimensions: antenna—2 meter diameter, fixed parabolic Receiver; processor and display—2 m (high)×.5 m (wide)×.5 m (deep); may need air conditioned enclosure for proper environment;
— Power: 220 VAC, 50 Hz, 5 amps;
— Weight: approx., 250 kg not including enclosure.

h) United States personnel needed. Two to three for maintenance and coordination of shift work personnel (possibly international in character).