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TOWARDS THE LEGAL RECOGNITION OF A NEW METHOD OF PROOF FOR THE DEFENSE OF THE ENVIRONMENT : SATELLITE IMAGES

By **Simone Courteix** *

Director of Research at the National Center for Scientific Research (CNRS)
Director of the Center for Study and Research of Space Law
(Institute of Comparative Law), Paris, France

Abstract

The principles contained in the 1986 United Nations General Assembly Resolution consecrating the freedom to record and diffuse images from space has furnished the States with a legal framework without which the development of remote sensing activities could not have been possible. However, the debate over whether the principles set forth in this treaty are customary norms of international law or whether they need be further consecrated in an international treaty remains open.

On the basis of these principles, an international practice has developed of using satellite images to certain purposes especially for international security (to prevent or control the spread of nuclear weapons; for example monitoring the Iraqi and North Korean nuclear facilities and the Libyan chemical factory in Rhabta) monitoring to prevent agricultural or fishing violations (e.g., fallow land and fishing quotas), as well as monitoring environmental disasters (Chernobyl, the Exxon Valdez accident in Alaska, the Corogne region of Spain and the Gulf war).

What legal value could be given to these satellite images as a means of proof before an international environmental Court ? Beyond the objections that could be made based on the scientific objectivity of this evidence, we must inquire into its legal justification and its receivability. After this question is resolved, we will also examine both the texts which discuss recourse to this method of proof and finally concrete cases in the context of jurisdictional procedures.

These developments lead us to consider the creation of a mechanism similar to that which is going to be set up under the WEU for the control of armaments and surveillance of the environment in the form of a global system of satellites data for the benefit of the environment.

By remote sensing activities, one should not understand only space activities. Indeed these activities cover a chain of successive operations from which only the first one takes place in

* Professor of Space Law, Member IISL.

space and go from exploitation of data supplied by the satellite, to the distribution of these data to the users.
This chain of operations has very soon created legal problems, which stand on two levels:

- on one hand, concerning the system properly speaking and its organization, it is a question of knowing until what extent the sensing State has the right to collect and to diffuse information without asking for the prior consent of the sensed State.
- on the other hand, concerning the data, the main question is to decide whether the sensed State has a property right on these data and a right on their use (do we have the right to diffuse any data, to any one ?...)

The answer to these questions, that we will very succinctly deal with in the first part of this paper, will allow us to speak about the key issues of our subject today, that is to say : is it possible to use the satellite images as a means of proof in the framework of an action brought to a Court and what is the legal value of this type of data ?

In order to point out the potentialities of satellite remote sensing for legal assistance, we will present in a second part of this paper the international practice of using satellite data, in many fields, which will be illustrated by some examples. We will then define in a third part the conditions in which this technique of proof can be used and we will ask ourselves about its justification and its receivability.

International space law sets up two different legal regimes depending on whether we are considering the utilization of the satellite for remote sensing purposes or the utilization of the data obtained by remote sensing, and first of all

I - THE LEGAL PRINCIPLES GOVERNING THE SATELLITE REMOTE SENSING ACTIVITIES.

According to principle 1 of the 1986 resolution (1), remote sensing designate " the sensing of the Earth's surface from space ... for the purpose of improving natural resources management, land use and the protection of the environment". The meteorological or military monitoring activities are then out of the scope of these principles.

Are the activities of remote sensing recorded images allowed by international law ? Is the remote sensing State obliged to obtain prior consent of the State which territory will be observed ?

A - The lawfulness of remote sensing activities.

To this respect, the general principles of space law, confirmed by the legal principles governing, in a specific way, remote sensing activities sets up the principle of freedom of remote sensing images records. This principle is in fact the expression of a pre-existing customary rule of the practice followed by various actors of the international community : States and international organizations.

1 . The existence of a customary rule (2)

It is possible to conclude from the behavior of States a certain kind of consensus among States as for the existence of a customary rule. It is the result of

- the approval of this practice, during the 2nd conference of the United Nations on peaceful activities of outer space which was held in Vienna in August 1982 (3).
- the progressive codification of the lawfulness of satellite observation in a conventional rule, particularly with the decisive step that was achieved with the american-soviet agreements on the limitation of strategic armaments that deal with the use of national technical means of verification (4). This principle

has been further consecrated in the international texts on space law.

2 . The space law rules (5).

The 1967 Outer Space Treaty, in its article 1 sets down indeed the fundamental principle of freedom of exploration and of use of outer space. Remote sensing by satellites is then recognized as an activity among others, using outer space. In this way, it may be freely carried out by the States.

Remote sensing images are recorded from space in which State sovereignty is prohibited, according to article 2 of the 1967 Treaty. Thus they do not need, unlike the pictures recorded from an aircraft, a prior authorization from the State which territory is overflied .

Besides these space activities must be carried out for the benefit of all mankind and according to the principles of international cooperation and of peaceful use of space (principles that take here all their importance in the framework of the purposes sought by the satellite environmental monitoring).

- Remote sensing.

The general principles of space law have received application, particularly concerning environmental surveillance by satellites, through the adoption of fifteen principles on remote sensing, adopted by consensus the 4th December 1986 in a resolution of the United Nations' General Assembly and materialized in a recommendation form without any binding force (6). This resolution confirms, among others principles, the freedom to record images and the human finality, but in a more specific way the principles X and XI, precise that "Remote sensing shall promote the protection of the Earth's natural environment and the protection of mankind from natural disasters".

If the lawfulness of remote sensing activities has very soon obtained the consensus of the United Nations Space Committee members States, notably as for their application to the environmental protection field, it was more difficult to get it concerning the problems presented by the dissemination of data collected by satellites and for the access to these data. To this respect, the key question to resolve was to know whether a State, having at its disposal information on another State, thanks to remote sensing by satellite techniques, should have to obtain the authorization of the latter in order to diffuse these remote sensing images ?

B - The regime of diffusion of remote sensing images (7).

The compromise agreement of 1986 allows a collect and a free distribution on a world scale of remote sensing data, while obtaining access for the sensed States to the ones concerning their territory. In return, this free diffusion, without discrimination, may well commit the international responsibility of the State carrying it.

1 . The principle of free diffusion without discrimination of remote sensing images.

It means that all States having at their disposal remote sensing images have to allow the State whose territory has been observed to have access to these data on a non discriminatory basis; it also means that all sensed States are ensured to have access to the primary data and to the processed data and in principle to the available analysed information. As for the conditions of access to these data, we have to point out that the States exploiting operational systems have adopted a set of rules or commercial practices (8) in order to specify them, according notably to the purpose sought by remote sensing.

As for the use of data for environmental purposes, we have to precise that in accordance with the principles X and XI aforementioned, a State having identified information in its possession that is capable of averting or reducing any phenomenon harmful to the Earth's natural environment or the consequences of a natural disaster, shall transmit such information to the States concerned or likely to be affected by it. These provisions do constitute the beginnings of a system of utilization of data for the benefit of the environment.

2 . The responsibility of States participating in a remote sensing program.

States having at their disposal remote sensing images can therefore diffuse them freely, but the counter part of this freedom is an obligation of responsibility.

Remote sensing activities being complex and including the new notion of "sensing community", the United Nations principles, particularly the principle XIV, involve two types of liability, one of space law limited to activities carried out in outer space and a liability of international law for the other States participating in these remote sensing activities. This is particularly the case of the activities of collecting and diffusing these data, that "should not be conducted in a manner detrimental to the legitimate rights and interests of the sensed States" (Principle IV in fine). But we should ask ourselves on the meaning of the terms "detrimental effects" and "legitimate interests" of the sensed State. Concerning our point of issue, if a State considers having suffer a damage because it was not informed of any harmful phenomenon to the environment or a natural disaster, while another State possessed these data that would have allowed to prevent it, it can engage the liability of the latter, that is to say, according to the norms of international law : proving a damage, establishing the relation between the damage and the illicit fact ..., by referring to the famous principle of "precaution" that has appeared, this last years, in the environmental law, and invite, when in doubt, to protect ourselves from the risk (9).

We can then conclude that the 1986 United Nations principles set up a specific regime for the diffusion and the use of data relating to the protection of the environment. But while the 1967 Treaty has a legal binding nature, the 1986 principles is only the expression of a recommendation of declared principles, even if they reflect the legal opinion of the whole international community due to their adoption on a consensus basis, and to a constant and repeated practice since 1986, during which, one can notice the absence of an opposite act as for the content of these principles. We must however note that the legal international regime of remote sensing still has a general character and that the task to develop it by a more precise regulation remains opened. The non resolved questions are to be settled either by institutional cooperation, or by contractual practice (10).

The legal conditions of access and diffusion of satellite images being so defined, we have to examine now the practice of using satellite data that has been developed : in what fields and for what purposes ?

II - THE DIFFERENT FIELDS OF LEGAL UTILIZATION OF SATELLITE DATA.

A- Utilization for international security purposes.

Looking through the specialized newspapers of the last years, that have published pictures recorded by civil or military satellites during international crisis or conflicts, is enough to realize how much the gigantic space

observatory becomes an irreplaceable tool to help diplomats and lawyers.

The satellite images play indeed a leading part among the different methods of verification in the field of disarmament and of limitation of armaments (11). We shall only mention among the most known examples the pictures recorded in 1977 of the Kalahari desert in South Africa, those of the chemical factory in Rhabta in Libya, the latest dating from the Gulf war and its followings (12), particularly the oil slick in the Persian gulf, that has been triggered off by the Iraqi army by opening the terminal gates (13).

At last in relation with other systems of verification, the satellite images constitute at the present time complementary inspection means irreplaceable in the framework on the one hand, of the mission conferred to the special Commission of the United Nations concerning Iraq, and, on the other hand, of the verification of the declarations of the Peoples Democratic Republic of Korea concerning the nuclear activities engaged by the country in certain parts of the site of Nyongbyon.

We can assess by these examples the fundamental role played by the remote sensing satellite transcending the frontiers, that provides a means to detect signs of proliferation of nuclear weapons (14), without colliding with the limits of the diplomatic intervention and the sovereign rights of the States. On the contrary, it offers of course possibilities of observation that might come into conflict with the preservation of the integrity of nations and of the private life, if all the requirements are satisfied (15). We still have to point out that all scientists agree to consider that such satellites will never completely replace the inspections in situ and the intelligence services that will corroborate the images recorded by satellites.

B - Utilization for agricultural or fishing exploitation purposes.

Remote sensing satellites offering particularly the great advantage to overfly at regular intervals any point of the globe and in particular to observe what has changed between two passages, the European Community Commission has decided to use this inquiry tool in support of its agricultural, environmental and research policy among others to verify that the policy of fallow land is well implemented and in order to calculate the compensations to pay for (16).

We have however to point out that according to the experts' opinion, particularly from Spot Image, these satellite images, used for control purposes, should rather be considered as an inquiry tool consisting in indications than a system of proof that needs to be confirmed by verifications on the ground.

C - Utilization for natural disasters assessment purposes.

Of course every one has in mind the terrible floods produced around the city of Saint Louis, in July 1993, caused by the rising of the Mississippi. Thanks to ERS-1, it has been possible to photograph the extent of the flooded area as well as the nature and the type of the cultivation affected, but these informations had to be confirmed on the ground.

D- Utilization for environmental monitoring purposes.

We will mention here some examples of environmental damages, watched by remote sensing satellites and which satellite images can serve as a precious auxiliary for the legislator or the judge induced to pay for compensation to victims of ecological

harms. We shall particularly remind the successive images recorded by satellite of the Chernobyl disaster, of the Aral sea, of forest fires but mostly of oil pollutions at sea, such as the Amoco Cadiz, Exxon Valdez, the oil slicks off Corogne, etc. .... (17)

Most of the accidents that are at the origin of an oil pollution are linked to transport. Setting up an inventory of fixtures by several means, particularly by satellite records, enable to establish what the remote sensing specialists call a "cartography of the environmental vulnerability", that can be used as a reference in case of a further dispute. These maps, recorded at successive moments of time will serve as a basis of comparison and measure of the real impact of the pollution, as well as an assistance for setting up an emergency plan and an assessment of the importance of the damages.

What is the nature and the extent of the disaster ? Who is responsible and how to assess the total compensation to pay for ? These are the main questions to settle in case of a dispute. We have already seen that the satellite images can help to resolve these questions. But what is the legal value that can be given to these data ? We will now examine, in the last part of this paper, this item.

III - THE PROBATIONARY VALUE OF SATELLITE DATA.

From the embryo of practice that tends to develop more and more, we have to inquire about the scientific objectivity of this technique of proof, of its legal justification and its receivability, particularly in the framework of an action brought to an international environmental Court to be created.

A- Conditions of receivability of satellite data as a means of proof.

We will briefly list them.

a) Method and space technique used.

The systems of acquisition of data differing, according to the method used and to the types of sensors located aboard the satellite, the results obtained can also very noticeably vary, depending on whether it is an optical satellite or a radar satellite.

b) The value of satellite data.

It depends on three factors :

- the preciseness of the measure itself and its stability in time
- the degree of preciseness concerning the location of a phenomenon
- the dimension of the phenomenon to observe (18)

c) The difficulties of interpretation of satellite data.

Indeed a remote sensing image is the product of a whole chain of very complex measures that generate at each link risks of errors and of divergent interpretations. The big problem to settle, once the data analyze is performed, is to compare the conformity of the results with the reality observed and therefore their reliability (19).

d) The selective appropriateness of this type of evidence.

The satellite data, as a means of proof, are not suitable to all types of violations or pollutions. They are not much useful to detect the punctual discharges of vessels at sea, and to identify in an irrefutable way the offenders. On the other hand satellite data are particularly appropriate to offer an objective assessment of a situation laid down and above all to enable a control of the mega pollutions and a survey of their temporal evolution: for

example the several oil slicks aforementioned are very lightening evidence of this.

e) The satellite data, an element of evidence among others, need to be confirmed.

One could notice that in the most cases aforementioned, a confirmation in situ, by inspectors or by airborne means, in several areas of activities, was necessary. This authentication is necessary in order to reduce as much as possible the scientific uncertainties, and as a consequence the one affecting the determination of the damage and its estimation. The parade of the law to this inadequacy is the more and more frequent adoption of the aforesaid "principle of precaution" (20); remote sensing satellites can significantly help to the implementation of such a principle and to the control of the application of rules. Let us examine now this question.

B - The legislative and case-law basis of this type of evidence.

And first of all

a) The international legislation.

The most recent and characteristic example is the one of the 1973 international convention on the prevention against pollution by ships, as amended by the Protocol (MARPOL 73/78). Its provisions specially require the Parties to cooperate in order to detect the infringements and pursue the offenders; but taking into account the difficulties presented by the charge of evidence in case of a supposed infringement to the Bonn agreement dealing with the oil discharges at sea, the Parties to the agreement convened to elaborate, for the benefit of the authorities in charge of the detection of the infringements, a handbook describing the airborne monitoring systems as well as the other methods used to identify the offenders and acquire evidence of the offense. The text of this handbook entitled " Oil pollution at sea; securing evidence on discharges from ships", adopted in 1993 (21) constitutes an assisting tool for decisions and provides a reference book for the judges who will have to come to a conclusion on the licit or illicit character of a discharge at sea.

If the satellite images can be used particularly as a means of proof for oil mega pollutions, this is because the Marpol convention and the 1993 handbook expressly authorizes this kind of proof. The case is different concerning the surveillance by satellites of the iraqi and north korean nuclear plants aforementioned; because if the IAEA could obtain this type of information, it is via the United States and its remote sensing satellites, but it could not legally put them forward as an evidence before the Council of Governors - and a fortiori before the Security Council - for want of capacity to rely on legal texts authorizing this organization to do it.

b) The national legislations.

The problem of the probationary value of these satellite images arises as well as for other technologies, such as computer data, fax, view data processing, etc ... that call in question the legal system concerning the law of evidence (22). The notion itself of proof not being defined by international law, each of the national legal systems will have to answer this question. In this way, in the United States a recording is more evidence than in the french procedure, even if the french law of evidence has considerably evolved and extended the system of freedom of evidence, particularly in civil, administrative and commercial law.

It is impossible, in the framework of this paper, to do a comparative study of the law of evidence. We will only point out that in

the field under consideration, the current trend of the legislator is to include provisions concerning as well sanctions in the case of infringement than in support of verification instruments that can be brought to Courts in case of damages to the environment. This is for instance the case of the draft bill on the protection of the environment in Hungary, as well as the brazilian law that particularly takes into account satellite images as a tool for environmental monitoring.

Of course, any regulation will be necessarily submitted later to the interpretation of the judges and the decision to pursue will depend on the "rooted conviction" of the Attorney-General concerning evidence brought to him. What is the contribution of the jurisprudence in this field ?

c) Case law.

To our knowledge, the number of decisions of Courts in this field are very limited and we can more argue by analogy with litigious cases in which aerial photographies recorded by aircraft overflying at a high altitude have been considered as receivable by the Courts.

This practice has been established by the famous decision of the United States Supreme Court in the case of Dow Chemical v. United States representing the Environmental Protection Agency (23).

We will not develop this special case and the arguments presented by both parties aiming to reject or to confirm this type of evidence. We will only keep in mind that by its decision, the United States Supreme Court has given legality to the utilization by the Environmental Protection Agency of remote sensing data, recorded by an aircraft overflying at a high altitude, the Dow Chemical industrial complex, in view to enforce the environmental laws in the United States, in the present case the Clean Air Act (24). This decision constitutes a precedent for aerial (and by logical extension, space) surveillance cases (25). It constitutes a precedent that can only encourage the public authorities or the private companies and individuals to use remote sensing data as evidence, in environmental legal proceedings, which already american lawyers usually do, by getting images recorded by the Landsat satellite to the Eosat company which markets these data.

What about the receivability of this new means of proof brought to an international environmental Court to be created ?

Here also the decision to pursue will depend on the "rooted conviction" of the judges constituing this Court, according to evidence that would be brought to. As for the decision properly speaking, it remains submitted to the same hazard of interpretation than those national Courts of justice are facing (26).

Let us go back now to our previous idea to establish a parallel between the utilization of images recorded by satellite, in support of a violation of the Vienna Agency NPT safeguards agreements, brought to the Security Council of the UNO, and the utilization of satellite data as evidence of a violation of agreements on pollution prevention. In these cases, the main problem to settle concerns the legal basis on which the Security Council can lie upon - via the IAEA - on one side, and the aforesaid International Environmental Court on the other. It would be convenient in one case as in the other to confer to these international instances the power to use these types of evidence and of course to have the technical and financial means allowing it.

But this question takes us back to the problem examined in other instances and in the framework of other colloquiums (27) : that is to know whether it

would not be convenient to create an International Satellite Control Agency having both missions of controlling armaments and of monitoring the environment. This proposition, considered under several forms, in the framework of the UNO (28), has not yet received a concrete materialization. Otherwise a mechanism of control, having both missions, is being set up on a regional level in the framework of the European Occidental Union, which Satellite Center, constructed in Torrejon (Spain), represents the first concrete step to the setting up of a European Agency of processing and interpreting satellite images.

CONCLUSION

The environmental protection of our planet has given birth to a corpus juris specialized in environmental law which have seen its confirmation during the 1992 "Earth Summit" in Rio de Janeiro. These international regulations generally fall short of the weakness, the lack of mechanisms of control or constraints that would make them more effective.

The remote sensing satellite is the only technique allowing to break away from frontiers and to bring the "photographic evidence" often judged essential by the political or legal authorities. No doubt, in our opinion, that the international community is moving towards the legal recognition of this new method of proof, a decisive tool in the framework of the defense of the environment.

NOTES

(1) See U.N.G.A. Res. 41/65 (Dec. 4, 1986).

(2) On the customary law in international law, see Manin, Ph., Droit International Public 20-35 (Masson, Paris, 1979); concerning its elaboration in space law, see Peyrefitte, L., Le droit de l'espace, 40-41 and 275-277 (précis Dalloz, Paris, 1993); see also Christol, C.Q., The 1986 Remote Sensing Principles : Emerging or Existing Law?; Proc. 30th Colloquium on the Law of Outer Space,268-275 (1988).

(3) See U.N. Report on the 2nd Conference on the peaceful uses and exploration of Outer Space (Vienna, August 9-21, 1982), A/CONF.101/10, Aug. 16, 1982, 27-32-46-56.

(4) On the provisions of these agreements concerning the satellite verification, see the article of Fischer, G. and Sur, S., in Annuaire Français de Droit International, 33-68 and 69-93 (1977); on the legality of satellite reconnaissance, see Kuskuvelis, I.I., La légalité coutumière de l'observation spatiale militaire, 3, Revue Française de droit aérien et spatial, 297-322 (July-Aug. 1990).

(5) See Courteix, S., Le droit de l'espace (Documentation Française, Doc. d'études 3.04); Peyreffite, L., Le droit de l'espace (Dalloz) op. cit., and Martin, P.M., Le droit des activités spatiales (Masson, Paris, 1992).

(6) On this U.N. code of conduct concerning the satellite remote sensing, see Peyreffite, L., op.cit.,note 4, 271-320; Christol, C..Q., Remote Sensing and International Law, Annuaire de droit aérien et spatial. 380 (1980); de Saint Lager, O., Aspects juridiques de la télédétection spatiale, in Aspects récents du droit de l'espace, 225 (Pedone, Paris); Colliard, C.A., Les principes régissant la télédétection spatiale, A.F.D.I., 697-714 (1986); Catalano Sgrosso, G., Mise en oeuvre des principes des Nations Unies sur la télédétection. Droit, Télédétection et Environnement (Sides, Paris, 1994).

(7) See note 6, op.cit.

(8) On these laws and contractual practices, see Droit, Télédétection et Environnement (Sides, Paris, 1994).

(9) On the aforesaid principle of precaution, see particularly Kiss, C.A., Droit international de l'environnement, 350 (Pedone, Paris, 1989) and Remond-Gouilloud, M., Le risque de l'incertain :

la responsabilité face aux avancées de la science. La vie des sciences, reports, general serie, t.10, 4, 341-357 (1993).

(10) See Droit, Télédétection et Environnement (Sides, Paris, 1994).

(11) A revealing number of research reports or works have been published along the recent years by the UNIDIR on the technical and political aspects of this question. See particularly Sur, S., (Ed.) La vérification des accords sur le désarmement et la limitation des armements : moyens, méthodes et pratiques , 406, U.N., (1991) and Vérification du désarmement ou de la limitation des armements : instruments, négociation, propositions, 246, U.N., (1994).

(12) See for instance Un ciel bien encombré, in Le Monde (14 Nov. 1990), or Conflit du Golfe: rien n'échappe aux satellites, in Science et Vie (Sept. 1990); Air and Cosmos (25 Aug. 1990), or Le rôle des satellites dans le dispositif occidental; Les surveillants du ciel in Le Monde (18 Jan. 1991).

(13) See particularly the images recorded by the american satellite Landsat and published in Aviation Week & Space Technology (4 March 1991) and corroborated by airborne american and canadian pictures in May 1991, as well as by pictures recorded by the MIR orbital station, Le Monde (3-4 March 1991). Besides, we know that the Americans have been the biggest users of images recorded by the Spot satellite during the Gulf war, see Air & Cosmos 30 (9-15 May 1994).

(14) The newspapers have recently revealed that a research laboratory on nuclear weapons in Los Alamos was finalizing multispectral sensors "made to suit" and put aboard satellites allowing to control the proliferation of nuclear weapons ant to verify agreements on armaments control, that would particularly be used to monitor a State's territory that fails to cooperate with the Vienna Agency's inspectors. See Space News (31 Jan. and 6 Feb. 1994) and Financial Times (25 March 1994).

(15) All the more the Russians, as the Americans, have recently authorized private companies to commercialize pictures with a high resolution. See particularly the President Clinton's directive, International Herald Tribune (12-13 March 1994).

(16) See Space News, Nov. 23-29, 1992 and Jan. 31 - Feb. 6, 1994 and Un oeil dans le ciel pour prévoir les récoltes, Le Figaro, Apr.4, 1994.

(17) See particularly Spot, l'Environnement sans frontières, 44 (1990); Accéder à une vision vivante de la Terre (May 1993) and Spot et l'Environnement, files 1986 to 1990 (Toulouse, Spot Image); Les satellites au service de l'environnement et du développement, 20 (ESA, Paris, 1992).

(18) See Becker, F., Les systèmes d'observation de la terre, caractéristiques, possibilités et aspects juridiques in Droit, Télédétection et Environnement (Sides, Paris, 1994).

(19) Ibidem.

(20) See Kiss, C.A., Le droit international de l'environnement et la télédétection, in Droit, Télédétection et Environnement, op. cit., note 10 and Remond-Gouilloud M., op. cit., note 9.

(21) The ministerial declaration of the 3rd international Conference on the protection of the North Sea held in La Haye the 7-8 March 1990 planed a serie of measures aiming to reinforce the environmental protection of the North Sea and particularly an action program aimed to improve the gathering of evidences, necessary to the pursue of the offenders. A working Group was created and on the Danemark initiative, four seminars were organized with the support of the European Commission. Their works have lead to the adoption of this handbook which has been widely diffused to the competent national and international instances. See Bonn Agreement (1993) handbook "Oil pollution at sea; securing evidence on discharges from ships" ou "la pollution des mers par les hydrocarbures; recueil de preuves concernant les rejets en provenance des navires", french version, 56.

(22) See the excellent collective book, Une société sans papier? Nouvelles technologies de l'information et droit de la preuve, 254 (Documentation Française, Notes et études documentaires, n° 4914-4915, 1990).

(23) See Dow Chemical Company v. United States, 476 U.S. 227, 106 S. Ct 1819 (1986)

(24) See Clean Air Act, 42 U.S.C. §7414 (a).

(25) For more details concerning this sentence, see G.P. Sloup and E.A.Inadomi, The Legality of Airborne and Orbital Remote Sensing to Enforce Pollutions Laws - The Evolving United States Practice, 33th Proc. Colloquium on the law on outer space, 168-172 (1990).

(26) It is therefore not excluded that in a more or less close future, an association could submit such matter to a Court. But moreover it should be able to prove that its "direct interests" (see p. 4) have been damaged.

(27) See Courteix, S., L'utilisation de l'espace pour la protection de l'environnement : aspects institutionnels et juridiques, vol. XV, Annales de droit aérien et spatial 275 (1990); ibidem, Les satellites bleus au service de la paix et du désarmement, 24, German Yearbook of International Law, 242 (1981); see also the reports of Revah, I. and Chevrel, M. and Kopal, V., in Droit, télédétection et environnement, op. cit. note 10.

(28) See CERDE Faut-il créer une organisation mondiale de l'espace?, 167 (La Documentation Française, Paris, 1992) and more specifically the recommendations of this french working group concerning the creation of a "United Nations' Center for Space", having among other functions the analyze and interpretation of satellite images for environment surveillance and international security purposes, on behalf of the UN Security Council or any other international environmental authority.