

No. 27143

**UNITED STATES OF AMERICA
and
EUROPEAN SPACE AGENCY**

Memorandum of Understanding concerning the use of European Space Agency's EARTHNET System to receive and process National Aeronautics and Space Administration's Landsat data. Signed at Paris on 7 October 1978

Exchange of letters constituting an agreement extending the above-mentioned Memorandum of Understanding. Washington and Paris, 17 June 1982

Authentic text: English.

Registered by the United States of America on 15 March 1990.

**ÉTATS-UNIS D'AMÉRIQUE
et
AGENCE SPATIALE EUROPÉENNE**

Mémorandum d'accord relatif à l'emploi du Système EARTHNET de l'Agence spatiale européenne pour la réception et le traitement des données Landsat de la National Aeronautics and Space Administration. Signé à Paris le 7 octobre 1978

Échange de lettres constituant un accord prorogeant le Mémorandum d'accord susmentionné. Washington et Paris, 17 juin 1982

Texte authentique : anglais.

Enregistré par les États-Unis d'Amérique le 15 mars 1990.

MEMORANDUM¹ OF UNDERSTANDING BETWEEN THE EUROPEAN SPACE AGENCY AND THE UNITED STATES NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

The United States National Aeronautics and Space Administration (NASA) and the European Space Research Organisation, established by the Convention opened for signature in Paris on 14 June 1962² and conducting its activities since 31 May 1975 under the name of the European Space Agency (ESA), recognizing:

- that NASA conducts an experimental Landsat earth resources satellite program and that NASA, under certain conditions, provides for direct reception of data from these satellites by stations operated outside the United States, and
- that ESA has established the EARTHNET System for the reception, pre-processing, archiving and dissemination of data from earth resources observation satellites, and affirms that it has concluded appropriate agreements with Telespazio of Italy and the Swedish Board for Space Activities, under authority given to it by its member States including Italy and Sweden, for the operation of Landsat ground stations in Fucino (Italy) and Kiruna (Sweden),

have decided to enter into this Memorandum of Understanding which, subject to the following terms and conditions, provides for (a) direct access to NASA's currently operating and future experimental Landsat satellites by the EARTHNET System and (b) making available to NASA and others Landsat data acquired by the ground stations of this System.

1. For its part, ESA will use its best efforts to:

- (a) set up and operate, under its authority, EARTHNET System, including the above-mentioned ground stations at Fucino (Italy) and Kiruna (Sweden), for the reception, pre-processing, archiving and dissemination of in particular Landsat data, 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;

¹ Came into force on 7 October 1978 by signature, with retroactive effect from 9 May 1978, in accordance with section 10.

² United Nations, *Treaty Series*, vol. 528, p. 33.

- (b) produce computer compatible tapes and image products;
 - (c) ensure, in conformance with the US Landsat data dissemination practices, unrestricted public availability of all Landsat data of areas within the EARTHNET coverage zone at a fair and reasonable charge, and in a non-discriminatory manner;
 - (d) ensure the provision of pre-processed Landsat data (imagery and digital products) to NASA-selected Principal Investigators whose test sites are in the EARTHNET coverage zone, for the period of coverage envisaged and under the same conditions as NASA applies to them;
 - (e) provide to NASA, on terms to be agreed mutually, reasonable support in a spacecraft emergency condition, such as the provision of duplicate station tapes or high density digital tapes should the Landsat on-board tape recorders fail;
 - (f) provide to NASA and the US EROS Data Center on a monthly, cost-free basis catalogue listings of Landsat data acquired by the EARTHNET System. Catalogue listings of all Landsat stations will also be made publicly available;
 - (g) make available to NASA on request, for US Agencies' experimental purposes, on a cost-free basis and in reasonable quantities, copies of Landsat data acquired and pre-processed by the EARTHNET System.
2. For its part, NASA will use its best efforts to:
- (a) program Landsats-2 and -3 and any subsequent experimental NASA Landsat type satellites to acquire and transmit data of areas accessible for direct read-out at the EARTHNET ground stations with a view to ensuring regular coverage of the EARTHNET coverage zone commensurate with the Landsat repeat cycle. Details of this programming will be subject to mutual agreement by the designated technical representatives of the parties;
 - (b) provide the EARTHNET ground stations with orbital elements for calculating the antenna pointing angles necessary to acquire the Landsat transmitted signals, and for processing the data acquired;
 - (c) process, on a time available basis, as agreed by the designated technical representatives, a limited number of data tapes for initial evaluation and calibration of station performance;

- (d) make available to ESA for comparison purposes, a limited number of NASA data tapes covering selected portions (as defined by ESA) of the EARTHNET coverage zone.

3. ESA and NASA will each designate technical representatives to be responsible for coordinating the agreed functions and responsibilities of each party with the other. The technical representatives, and their deputies, and advisors as mutually agreed, will participate in meetings of the Landsat Ground Station Operations Working Group. This Working Group, established by NASA, meets every six months and serves as a forum for exchange of technical information among station operators. Supplemental meetings between ESA and NASA will be held as mutually agreed.

4. The following additional understandings are confirmed:

- (a) ESA will, in cooperation with the responsible national and international authorities, take appropriate measures so that any radio frequency problem occurring in relation to Landsat data reception within the EARTHNET coverage zone is resolved to the satisfaction of the parties to this Memorandum of Understanding. In this context, it is noted that provisions of the International Telecommunications Union's Radio Regulations require that radio frequencies for future operational Landsat-type satellites will differ from those currently used for experimental satellites.
- (b) It is understood that the NASA Landsat Program is experimental in character and, therefore, subject to change in accordance with modifications in technical requirements and opportunities, and that at the date of this Memorandum of Understanding, NASA cannot make a firm commitment regarding the launching of future Landsat-type satellites. NASA, however, undertakes to keep ESA informed in good time of any modifications to the satellite design or to its plans for the Landsat series of satellites which may affect the implementation of this Memorandum of Understanding.
- (c) NASA and ESA will exchange, upon request, such technical information including software programs as may be mutually agreed to be necessary for the implementation of this Memorandum of Understanding and is consistent with the applicable export regulations.
- (d) NASA and ESA may each release public information regarding their own activities under this Memorandum of Understanding and, insofar as the participation of the other party is concerned, after suitable consultation.