

No. 14981

**UNITED STATES OF AMERICA
and
CHILE**

Memorandum of understanding between the University of Chile and the United States National Aeronautics and Space Administration (NASA). Signed at Santiago on 24 July 1975 and at Washington on 8 September 1975

Authentic text: English.

Registered by the United States of America on 19 August 1976.

**ÉTATS-UNIS D'AMÉRIQUE
et
CHILI**

Mémorandum d'accord entre l'Université du Chili et l'Administration nationale de l'aéronautique et de l'espace des États-Unis (NASA). Signé à Santiago le 24 juillet 1975 et à Washington le 8 septembre 1975

Texte authentique : anglais.

Enregistré par les États-Unis d'Amérique le 19 août 1976.

MEMORANDUM OF UNDERSTANDING¹ BETWEEN THE UNIVERSITY OF CHILE* AND THE UNITED STATES NATIONAL AERONAUTICS AND SPACE ADMINISTRATION (NASA)

1. The purposes of this agreement are to set forth the responsibilities of the parties and the procedures for providing for (a) direct access, by a ground station to be built and operated in Chile by the University of Chile to NASA LANDSAT-1 and LANDSAT-2 satellite data and to the data from any future LANDSAT experimental satellites which NASA may launch, and (b) availability to NASA of data acquired by the station pursuant to (a) above, subject to the provisions which follow.

2. For its part, the University of Chile will use its best efforts to:

- (a) develop and operate a ground station facility near Santiago for acquisition and processing of LANDSAT data as well as other non-space data of interest to the University of Chile entirely at its own cost, including the cost of the necessary communication links with the NASA LANDSAT Operations Control Center/NASA Data Processing Facility (OCC/NDPF) at the Goddard Space Flight Center;
- (b) provide during Phase B, as described below, processed data (imagery and digital products) to LANDSAT Principal Investigators duly selected by NASA whose test sites are in range of the Chilean data acquisition station for the period of coverage promised to them and under the same conditions as NASA provides data to Principal Investigators. Should another country in the region operate LANDSAT facilities, the University of Chile's obligation to provide data to Principal Investigators in that country will terminate as soon as these facilities are capable of providing this service. The University of Chile will continue to serve Principal Investigators in countries within range of the Santiago station which do not operate LANDSAT facilities unless and until alternative arrangements are concluded.
- (c) provide, to the best of its ability, any support requested by NASA in a spacecraft emergency condition, such as the provision of data indicated in paragraph 2(e) below should the on-board tape recorders fail;
- (d) provide quarterly reports in English to NASA on the progress and results of the University of Chile's experimental program with respect especially to the ability to apply data and analyses obtained to real-time decision-making, and the principal applications made;
- (e) make available to NASA, on a cost-free basis and in the NASA-preferred format (negative imagery format with identifying annotation) such copies of the LANDSAT data it acquires and processes as NASA may request in reasonable quantities (except in emergency conditions as noted in paragraph 2(c) above). These data provided to NASA by the University of Chile will be made available to the public from US sources on precisely the same terms as data acquired directly by NASA. These provisions apply as well to selected duplicate computer compatible tapes. Public requests for data from the area covered by the Santiago station will be referred as appropriate to the University of Chile or to other

* The University of Chile is a part of the Ministry of Education.

¹ Came into force on 8 September 1975 by signature, in accordance with paragraph 7.

regional facilities which may be established in the area. Coordination among such facilities would be highly desirable;

- (f) include as output data from the Santiago station computer compatible tapes and 70mm or 9 inch roll film.

3. For its part, NASA will use its best efforts to:

- (a) program LANDSAT-1, LANDSAT-2 and any subsequent experimental LANDSAT-type satellite to acquire data of areas accessible for direct read-out by the Chilean station. The frequency of such programming will be subject to mutual agreement by the Project Managers (see below). It will be limited to test purposes in Phase A and expanded as agreed in Phase B;
- (b) provide to the University of Chile orbital elements for calculating the antenna pointing angles necessary to acquire the LANDSAT spacecraft transmitted signal and for use in processing the data acquired;
- (c) process, on a time-available basis and as may be agreed by the Project Managers, a limited number of data tapes acquired by the Chilean station in Phase A for initial evaluation and calibration of the station's performance;
- (d) provide, during Phase A, LANDSAT data to any NASA-selected Chilean Principal Investigators to the extent of the time-coverage promised for them;
- (e) make available, for comparison purposes, a limited number of selected NASA data tapes covering portions of the area accessible to the Santiago station;
- (f) keep the University of Chile informed of other prospective LANDSAT ground station facilities in the area so that regional coordination can be effected.

4. The course of the project will be divided into two phases. Phase A is for the test and checkout of the Santiago station. Phase B is for the following period of routine data acquisition at the Santiago station and processing either at Santiago or at similar facilities established in the region. Phase A will begin when the Project Managers agree on the readiness of the technical and operational interfaces required to carry out the project and on a schedule for accomplishing Phases A and B. Phase A will be concluded and Phase B begun by mutual agreement of the Project Managers.

5. To implement the agreement, the University of Chile and NASA will each designate Project Managers to be responsible for coordinating the agreed functions and responsibilities of each side with the other. The Project Managers will be co-chairmen of a Joint Working Group which will be the principal instrument for assuring the execution of the project and for keeping both sides continuously informed of the project status. The Joint Working Group may establish such committees as required to carry out the project.

6. The following additional understandings are confirmed:

(a) Until such time as the University of Chile ground station facility becomes operational, the University of Chile will use the existing NASA Santiago tracking and data acquisition (STDN) facility for the acquisition of LANDSAT-1 and 2 satellite data. The University of Chile will, at no cost to NASA, provide the added equipment necessary to receive and record these data. This use of the Santiago STDN facility will be on a non-interference basis with on-going NASA STDN activity. Any modifications to the existing facility necessitated by this augmentation will receive prior approval of the NASA Representative in Chile. Any additional costs resulting from the operation of the STDN facility for the acquisition of LANDSAT data will be borne by the University of Chile. This use of the NASA STDN facility does not impose any obligation on NASA to continue operation of the facility beyond NASA's own program requirements.

(b) The University of Chile will resolve any radio frequency difficulties in the region to the satisfaction of the parties concerned so this cooperation can proceed without difficulty.

(c) The responsibility for spacecraft control, health and status will remain with NASA throughout the program.

(d) This agreement assures the University of Chile access to LANDSAT-1 and/or LANDSAT-2 without charge for a six month period from the date the University of Chile begins to acquire LANDSAT data. It is understood, however, that NASA may thereafter, at its option, introduce a cost-sharing arrangement, such as a users' fee, which may be generally established for participating ground stations.

(e) It is understood at this stage that NASA cannot make a firm commitment regarding the launching of future LANDSAT-type satellites.

(f) Decisions taken by the International Telecommunications Union require that radio frequencies for future operational LANDSAT-type satellites will differ from those currently used for experimental satellites.

(g) It is understood that the University of Chile and the other Chilean government agencies participating in the program will pursue a LANDSAT open-data policy comparable to that of NASA and other US agencies participating in the program, particularly with respect to the public availability of data. The University of Chile will thus ensure unrestricted public availability of the earth resources satellite data at a fair and reasonable charge.

(h) Catalog listings of LANDSAT data processed by the Santiago station as well as ground station tape recorder logs will be provided to NASA on a monthly basis.

(i) Training and exchange of technical personnel will take place as mutually agreed.

(j) The University of Chile and NASA will freely share and exchange technical information as mutually agreed and consistent with the export regulations of the two countries.

(k) It is understood that this project is experimental in character and subject to change in accordance with changes in technical requirements and opportunities.

(l) The University of Chile and NASA may each release general information to the public regarding the conduct of their own portion of the project as desired and, insofar as participation of the other agency is concerned, after suitable coordination.

(m) The University of Chile and NASA will assure that the project is appropriately recorded in still and motion picture photography and that the photography is made available to the other agency upon request for public information purposes.

(n) It is understood that the ability of the University of Chile and NASA to carry out the responsibilities of this agreement is subject to the availability of appropriated funds.

7. This Memorandum of Understanding shall enter into force upon signature by the University of Chile and NASA and shall continue in force for four years, subject to extension as may be agreed by the University of Chile and NASA.

AGUSTÍN RODRÍGUEZ PULGAR
Rector

For the University of Chile

[Signed]
Date: July 24, 1975

JAMES C. FLETCHER

For the National Aeronautics
and Space Administration

Date: Sept. 8, 1975
