ENGLISH ONLY

COMMITTEE ON THE PEACEFUL USES OF OUTER SPACE Legal Subcommittee Forty-fourth session Vienna, 4-15 April 2005

PROCEEDINGS OF THE IISL/ECSL SYMPOSIUM

"RECENT DEVELOPMENTS IN REMOTE SENSING AND THE DESIRABILITY OF REVIEWING THE 1986 UNITED NATIONS PRINCIPLES RELATING TO REMOTE SENSING OF THE EARTH FROM OUTER SPACE"

held on the occasion of the forty-fourth session of the Legal Subcommittee of the United Nations Committee on the Peaceful Uses of Outer Space

- 1. The Legal Subcommittee of the Committee on the Peaceful Uses of Outer Space agreed at its forty-third session that the International Institute of Space Law (IISL) and the European Centre for Space Law (ECSL) should be invited to hold a symposium on space law at the forty-fourth session of the Subcommittee in 2005 (A/AC.105/826, para. 11).
- 2. The present document is a compilation of the presentations delivered during the Symposium on 4 April 2005.

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IISL/ECSL SPACE LAW SYMPOSIUM 2005

RECENT DEVELOPMENTS IN REMOTE SENSING AND THE DESIRABILITY OF REVIEWING THE 1986 UNITED NATIONS PRINCIPLES RELATING TO REMOTE SENSING OF THE EARTH FROM OUTER SPACE

On the occasion of the 44th Session of the Legal Subcommittee of the United Nations Committee on the Peaceful Uses of Outer Space

Monday, 4 April 2005

Chairman: Amb. Peter Jankowitsch

Chair of the Supervisory Board of the Austrian Space Agency, Past Chair of the United Nations Committee on the Peaceful Uses of Outer Space, Austria

Rapporteur: Mr. Sergiy Negoda

Legal Officer, United Nations Office for Outer Space Affairs

Coordinator: Ms. Tanja Masson-Zwaan

Outer Space

Secretary, International Institute of Space Law (IISL)

PROGRAMME

16h00 Words of Welcome Nandasiri Jasentuliyana, President, IISL 16h05 The International Legal Framework of Remote Sensing in the Year 2005: Changed Conditions and Changed Needs? Dr. Mahulena Hofmann, Max Planck Institute, Germany 16h25 The 1986 United Nations Principles and current state practice in North America Prof. Joanne Gabrynowicz, National Remote Sensing and Space Law Center, United States of America 16h45 The 1986 United Nations Principles: On the Necessity of a Revisit Dr. Rajeev Lochan, Indian Space Research Organization (ISRO), India 17h05 The 1986 United Nations Principles and current state practice in Europe Mr. Marco Ferrazzani, European Space Agency 17h25 Discussion 17h50 **Concluding Remarks** Prof. Sergio Marchisio, Chairman, Legal Subcommittee of the Committee on the Peaceful Uses of

The International Legal Framework of Remote Sensing in the Year 2005: Changed Conditions and Changed Needs?

Dr. Mahulena Hofmann*

Max Planck Institute Germany

Mr. Chairman, ladies and gentlemen,

The subject of my contribution today is "The International Legal Framework of Remote Sensing in the Year 2005: Changed Conditions and Changed Needs". At the end of this title, a question mark should be set. Why? I think we shall be able to agree on the fact that conditions have clearly changed since the elaboration of the 1986 principles. It will be much more difficult to assess, however, whether also the needs of the actors involved in this activity have changed: Only in some cases there exist express formulations of the future policies on remote sensing as e.g. the proposals which some States presented to the UN Legal Subcommittee; in most of the cases, the corresponding assessment can be derived only from the factual practice, i.e. how the States concerned are performing their activities.

Because of the tight time schedule and because of the subjects of the following contributions I shall limit my presentation to several general remarks in which I shall try to offer to you the main characteristics of the substantive differences between the legal and factual situation at the time of the elaboration of the 1986 remote sensing principles and today.

I. Changed Conditions

1. Speaking on the changed conditions of remote sensing activities, the first point has to reflect the change in the general **political situation**. It is generally known that the UN Principles are a "child" of the Cold War period and the east-west antagonism. It is not necessary to remind you of the fact that the fear of the then socialist States and numerous developing countries of an unlimited sensing of their territories contributed to the proposals of an international regime at the end of the 1970ies: This regime should have been based mainly on the principle of state sovereignty and should have been generally restrictive in its nature. In contrast thereto, other States were interested in the unlimited observation of the Earth and supported an open system of remote sensing the core of which should have been the non-discriminatory-access rule. As all of you know, the result was a non-binding compromise which sought to achieve a balance between the two political approaches but did not satisfy the objectives of any of them.

Today, the actors of remote sensing base their needs on substantially different conditions: The former east-west antagonism has been replaced by the north-south divide which influences the developments of the international space law policies. The consequence of this changed situation seems to consist of, in particular, a reduced interest in the restrictive approach to remote sensing and an increased reliance on policies of coordination and cooperation.

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2. My second point concerns the increased **number** of **States** which constitute remote sensing actors.

In the 1980ies, there were only a few States which had their own remote sensing programmes – the main actors were, without any doubt, the USA and the USSR.

Nowadays, however, a new generation of space faring nations has appeared: Not only the number of the nations placing human beings into outer space has increased – as you know China became, in the meantime, the third nation to achieve this goal – but also in the area of remote sensing, the number of States including developing countries which have their own remote sensing programmes, has grown considerably. Let me mention several examples as they figure in the UN Register of Space Objects established by the UN Secretary - General: Algeria is in possession of her own Earth observation and disaster monitoring satellite, ALSAT-1¹; Argentine has registered µSAT-1² and SAC-C³; Brazil has launched – together with China – an Earth Resources Satellite⁴; China operates its ZY-2 Remote Sensing Satellite⁵; Chile has registered an ozone layer monitoring satellite FASAT Bravo⁶; India launched the Resourcesat -1ⁿ. Pakistan has constructed the BADR-B³ and also Nigeria is in possession of her own remote sensing satellite, the NigeriaSat1.

The consequences thereof is that the data of remote sensing do not any more represent extremely rare products available only to a very limited number of actors. This development has transformed some of the former customers into the providers of the Earth's data and influenced the conditions on the remote sensing products market.

3. Speaking on the changed spectrum of remote sensing actors, the increase of the importance of the **commercial** entities involved in remote sensing and the development of a **hybrid public-private** environment has to be mentioned.

Whereas, in the 1980ies, the States were the main actors of remote sensing and in those States with a strong private sector the public and private sectors were clearly separated, the post-Cold War national budgets have created pressure to forge public-private partnerships even in nations historically committed to the separation of these sectors. Today, leading remote sensing nations including France, Canada, India and Japan, operate remote sensing systems based on mixed public-private institutions and principles. Even in the USA, where separation of public and

¹ A/AC.105/INF.408.

² ST/SG/SER.E/317.

³ ST/SG/SER.E/382.

⁴ A/AC.105/INF.404.

⁵ ST/SG/SER.E/420.

⁶ ST/SG/SER.E/422.

⁷ ST/SG/SER.E/440.

⁸ ST/SG/SER.E/403.

private institutions is the standard approach, government-owned space corporations are considering such cost-saving measures¹.

4. My fourth issue concerns the fact of the emergence of specific **national legislation** on remote sensing and the pertinent practice.

I shall not mention the 1992 US Land Remote Sensing Policy Act and the relevant practice since the USA had their own legislation on remote sensing already in the 1980ies². But since the elaboration of the UN remote sensing principles, other States have taken the same direction: France, e.g., has issued her remote sensing legal framework³, Canada the Access Control Policy⁴ and India her national policies⁵ which are of relevance for remote sensing. In the States with pertinent national legislation, remote sensing activities are thus not any more a national activity extra legem but are subject to various licensing and supervisory systems of State organs and institutions.

5. The next difference deals with the emergence of various international **Non-State** Actors using remote sensing data:

In the field of my present analysis, several international non-state actors are expanding their activities. As example can be mentioned the foundation of the Global Spatial Data Infrastructure (GSDI) Association which is an organization of institutions, agencies, companies and individuals aiming at promoting the international cooperation in support of spatial data infrastructure and, thus, better "addressing the social, environmental and economic issues".

6. The next developments concern the **convergence** of civil and military programmes using remote sensing methods. Whereas in the 1980ies remote sensing was limited to the purpose of improving natural resources management, land use and the protection of environment⁷, the precise demarcation of these two forms of activities is today technically hardly practicable. Technical parameters of the sensors orbiting the Earth have improved dramatically and only the very intention of their application seems to justify drawing a differentiating line between them today.

As an example of the convergence of civil and military programmes of Earth observation can be mentioned the merger of the US civil Polar Orbiting Operational Environmental Satellite program (POES) with the US military's defense Meteorological Satellite Program (DMSP),

¹ *J. I. Gabrynowicz*, Space Law: Its Cold War Origins and Challenges in the Era of Globalization, 37 Suffolk U. L. Rev. (2004) pp. 1041 – 1065, at 1056.

² 1984 Land Remote Sensing Commercialization Act.

³ P. Clerc, The State of Remote Sensing Law: French Regulation in Practice, in: J. Gabrynowicz (ed.), Proceedings, 1st International Conference on the State of Remote Sensing Law (2002).

⁴ P.J. Baines, Balancing Interests: Towards Further Progress in the Development of a Regulatory Regime for Commercial Remote Sensing Space Systems in Canada, ibid.

⁵ M. Rao et al., Issues for a Remote Sensing Policy and Perspective of he Indian Remote Sensing Data Programme, ibid

⁶http//www.gsdi.org/Default.asp.

⁷ See Principle I of the 1986 UN Resolution.

coordinated with the Eumetsat's satellites METOP to create a Joint Polar System (JPS)¹. Another example of this convergence is the European Global Monitoring for Environment and Security (GMES) initiative, a joint project of the European Union and the European Space Agency which should offer a permanent, independent observation capacity for political decision-making on the basis of information on environment, agriculture and foreign policy².

These technical changes raise a question as concerns the feasibility and practicability of creating different legal regimes for these two space activities; to be precise, I do have my doubts as to the practicability because I see considerable problems as regards the possibility of effectively controlling the correct implementation of those binding rules which, in the framework of such systems, might be adopted in the future. The decision is further complicated by the fact that the merged US – European system I have mentioned before, has the capacity of its US part to selectively deny critical environmental data to an adversary during crisis or war and ensuring data use by the US and its allies³ which would hardly comply with the non-discriminatory-access approach embodied in the present UN remote sensing principles.

7. A similar question concerns the improvement of the technical potential of remote sensing methods and the possibility to apply it as national means of verification.

In the 1970ies and 1980ies, there was a sharp line between those uses of satellite images which served primarily verification purposes and "remote sensing" methods; this differentiation was also reflected in the legal regulation of both activities.

The technological progress of the 1990ies resulted in such an improvement of remote sensing methods that - from the technical point of view - there is no more any substantive difference between their potential and that of satellite verification. Many of the space systems are constructed already to have not only a single, but a multiple capacity which makes their traditional separation almost impossible. The question remains whether and how these two different purposes should be reflected in the legal terms: The legal regime of the disarmament agreements such as the SALT and ABM Treaties, as well as START I and START II, are controlled by national means of verification which are generally understood so as to mean that they do include imaging satellites. However, the definition of the scope of the UN remote sensing principles could not be interpreted as giving the sensed state a right of access to data from other countries surveillance satellites!

8. The last development I would like to mention today is the present strong tendency towards a development of global space-based systems for the monitoring of the Earth. Of course, there were attempts to create an international remote sensing organization already in the 1970ies⁴ which was envisaged to collect all remote sensing data and to make them available to the States concerned, together with providing assistance to the developing countries in this field. This project turned out to be unrealistic in that period of time but the idea of the necessity of coordinating the sources of

¹ Agreement between the U.S. National Oceanic and Atmospheric Administration and the European Organization for the Exploitation of Meteorological Satellites on an Initial Polar-orbiting Operational System, Nov. 19, 1998; Agreement between the U.S. National Oceanic and Atmospheric Administration and the European Organization for the Exploitation of Meteorological Satellites on Joint Transition Activities Regarding Polar-orbiting Operational Environmental Satellite Systems, June 24, 2003, 2003 U.S.T. Lexis 49.

² J. I. Gabrynowicz, supra note 9, p. 1058.

³ *Ibid*.,at 1060.

⁴ F. Nozari, The Law of Outer Space, Stockholm (1973), 187 ff.

remote sensing remained attractive for many countries. There were the enormous and terrible natural disasters of this and the previous years which gave a new impetus for efforts to implement these ideas.

First, the International Charter on Space and Major Disasters as the first internationally coordinated and comprehensive system that integrates different space resources and makes them available for the wider community¹ should be mentioned, initiated by ESA and CNES, signed on October 20, 2000 and operational since November 2000. The Charter includes six member space agencies now² which provide data from their satellites – on the basis of an authorized request – free of charge to States affected by natural or man-made disasters.

Further, it should be stressed that on 16 February 2005, representatives of more than 50 governments met in Brussels to discuss and promote the development of a comprehensive Global Earth Observation System of Systems (GEOSS)³. One of the results of this meting is the Standing Arrangement of this new structure with the WMO to provide home for the proposed GEO Secretariat, while the Government of Switzerland declared its support and contributions to its establishment in Geneva. Many of the developing countries are strongly involved in this initiative.

The main goal of this network should be to coordinate the systems for gathering and distribution of Earth Observation data. This structure that would include a tsunami detection network, is given a promising future also in connection with the entry into force of the Kyoto Protocol on Climate Change the implementation of which could be monitored e.g. by Earth observation means.

In the context of the creation of this system, several legal questions have to be answered: How to guarantee that the free sharing of the satellite information will not endanger the financing of the existing observation systems? How to coordinate its future activities with the presently existing international structures, such as those international organizations which are parts of the UN system and are currently involved in satellite observation activities, such as FAO, UNESCO, UNEP, WMO and others? And. last but not least, how to make this legal framework cope with the present UN Remote Sensing principles? Shall it make them superfluous at the end? Or shall it put them into the centre of its attention and modify them for its needs?

II. Changed Needs?

Mr Chairman, ladies and gentlemen, can we - on the basis of what I have said with respect to the changed conditions – now appropriately assess the changed needs of the present actors of remote sensing? Let me try:

First, it seems that the interest, by the sensed States, in the protection of data from their own territories is decreasing. With the growing number of States involved in remote sensing activities, there seems to be rather an interest in an cooperation and coordination-based approach to remote sensing technologies which would enable also the developing countries to strengthen their position on the remote sensing market. Second, a decreasing interest in maintaining States as the only actors remote sensing activities can be identified. Third, there seems to be a growing

¹ A. Ito, Legal Aspects of the International Charter on Space and Major Disasters, IAC-04-IISL-2-15, p.1.

² CNES, ESA, Canadian Space Agency, National Oceanic and Atmospheric Administration (NOAA), Indian Space Research Organization and Comisión Nacional de Actividades Espaciales (CONAE).

³ Http://earthobservations.org/organization.asp.

consensus on the need for a coordinated, international system of Earth data which would be active primarily in the sphere of natural disaster prevention and of environmental protection.

This short overview of the changed practices in the area of remote sensing could only deal with some of the major aspects of these developments and is far from being complete. The idea to review state practices in this sphere and to renew the discussion on the UN Principles expressed by a group of States at the 43rd Session of the Legal Subcommittee of COPUOS in April 2004 is surely an important step for further evaluation of the future fate of the principles. An important role is played also by the ILA Space Law Committee led by Professors *Maureen Williams* and *Stephan Hobe* who – on the basis of the results of the session of the Committee in Berlin in August 2004 – distributed a questionnaire aimed at receiving further information on this subject¹.

III. Conclusion

The conditions of remote sensing have changed substantially since the approval of the 1986 UN Principles. In my opinion, also the needs of many countries have changed considerably. Only reliable information on the practice of and **by** the actors of remote sensing will, however, enable us to draw appropriate conclusions on the further regulation of this activity – a regulation which would attract broad consensus and be realistic in its consequences.

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¹ *M. Williams*, Introduction, Report on the Legal Aspects of the Privatisation and Commercialisation of Space Activities, ILA Berlin 2004.

THE 1986 UNITED NATIONS PRINCIPLES AND CURRENT STATE PRACTICE IN NORTH AMERICA

Prof. Joanne Gabrynowicz

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The 1986 UN Principles and Current State Practice in North America

IISL/ECSL SPACE LAW SYMPOSIUM 2005 44th Session of the Legal Subcommittee of the UNCOPUOS

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North America



North America



- Canada
 - Bill, in process of becoming law
 - Bill C-25 An Act governing the operation of remote sensing space systems
- United States
 - Statute
 - The 1992 Land Remote Sensing Policy Act
 - Regulations
 - Licensing of Private Land Remote-Sensing Space Systems; Interim Final Rule and Interagency MOU (Appendix 2)
 - Policy NSPD 27

North America



- Bilateral
 - US-Canada Agreement on Commercial Remote Sensing Satellite Systems
 - 16 June 2000
 - · Promote development of industry
 - · Ensure satellites won't harm the nations
 - Common statement
 - "an agreement that fosters broad private uses of commercial remote sensing satellite systems while protecting common national security and foreign policy interests"



North America



- Bilateral
 - -Common statement, continued
 - Establish controls on satellites
 - Advance opportunities for greater access to remote sensing data for diverse users
 - Basis for future cooperative efforts in this expanding field





Canada





Canada



- Radarsat 2
 - Mostly funded by Canadian Space Agency
 - First satellite owned by a company
 - Radarsat International
 - Not owned by the government
 - Primary client is the government
 - Scheduled for launch in 2005



Bill C-25 An Act governing the operation of remote sensing space systems

- Work in progress: currently becoming law
 - Bill subject to change in law-making process
 - Policy, which is basis of Bill C-25, was introduced in 1999
- In Parliamentary House Committee review
 - Clause by clause
 - Resumes week of 4 April 2005
- After House goes to Senate for same process
- Royal Assent and Proclamation
 - Difficult to determine when it will happen
- Coordinating amendment: Department of Public Safety and Preparedness Act

Bill C-25 An Act governing the operation of remote sensing space systems

- Critical fact
 - No regulations yet
 - Will provide specifics for important aspects
- Regulations may be made
 - Process(es)to be considered or not to be considered regarding transformation of raw data
 - Classes of persons having a substantial connection to Canada related to remote sensing space systems
 - Details of licensing process



Bill C-25 An Act governing the operation of remote sensing space systems

- Summary
 - Establishes
 - Licensing regime for remote sensing space systems
 - Provides
 - · Restrictions on distribution of data gathered by them
 - Gives
 - Special powers to the Government of Canada concerning priority access



Bill C-25 Definitions



- · "controlled activity"
 - Formulating or giving command to satellite
 - Receiving raw data from satellite
 - Storing, processing or raw data from system
 - Establishing or using cryptography or information assurance measures
- "remote sensing system"
 - Satellite(s); mission control centre; facilities used to operate satellites
 - Facilities used to receive, store, process or distribute raw data



Bill C-25 Definitions



- · "raw data"
 - Sensor data from a satellite and any auxiliary data required to produce remote sensing products from sensor data and have not been transformed into a remote sensing product
- "remote sensing product"
 - Image or data produced from raw data in any way that transforms the raw data
- · "transform"
 - Having regard to the regulations, to so process data that it is substantially impossible to reconstitute them from the resulting remote sensing product



Bill C-25 License Conditions

- "raw data and remote sensing products from the system about the territory of any country—but not including data or products that have been enhanced or to which some value has been added—be made available to the government of that country within a reasonable time, on reasonable terms and for so long as the data or products have not been disposed of"
- Keep control of
 - Licensed system
 - Raw data and remote sensing products until they are disposed of according to Act

Bill C-25 Interruptions of Service or Requiring Priority Access



- Minister of Foreign Affairs may order if
 - Reasonable grounds that continued operations
 - Would be injurious to international relations
 - · Inconsistent with international obligations
- · Minister of Defence may order if
 - Reasonable grounds that continued operation
 - · Would be injurious to defence of Canada or safety of Canadian Forces



Bill C-25 Priority Access



- Solicitor General may order any service to
 - Royal Canadian Mounted Police
 - Canadian Security Intelligence
 - Government for critical infrastructure protection or emergency preparedness
- Reasonable grounds service is desirable to fulfill respective responsibilities





The United States





The United States



- Public non-commercial
 - Landsat
 - · Tax-funded, minimum data fees by law
 - · Cost of fulfilling a user request
 - Operational Landsat Imager on NPOESS
 - Weather satellites
 - Tax-funded, some data fees
 - · Commercialization is prohibited by Congress
 - Operated by National Oceanic and Atmospheric Administration
- Private commercial
 - DigitalGlobe, Orbimage
 - SpaceImaging (failing; assets for sale)



- Not owned by the government
- Primary client is the government

1992 Land Remote Sensing Policy Act Nondiscriminatory Access



- Tax funded systems
 - "unenhanced data...shall be made available to <u>all users</u> without preference, bias, or any other special arrangement (except on the basis of national security concerns pursuant to section 5656 of this title) regarding delivery, format, pricing, or technical considerations which would favor one customer or class of customers over another."
- Private commercial licensees shall
 - "make available to the government of any country... unenhanced data ... concerning the territory under the jurisdiction of such government as soon as such data are available and on reasonable terms and conditions"

» 15 USC 5622 (a) and (b)

Licensing of Private Land Remote-Sensing Space Systems; Interim Final Rule

- UN Principles and private systems
 - Nondiscriminatory access to sensed states
 - "Congress was careful to ensure that access to unenhanced data would remain consistent with the UN's Principles...the 1992 Act requires that all licenses include the condition that the licensee shall make available upon request to the government of any country unenhanced data...concerning the territory under the jurisdiction of such government on reasonable commercial terms and conditions as soon as such data are available..."
 - Consistent with the national security concerns, foreign policy and international obligations of the US







The Public-Private Spectrum



All Tax funded

Full Nondiscriminatory Access

Public and Private Funded

Case-by-case determination

All Private Funded

Access to sensed states only

15 CFR Part 960

Licensing of Private Land Remote-Sensing Space Systems; Interim Final Rule

- Reasonable terms
 - Normal commercial transaction where the government of a sensed state is a regular customer
 - "Price of data, if measured in terms of their value to a particular commercial customer, may be prohibitive to a small government that simply wishes to monitor its own natural resources or to use the data, for example, for purposes of land use planning or to mitigate the effects of a recent natural disaster. On the other hand, the same price may be reasonable if the sensed state intends to use the data for competitive purposes. The reasonable commercial terms and conditions will have to be considered on a <u>case-by-case basis</u>."
 - Sensed state has opportunity to demonstrate terms result in undue hardship
 - If unable to acquire unenhanced data directly from the licensee <u>can make</u> <u>request to NOAA Assistant Administrator</u> including the specific information (i.e., geographic location, date) on the unenhanced data it desires

» 15 CFR Part 960

Space Systems; Interim Final Rule

- System control
 - Implements US obligations under Outer Space Treaty
 - U.S. Government, as a State party, will be held strictly liable for any U.S. private or governmental entity's actions in space
 - Licensees must maintain ultimate control
 - · Minimize liability risks
 - Assures US national security concerns, foreign policy and international obligations
 - Foreign entities may be involved in the operations of the system with approval based on
 - · review conducted by NOAA in consultation with other USG agencies.
 - · significant and substantial foreign agreement are subject to review



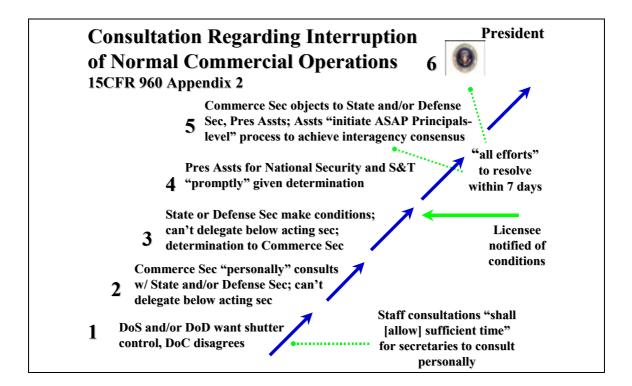
» 15 CFR Part 960

Licensing of Private Land Remote-Sensing Space Systems; Interim Final Rule

- Interruption of service
 - Smallest area and shortest time
 - Alternatives "shall be considered"
 - · Delay data transmission or distribution
 - · Restrict field of view
 - · Data encryption
 - · Other means
- Licensee to provide data on a commercial basis exclusively to the U.S. Government



» 15 CFR Part 960



Licensing of Private Land Remote-Sensing Space Systems; Interim Final Rule

- New and advanced technologies not previously licensed
 - May have two tiered license
 - Licensee to operate its system at one level, available to all users
 - Full operational capability reserved for USG or USGapproved customers

» 15 CFR Part 960

• Exempt from FOIA requests

REMAINE SEASONE OF SPINGE LAN

» FY05 Defense Authorization Act

On-Line Resources

- C-25
 - http://www.parl.gc.ca/38/1/parlbus/chambus/house/bills/government/C-25/C-25 1/C-25 cover-E.html
 - http://www.parl.gc.ca/LEGISINFO/index.asp?Lang=E&Chamber=N&StartList= A&EndList=Z&Session=13&Type=0&Scope=I&query=4354&List=toc-1
- Land Remote Sensing Policy Act
 - 15 U.S.C. 5601, et. seq.
 - http://www.licensing.noaa.gov/reference.html
- Licensing of Private Land Remote-Sensing Space Systems; Interim Final Rule and Interagency MOU (Appendix 2)
 - 15 CFR Part 960
 - http://www.licensing.noaa.gov/reference.html
- Policy NSPD 27
 - http://www.licensing.noaa.gov/reference.html
- · Common Statement
 - http://www.licensing.noaa.gov/rsat2factsheet.htm
 - http://www.usembassycanada.gov/
- FY05 Defense Authorization Act
 - http://thomas.loc.gov/





The 1986 UN Principles and Current State Practice in North America

National Remote Sensing and Space Law Center
University of Mississippi School of Law
www.spacelaw.olemiss.edu

THE 1986 UNITED NATIONS PRINCIPLES: ON THE NECESSITY OF A REVISIT

Dr. Rajeev Lochan

Indian Space Research Organization (ISRO)
India

The 1986 UN Principles: On the Necessity of a Revisit

Recent Developments in Remote Sensing and the Desirability of Reviewing the 1986 United Nations Principles Relating to Remote Sensing of the Earth from Outer Space

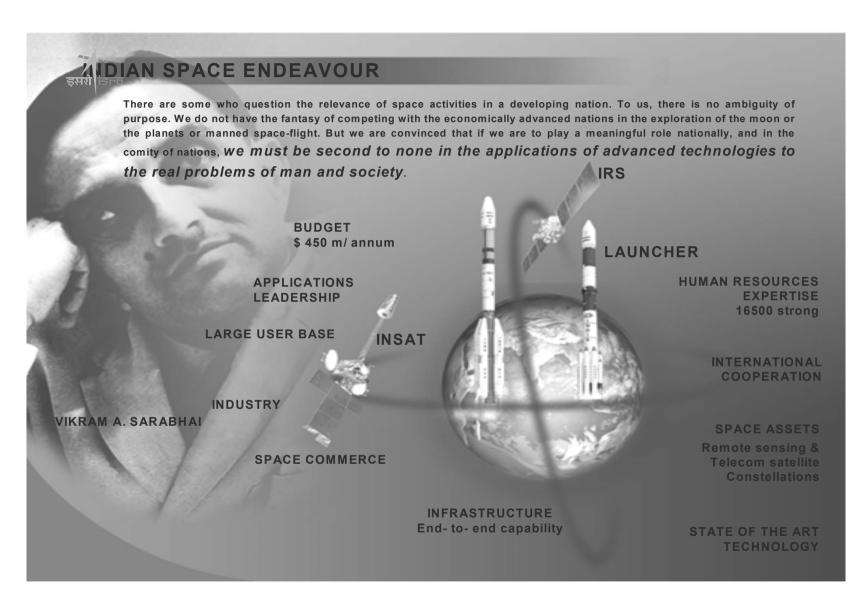
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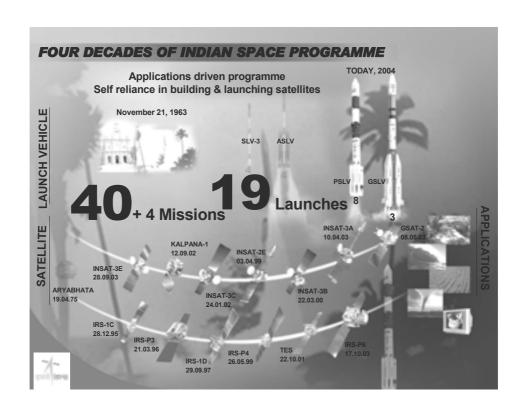
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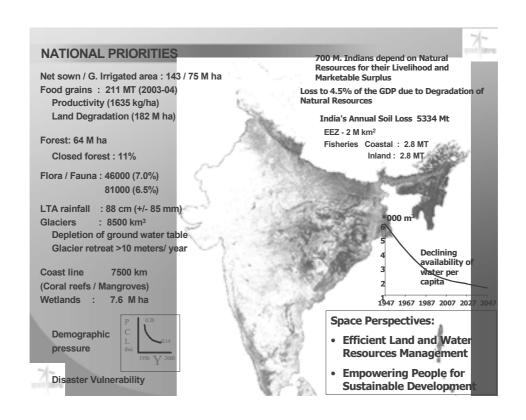
By Dr. Rajeev Lochan

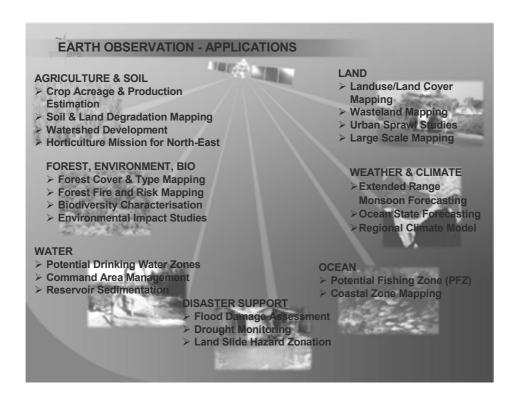
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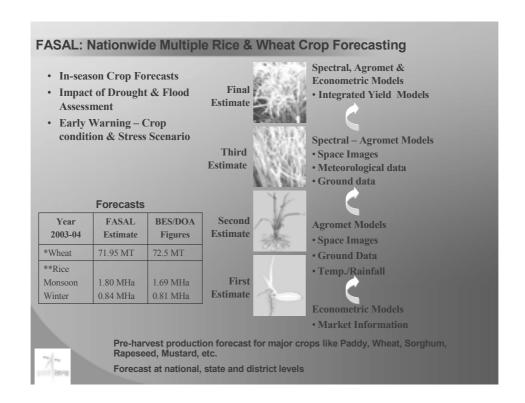
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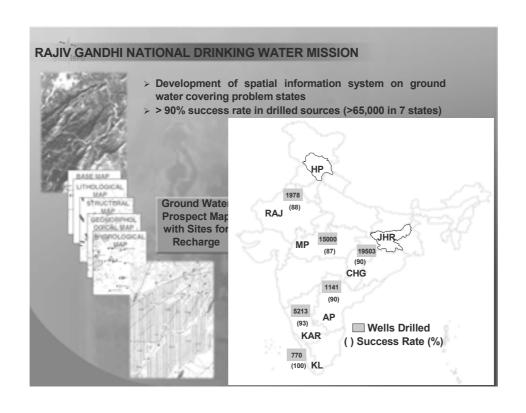


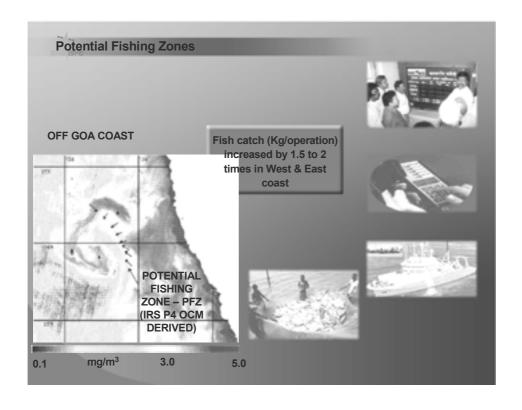


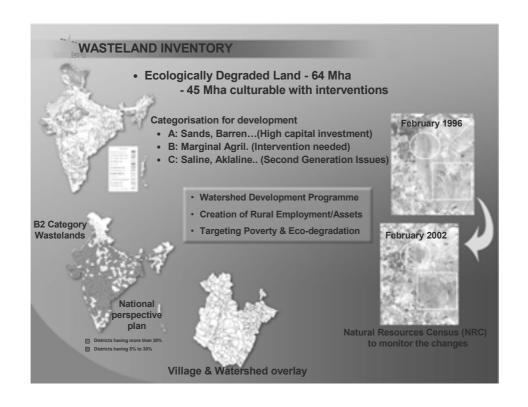


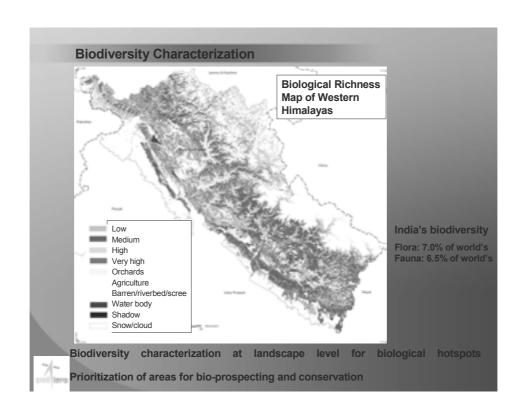


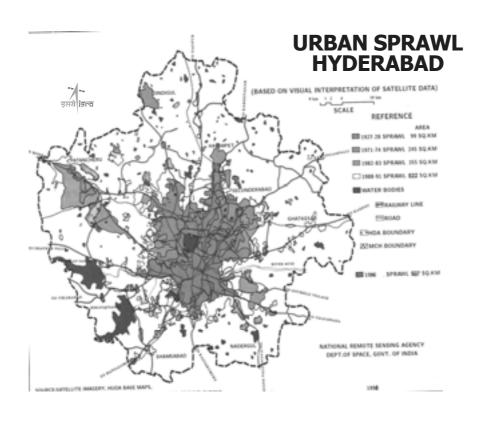


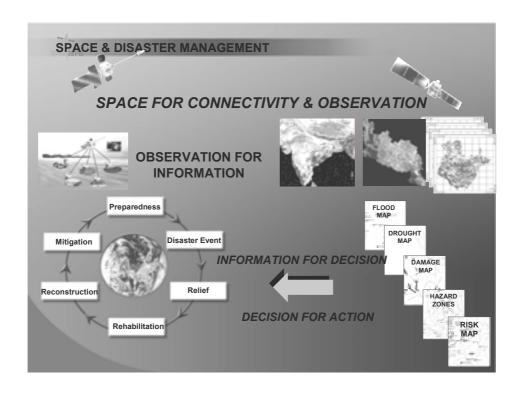


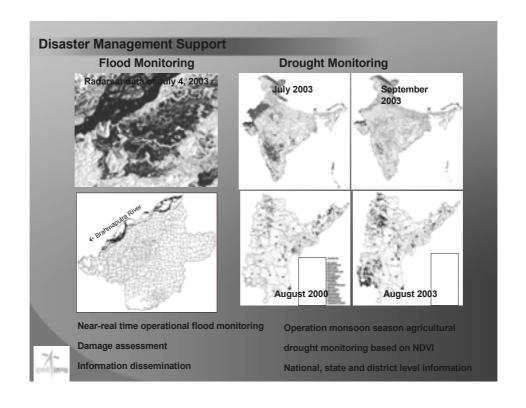


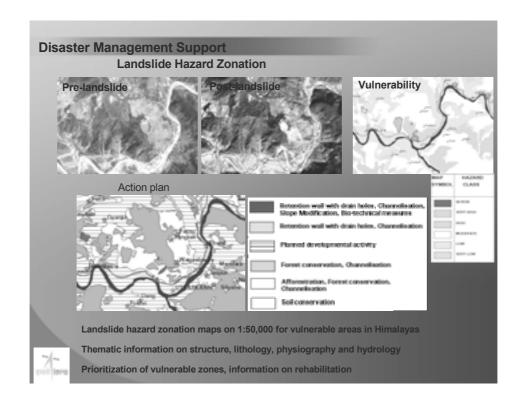


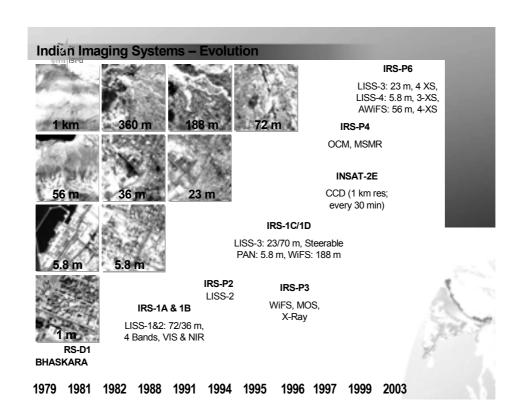


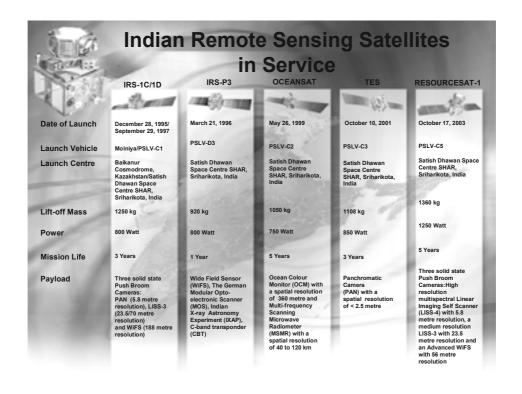


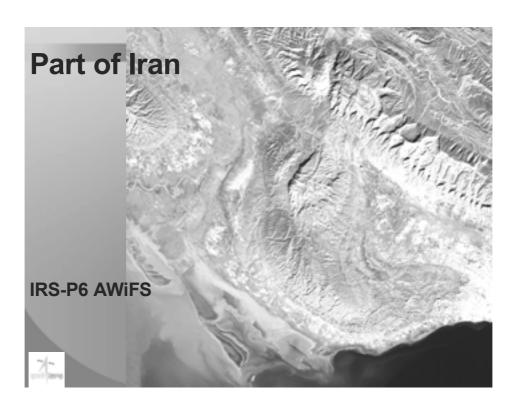


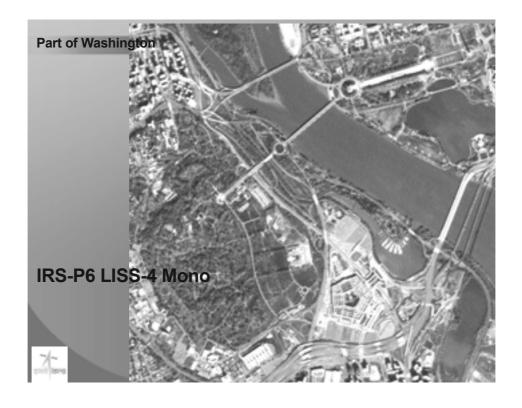


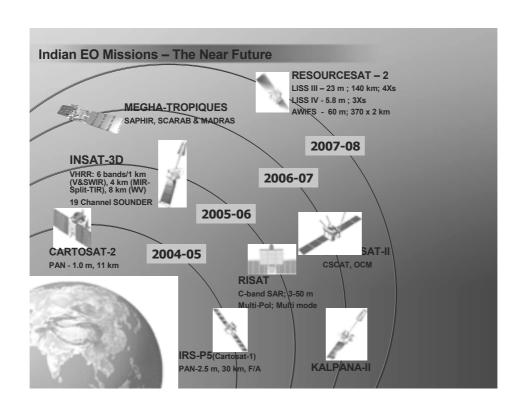












THE 1986 UN RESOLUTION (41/65)

OBJECTIVES

Benefits of All the Countries on a Non-Discriminatory Basis with Particular Consideration to Developing Countries [I(a) & II]

Promote Protection of the Natural Environment [X] & Protection of Mankind from Natural Disasters [XI]

SUBJECT TO

International Law; the UN Charter; Outer Space Treaty (1967) & ITU [III]

Respect for Principles of Full and Permanent Sovereignty of All States & Peoples over Their Own Wealth & Natural Resources [IV]

Such activities shall not be carried out in a manner detrimental to the rights and interests of the sensed state [IV]

THE 1986 UN RESOLUTION (41/65) - Continued

RIGHT OF SENSED STATE

Access to Primary Data, the Processed Data and the Analyzed Information on a Non-discriminatory Basis at a Reasonable Cost [XII]

MANNER

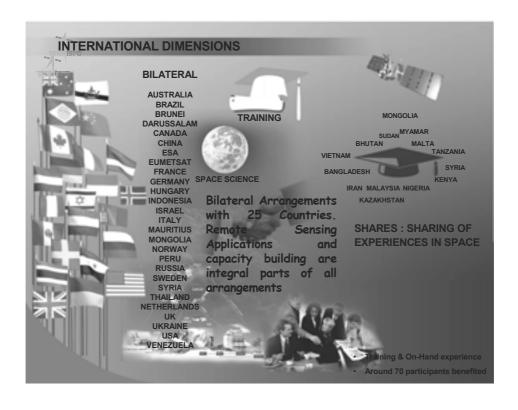
Promote International Cooperation & Provide Opportunity, Technical Assistance and Enter into Consultation for Other States for Participation on Equitable and Mutually Acceptable Terms [V, VI, VII, VIII & XIII]

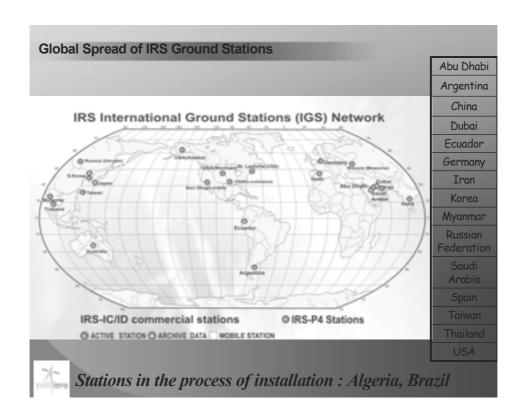
Remote Sensing State to Inform UN and Make Available Relevant Information to Any Other State Particularly Affected Developing Country on Request [IX]

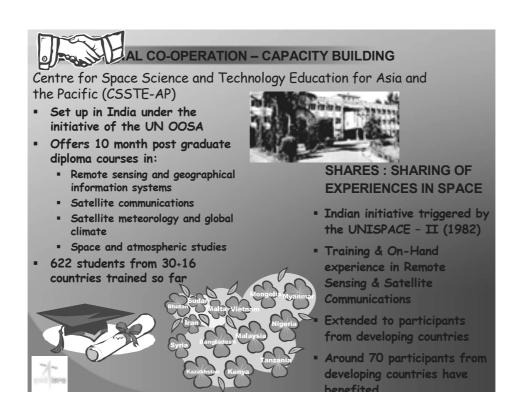
RESPONSIBILITY

International Responsibility Lies with the Sensing State [XIV]









Growth of Remote Sensing Technology, Practices & 1986 Principles

Spacecraft	Period Of Operation	Resolution (m)
KH 1-4	1959-63	8 - 13
KH 4A	1959-63	~ 3
KH 4B	1967-72	~ 2
KH 6	1963	~ 2
KH 7	1963-84	~ 0.5
KH 8	1963-84	~ 0.15
KH 9	1971-84	0.3 - 0.6
KH 11-12	1976 - present	~ 0.15

- · LANDSAT-1 in 1972 with 79m resolution
- · LANDSAT-7 in 1999 with 15m panchromatic

Evolution of Principles

- Res. 3234 (XXIX) of 12 Nov 74
- · 12 years of negotiation
- · Adopted on 3 Dec 1986

Evolution of Practices

- □ Landsat Act, 1984
 - ☐ Nondiscriminatory Data Distribution
 - □ EOSAT setup
- ☐ Space Policy Act, 1992
 - Distinction between Private& Public Funded entities
 - Commercial operators only raw data to Government of Sensed state



B. Jasani: "Orbiting Spies - Opportunities & Challenges" Space Policy 18 (2002)

During conflict, should such imageries be made available commercially?

Precedence

- □ NIMA secured exclusive rights over Afghanistan imageries during Gulf war of 1991 at \$ 1.9 m / month
- ☐ France too embargoed sale of imageries from SPOT
- □ During Iraq war, Imageries were, reportedly, not shared among even the allies

One can safely assume absence of commercial sale of imageries in case of conflict

Use of RS data by the sensing state during a conflict with the sensed state does violate the provision of Principle IV -



"...Such activities shall not be conducted in a manner detrimental to the legitimate rights and interests of the sensed state"

Protection of the Natural Environment - 1
WORLD SUMMIT ON SUSTAINABLE DEVELOPMENT
 Johannesburg declaration on sustainable development by heads of States and Governments
☐ Political impulse to implementation of Agenda 21
☐ CEOS follow-up programme on WSSD
 □ Area 1 - Education, training and capacity building
☐ Area 2 - Water Resources Management
☐ Area 3 - Disaster Management and Conflicts
☐ Area 4 - Climate change
☐ Area 5 - Global mapping, land use monitoring and GIS

Protection of the Natural Environment - 2 COMMITTEE ON EARTH OBSERVATION SATELLITES (CEOS) 20TH Anniversary in 2004 Participated by 43 Space Agencies Integrated Global Observation Strategy (IGOS) initiative for reducing observation gaps and overlaps Notable effort in calibration, validation data formats, information exchange and so on

INTERNATIONAL INITIATIVES Towards comprehensive, coordinated and sustained global observations First EO Summit at Washington, July 2003 Washington Declaration Inter-governmental Group on EO (GEO) 48 members and 29 participant organisations Tokyo Summit - April 2004 Adoption of conceptual framework Preparation of 10 year implementation plan Third summit held in February 2005

Protection of Mankind from Natural Disasters - 1 International Charter on Space & Major Disasters Initiative Triggered by UNISPACE III Initiated by ESA, CNES & CSA ISRO & NOAA (2001); CONAE (2003); JAXA (2005) 24 Hours X 365 Days on alert Unified system of Space data acquisition & delivery to those affected by natural or man made disasters through authorized users (others through partners) No single operator can match the challenges of disasters Member states commit resources to the charter ISRO commits world's largest constellation of RS Satellites for this cause

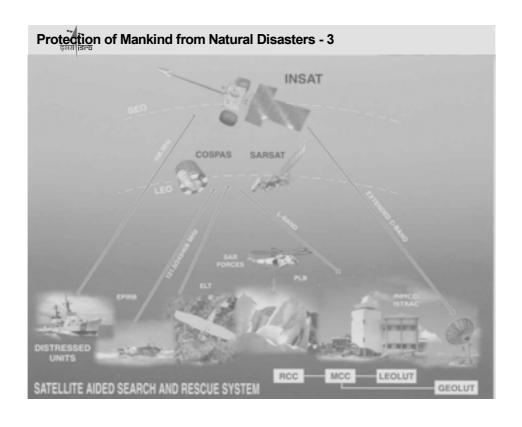
Protection of Mankind from Natural Disasters - 2

International Charter on Space & Major Disasters - Charter Activation

Event	Date	Remarks
Namibia Flooding	March 04	20,000 people & 400 Sq. km area affected
Congo Volcanic Eruption	17 Jan 02	500,000 people relocated
Algeria Earth Quake	21 May 03	2100 lives lost
Germany Flood	Aug 02	
Spain Oil Spill	14 Nov 02	
Iran Earthquake	26 Dec 03	
Portugal Forest Fire	20 Aug 03	5.6% of forest cover lost
Argentina Flood	30 Aug 03	
France Floods	1 Dec 03	
Bolivia Flood	26 Jan 04	



Principle XI: Remote sensing shall promote the protection of mankind from natural disasters.



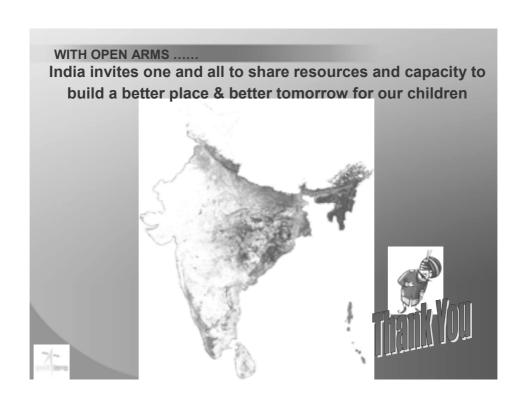
Closing Remarks - 1				
☐ Global Initiatives Towards Protection of Environment & Protection of humanity against Disasters				
	Acc	ess at Reasonable Cost		
		RS Data related to protection of environment and protection against national calamities are available free-of-cost		
		Most RS data available to all at no-cost basis for Scientific Research and development of new RS applications		
		Remote Sensing is not a matured self sustaining commercial activity		
2/2		Although expensive in itself, cost of imageries is only a small portion of the total cost associated with full exploitation of RS data		

Closing Rem	arks - 2
☐ The	UN Principles
	Not flawless, yet contain most of the novel features
	Present International Space Law Regime – a fragile equilibrium
	Attempts to revisit likely to elude consensus and may shatter the equilibrium
	Seeking enhanced compliance is more pragmatic in contrast to demands for a reconstruction of another treaty
☐ "Non ultim	-discriminatory Access at reasonable cost" is not the ate
	Optimum exploitation of data requires huge capacity building
fires pand	Lack of capacity causing wastage of opportunities

Concluding Remarks

- 1. Seeking better compliance of not-so-perfect arrangement is a more prudent alternative to an elusive concept of flawless treaty
- 2. Massive Competence Building is the need of the hour for optimum exploitation of the existing opportunities





The 1986 United Nations Principles and current state practice in Europe

Marco Ferrazzani*

European Space Agency

THE POLICIES IN REMOTE SENSING AND THE PRACTICES OF THE EUROPEAN SPACE AGENCY

1. EUROPEAN POLICY IN REMOTE SENSING

The need to understand our Planet and its resources, along with the growing public awareness have contributed to the development Space remote sensing and therefore of principles of international law in this domain, up to a point where previously "unregulated" behavior is now understood and dealt with under a widely recognized institutional framework.

Legal arrangements and practice are now supported by a sufficient enough level of experience to be considered established practice and respected principles. National and international legislative developments have helped this process.

Europe has achieved leadership in many areas of Earth Observation, notably in SAR imagery and the numerous applications of interferometry. The Envisat payload is now giving Europe a competitive advantage in pollution monitoring and atmospheric chemistry, which are likely to become keys to a number of political and industrial issues of the 21st century. This leadership in technologies and data processing software is further matched by a coveted modeling expertise. ECMWF, the European Center for Medium-Range Weather Forecasts, currently runs the best model available for mid-term forecasting and climate prediction and is well advanced in incorporating new satellite data into its official forecasts.

But having access to data from Earth Observing satellites is often expensive and always cumbersome. The use of these data is therefore restricted to governments, large companies and highly trained people and this is severely limiting the development of science, applications and services that space remote sensing programmes may be able to deliver. Delivery of the data to the end user is still quite complex and this does not facilitate applications requiring near real-time access.

The ESA policies have one ultimate objective: allowing for the sustainability of the next generation of operational Earth Observation satellites by increasing the use of EO data. It is a strategy, not another shopping list of satellites. It concentrates on defining a set of requirements from a set of users, as well as one or several mechanisms for achieving sustainability in providing Earth Observation data. In order to do so, one should increase the exposure of future users, scientists, value-adding companies, service providers, public authorities, European Commission, to the potential benefits of EO for their activities and responsibilities.

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This approach is based on the evidence that the price of data must be determined by the benefits they provide rather than by the cost of producing them.

ESA policy and programmes will be a major contribution to the implementation of the European strategy under GMES since it will provide access to the space component of this Environment and Security Intelligence System which we are currently building with the European Commission, also based on the strong belief that the collective responsibilities of mankind regarding the evolution of the planet are going to be better defined and shared by guaranteeing to all actors, the European Union, National Administrations, International Organizations, developing countries and NGOs an open and equitable access to space information where, when and however needed.

ESA present action is to plan and rationalize the acquisition, processing, archiving and distribution of data from all European Earth Observation satellites, in order to ensure their most effective exploitation. ESA aims at making available, equitably to all interested entities, the whole data set generated by European satellites, and to building, in cooperation with industry, a first core of services addressing public and private needs. Success in this enterprise will mean that, by 2010, we shall be in a position to implement a new constellation of coordinated EO satellites, which we will refer to as the GMES generation.

2. INTRODUCTION ON LEGAL CONCEPTS

- National Public / Private Law
- International law / National law (sovereignty over territory, airspace and territorial water)
- Public International law / Space law
- RS legal framework as an illustration of the greatest application of space law together with telecommunications.
 - Importance of RS for the development of the economy and the environment.
 - Issues as to economic and military security.

A/RES/41/65 of 3 December 1986: The UN adopted the Principles Relating to Remote-Sensing of the Earth from Space:

Legality of Earth Observation (see the UN Principles in the Annex).

Definitions:

Remote sensing: collection of information from a distance about an object or an area without any direct physical contact. E.g. of a remote sensor: our eyes. Definition of RS by the 1986 United Nations Principles: "The sensing of the Earth's surface from space by making use of the properties of electromagnetic waves emitted, reflected or diffracted by the sensed objects, for the purpose of improving national resources management, land use and the protection of environment." Principle I (e) defines remote sensing activities as all of the following: "the operation of remote sensing space systems, primary data collection and storage stations, and activities in processing, interpreting, and disseminating the processed data."

Relevance of remote-sensing activities in space: Provide information on topographic features, soil types, crop species and health, mineral resources, water resources, water pollution, icebergs...

✓ Civil applications (disaster management, mapping, urban planning), military applications (reconnaissance, targeting), and scientific application (environments), geology and archeology)

Relevance of remote-sensing for futures space activities: commercialization of the data. Public and private actors do not have the same priorities.

RS = major commercial space activity (after telecom) used for both civilian and military purpose.

➤ Until now, States support the biggest part of the cost. In order to make this remote-sensing activity more profitable, demand from the private side is expected. Legal aspects, depending on the issues chosen, may play a great role in this RS market.

<u>Classical Issue</u>: sovereignty over national resources and freedom of dissemination of information.

The legal framework of remote-sensing is composed of three levels:

- the 1986 UN Principles;
- data policy (by country or through groups of countries like with ESA);
- international practice.

3. THE 1986 UN PRINCIPLES:

Contents of the UN Principles:

UN Principles recall applicable rules; International law, Outer Space Treaty, UN Charter, ITU instruments (Principle III)

Goal of these Principles and common interests:

- RS activities shall be carried out for the benefit and in the interest of all countries (Principle II)
- Improve national resources management, land use and protection of the environment (Principle I)
- Promote protection of Earth's natural environment (Principle X)
- Protect against natural disasters (Principle XI)

Access to data and sensed state:

- States shall make available to other States opportunities to participate on equitable and mutually acceptable terms (Principle V)
- Freedom of observation, no prior consent (derived implicitly from Principle XIII)
- Permanent sovereignty of all states and peoples over their own wealth and national resources. Regard for legitimate rights and interests of sensed state (Principle IV)

This provision does not give any power to the sensed state to prevent the activity to observe it from outer space.

- As soon as the primary data and the processed data concerning the territory under its jurisdiction are produced, **the sensed state shall have access to them on a non-discriminatory basis and on reasonable cost terms**. Same for analyzed information (Principle XII). As this right is not unlimited, it is of great concern for developing

countries: the high cost of space activities limit their availability to these countries. This issue is common with access to all technologies for developing countries.

Level of responsibility:

International responsibility for national space activities, like in the Outer Space Treaty, pillar of space law (Principle XIV). In space law, any space activities is assumed as authorized by a government before it starts. A private company is unable to have a RS activity without the government consent on the territory of which it is established. See different licensing regimes depending on the country of jurisdiction. The licensing or authorization act is the consequence of this rule.

However the legal principle and norms on the State responsibility are not recognized as covering a complete liability for any indirect damages.

Relevance and strength of UNGA Resolution:

Legality of remote-sensing activities but legal strength of a UN resolution in public international law? Can we consider these principles as an international custom, and consequently a binding source of law?

- A **resolution** is not a treaty, consequences: they are mere guidelines. Considered as guidelines by US, Europe and Japan and other main operators in the data policy documents.
- Adoption by consensus on 3 December 1986 by the General Assembly: However, universally **adopted in practice** of remote sensing nations. Considered as valuable evidence of **international custom** by some authors.
- Brief explanation on international custom as a source of law.
- Constant respect of the Principles could lead to their acceptance as a source of law.

4. ESA PRINCIPLES AND PRACTICES

UN Principles are considered as guiding legal principles. Many interests have to be safeguarded.

- There are two main legal principles:
 - Free access to the data on an open and non-discriminatory basis; wide availability of data to all interested users;
 - Freedom of observation over all territories of the world.
- Ownership: the full title over data to be delivered by ESA as the owner of the satellite (ERS, ENVISAT and Earth explorers).
- Mechanism:
 - Application of the copyright on each unit of raw data distributed under the terms of ESA Agreements. The user has to be authorized in order to obtain the raw data.
 - Most of the time, each user holds a license. The license to use directly or to distribute
 is granted by ESA or by specially appointed distributor, to each final user or to the
 scientific users: Principal Investigators (PI). Agreements and licenses are nonexclusive.

- Advantages of this policy: protection of the data at the moment of the distribution, control by ESA of the data distribution to permit the wider distribution of these data, sound legal basis for the appointed distributors.
 - > Through this policy, creation of a precedent in Europe for Earth Observation data.

ESA / ENVISAT data policy: "ENVISAT data shall be available in an open and non-discriminatory way, and distribution of the data shall be consistent with the United Nations Resolution on Principles relating to Remote Sensing of the Earth from Space."

- ✓ Same rules on ownership/copyright/license for ENVISAT.
- ✓ Take into account here the trend: increase in the commercial distribution. New appointments of commercial distributors for ERS and ENVISAT data and services.
 - The ESA Earth Observation Data Policy has been aligned for all missions: ERS-1, 2 and ENVISAT, Earth explorers, GMES.
- Distinction to keep in mind: **raw** and **processed data** (final product). The final product is protected fully by copyright laws, as data belonging to those who have processed it.
 - ✓ Database: application of copyright law, protection of the form.
 - ✓ Content of the Database: protection by a *sui generis* right, the information itself. European Community Directive 969 of 11 March 1996 on the Protection of Electronic Databases. Better protection for the operator.

5. OTHER INTERNATIONAL PRACTICE

Besides the ESA Remote sensing missions, several other space agencies in the world carry out mission producing valuable data: NASA, NOAA, JAXA, CNES, ISRO, CSA, etc., All those actors in pursuit of scientific objectives, distribute and exchange remote sensing data and products and therefore form in their common behavior plenty of relevant international common practice, to which ESA contributes as a provider of information and data or also as a partner forming and complying to shared procedures.

One notable and well-know example is the Committee on Earth Observation Satellite (CEOS), created in 1984:

CEOS Mechanisms:

- 20 members and 4 observers
- The CEOS Plenary session has approved resolutions setting definitions and principles widely recognized in the space community
- The CEOS is an international co-operation system elaborated by national or international governmental organizations with three objectives on a voluntary basis:
 - ✓ Optimize the benefits of space borne Earth observations through cooperation of its Members.
 - ✓ Focal point for international coordination of space-related Earth observations activities,
 - ✓ Exchange policy and technical information to encourage complementarity and compatibility among space borne systems.

Their cooperation activities include also discussions on sensor capabilities, investigation to increase data cost-effectiveness, co-ordination of data acquisition, compatibility of data archives, presentation of plans for emerging satellite remote-sensing technologies and programs...

Model of international co-operation:

- ✓ These objectives are stated in a text called **Terms of Reference** which does not constitute a binding agreement in international law, but rather **a** flexible method of law creation. Although "participation in the activities of CEOS will not be construed as being binding upon space borne Earth observation system operators," **the standards elaborated by the CEOS are strongly followed by its members**. Since most of the RS actors are part of this Committee and respect the recommendations, its importance should not be neglected.
- ✓ Once a governmental organization becomes a member of this Committee, it has access to all the data of the members on a reciprocity basis. It is in the interest of each of the member to comply with CEOS' rules.
- > This CEOS participates to the current trend: the production of international multilateral instruments containing non-binding principles of ethics or charters or terms of reference for specific groups. Many initiatives of international cooperation are not based on specific treaty but rather on common initiative, under the generic term of "soft law."
- The lack of clear binding commitments from members in those groups cannot elect this practice enough to prove the existence of positive and codified international law. However, the legal instrument adopted are sufficiently finalised to contain rights and obligations.

Another specific example is the International Charter on Space and Major disaster:

One of the latest examples. On 20 June 2000 a "Charter on cooperation to achieve the coordinated use of space facilities in the event of natural or technological disasters" was signed by founding members. The purpose is to promote cooperation among space agencies and space system operators in the use of space facilities as a contribution to the management of crises, arising from natural or technological disasters. It brings together space agencies having significant remote sensing activities that may be readily deployed in the events of crisis. A common mechanism is set up to supply, during period of crisis, all available space data and facilities to States or communities whose population, activities or property are exposed to a risk. Present members are ESA, CNES, the Canadian Space Agency, the Indian Space Research Organization, CONAE of Argentina. Without becoming members, other entities may be called to be cooperating or associated bodies to contribute to the coordination mechanism, or else be a beneficiary body to receive data, associated information and services.

6. ESA DATA POLICY FOR EXPLOITING ITS SATELLITES

The experience that Europe has gathered in its remote sensing activities has allowed the European Space Agency to establish a policy for the sensing from space and the distribution of data resulting from this activity.

Some space systems were developed within the framework of the European Space Agency and then passed onto operational customers, as was the case of Meteosat, now a successful EUMETSAT programme. Some other systems see ESA itself become a manager of remote sensing in the name of the interest of making the technological and scientific results widely available to the customers. That has been the reason for the existence of a large section of activities in ESA including data gathering and distribution to users as part of the Agency's mandatory activities. In giving a specific and permanent mandate to ESA in these activities, the European governments have recognized the high scientific priority to be given to remote sensing data gathering and distribution.

This has enabled ESA to acquire a specific knowledge and expertise in the complex situation of cooperation between European States. On this basis, European governments have entrusted ESA to develop and operate the first European Remote Sensing Satellite ERS-1 launched in 1991 and later on its twin ERS-2, still in active service.

In the discussions that led to the establishment of an ESA policy for the management of data resulting from these 2 missions, a number of concerns appeared obvious yet quite complex. Various requirements had to be met, some that did seem difficult to match together. Beyond the technological demonstration that ERS-1 and 2 were going to display, Europe needed a well-balanced set of arrangements that would allow many interests to be safeguarded and which are the basic concepts still valid today.

The mandate of ESA itself calls for the development and demonstration of space systems intended both for scientific and operational purposes. Since, the ERS programmes have managed to fulfill this difficult task where at the same time the technological, scientific and operational requirements are satisfied, while the resources of the "tool" are maximized.

At the outset, we carried out a basic assessment of the international scene of remote sensing policies. In a world arena where some Earth Observation missions are exclusively scientific while others are predominantly commercial, ERS missions found its role in allowing a flexible use of its capabilities, without jeopardizing its commercial potentials.

ESA has based its data policy for both the ERS missions on two fundamental legal principles that have allowed the fulfillment of the above-mentioned objectives:

- 1. On one side, the respect of the widest availability of data to all interested users each of whom has free access to the data on an open and non-discriminatory basis. In doing so, we wished to conform and set a practice of conformity to the spirit of the well known "Principles relating to Remote Sensing of the Earth from Outer Space" approved in the United Nations framework in 1986.
 - Although containing some only minimal concept, such provisions can and will be far reaching in the practice of States operating Remote sensing systems that are beneficial to the management of Earth's resources and can therefore help other States.
- 2. A second basic principle lies with private more than with public international law. This is the concept of ownership over the Remote sensing data identified as the result of the output of the sensors onboard the satellite along with its processed and derived products. I have indicated that this principle is more of a private law nature because of its legal essence and also because of the contractual approach, as this has so far been the way to follow in order to construe it. All ESA legal instruments contain to this effect a specific legal provision to be underwritten by the prospective user, whereby it is recognized by the user that the full title over the remote sensing data to be delivered is held by ESA as the owner of the satellite. Through this practice we have consistently established a precedent in term of a European legal policy for Earth Observation data.

A fact that deserves particular legal analysis is that, because of the success of the ERS missions, and the high request for its data, virtually any entity in the world community working in remote sensing has requested and is going to use these data. In order to do so, everybody has subscribed to the recognition of the principle of ownership of the data. Although it might still be debatable under national legislations meanings, a practice has been established, along with a

consequence that we consider fundamental. That is the application of the copyright on each unit of raw data distributed under the terms of our agreements.

These legal instruments have been found useful to the construction of a data policy to the extent that they enable a broad protection scheme of the data at the moment of distribution and therefore allow the satellite operator and the data distributor to enjoy a more secure negotiating position at that stage. In this respect, we feel that the establishment of a legal policy based on the concepts of ownership, copyright and license, not only respond to the truth of the activities at stake, but also give the right value and offers the best chance for the economic development of this fundamental way to use outer space. It also prepares legally the ground for a future evolution when economic actor will be able to invest and generate a possible stream of revenues with their control over the data entitlements. As immediate advantage, through the concept of its ownership and copyright, ESA has been able to control the data distribution in order not to limit only to one or few users, but to develop the widest availability as one main objective of the programme.

A consequence of the idea of ownership is that the user has to be authorized in order to obtain the raw data and to be able to work with it. This happens through the act by the owners of licensing the use or the reproduction of the data. Each user holds a license, either directly from ESA as it is the case of the large scientific community of so called Principal Investigators, or through a specially appointed consortium who acts as ESA specially appointed distributor. In addition several international entities who are able to receive ERS data directly from the satellites through a ground receiving station, have requested access to ESA, and through an agreement, have been licensed to receive, archive, use and reproduce the same data. Data generated by the satellite is provided by ESA to the user. This is done after acceptance of the terms and conditions of use, containing the license and against the payment of the marginal cost necessary to meet the request, called cost of reproduction.

The only exception is the free use by the scientific community for investigations whose results are made public in the interest of progressing of science. In principle any possible request of data for scientific purposes, has its own justification which is accepted and satisfied by ESA via a sound scientific programme of so called Principal Investigators (P.I.), providing a large amount of data free-of-charge and the resources, however important are limited compared to the world community. Therefore, requests are evaluated within the scope of the programme itself in order to obtain a financial support, and the scientific investigators bringing a contribution to the programme are accepted as P.I. In such approved cases the ESA programmes sustain the financial costs of the scientific uses.

Coming back to one of the two basic principles: freedom of access to everyone, the system of licenses has been implemented without any exclusivity. All the described agreements and licenses are non-exclusive. Nobody in the world can obtain a ESA originated R.S. data alone, restricting its use to any other.

In conclusion, ESA data distribution policy provides for a public availability although through recognized channels and licenses to use the data granted by the data owner. The non-exclusive formula is found the best scheme to encourage the widest possible access and use of the data to the largest number of potential users.

The latest development in ESA has been the recent approval, of the Data Policy applicable to all ESA missions including the current ERS+ ENVISAT mission and the next Earth Explorers to be launched: Cryosat, SMOS,GOCE, ADM-AEOLUS. Such missions, are complex and rich in data exploitation activity, which many users in the world are waiting for.

The principles of the overall ESA RS Data Policy (issued also on the ESA Webpage) remain similar to ERS as for ownership, copyright, licensing scheme and cost of reproduction.

This trend is similar to other space agency, who are moving from a tradition to develop one data policy for each satellite mission, into a more constant approach of an overall data policy of the Agency, applied to all its missions.

More detailed information on ESA policies, satellites and missions can be found on the web page ESA observing the earth at: http://www.esa.int/export/esaSA/earth.html

7. CONCLUSION AND FUTURE ISSUES

- Issue of the opportunity of the conversion of the Principles into a legally binding agreement.
- With the tendency toward commercialization of space activities, it may become difficult for governments to guarantee application of UN principle XII; access of sensed states on a non-discriminatory basis and on a reasonable cost.
- Question of the **developing countries**: with RS satellites, natural resources are not under their exclusive control any more.
- National restrictions: existence of increasing restrictions on access to remotely sensed data; the openness principle is weakened for commercial an military reasons; problem of open or closed society
- Dependence of the countries on space assets for commerce and national security.
- Data policies are different, depending on many economical, social, political factors, need to converge.
- How to conciliate the different data policies? See valuable effort by ISU, workshop report: "Toward an Integrated International Data Policy Framework for Earth Observations"

ANNEX:

SUGGESTED READINGS ON THIS TOPIC

John C. Baker; Kevin M. O'Connell; Ray A. Williamson "Commercial Observation Satellite: At the Leading Edge of Global Transparency", co-published by RAND and the American Society of Photogrammetry and Remote Sensing. 2001.

Clerc P., "Civilian Satellite Earth Observation Policies in France and Canada: Comparative Analysis of RADARSAT and SPOT policies," ISU/MSS individual project report, May 1996.

Courteix S.:

- "Towards the Legal Recognition of a New Method of Proof for the Defence of the Environment: Satellites Images", *Proceedings of the 37th Colloquium on the Law of Outer Space, International Institute of Space Law of the International Astronautical Federation*, Israel, 1994, pp. 222-232.
- Droit, Télédétection et environnement, Ed. Sides, 1994.

Ferrazzani M.:

- "The Legal Framework for the Use of ERS-1 Data": ESA Bulletin No.68 November 1991, page 104.
- "International Agreements and contractual practice for collecting and distributing remote sensing data" International seminar, Strasbourg, 23 June 1993: "The Law in Relation to Remote Sensing Satellite Techniques for the Benefit of the Environment". Published in Droit Télédétection et Environnement, Actes du Colloque International, SIDES, 1994. page 181.
- "The status of satellite remote sensing in international treaties" in Legal framework for the commercial use of outer space. Cologne 29-31 May 2001. Proceedings of an international Colloquium. Carl Heymanns Verlag KG.
- "The legal protection of Remote-Sensing Satellite Data in Europe" in Proceedings of the first international conference on the state of Remote-Sensing Law 18/19 April 2002 University of Mississippi.
- "Alternative approaches to International Space Cooperation" ESA Bulletin n. 110, May 2002, page 76.
- "Les programmes de télédétection de l'Agence Spatiale Européenne: opportunités futures de coopération » Actes du Centre Régional de Télédétection des Etats de l'Afrique du Nord Tunis 26 September 2002

Gabrynowicz J.I., "Expanding Global Remote Sensing Services: Three Fundamental Considerations," UNISPACE III - Workshop on Space Law in the 21st Century, Vienna, Austria, 20-24 July 1999 (Coordinated by the International Institute of Space Law, IISL), pp.53-89.

Okolie C., *International Law of Satellite Remote Sensing and Outer Space*, Kendall/Hunt Publishing Company, 1989.

Oosterlinck R., "Legal Protection of remote sensing data," Proceedings of the twenty-seventh Colloquium on the law of Outer Space. IISL, October 7-13, 1984, Lausanne, Switzerland, pp. 112-128.

KUSKUVELIS I., "La légalité coutumière de l'observation spatiale militaire", Revue française de droit aérien et spatial, N° 175, Pedone, Paris, 1990-1991, pp. 297-322.

MARCHISIO S., "Remote Sensing for Sustainable Development in International Law", Outlook on Space Law over the next Thirty Years, Kluwer Law International, The Hague, 1997, pp. 335-350.

SANDALOW D. B., "Remote Sensing and Foreign Policy", Symposium on "Viewing the Earth: the Role of Satellite Earth Observations and Global Monitoring in International Affairs", the George Washington University, Washington D. C., 2000, 11 p.

ISU Workshop report, "Toward an Integrated International Data Policy Framework for Earth Observations," July 22-24, 1996, Ottrott, France, ISU/REP/97/1.

Proceedings of the Project 2001 – Workshop on Legal Remote Sensing Issues Legal, Framework for Commercial Remote-Sensing Activities, 28 October 1998, Toulouse.

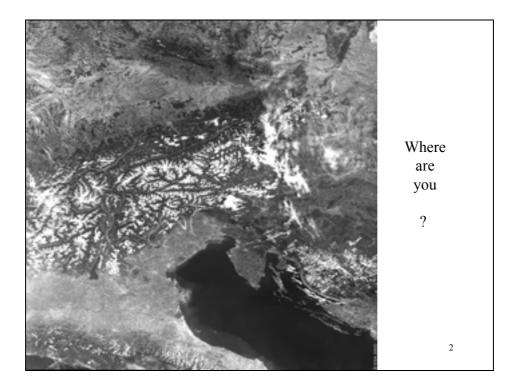
The 1986 UN Principles and current state practice in Europe

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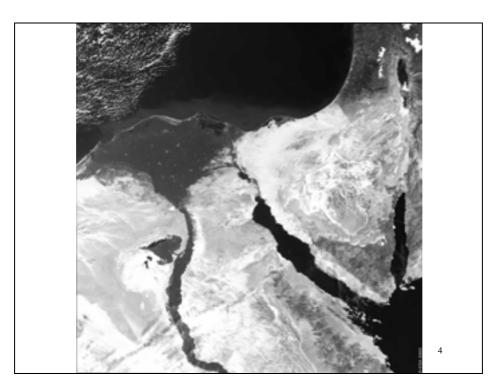




RS AND TELECOMMUNICATIONS: THE TWO MAIN APPLICATIONS OF SPACE LAW

- Importance of Remote Sensing:
 - Development of the economy and the environment
 - Source of many issues because of economic and military security





RS BASIC LEGAL and POLICY FRAMEWORK

- 1986 United Nations Principles
- Data Policy, see each country
- Large and evolving international practice

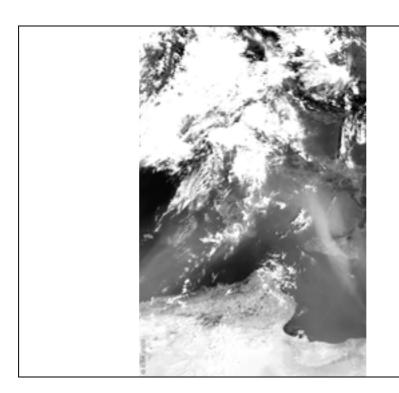


1986 UNITED NATIONS PRINCIPLES

- Principles Relating to Remote Sensing of the Earth from Space = Legality of Earth Observation
- "The sensing of the <u>Earth's surface</u> from space by making use of the properties of electromagnetic waves emitted, reflected or diffracted by the sensed objects, for the purpose of improving national resources management, land use and the protection of environment."



6



1986 UN PRINCIPLES

- Relevance of remote-sensing for future space activities:
 - Commercialization of data
- Classical Issue:
 - Sovereignty over national resources
 - Freedom of dissemination of information.



8

1986 UN PRINCIPLES

- Their main goals:
 - National resources management improvement (Principle I)
 - Benefit and common interest of all countries (Principle II)
 - Environment matters (Principle X)
 - Natural disaster prevention by the transmission of data and information as promptly as possible (Principle XI)



1986 UN PRINCIPLES

- Access to data and sensed state:
 - Freedom of observation/No prior consent (Principle XIII)
 - Access on a non-discriminatory basis and on reasonable cost terms (Principle XII)



10

1986 UN PRINCIPLES

- "States operating remote sensing satellites shall bear international responsibility" (Principle XIV)
 - 1967 Outer Space Treaty, article VI
 - Same rule for RS activities, UN Principles XIV
 - Consequences for private companies



RELEVANCE AND STRENGTH OF UNGA RESOLUTION

- UN Principles = General Assembly Resolution Not a treaty
- Notion of international custom
- Are these principles binding the States?



12

EUROPEAN POLICY EVOLUTIONS

- Europe has now developed experience in building and operating all type of satellites and information.
- Now move to a policy of coherence and long term strategy via GMES:

G lobal

M onitoring a joint ESA/EU

E nvironment initiative to build a

S ecurity complete system by 2010.



DATA POLICY at ESA

UN Principles as guidelines

- Ownership of the data and licensing mechanism
- Applied in ERS, ENVISAT, Earth explorers missions.
- Data policies move from mission ad hoc to Agency for all data.



14

OTHER INTERNATIONAL PRACTICE

Committee on Earth Observation Satellite (CEOS):
Optimise the benefits of spaceborne Earth
observations

- Focal point for international co-ordination of space-related Earth observations activities,
- Exchange of data and technical information.
 International Charter on major disasters:
- Club of space agencies
- Use of RS data to help management of natural disasters worldwide



CEOS – IGOS – Charters

- Models of international co-operation:
 - Flexible method of law creation
 - Standards strongly followed by its members
 - "Soft law" is most suitable



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CONCLUSION AND FUTURE ISSUES

- Conversion of the principles into a legally binding agreement ?
- Application of Principle XII
- Question of the developing countries
- Issues of data restrictions vs. transparency
- Dependence of the countries on space assets for commerce and national security
- Data policies derive from States' economic policy
- How to conciliate the different data policies?

