

Admissibility of remote sensing evidence before international and regional tribunals

Innovations in Human Rights Monitoring
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I. Introduction

Remote sensing, also commonly referred to as Earth Observation (EO), is the science of extracting information from an object or area through the analysis of data acquired by a sensor that is not in direct contact with the area. Indeed, remote sensing is conventionally used to refer to data acquired by satellite.¹ It is relevant to mention that because of the “Open Skies policy” there is generally unrestricted access to EO data worldwide.

The question we are presented with today is whether said data can be used as a legally valid form of evidence before international and regional tribunals, especially when dealing with cases regarding human rights violations. In this respect, from what I was able to assess, none of the international or regional tribunals have explicitly addressed the question, and there is no consensus amongst experts and commentators as to the admissibility of this type of evidence when used in international litigation. Moreover, the practice itself of tribunals has been somewhat inconsistent on the matter, which therefore makes it difficult to try to derive a general rule on the issue. Indeed, continuing judicial mistrust over the use of such data persists, namely because of its relative novelty and the fact that the data is digital in nature and therefore more easily manipulated.

Furthermore, the answer to our question will also depend on the particular legal system which is being applied in the specific case (the substantive rules which govern the matter) and, more importantly, on the procedural rules applied by each tribunal, which vary greatly from one to the other. Indeed, some tribunals have more flexible rules of procedure and standards of proof, whereas others are very rigid and demanding. This of course will have a direct effect on the question of the admissibility and legal value of this type of evidence.

Accordingly, because of all of the above, at this point in time, when the issue is still relatively novel and still debated, it seems premature to try to give a definite and all-inclusive answer to the question of the legal status of satellite images as evidence before international and regional tribunals. Indeed, there is to date no uniform rule on the matter, much of it depending on the specific tribunal before which the case is being debated and its procedural and evidence rules (as shown *infra*).

¹ See United Nations General Assembly Resolution on the ‘Principles Relating to Remote Sensing of the Earth from Space’, A/RES/41/65, 95th plenary meeting, 3 December 1986. Available at: <http://www.un.org/documents/ga/res/41/a41r065.htm>

II. Technical and legal challenges faced by satellite imagery as legal evidence

There is certainly no rule prohibiting parties from submitting satellite imagery as evidence or prohibiting tribunals from relying on it. And so, in the absence of a strict prohibition against the use of remote sensing satellites to obtain EP data, it may be concluded that this method of obtaining data is at least implicitly allowed under international law.² And indeed, as will be shown *infra*, these images are being presented by parties and admitted by international and regional tribunals in the context of different types of litigations.

Nevertheless, the question here is more complex. Indeed, the real question is whether satellite imagery can serve, in itself, as sufficient evidence to prove relevant facts in these cases. In other words, whether satellite imagery can be awarded sufficient legal recognition so as to comply with the standards of proof under international law.

At this point it is important to clarify that, at least with regards to the question presented here; these images cannot be equated to pictures or videos which have not been obtained via satellite. Indeed, satellite pictures are not really pictures, but rather they constitute data, which is, for the matter discussed here, substantially different. Indeed, if a picture is altered, it will not be hard to prove it. However, from what we have gathered from the literature on the matter, the same cannot be said with regards to satellite images. In fact, they are a gathering of data which can be altered, without it being possible to prove the alteration further on. Therein lays the reason why, in terms of its possible use as legal evidence, satellite imagery poses a different challenge when compared to regular pictures.

In addition to what was stated *supra*, satellite imagery faces some additional problems with respect to its use as legal evidence, which derive from the fact that the information has to be processed, and that it then requires to be interpreted by an expert. Indeed, as explained by Silvia Maureen Williams:

The central point is that, even if digital maps obtained via satellite leave small room for human error with respect to the production of the image, said room is much larger when we are dealing with interpreting the image. This means that, in practice, in those cases where satellite technology is used as evidence, judges are relying

on the opinions of experts –who must be called to interpret- and not directly on the satellite information.³

And so, the reality is that, as with any human activity, interpretation of satellite imagery may vary depending on who the expert in question is. For example, in the case of *Nigeria v. Cameroon* before the International Court of Justice,⁴ Nigeria submitted a recently obtained satellite image of the disputed area to prove its location. However, each party gave a different and conflicting interpretation of the same image. Accordingly, what Nigeria had considered a very straightforward way to prove its assertion before the ICJ ended up having an opposite effect.

This is why commentators and international organizations have been advocating for the need to establish international rules regarding the methods to present satellite imagery before international tribunals as evidence. However, at this point, there is nothing of the sort.

In addition to all of the above it must be stated that validation and authenticity of satellite data are essential in order for use in court. Indeed, the validation must enable the data to maintain integrity and minimize the ability for the data to be discredited in a court. To date, there are no uniform standard of EO data use. Also, much rests on the interpretation of the data. Indeed “standards and certification for all stages in the data chain and interpretation process need to be developed to ensure conformity of presentation in court. So far however this has not proved to be a serious problem as generally speaking the admissibility of EO data as evidence has not been questioned in court”.⁵ However, as stated *supra*, in most cases the use of EO data will depend upon the interpretative services of an expert to verify its authenticity and accuracy.

In this regard, it is relevant here to cite what the study “Evidence from Space” by the London Institute of Space Policy and Law indicates about the nature of EO evidence:

² Of course, this activity will be subjected to the international regulation of remote sensing, specifically in the context of international space law (the 1967 Outer Space Treaty, the 1986 UN Principles Relating to Remote Sensing of the Earth From Outer Space [Resolution 41/65], etc.).

³ Sylvia Maureen Williams, La información satelital como prueba en litigios nacionales e internacionales, *in* Revista del Colegio de Abogados de la Ciudad de Buenos Aries, Diciembre 2011, tomo 71, nro. 2. Available at: <http://www.colabogados.org.ar/larevista/imprimir.php?id=91&pag=153&origen=>

⁴ decided on October 10, 2002.

⁵ BNSC sector studies program, Applications of earth observation to the legal sector, Final Report, August 2011, Report prepared by NPA Group, available at: <http://www.ucl.ac.uk/laws/environment/satellites/docs/EOdataLegalSector.pdf>

EO information is scientific and technical evidence. It has three important evidential qualities in this context.

First, it is based on digital data. This means that an untrained person cannot easily discern the connection between the data and the actual event or thing. A hearer of fact may be able to compare two sets of data and see that they are different, but might not appreciate the significance of that difference.

Second, the data will have to be converted into a comprehensible document by some process. It is the processed information that will be offered as evidence, not the original data. As a consequence, EO information may be regarded as hearsay. To be admissible, it will have to meet the specific hearsay requirements of the court. To be probative of the facts at issue, it may be necessary to introduce expert witness testimony or ground truth evidence.

Third, the document will be an electronic record. The collection, transmission, storage, processing and dissemination of EO information are carried out electronically. This presents some evidential considerations, including admissibility and reliability.⁶

In addition to all of the above, one of the additional concerns raised regarding the admissibility of EO data in courts deals with the possible infringement of the right of privacy of those captured in the data. Indeed, for example, with respect to the possibility of submitting satellite imagery before the European Court of Human Rights, although “the issue of privacy under Article 8 of the European Convention on Human Rights⁷ is currently not considered to be a problem for the use of EO data, the matter has not been tested in court. However, when the spatial resolution of EO data improves this is likely to be a significant concern.”⁸ And so, the question of privacy is potentially a major concern. In this respect it must be noted that present commercial satellite

⁶ LONDON INSTITUTE OF SPACE POLICY AND LAW, DOCUMENT ESA-ISPL/EO 76, FINAL REPORT, 27 APRIL 2012, EVIDENCE FROM SPACE, *Study for the EUROPEAN SPACE AGENCY on USE OF SPACE-DERIVED EARTH OBSERVATION INFORMATION AS EVIDENCE IN JUDICIAL AND ADMINISTRATIVE PROCEEDINGS AS PART OF ITS SERIES OF STUDIES IN SUPPORT OF ACTIONS TO INTEGRATE NEW DEVELOPMENTS INTO CURRENT EO SERVICES*, page 17.

⁷ COUNCIL OF EUROPE, The European Convention on Human Rights, ROME 4 November 1950, Article 8:

1. Everyone has the right to respect for his private and family life, his home and his correspondence.
2. There shall be no interference by a public authority with the exercise of this right except such as is in accordance with the law and is necessary in a democratic society in the interests of national security, public safety or the economic well-being of the country, for the prevention of disorder or crime, for the protection of health or morals, or for the protection of the rights and freedoms of others.

⁸ *Supra* note 5.

technology cannot identify individuals and breach of privacy is not thought a serious risk⁹. However, the possibility of a successful challenge because of its effect on the right of privacy could have a serious impact on the legality of high-resolution satellites.

III. Some uses of satellite imagery by different actors in the international field

It is relevant to mention that satellite images are indeed used to monitor compliance by states of different international law obligations. This is supposed to be the case in areas such as environmental law, arms control, human rights and fisheries management. For example, Resolution IMO A 152 of the International Maritime Organization provides the authority for the use of satellite images as evidence in enforcement actions by listing them alongside accepted methods of obtaining evidence such as photography, sea water sampling and the examination of ship log books.¹⁰

Now, specifically in the field of human rights, EO data can be extremely helpful, for example, to identify mass burial sites and other large upheavals within human settlements and populations. Indeed, large refugee movements can be tracked by satellite reconnaissance. For example, the flight of large numbers of ethnic Albanians from Kosovo to the Yugoslavia-Macedonia border following violence between Serbian forces and the Kosovo Liberation Army. However, "to date there is little evidence of EO data officially used for these purposes".¹¹

On the other hand, human rights organizations have relied extensively on EO to document grave violations of human rights. For example, in order to corroborate the widespread allegations of extensive village burnings in Somali Region, Human Rights Watch worked with the Science and Human Rights Program of the American Association for the Advancement of Science to obtain "before" and "after" satellite images of villages that had been reportedly burned. These images were reviewed for signs consistent with the reporting provided by Human Rights Watch, and in eight cases the imagery did provide indications of structural removal and, sometimes, burning.¹²

⁹ Additionally, commercial satellite image providers are normally regulated by governments, which put restrictions on the resolution of any images sold to non-governmental entities. For example, despite technological progress that allows US providers to collect imagery below 0.5 meters, NGOs can only get imagery of 0.5 meters or higher.

¹⁰ Resolution IMO A 152 of November 17, 1983 of the International Maritime Organization (IMO).

¹¹ *Supra* note 5.

¹² Human Rights Watch, *Collective Punishment – War Crimes and Crimes against Humanity in the Ogaden area of Ethiopia's Somali Regional State*, June 2008. Available at: <http://www.hrw.org/en/node/62175/section/>

In another case, both Human Rights Watch and Amnesty International released satellite images to confirm the widespread torching of ethnic Georgian villages inside South Ossetia¹³. The expert analysis by UNOSAT and AAAS, respectively, indicated clear patterns of destruction that are consistent with the evidence gathered by researchers working in the region.¹⁴

In addition to human rights groups and organizations, States themselves are also using satellite imagery as evidence of grave human rights situations. For example, the US government's 2009 report on war crimes in Sri Lanka in 2009 was informed by satellite data gathered and analyzed by AAAS, Amnesty International and Human Rights Watch to identify the locations and extent of damage to IDP shelters in Sri Lanka following reports that IDP camps were being targeted.¹⁵ As no outsiders were allowed access to the area during the timeframe in question, commercial high-resolution satellite imagery was one of the few options available for gathering information.

Also, UN bodies have relied on EO data to monitor or evaluate human rights crisis. For example, the United Nation's Office of the High Commissioner for Human Rights, in its report on the situation in Libya, more specifically, in the Libyan Arab Jamahiriya, included analysis of video and photographic images including satellite imagery provided by UNOSAT in order to determine that international crimes, specifically crimes against humanity and war crimes, were committed by Qadhafi forces in Libya.¹⁶

In its August 2012 report, the UN Commission of Inquiry for Syria relied on satellite images to investigate human rights violations, especially in regard to the infamous Houla Massacre from May 2012:

Regarding the Abdulrazzak site, where more than 60 people were killed, the commission considered that a large number of perpetrators would have been required to carry out the crime. The commission found, through satellite imagery and corroborated

¹³ *Satellite images document S. Ossetia destruction.* Reuters, October 9, 2008. <http://www.reuters.com/article/2008/10/09/idUSN09344942> ; *Georgia – Satellite Images Show Destruction, Ethnic Attacks*, Human Rights Watch, 27.08.08 – concerning satellite images released by UNOSAT of villages in South Ossetia, following the Russian-Georgian conflict in August 2008. Available at: <http://www.hrw.org/news/2008/08/27/georgia-satellite-images-show-destruction-ethnic-attacks>

¹⁴ For a comprehensive overview of human rights organization's past use of remote sensing, see Amnesty International USA's Remote Sensing Repository: <http://bit.ly/RemoteSensing-HumanRights>

¹⁵ Available at: <http://www.state.gov/documents/organization/131025.pdf>

accounts, that the movement of vehicles or weapons, as well as the size of the group, would have been easily detectable by Government forces stationed at the Water Authority position. The commission therefore believes that access to the scene was not possible for any sizeable anti-Government armed group.¹⁷

IV. A look into the practice of international and regional tribunals regarding use of satellite imagery

As we noted *supra*, there is still somewhat continuing judicial mistrust over the use of satellite imagery, namely because of its relative novelty and the fact that the data is digital in nature and therefore more easily manipulated. Nevertheless, we can refer to the practice of different international and regional tribunals to gather support for the notion that this type of evidence is indeed admissible when tribunals are ruling on issues of international law, including human rights violations. Indeed, as proven *infra*, States are increasingly providing this type of evidence in support of their arguments and courts and tribunals are admitting it in the context of different types of international litigation.

In this respect, the following must be noted: unfortunately, in most of these cases, when parties submit the satellite imagery as evidence, courts do not specifically refer to it when deciding the matters, or they do so in very vague terms. And thus, there is uncertainty as to the weight the evidence was given by the judges and its degree of reliance.

A. International Court of Justice (ICJ)

- As stated *supra*, EO data was used in Nigeria's case against Cameroon at the ICJ (Nigeria/Cameroon land boundary case).¹⁸ Cameroon misinterpreted Nigeria's use of satellite imagery in the preliminary objections.

¹⁶ Full Report of the International Commission of Inquiry (A/HRC/19/68) to investigate all alleged violations of international law in Libya.

¹⁷ Report of the independent international commission of inquiry on the Syrian Arab Republic, August 10, 2012, p.11. http://www.ohchr.org/Documents/HRBodies/HRCouncil/RegularSession/Session21/A-HRC-21-50_en.pdf.

¹⁸ decided on October 10, 2002; 2002 ICJ 303.

- EO data has also been used before the ICJ for accurate mapping of coastal baselines to supplement old charts, and for mapping of historical changes in the cases of Botswana/Namibia,¹⁹ Qatar/Bahrain²⁰ and the changes of shoreline in Lake Chad.
- It must be specified that in Botswana/Namibia (Kasikili/Sedudu Island) case at the ICJ²¹ satellite data was used, but to a minimal degree. Satellite data was requested by the judges for their deliberation, but in the end it was largely disregarded. Indeed, Judge Ranjeva requested that the 2 parties “ask the relevant specialized agencies to provide them with one or more satellite photographs of the area ... and to produce it or them to the Court”. The parties did so accordingly. It is not known how much influence or importance was attached to these images, but Judge Higgins clearly relied on the aerial photography and satellite imagery evidence produced in concluding that the northern channel was the broader and more important, and therefore, the main channel. On his part, Judge Parra Aranguren went on to affirm that the aerial photographs were irrelevant, for they had been obtained after the critical date.
- With respect to the Qatar/Bahrain case at the ICJ,²² multi-spectral satellite imagery (SPOT XS) was used at the oral hearing for Bahrain to ascertain the extent of the drying line along the Northern edge of Fasht Al A'zm.
- The first satellite image produced before the ICJ was in the Preliminary Objections stage of the Case concerning the land and maritime boundary between Cameroon and Nigeria. Satellite imagery has subsequently been used, apart from in the mentioned cases of Botswana/Namibia and Qatar/Bahrain, in Benin/Niger²³ and in the Yemen/Eritrea arbitration (decided on December 17, 1999).
- Also, in the *Case Concerning the Frontier Dispute (Burkina Faso/Republic of Mali)* maps based on satellite imagery were used).²⁴

It is important to note that States have increasingly been submitting satellite imagery in support of their arguments before the ICJ for many years now. Indeed:

¹⁹ *Case Concerning Kasikili/Sedudu Island (Namibia v Botswana)* ICJ Rep 1045, International Court of Justice, December, 1999 (aerial photography and satellite imagery), decided on December 13, 1999; 1999 ICJ 1045.

²⁰ decided on March 23, 2001.

²¹ *Supra* note 15.

²² decided on March 23, 2001; 2001 ICJ 40.

²³ 2005 ICJ 90.

²⁴ *Case Concerning the Frontier Dispute (Burkina Faso/Republic of Mali)*, ICJ Rep. 554, International Court of Justice, December 22, 1986; 1986 ICJ 554.

- in the case of *Nicaragua v. Honduras* regarding a dispute over their maritime boundary²⁵ both parties submitted photographs taken by satellites as evidence to support their arguments;²⁶
- in the case of certain activities carried out by Nicaragua in the border area (*Costa Rica v. Nicaragua*), Nicaragua presented satellite photographs to support its claims;²⁷
- in the case concerning Pulp Mills on the River Uruguay (*Argentina v. Uruguay*) Uruguay presented satellite images.²⁸
- More recently, in the case concerning the Territorial and Maritime Dispute (*Nicaragua v. Colombia*) in order to support its claims Colombia submitted satellite images.²⁹
- In the case concerning sovereignty over Pedra Branca/Pulau Batu Puteh, Middle Rock and South Ledge (*Malaysia v. Singapore*) Malaysia submitted satellite pictures.

In addition to all of the above it must be noted that in the case concerning Application of the International Convention on the Elimination of All Forms of Racial Discrimination (*Georgia v. Russian Federation*), Georgia relied, among other, on (UNOSAT) satellite imagery to support its claim that Russian forces were physically present in the region in substantial numbers and that ethnic cleansing was occurring.³⁰

²⁵ 2007 ICJ 659.

²⁶ See Public sitting held on Wednesday 14 March 2007, at 10 a.m., at the Peace Palace, President Higgins presiding, in the case concerning Maritime Delimitation between Nicaragua and Honduras in the Caribbean Sea (*Nicaragua v. Honduras*) Verbatim Record of public sitting of 2007/8 - 14/03/2007 - 181 Kb Territorial and Maritime Dispute between Nicaragua and Honduras in the Caribbean Sea (*Nicaragua v. Honduras*). Available at:

[http://www.icj-cij.org/docket/files/120/13785.pdf#view=FitH&pagemode=none&search=%22satellite pictures%22](http://www.icj-cij.org/docket/files/120/13785.pdf#view=FitH&pagemode=none&search=%22satellite%20pictures%22)

²⁷ Order - 08/03/2011 - Certain Activities carried out by Nicaragua in the Border Area (*Costa Rica v. Nicaragua*). Available at: <http://www.icj-cij.org/docket/files/150/16324.pdf#view=FitH&pagemode=none&search=%22satellite%22>

²⁸ Public sitting held on Monday 28 September 2009, at 3 p.m., at the Peace Palace, Vice-President Tomka, Acting President, presiding, in the case concerning Pulp Mills on the River Uruguay (*Argentina v. Uruguay*). Verbatim Record of public sitting of 2009/20 - 28/09/2009 - Pulp Mills on the River Uruguay (*Argentina v. Uruguay*). Available at:

<http://www.icj-cij.org/docket/files/135/15495.pdf#view=FitH&pagemode=none&search=%22satellite%22>

²⁹ See Public sitting held on Friday 4 May 2012, at 3.10 p.m., at the Peace Palace, President Tomka presiding, in the case concerning the Territorial and Maritime Dispute (*Nicaragua v. Colombia*). Verbatim Record of public sitting of 2012/17 - 04/05/2012 - Territorial and Maritime Dispute (*Nicaragua v. Colombia*). Available at: <http://www.icj-cij.org/docket/files/124/17004.pdf#view=FitH&pagemode=none&search=%22satellite%22>

³⁰ Public sitting held on Monday 8 September 2008, at 3 p.m., at the Peace Palace, President Higgins presiding, in the case concerning Application of the International Convention on the Elimination of All Forms of Racial Discrimination (*Georgia v. Russian Federation*).

Verbatim Record of public sitting of 2008/23 - 08/09/2008 - 263 Kb Application of the International Convention on the Elimination of All Forms of Racial Discrimination (*Georgia v. Russian Federation*). Available at: <http://www.icj-cij.org/docket/files/140/14719.pdf#view=FitH&pagemode=none&search=%22satellite%22>

Moreover, in the Application of the Convention on the Prevention and Punishment of the Crime of Genocide (*Bosnia and Herzegovina v. Serbia and Montenegro*), the Court considered satellite pictures contained in a UN report.³¹

B. Inter-American Court of Human Rights

As with the case of the rest of the tribunals which we will be mentioning here, the Inter-American Court of Human Rights has not explicitly dealt with the question of the legal status of satellite imagery as evidence. However, in several well-known cases before said court the parties submitted this type of evidence in support of their arguments. In none of the cases the Court refers to the evidentiary status of these pictures in particular. However, the pictures are never explicitly declared inadmissible and said decisions include the following general statement: “*Assessment of the Documentary Evidence*: In this case, as in others, the Tribunal admits the evidentiary value of those documents presented by the parties on the corresponding procedural opportunity in the reparations stage that were not contested or objected, or whose authenticity was not questioned”.

Satellite imagery was submitted before the Court in the following cases:

- In the case of *Case of the Saramaka People v. Suriname*, the Court admitted the testimony of a witness who provided expert opinion with regards to maps, aerial photographs and satellite images of an area of territory which the Saramaka people used and occupied and the damages caused to the area by the construction of a dam and logging activities. The Court admitted the evidence and relied on it, in conjunction with other evidence, to reach its decision that in fact there had been breaches of human rights.³²
- Additionally, the IACtHR admitted a report submitted by an expert commenting on satellite imagery. This happened, for example, in relation to Case 12.419 *Sawhoyamaya v. Paraguay* (January 2006)³³ where an expert provided a report requested by the

³¹ 2007 ICJ 43.

³² Inter-American Court of Human Rights, *Case of the Saramaka People v. Suriname*, Judgment of November 28, 2007 (*Preliminary Objections, Merits, Reparations, and Costs*).

³³ Available http://www.corteidh.or.cr/docs/casos/articulos/seriec_146_esp2.pdf

representative of the victims for a study of land and resource use patterns of indigenous communities in the Paraguayan Chaco. Indeed, the description of the natural landscape in the report is derived from a review of the literature, field observations made by TIERRAVIVA staff, land-use data generated through interviews with community members, and the analysis of satellite imagery.³⁴

- Also, in the case 12.054/05, *María Salvador Chiriboga v. Ecuador*,³⁵ which referred to an expropriation by the State of Ecuador of some land owned by Miss Chiriboga where a park was built, the representatives of the victim submitted before the Court, among others, satellite pictures of the corresponding areas of the Metropolitan Park from Google Earth.
- Also, in the case of the *XÁKMOK KÁSEK indigenous Community v. Paraguay* (judgment of August 24, 2012)³⁶ the representatives of the victims submitted pictures obtained from Google Maps of the lands that the community is claiming.
- It must be noted that, very recently (June 28, 2012), in the case of the *Massacre of Santo Domingo v. Colombia*, the State, during the oral presentation, presented its arguments accompanied by various satellite images.³⁷ The case is still pending.

C. International Criminal Court (ICC):

From what I was able to assess, in the case of this court, it has also not dealt with the matter of satellite images in an explicit manner. However, it has been reported that in 2006, while preparing the indictment of Sudanese President Omar Bashir for war crimes and crimes against humanity, the International Criminal Court reviewed commercial high-resolution satellite imagery analysis of the Darfur region.³⁸

In his July 2008 application for an arrest warrant for Sudanese President Omar Al-Bashir on charges of war crimes, crimes against humanity and genocide, ICC Prosecutor Luis Moreno Ocampo used satellite imagery of destroyed villages in Darfur to identify probable cause.

³⁴ A study of the extent to which the land of Santa Elisa and Michí (14,404 hectares) will be sufficient in size and quality to enable the indigenous people of *Sawhoyamaxa* (Paraguayan Chaco) to preserve and develop their particular way of life. A study requested by the Inter-American Court of Human Rights, in relation to Case: 12.419 *Sawhoyamaxa* Paraguay January 2006. Andrew Paul Leake, Ph.D. Available at http://www.corteidh.or.cr/docs/casos/sawho/afi_repr_1.pdf

³⁵ Judgment of March 3, 2011 Series C No. 222.

³⁶ www.corteidh.or.cr/docs/casos/articulos/seriec_214_ing.pdf

The Prosecution has also compiled open source information, victim accounts, video footage, photographs and satellite imagery about the attacks and destruction of villages; all such material has been incorporated on a map of Darfur (see Annex 3). This map illustrates the broader pattern of criminal activity throughout Darfur, whereby villages and small towns whose residents were predominantly from the target groups were singled out and attacked *in toto*.³⁹

The same document states that the prosecution is in possession of satellite imagery of the villages of Isma, Donkey Deris, Angabo, Gereida, Ligeodiba, Um Sidir and Bir Masa, which are consistent with the places in Amnesty International's *Eyes on Darfur* satellite imaging project⁴⁰.

Also, reports by the Satellites Sentinel Project (SSP)⁴¹ have been used as evidence in the International Criminal Court investigation of recent alleged crimes in Sudan. Indeed, satellite images were included as part of the materials furnished by the Office of the Prosecutor in support of its request for a warrant of arrest against Sudanese Defense Minister First Lieutenant-General Abdelrahim Mohamed Hussein in the Sudan situation, culminating in a warrant of arrest being issued by the relevant Chamber.⁴²

As reported, since 2006 various organizations (including Amnesty International) have been monitoring and documenting a succession of attacks on civilians that have occurred as a result of civil strife plaguing Sudan's western-most province of Darfur and eastern areas of Chad that border Sudan. Those studies examined satellite images for 28 locations, 23 in the Darfur region of Sudan and five in bordering Chad. Materials were supposed to be submitted on request to the International Criminal Court.

³⁷ Video available at <http://vimeo.com/44902426>

³⁸ <http://www.fmreview.org/technology/wolfinbarger-wyndham.html>

³⁹ Annex A, public redacted version of the Prosecutor's Application under Article 58 (ICC-02/05-156-AnxA 12-09-2008). July 14, 2008. <http://www2.icc-cpi.int/iccdocs/doc/doc559999.pdf>

⁴⁰ <http://www.eyesondarfur.org/satellite.html>

⁴¹ SSP was launched on December 29, 2010, with the goals of deterring a return to full-scale civil war between northern and southern Sudan and deterring and documenting threats to civilians along both sides of the border. SSP focuses world attention on mass atrocities in Sudan and uses its imagery and analysis to generate rapid responses on human rights and human security concerns. The project works like this: DigitalGlobe satellites passing over Sudan and South Sudan capture imagery of possible threats to civilians, detect bombed and razed villages, or note other evidence of pending mass violence. The Harvard Humanitarian Initiative analyzes imagery and information from sources on the ground to produce reports. The Enough Project then releases to the press and policymakers and sounds the alarm by notifying major news organizations and a mobile network of activists. SSP synthesizes evidence from satellite imagery, data pattern analysis, and ground sourcing to produce reports. (See <http://satsentinel.org/>)

⁴² <http://www.icc-cpi.int/NR/exeres/7D29D3F2-0090-4EB8-AD38-BDB8338FE115.htm>.

As reported in the study “Evidence from Space” by the London Institute of Space Policy and Law, in a case before the ICC EO information was admitted as evidence in the prosecution of two individuals for crimes in the DRC. Satellite imagery was submitted to identify the location of alleged crimes (the ICC *Prosecutor v. Germain Katanga and Mathieu Ngudjolo Chu*).⁴³ Satellite imagery provided by the Prosecutor was the subject of testimony by an expert witness,⁴⁴ along with photographs taken by the expert to produce a 360-degree image, and photographs taken by a drone.⁴⁵

D. International Criminal Tribunal for the Former Yugoslavia (ICTY):

In the case of this Tribunal, created in May 1993 by the United Nations in response to mass atrocities then taking place in Croatia and Bosnia and Herzegovina, it has been reported that satellite data was used as part of the massive investigation into the events that took place in Srebrenica. Indeed, despite the denial of Serb and other authorities that any crimes had taken place, Tribunal investigators used satellite photography, as well as the testimony of survivors, archaeologists, anthropologists, dog teams and a variety of other specialized teams and experts to search for evidence of mass executions and mass graves.

Indeed, in the Srebrenica case, satellite photography furnished by the U.S. military intelligence pinpointed to the minute movements on the ground of men and transports in remote Eastern Bosnian locations. In fact, according to Patricia Wald, one of the Judges of the International Criminal Tribunal for the former Yugoslavia “these photographs not only assisted the prosecution in locating the mass grave sites over hundreds of miles of terrain, [but] they were also introduced to validate its witnesses’ accounts of where thousands of civilians were detained and eventually killed”.⁴⁶

As reported in the study “Evidence from Space” by the London Institute of Space Policy and Law, satellite images were also used in cases before the ICTY, in order to provide information about the geography of the areas in question.⁴⁷ In *Prosecutor v. Karadžić*⁴⁸ satellite images were used

⁴³ ICC-01/04-01/07-T-90-ENG ET WT 26-01-2010 38/59 NB T, page 38, <http://www.icc-cpi.int/NR/exeres/4CE0B881-1146-4D0D-A728-A13F540273BD.htm>, accessed 19 December 2011).

⁴⁴ ICC-01/04-01/07-T-90-ENG ET WT 26-0102010 24/59 NB T, page 24.

⁴⁵ *Supra* note 6.

⁴⁶ Patricia M. Wald, *The International Criminal Tribunal for the Former Yugoslavia Comes of Age: Some Observations on Day-To-Day Dilemmas of an International Court*. Available at: <http://law.wustl.edu/journal/5/index.html>

⁴⁷ *Supra* note 6.

⁴⁸ (IT-95-5/18-I).

during the questioning of a witness on 10 October 2010 (page 7954); in *Prosecutor versus Ramush Haradinaj*⁴⁹ a satellite image was used during the examination of a witness on 15 October 2007 (page 9366).

E. European Court of Human Rights

The ECtHR has not dealt directly with the question of the admissibility of satellite imagery. However, in the case of *Moghaddas v. Turkey* an asylum seeker submitted a satellite picture to support his claims.⁵⁰

Now, it must be noted that the Court has indirectly referred to the problems of reliability of this particular type of evidence. For example, in the case of *Sufi and Elmi v. the United Kingdom*, which originated in two applications (nos. 8319/07 and 11449/07) by two Somali nationals who alleged that if returned to Somalia they would be at real risk of ill-treatment the Court, when referring to a report which commented satellite imagery of Somalia indicated the following:

119. According to a well-informed international aid worker, ten people per week died in Mogadishu due to fighting. It was difficult to estimate how many of the dead were civilians. It was also difficult accurately to estimate the number of displaced. According to the UNCHR, there were around 370,000 displaced persons in Mogadishu and 360,000 in the Afgooye Corridor. However, it was possible that there were great margins of error as the UN estimates were based on satellite images and it was thought that many houses had been built to mislead aid organizations.⁵¹

⁴⁹ (IT-04-84-T).

⁵⁰ European Court of Human Rights, SECOND SECTION, **CASE OF MOGHADDAS v. TURKEY**, (*Application no. 46134/08*), February 15, 2011.

⁵¹ European Court of Human Rights, Fourth Section, **CASE OF SUFI AND ELMI v. THE UNITED KINGDOM** (Applications nos. 8319/07 and 11449/07), JUDGMENT, STRASBOURG, 28 June 2011, FINAL 28/11/2011. Available at [http://hudoc.echr.coe.int/sites/eng/Pages/search.aspx#{"fulltext":\["satellite pictures"\],"documentcollectionid":\["COMMITTEE","DECISIONS","COMMUNICATEDCASES","CLIN","ADVISORYOPINIONS","REPORTS","RESOLUTIONS"\],"itemid":\["001-105434"\]}](http://hudoc.echr.coe.int/sites/eng/Pages/search.aspx#{)

Indeed, referring to the European Court of Human Rights, it is believed that “the Court will increasingly need to be alive to technological advances, allowing for the use, for example, of satellite imagery”.⁵²

F. African Court of Human and People’s Rights

With regard to satellite imagery and the African Court there is not much that I was able to find, apart from the following:

In 2006 Amnesty International USA (AIUSA), together with American Association for the Advancement of Science (AAAS) and a grant from the McArthur Foundation, used satellite technology to record hard evidence of housing demolitions in Zimbabwe. The images were included in a highly-publicized 2006 Amnesty report, *Shattered Lives - the case of Porta Farm*, prepared jointly with the Zimbabwe Lawyers for Human Rights. It has been reported that formation from the report was presented by the Zimbabwe Lawyers for Human Rights during litigation in the African Court on Human and People's Rights.

G. The European Court of Justice:

In the European Court of Justice case *European Commission v. United Kingdom*,⁵³ the UK challenged the reliability of EO information. The ECJ addressed the issue of temporal relevance, holding:

87. Contrary to what the United Kingdom asserts, that capture of images by remote sensing cannot, as such, be regarded as unreliable, the United Kingdom itself having recourse to such images to support certain of its arguments concerning other areas at issue, and it therefore constitutes a means capable of revealing

⁵² INTERNATIONAL HUMAN RIGHTS & FACT-FINDING, An analysis of the fact-finding missions conducted by the European Commission and Court of Human Rights, Report by the Human Rights and Social Justice Research Institute at London Metropolitan University, Philip Leach, Costas Paraskeva, Gordana Uzelac, February 2009, Page 54. Available at http://www.londonmet.ac.uk/library/d67915_3.pdf

the existence of accelerated growth of algae and higher forms of plant life.

88. However, the Commission relies, here, on a single capture of images carried out nearly three years after the date on which the United Kingdom was to identify sensitive areas with respect to eutrophication¹⁹⁰ as referred to in Directive 91/271, namely 31 December 1993.

89. An isolated capture of images of that kind cannot alone reveal the existence of accelerated growth of algae and higher forms of plant life in the Humber Estuary such as to demonstrate, even a *posteriori*, that that estuary could have become eutrophic in the near future after that date.

And so, “the ECJ concluded that the satellite image produced by the Commission was not sufficient to show that algae occurred extensively in the Humber Estuary during the relevant time period. However, it clearly admitted and considered the EO information as evidence”.⁵⁴

H. Other tribunals / Miscellaneous:

- With regards to the International Tribunal for the Law of the Sea, in the case between *Bangladesh and Myanmar*, Myanmar presented satellite images to support its claims.⁵⁵
- The People’s Tribunal on Sri Lanka (Dublin) considered satellite images as evidence of war crimes.⁵⁶
- With regard to environmental and other damage claims by Kuwait and her nationals before the UN Compensation Claims Commission (UNCCC) temporal data from a variety of satellites is being used to provide baseline studies for comparisons to be made between the

⁵³ European Commission v UK, ECJ 2009, Case C-390/07. Available at:

<http://curia.europa.eu/juris/liste.jsf?language=en&num=c-390/07>

⁵⁴ *Supra* note 6.

⁵⁵ International Tribunal for the Law of the Sea, Judgment, March 14, 2012, Case No. 16, Dispute concerning delimitation of the maritime boundary between Bangladesh and Myanmar in the Bay of Bengal.

environmental damage caused by the Gulf War relative to the prior state of the environment before the conflict began.⁵⁷

- Gulf of Guinea and Chile/EU fishing disputes: EO data are said to be used by both sides in these disputes.⁵⁸
- In the process of establishing a formal border between the countries of Ethiopia and Eritrea — located on the Horn of Africa - the analysis of Ikonos high-resolution satellite imagery supported claims from State of Eritrea submitted to the Permanent Court of Arbitration at the Hague on October 15, 2002, in a report entitled "Ethiopia's Violations of International Law Arising From Its Attacks on and Occupation of the Central Zone of Eritrea." This use of satellite data by the State of Eritrea is one of the earliest examples of using commercially-available satellite data for tracking human rights violations.⁵⁹

It is relevant to note that according to the "Eyes in the Sky" organization, their analyses are currently being used in cases involving human rights abuses in three countries before international courts:

1. Darfur before the International Criminal Court;
2. Georgia before the European Court of Human Rights, and
3. Zimbabwe before the African Court on Human and Peoples' Rights.

I. Domestic tribunals:

It must be noted that domestic courts of certain states have been also admitting satellite imagery as evidence. For example:

- One case where satellite imagery has been accepted as legal evidence in court is the Singapore Song San case. In 1996 oil pollution in the Strait of Malacca was detected using satellite imagery (ERS satellite images) together with laboratory analysis. The Singaporean

⁵⁶ *Supra* note 5.

⁵⁷ *Ibid.*

⁵⁸ *Ibid.*

tanker Song San was identified as the source of the marine pollution. On the basis of the satellite data, legal proceedings were initiated in Singapore.⁶⁰

- In the case of the national courts of Argentina: *Terrero, Felipe Eduardo y otros c/Buenos Aires*, Provincia de s/danos y perjuicios, decided by the Supreme Court of Justice on the 26th of February, 2002.
- Courts in Bosnia and Herzegovina have indicted individuals for the crime of genocide based, among others, on satellite imagery: “There are many photographs and satellite pictures which objectively testify about the events in the Kravica Farming Cooperative Warehouse, and which show parked buses in front of the Warehouse, the disturbed soil which attests to the relocation of the body remains from mass gravesites, and the locations of mass gravesites”.⁶¹

V. Preliminary conclusion:

As derived from what has been stated *supra*, at this point in time it is premature to give a definite and all-inclusive answer to the question of the legal status of satellite images as evidence before international and regional tribunals. Indeed, there is to date no uniform rule on the matter, much of it depending on the specific evidence and procedural rules of the tribunal in question.

However, there are no substantive legal barriers to the use of EO information as evidence before courts and tribunals. Indeed, in some cases the EO information is treated as direct evidence, probative of a fact in issue. Under other circumstances it can provide circumstantial or other indirect evidence of facts.

As with any evidence, it is necessary to show that the EO information is accurate, authentic and reliable. This requirement may be met through technical and procedural standards. However, due to its complexity and the need to process some of the data into intelligible information, it may be

⁵⁹ <http://srhrl.aaas.org/geotech/eritrea/eritrea.shtml>

⁶⁰ Nicolas Peter, The use of remote sensing to support the application of multilateral environmental agreements, Space Policy 20 (2004) 189–195. Available at <https://old.cbd.int/doc/articles/2004/A-00402.pdf>

⁶¹ BOSNIA AND HERZEGOVINA PROSECUTOR'S OFFICE, Number: KT-RZ-101/07 Sarajevo, 15 January 2010, C O U R T OF BOSNIA AND HERZEGOVINA, Preliminary Hearing Judge, Ref. Number: X-KRN-09/823, I N D I C T M E N T AGAINST DUŠKO JEVIĆ, aka Staljin, MENDELJEV ĐURIĆ, aka Mane, GORAN MARKOVIĆ. Available at <http://www.legal-tools.org/en/doc/02d3ea/>

necessary to produce expert confirmation of the adequacy of processes and the likely validity of the information.

Moreover, as stated in the study “Evidence from Space” by the London Institute of Space Policy and Law, sensors gathering EO data and information are rapidly developing to provide a more detailed and wider range of information. Generally, EO systems cannot provide all the evidence needed for the establishment of a fact in a legal proceeding. However, in many cases EO does provide valuable corroborative evidence confirming other testimony and evidence, and in some cases EO information may be sufficient in itself.⁶²

Accordingly, from what derives of the practice of regional and international tribunals and the opinions of experts we can conclude that these images are being presented by parties and admitted by tribunals, but only insofar as they are accompanied by other (more conventional) types of evidence which corroborate the same facts. Indeed, as confirmation of this finding we have the words of one of the judges herself of the International Criminal Tribunal for the former Yugoslavia who, referring to satellite imagery stated: “these photographs not only assisted the prosecution in locating the mass grave sites over hundreds of miles of terrain, [but] they were also introduced to validate its witnesses’ accounts of where thousands of civilians were detained and eventually killed”.⁶³

And so, at this point in time, it appears that satellite imagery can be presented before international and regional tribunals and that it will most probably be admitted and evaluated by the judges. However, said evidence, by itself, might be considered insufficient to prove facts regarding grave human rights violations (mostly because of the problems which are inherent to satellite imagery, which we mentioned *supra*). Indeed, in order to be assured that the standard of proof applicable before said tribunal is being met, and at least until the issue is explicitly dealt with by these tribunals, it would be advisable for the party to submit additional evidence to corroborate what derives from the satellite imagery.

⁶² *Supra* note 6.

⁶³ Patricia M. Wald, The International Criminal Tribunal for the Former Yugoslavia Comes of Age: Some Observations on Day-To-Day Dilemmas of an International Court. Available at: <http://law.wustl.edu/journal/5/index.html>