

EARTH OBSERVATION AND DATA POLICY IN EUROPE:  
THE LEGAL ISSUES  
- The EOPOLE Concerted Action Project -

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Abstract

Earth observation activities using satellites constitute one of the areas of space activities where important developments are presently occurring – most prominently as regards the ‘downstream’ use and application of data resulting from those activities. The increasing measure of private involvement in the relevant activities and the increasing availability of very high resolution data on the market are especially noticeable from this perspective. Policy issues regarding the use of earth observation data – as partly reflected by, partly resulting in legal parameters – in their turn are of paramount importance also for the earth observation activities in outer space themselves. From a legal point of view, ‘Europe’ presents an area of special interest here, in view of the large measure of integration of national economies and space activities (including satellite earth observation), in terms of the European Community, ESA and EUMETSAT. Here, three areas may be discerned where serious obstacles for benefiting optimally from earth observation activities still exist: in technology, in the development of applications and in data policy. Some of the technology barriers are being tackled through ESA and EUMETSAT, for example with the Envisat and Metop programs. The development of applications is enhanced through national initiatives and international initiatives such as the European Commission’s Centre for Earth Observation (CEO). So far little analysis is available on earth

observation data policy issues in Europe. What is clear, however, is that no investments in the exploitation of the data and in the systems to access earth observation data have been made which would somehow be comparable to those which have been made in the space segment. This lack of interest in the conditions of access to earth observation data, fundamental to the exploitation of earth observation data and the further growth of earth observation markets, poses a serious threat of backfiring at the European satellite earth observation activities ‘upstream’.

The CEO undertook various efforts to bring earth observation data customers and earth observation service providers together through its activities in terms of user support, applications support and enabling services. Especially dealing with earth observation data policy was seen by the CEO as helping it to meet its objectives, in terms of enlarging the benefits to be derived from use and application of earth observation data. The EOPOLE project, undertaken by a team of European institutions led by the University College of London’s Department of Geography, represents one such effort as it analyses the various earth observation data policy issues in Europe from a political, economical and technical, as well as from a legal point of view.

In discussing such issues regarding applications and use of earth observation data gathered from space, a few parameters readily offer themselves for further scrutiny. On the one hand, the practical link of data policy issues to the space activity of earth observation itself also has an

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interesting legal component. On the other hand, the dominant legal issues in data policy, especially in the European context, are of a more indirect effect when it comes to the space activities proper. In introducing the EOPOLE project, the present paper thus presents an effort to shed more light on the precise relationship between the space activity of earth observation itself and the issues of data policy, and more in particular on the role which legal issues play in this regard, further to the general remarks above.

### 1. Introduction: the EOPOLE project

The project on Earth Observation Data Policy and Europe (EOPOLE)<sup>1</sup> has two major aims: to review and co-ordinate relevant European national research in earth observation data policy, and to identify and recommend improvements to earth observation data policy with a distinctly European perspective in order to provide better conditions for the expansion of the earth observation sector, thus contributing to the objectives of the European Commission's Centre for Earth Observation (CEO).<sup>2</sup>

As secondary aims EOPOLE would in addition collate and review the earth observation data policies of European member states and international agencies in which Europe plays an active part, transfer knowledge and experience of earth observation data policy issues (particularly those directly affecting users) amongst European member states, increase awareness in the earth observation sector of obstacles current earth observation data policies are providing as well as opportunities for improving the conditions of access to earth observation data by changing earth observation data policies, and build broadly-based European expertise in earth observation data policy so that the European perspectives can be articulated in global earth observation fora.

A strong user perspective should be driving the discussion of the pertinent issues: it should focus on those earth observation data issues which are

presently or at least in the foreseeable future of real importance for the users, e.g. as to the types of activities closely considered.

Furthermore, the European context for EOPOLE regarding earth observation data policies would mean that the focus would largely be on the European interests in earth observation data and related activities and on European obstacles and opportunities in this field.

A further concept at stake concerns privatisation, which as such is beneficial for the further exploitation of space including earth observation activities, though obviously a balance between the interests of private enterprise in undertaking certain earth observation related activities (and of governments in enticing them to do so) and the interests of the public at large in (for instance) safe, non-violent and non-polluting earth observation activities should be struck.

Finally, it may be noted that the earth observation sector could be subdivided into a few distinct and legally relevant categories of activities. Earth observation *lato sensu* consists of the following sets of activities: 1) the development and production of spacecraft and instruments used for earth observation; 2) the launch and actual operation of the spacecraft, including the core activity of earth observation itself; 3) activities consecutive to the creation of data in the strict sense, such as down-linking, reception and value-addition on earth; and 4) marketing and sales activities related to the data once these are (value-added or not) fit for use by entities not involved and experienced in any earth observation activities themselves.

The foregoing offers the general outline for discussing pertinent legal issues in regard of the satellite earth observation sector, and in particular of the related data policy issues, as it arose from discussions within EOPOLE, and will be sketched further below.

## 2. Space law and satellite earth observation

As the basis for any legal analysis, a well-known though rather limited set of rules is provided by space law-proper which will be summarised presently for completeness' sake. The fundamental rule of space law regarding freedom of space activities<sup>3</sup> provides the starting point for any discussion on space law: everything that is not, one way or another, prohibited or conditioned, is allowed. This includes, obviously, the activity of using satellites for earth observation purposes. On the other hand, it should be pointed out that, equally obviously, this regime applies (with a few major exceptions) to the second category of earth observation activities: the 'space part' itself.

The Outer Space Treaty itself provides mainly for a few principles to which space activities should conform. Examples thereof concern international co-operation, absence of stationing of weapons of mass-destruction, the supervision and authorisation of private space activities, and sincere efforts to minimise harmful effects of one's space activities (e.g. as to the environment).<sup>4</sup> Also, states are responsible for private space activities carried out under their *aegis*,<sup>5</sup> as well as liable for damage caused by space objects involved in such private activities.<sup>6</sup> The latter regime has been further elaborated by means of the Liability Convention of 1972.<sup>7</sup>

The issue of earth observation (or, as it is phrased by a slightly more comprehensive term, 'remote sensing') has only been dealt with in any detail by the United Nations General Assembly Resolution 41/65, adopted with consensus on 3 December 1986.<sup>8</sup> The Resolution acknowledges the freedom of remote sensing activities, as one particular manifestation of the freedom of space activities subject only to international law.<sup>9</sup> Also, it requires respect for the sovereignty and the rights especially of the 'sensed state', as well as the legitimate rights and interests of any state and its entities.<sup>10</sup> Furthermore, the Resolution urges the promotion of international co-operation *in re* remote

sensing, including sharing resulting data or technical know-how.<sup>11</sup> However, this does not alter the fact that the 'sensed state' has no veto to prevent it from being 'sensed', or even an exclusive or preferential right of access to the data. Rather, access is to be made available "on a non-discriminatory basis and on reasonable cost terms".<sup>12</sup> This Principle is the most prominent provision directly relevant for activities downstream from the satellite earth observation activities for data policy purposes. Finally, information "that is capable of averting any phenomenon harmful to the Earth's natural environment", respectively "that may be useful to States affected by natural disasters, or likely to be affected by impending natural disasters", should be transmitted as quickly as is feasible to the other states involved.<sup>13</sup>

## 3. The European legal dimension to satellite earth observation activities

The efforts at international or even supranational integration which have been undertaken within Europe ever since World War II have led to the existence of three international organisations which taken together provide earth observation in its widest sense in the European context with its own extra legal dimension, in addition as it were to the rough framework provided by international space law – and, moreover, not just focusing on the 'space part' of earth observation..

Here, firstly the European Space Agency (ESA), established in 1975, is of importance. ESA is entrusted with joint research and development programmes of an exclusively peaceful nature.<sup>14</sup> Individual member states offer such programmes for the purpose of allowing other states to join (and to make them share the costs thereof), while ESA itself also has the competence to propose programmes. Article V of the ESA Convention represents the nucleus of ESA's role in the European space endeavour. It provides a framework that allows for much flexibility in accommodating the desires of individual states

to join certain space programmes at a certain level of involvement, while maintaining a coherent and efficient manageable space programme on the international plane.

Article V makes the fundamental distinction between mandatory activities and optional activities, and in addition establishes yet another category – that of operational activities. Mandatory activities of ESA are of a scientific nature – studies of future projects and technological research work as well as the elaboration and execution of scientific programmes, including those with regard to satellites and other space systems.<sup>15</sup> Optional activities of ESA on the other hand concern the design, development, construction, launching, placing in orbit and control of satellites and other space systems.<sup>16</sup>

The third category, of operational activities, can be undertaken by ESA on behalf of other agencies or entities.<sup>17</sup> This concerns, for example, the placing of ESA facilities at the disposal of such an agency, or the launching, placing into orbit and control of application satellites. This clause, specifically aimed at space applications, allows ESA to be involved in operations such as meteorology-related remote sensing. Specifically for this purpose, the second international organisation of current interest EUMETSAT was created, in respect of which ESA performed essential functions such as tracking and control of the satellites and the design and development of next generations of meteorological satellites.

The European Meteorological Satellite Organisation EUMETSAT was established in 1983, by means of the EUMETSAT Convention.<sup>18</sup> The major task of EUMETSAT is to continue the Meteosat programme, developed and hitherto operated by ESA. As a consequence, EUMETSAT is so far only involved in remote sensing for meteorological purposes, and not for earth observation purposes such as agricultural, environmental or cartographic ones. EUMETSAT essentially operates as a customer- and user-organisation:

development, construction and operation of (new) satellites is still undertaken by ESA.

For both ESA and EUMETSAT, from a legal perspective it is important to note that they are inter-state, inter-governmental as well as operational organisations: they pool material resources of individual member states and act as mechanisms to prevent inefficient duplication of activities within individual member states. In both cases, the member states did not bequeath the international organisations with anything like independent regulatory authority and competencies. Legal rules and competencies developing within the two respective frameworks, therefore, can only do so with the clear consent of all member states, and remain the exception rather than the rule.

For the European Community (as the legally relevant pillar of the European Union), obviously this lies different. As a supranational halfway house between a traditional international organisation and a federation-like structure, it effectively pools the regulatory efforts of the member states. This has gone so far, that actually the sovereignty of the individual members states (obviously predominantly on economic issues) has been noticeably lessened by this ‘leaking away’ of many sovereign competencies to the partly supranational level. This was achieved through signature and ratification of the Treaties of Paris and Rome in the 1950’s<sup>19</sup> and subsequent treaties such as the Single European Act of 1986,<sup>20</sup> the Treaty on European Union of 1992<sup>21</sup> and the Treaty of Amsterdam of 1997.<sup>22</sup>

Together these treaties form a body of primary Community law, *inter alia* creating the main Community organs. Furthermore, the treaties provided these organs with extensive legal competencies that amount in a number of cases to supranational powers. In turn, these Community organs themselves, with primary Community law as the basis, jointly established the immense body of secondary Community law.

These essential elements of the Community legal order present the Community with its own measure of jurisdiction over a wide range of economic or economy-related activities, including in principle earth observation (related) activities. Community jurisdiction moreover can be directly applied not only to the member states themselves, but also to private persons and entities otherwise resorting under the domestic jurisdictions of these member states. In addition, in many cases the rights and obligations directly applicable to individual citizens and legal entities can also be claimed directly. Bypassing domestic jurisdictions of member states, the European Court of Justice can be called upon in a number of instances by those concerned to judge upon the legality of Community as well as national actions.<sup>23</sup> The existence of this body central to the Community legal order represents an essential measure of supranational adjudication. On economic issues the power of an individual state to legislate has thus largely been transferred to – or at least circumscribed at – the Community level. To a major extent, a distinct and partly supranational jurisdiction of the Community has replaced the individual jurisdiction of the member states – whether over their respective territories or over their respective nationals. The Community organs have partially taken over the law-creating role of the individual member states. Under Community law private entities, in contrast to their position under international space law, are definitely subjects in their own right.

Limitations to the Community's competence *vis-à-vis* earth observation activities would emanate from Community law as interpreted in accordance with the notion of 'subsidiarity'.<sup>24</sup> If doubt arises whether an issue could be regulated more effectively and logically at the European level or at the national level, the presumption under 'subsidiarity' is that the domestic level should prevail. In result, unless the competence to legislate on a certain issue has unequivocally (even if only implicitly) been transferred to the Community's organs, the relevant power should

be deemed to rest with the national governmental authorities. In other words; only to the extent that earth observation activities are clearly covered by provisions in primary or secondary Community law, can any competence to legislate with respect to them, be exercised by Community organs. Thus, earth observation activities fall within the Community legal order essentially because (and to the extent that) they form a category of economic activities in general. From this perspective, a few fundamental regimes of Community law would have a substantial impact upon such activities, albeit that the extra-territorial, even extra-terrestrial aspects of satellite earth observation may provide for some additional peculiarities. In a substantive sense, the central and most comprehensive aim of Community integration remains the creation and maintenance of a common market.<sup>25</sup> While only the internal market, being one side of the common market, was established as of 1993, the result amounts to a free market regime.<sup>26</sup> This regime in turn is based upon four freedoms,<sup>27</sup> a competition regime<sup>28</sup> and harmonisation of relevant national legislation.<sup>29</sup> In addition, the future realisation of a common market would call for external competence of the Community organs in relevant matters<sup>30</sup> – but largely this is still a (rather sensitive) political rather than a legal issue.

#### 4. Legal issues in earth observation activities and data policy

Policy, whether national or international, for a large part makes use of legal instruments and concepts. This would be no different in principle for earth observation activities, including issues of earth observation data and the enhancement of their usage. At the outset, a few general legal issues in a substantive sense offer themselves for closer scrutiny, which also this particular area of policy making will have to take into account.

A major instrument of policy, especially *vis-à-vis* private enterprise, is the concept of licensing. Licensing certain activities, or licensing certain entities to undertake certain activities, is an efficient means to control, legally as well as factually, those activities. Whether in respect of nationals or of territory, this instrument allows states to live up to their international responsibility, for example under space law, for such activities. Operating without a license can be made a criminal offence, while in the licenses requirements can be included with regard e.g. to good conduct, financial responsibility, operational know-how and minimum safety standards to be adhered to. Also, international liability can be taken care of, for example through provisions on reimbursement or obligatory insurance.

Licensing in general is an asset usually only of states, which have the full sovereign legal machinery to legislate, implement, enforce and adjudicate licensing issues. Even within the European Community, supranational licensing so far usually takes the form of Community standards and requirements for licensing to which national licensing processes would have to conform. On the other hand, opportunities abound within the Community's legal framework to actually establish such a centralised licensing structure also on the international plane – as the satellite communications market within the Community makes clear. Furthermore, when it comes to operational organisations such as ESA and EUMETSAT, licensing as such might perhaps not form part of their competencies. Yet, their central position in certain areas of activities and the contracts that they conclude with entities (state or non-state) could give them an instrument rather similar to that of licensing. This would apply for example when it comes to the down-stream use of earth observation data involving space operations conducted by those organisations.

In this respect, reference might be had in particular to the possibility to license earth observation activities for their 'space part'

through registration of the relevant spacecraft and the consequent entitlement to exercise jurisdiction over it. Since this 'space part' of earth observation is clearly an indispensable prerequisite for any creation of earth observation data and consequent earth observation data activities, it might present also a useful tool for any policies to be implemented in that respect. The international character and scale of earth observation activities in a practical sense – data could, in principle, be received all over the globe – acts as an advantage here. After all, regulating earth observation activities through licensing of a particular satellite automatically results in those activities undertaken down-stream from that satellite being legally harmonised to that extent.

A second important aspect of earth observation activities *lato sensu* concerns liability, as the legal accountability of a person or entity for damage caused to another person or entity as defined and regulated by a particular set of rules and principles. Both under public international law and in national legal systems a large number of liability regimes for specific activities, areas, situations, and entities exist. Especially in the case of space activities, including those underpinning the earth observation sector, such liability regimes present a powerful regulatory and policy tool, in view of the large risks of failure and the large risks of damage being of a catastrophic character compared with other sectors of human activity. Experience in the United States launch services business has shown that for example the way in which the question of limitation of liability is dealt with plays a crucial role in the measure of private interest in a specific sector of space activities.

At this point, it seems that internationally speaking the sole liability regime of interest for the present analysis is the space law liability regime, as elaborated in the Liability Convention of 1972. Operation of the liability regime contained in it, however, is triggered by the damage being caused "by a space object", which is usually taken to mean by means of physical impact.<sup>31</sup> Thus, it would not seem to include

damage caused by flawed data created in outer space – at least not as of yet. On the other hand, while the required competencies could no doubt be easily found within national jurisdictions, it might be questioned whether at present any national liability regime deals in any reasonably specific manner with earth observation, and/or data distribution at all. Thus, only general (national versions of) legal concepts such as “due care”, “negligence”, “gross negligence” or “wilful misconduct” could be discerned, whose application to the earth observation data business, however, would be – to say the least – uncertain, *ad hoc* and dependent upon interpretation *a posteriori* rather than *a priori*.

A third point of interest for earth observation activities, this time more focused moreover on the data distribution issue, relates to intellectual property rights. Intellectual property rights for the present analysis is a generic term, encompassing copyrights (for written or otherwise ‘created’ materials) and patents (for inventions) as the most common specific forms of intellectual property rights. Any intellectual property rights regime has as its basic tenet the protection of someone’s pioneering and inventing work against potential profiteers benefiting from such work without any effort of their own. The stimulation of pioneering and inventing efforts should be maintained. However, no pioneer or inventor should have an inherent right to an eternal monopoly regarding his or her work; any regime should strike a balance in this respect.

For such a regime to be internationally and comprehensively effective, it should apply to materials created or invented in space, in order not to discourage pioneers ‘out there’. Further, to maximise effectiveness of intellectual property rights protection, efforts to harmonise national legislation on this issue are required. Such national regimes on the issue are usually territorial in scope, whether this concerns the territory where the intellectual property is devised and/or registered, or the territory where the violations of applicable rights occur. One

consequence of the *terra communis* status of outer space<sup>32</sup> is that the normal operation of copyrights and patent rights regimes would be severely curtailed if data is physically conceived, created or invented in that area. At the same time, this is where the issue of terrestrial value-adding comes (back) into the picture.

Such intellectual property rights regimes can and do – even in Europe – differ quite substantially. For example the definition of relevant rights to be protected (what criteria have to be fulfilled in respect of a certain ‘creation’ before a copyright could be granted), and scope thereof (does something fall under copyrights or patent rights), can be very broadly or very narrowly construed. Many differences in procedures and legal consequences of violations may be detected amongst the various domestic regimes. In general terms, the World Intellectual Property Organisation (WIPO)<sup>33</sup> is a harmonising factor of some importance in this field, but obviously its effectiveness in this respect is curtailed by the general, inherently secondary status of international organisations in terms of regulatory competencies.

As to earth observation data activities, one way to deal with the particularities thereof would be by means of data base protection specifically. At first it was ESA that undertook an effort to harmonise national legislation on the issue. The major shortcomings of ESA in this field, however, soon became clear, as stemming from its circumscribed role in legal terms. The tools were provided to impose a certain regime only where ESA itself was an indispensable participant, for example in the European Remote Sensing Satellites (ERS) programme. The opportunity to play such a role, however, is diminishing with the budget cuts on the national level for space programmes undertaken within the ESA framework. In 1990, ESA started a research project on the legal problems of remote sensing data protection, when it became clear that its own competencies were too limited for comprehensive action. The Commission became interested, in view of the possibility to use

intellectual property rights as anti-competitive tools. A study for the Commission resulted in recommendations to make the then draft Directive on the Protection of Databases applicable to remote sensing data. In this regard, the resulting Directive 96/9/EC of 11 March 1996<sup>34</sup> established a *sui generis* right of data base protection. It obliges the member states to include databases, amongst others those containing earth observation data, in their national intellectual property rights regimes, in conformity with a number of parameters further provided by the Directive. The Directive applies to both 'Community nationals' and 'Community territory'.<sup>35</sup>

The fourth particularly interesting legal area for further debate concerns that of privacy. It is especially here, where the special opportunities provided by the availability of very high-resolution data require special attention. Earth observation, especially if of very high resolution, can easily intrude, in practical terms at least, into the privacy of individuals or other legal entities. Whether it would also amount to intrusion in legal terms, depends rather on the various (national) regimes dealing with privacy questions.

At this point, it would be fair to say that such national regimes have not really dealt with the possibility of intrusion into privacy by the 'mere' act of observation from outer space. It will thus be largely a matter of *lex ferenda*. At the same time, of course, this would open up interesting opportunities to actually implement certain policies with regard to earth observation data distribution. Stringent privacy-respecting regimes on earth could provide insurmountable obstacles to a policy designed to enhance the widespread usage of earth observation data (with due consequence fore the satellite operations themselves), and *vice versa* regimes easy on privacy protection could rather stimulate such a policy implementation. In the absence of any effective international regime, overruling the national regimes on the important aspects, the possibility of 'legislative competition', of

competition between states to enhance the earth observation data market by means of liberal regimes, would arise.

A fifth major issue, in a sense a special manifestation of the fourth one, concerns the evidential value of earth observation data. At a 1998 CEO Workshop in Lisbon it became clear that earth observation data could nowadays from a practical point of view serve as evidence for example against polluters of the seas. Whether such evidence would be admissible in court, however, is quite another matter (especially in view of the usual absence of experience and knowledge among magistrates with this ultra-modern and high-key type of evidence), and would depend on national rules on court proceedings. As also became clear at this Workshop, to the extent there was experience with this problem of evidential value, a case in one state was cited as having allowed for earth observation data in evidence, whereas a case in another state was cited as this not having been allowed. International harmonisation would, also here, from a policy perspective create one single market for earth observation data distribution and other related activities.

### 5. Some concluding remarks

The present stage of analysis is concerned with arriving at an inventory of legal aspects and issues rather than evaluating them in any detail. A more substance-oriented analysis will be more proficient once the interests of the various user communities have been defined in more detail. It would then result in clear guidance as to the particular areas where the role of law as a policy instrument – or obstacle – is important. The EOPOLE project is *inter alia* designed to undertake that analysis, as far as earth observation in Europe is concerned.

The dichotomy between the international legal realm of outer space where no sovereignty applies and the various national territories where sovereignty rules supreme is essential for an



understanding of how and where law could operate as a policy instrument *in re* earth observation, including data policy. Even the special legal dimension that is provided by the Community's legal regime has to be understood from this perspective. It will thus play a crucial role also in EOPOLE's analysis on the role of law as a policy instrument in regard of earth observation and earth observation data.

In this light, again the fourfold sub-division of earth observation in categories of activities is of importance. On the first category, it appears that it would present a too remote and too indirect point of attachment of legal rules for the purposes of data policies to merit extensive evaluation. Even the only reasonably elaborated concept, of product liability, would not seem to bear any significance from that perspective. In either case, on this category national law rules supreme, international law would operate as a harmonising factor at best – with all attending difficulties.

On the second category, legal regulation is more international in character than in the other cases. This has obviously to do with the fact that the international area of outer space is directly involved here. Admittedly, also individual states' territorial sovereignty – next to jurisdiction over nationals and over registered space objects – remains a potent tool in view of the character of these earth observation activities as being 'remote-controlled' from the earth. The 'space part' of earth observation nevertheless presents a likely target for international law and internationally harmonised national legislation, in view of it being indispensable for the third and fourth categories down-stream where the earth observation data themselves are concerned.

On these third and fourth categories, the national component in regulation becomes more important again (especially in the last category). International law in those areas would have to operate through the mechanism of harmonisation of (for a major part already well established) national legal regimes. It is precisely here where, in Europe, the possibilities of the Community's

legislative machinery (could) operate for the benefit of the aforementioned purpose. Law, after all, next to defining policy options, is also an instrument for policy making and implementation. In the, as of yet highly undefined area of earth observation data and data policies, the latter component is probably more important than the former.

The results and final conclusions of the EOPOLE project, finally, will hopefully shed more light on the relevance and particular effectiveness of policy measures in regard of the various categories dealt with, taking into account in each case their particular advantages and disadvantages.

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#### Notes:

<sup>1</sup>. Further details on the EOPOLE project can be found on the EOPOLE web-site: <http://www.geog.ucl.ac.uk/eopole>, and through the EOPOLE Newsletter regularly published by the Project Co-ordinator at UCL; Dept. of Geography, 26 Bedford Way, London WC1H 0AP, United Kingdom, Fax: +44.0171.504.42.93, E-mail nolby@geog.ucl.ac.uk.

<sup>2</sup>. The CEO as a distinct entity may now have ceased to exist, or rather be subsumed under other European Commission entities; activities well underway such as EOPOLE are not influenced by this development.

<sup>3</sup>. See Art. I, Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (hereafter Outer Space Treaty), London/Moscow/Washington, adopted 19 December 1966, opened for signature 27 January 1967, entered into force 10 October 1967; 6 ILM 386 (1967); 18 UST 2410; TIAS 6347; 610 UNTS 205.

<sup>4</sup>. Cf. Artt. III, IV, VI, IX, Outer Space Treaty.

<sup>5</sup>. See Art. VI, Outer Space Treaty.

<sup>6</sup>. See Art. VII, Outer Space Treaty.

<sup>7</sup>. Convention on International Liability for Damage Caused by Space Objects (hereafter Liability Convention), London/Moscow/ Washington, adopted 29 November 1971, opened for signature 29 March 1972, entered into force 1 September 1972; 10 ILM 965 (1971); 24 UST 2389; TIAS 7762; 961 UNTS 187.

<sup>8</sup>. Principles Relating to Remote Sensing of the Earth from Outer Space, UNGA Res. 41/65 (hereafter Res. 41/65), of 3 December 1986; UN Doc. A/AC.105/572/Rev.1, at 43.

<sup>9</sup>. See Princ. IV, Res. 41/65.

<sup>10</sup>. Cf. Princ. IV, Res. 41/65.

<sup>11</sup>. See Princ. V, VI, VII, XIII, Res. 41/65.

<sup>12</sup>. Princ. XII, Res. 41/65.

<sup>13</sup>. See Princ. X, XI, Res. 41/65.

<sup>14</sup>. See Art. II, Convention for the Establishment of a European Space Agency (hereafter ESA Convention), Paris, done 30 May 1975, entered into force 30 October 1980; 14 ILM 864 (1975).

<sup>15</sup>. See Art. V(1)(a), ESA Convention.

<sup>16</sup>. See Art. V(1)(b), ESA Convention.

<sup>17</sup>. See Art. V(2), ESA Convention.

<sup>18</sup>. Convention for the Establishment of a European Organization for the Exploitation of Meteorological Satellites (EUMETSAT) (hereafter EUMETSAT Convention), Geneva, done 24 May 1983, entered into force 19 June 1986; as amended 14 July 1994, entered into force 27 July 1994; Cmnd. 9483; Space Law – Basic Legal Documents, C.III.1; 44 Zeitschrift für Luft- und Weltraumrecht (1995), at 68.

<sup>19</sup>. Resp. Treaty establishing the European Coal and Steel Community (Treaty of Paris), Paris, done 18 April 1951, entered into force 23 July 1952; 126 UNTS 140; Treaty establishing the European Atomic Energy Community, Rome, done 25 March 1957, entered into force 1 January 1958; 298 UNTS 167; and Treaty establishing the European Economic Community, Rome, done 25 March 1957, entered into force 1 January 1958; 298 UNTS 11 (Treaties of Rome). The EEC Treaty was re-christened 'EC Treaty' with the entry into force of the Treaty on European Union (see *infra* at n. 21).

<sup>20</sup>. Single European Act, Luxembourg/The Hague, done 17/28 February 1986, entered into force 1 July 1987; 25 ILM 506 (1986).

<sup>21</sup>. Treaty on European Union, Maastricht, done 7 February 1992, entered into force 1 November 1993; 31 ILM 247 (1992).

<sup>22</sup>. Treaty of Amsterdam Amending the Treaty on European Union, the Treaties Establishing the European Communities and Certain Related Acts (hereafter Treaty of Amsterdam), done 2 October 1997, entered into force 1 May 1999; CONF 4005/97, of 23 September 1997.

<sup>23</sup>. Cf. Artt. 226, 227, 230, 232, EC Treaty.

<sup>24</sup>. See Art. G(B.5), Treaty on European Union.

<sup>25</sup>. See esp. Artt. 2, 3, EC Treaty.

<sup>26</sup>. See Artt. 13-19, Single European Act.

<sup>27</sup>. See Artt. 23-69, EC Treaty.

<sup>28</sup>. See Artt. 81-89, EC Treaty.

<sup>29</sup>. See Art. 95, EC Treaty.

<sup>30</sup>. Cf. Artt. 2, 3, 10, 308, EC Treaty.

<sup>31</sup>. Cf. e.g. Art. I(a), Liability Convention.

<sup>32</sup>. Cf. Art. II, Outer Space Treaty.

<sup>33</sup>. Convention Establishing the World Intellectual Property Organisation (WIPO), Stockholm, done 14 July 1967, entered into force 26 April 1970; ATS 1972, No. 15.

<sup>34</sup>. Directive of the European Parliament and of the Council on the legal protection of databases, 96/9/EC (hereafter Directive 96/9/EC), of 11 March 1996; OJ L 77/20 (1996).

<sup>35</sup>. See Art. 11, Directive 96/9/EC.