

Intellectual Property and International Climate Research: The Influence of Intellectual Property Rights Regulation on Overcoming Environmental Issues in the Arctic Region and Globally

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In 2014, the 5th Assessment Report was submitted by the Intergovernmental Panel on Climate Change (IPCC), which confirmed that global climate change is indeed taking place. The report points at negative effects of climate change, particularly, “an increase in the incidence of extreme weather events and natural disasters, changes in sea level, floods, abnormal temperatures, droughts, desertification, lack of water, and the spread of tropical and infectious diseases” [5]. These phenomena represent direct and indirect threat for human rights throughout the world, including such basic rights as right to life, safe, acceptable, accessible and affordable water, food, health, as well as self-determination, culture and development. Since 1970s scientists started reporting climate changes in the Arctic region. Arctic warming is causing changes to sea ice, snow cover, and the

extent of permafrost in the Arctic, which is a strong influence factor for global climate changes. To study these phenomena, ecologists need a huge amount of climate data. The Earth is an integrated system and climatologists are running an ongoing analysis of measurements and observations from land, sea and airspace around the globe to distinguish climate change from normal weather deviations [6]. No national or even international scientific team can collect sufficient data on its own. In this regard, climate scientists must constantly share technical information with each other, as well as look for ways to obtain data from the agencies and organizations that own such data.

Intellectual property laws in most countries grant set of exclusive rights to data owner including the right for legal protection against persons who use data without permission. In most cases, such protection is assigned automatically, with no need to fulfill any formalities. In some cases, IP rights are obtained in accordance with a contract or through registration process.

The exchange of climate data for research purposes is often regulated by public law (national or international) because it obviously affects public interests. According to the Agreement

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on Enhancing International Arctic Scientific Cooperation, the Parties recognizing the importance of such public values as maintaining peace, stability, sustainable use of resources, economic development, human health, and environmental protection took obligations "to support full and open access to scientific metadata and encourage open access to scientific data and data products and published results with minimum time delay, preferably online and free of charge or at no more than the cost of reproduction and delivery"[24].

However, the international exchange of environmental information remains a complex and multifaceted problem regionally and globally. Researchers are often willing to share their data, but they lack infrastructure needed to present information in appropriate format [11]. "Scientific competition" is also an obstacle for information exchange [10]. National security, state secrets and political reasons are other factors making the exchange of geospatial data extremely complex [5].

Intergovernmental organizations and state governments provide much of the climate data by making it available to the public or through mechanisms granting data access to research centres. For example, open data can be obtained through the United Nations Intergovernmental Panel on Climate Change [4]. Three intergovernmental

organizations - WMO (World Meteorological Organization), UNESCO, represented by the Intergovernmental Oceanographic Commission (IOC), the UN Environment Programme (UNEP) together with an NGO - The International Science Council have established a global climate monitoring system to collect and provide access to global climate information, including physical, chemical and biological data, and information on atmospheric, oceanic, hydrological, cryospheric and terrestrial processes. International organization - Group on Earth Observation (GEO) was established to promote ideas, principles and technologies facilitating space and terrestrial observation data access and exchange. The World Meteorological Organization plays a key role in the exchange of weather and climate data at the global level. Mechanisms to access climate data at the regional and national levels have also been actively developed in recent decades. There are number of mechanisms elaborated by the Arctic Council to facilitate information exchange. Agreement on Enhancing International Arctic Scientific Cooperation, concluded between the Arctic Council Member States was another step forward facilitating data collection, access and exchange. Several programs, initiatives and organizations providing access to climate data in the Arctic made a great progress, among

them Sustaining Arctic Observing Networks, the International Arctic Science Committee, the University of the Arctic, the Forum of Arctic Research Operators and other.

Due to extreme importance of the Arctic region for global climate as well as specific status of the Arctic in international law, national data “owners” are more open for sharing data with scientist from around the world. National data centers provide convenient tools for scientists and researchers.

However, there is still lot of progress to be achieved. The rules and tools granting data access to climatologists often get into contradiction with rules granting exclusive rights to intellectual property owners which forms a web of complicated contradictions between private and public as well as national and international regulations. This article will focus on some specific initiatives to improve data sharing by encouraging public access to the climate data, as well as universal recognition and protection of the right to reuse data for research purposes.

Let us distinguish two forms of international scientific data exchange: access and use. Depending on the nature of the data and the technical way in which access is granted, such legal relations are only sometimes subject to the regulation by intellectual property law. These are cases when data is subject

to trade secrets, or it can be protected in whole or partially by copyright. The use of classified climate data is clearly the subject of intellectual property law regulation. The creator (author) or owner of the database may own the copyright to its structure or user interface. The specifics and volume of environmental information makes it almost impossible to store the data in a “raw” (unclassified) form, and as a result, copyright rules must be considered for any use of climate data. The key criterion for legal protection in this case is the creativity factor and originality. The U.S. Supreme Court has stated that a telephone directory cannot be protected by copyright law because the phone numbers and addresses are “facts” and are not the result of the authors’ creative work [12]. In addition, the selection and classification of facts does not meet the requirement of originality, as the way to organize records in alphabetical order by name does not contain even a small degree of creativity. Thus, the originality criterion prevents copyright from being applied to databases that use standard methods of classifying information, such as alphabetical or numerical order.

However, the law in many countries recognizes as copyright objects the non-exhaustive databases, like collections of selective data. (E.g.: 2019 Fifty Best Moovies, Best Restaurant Ranking, etc.). It is prohibited to copy and publish such

data collections without permission of copyright owner. Though it is permitted to use such collections as reference material to create own compilation. In addition, some doctrine sources are insisting on excluding data collections and systems from copyright protection if the nature of the data or idea is sourced from a very limited number of expression or classification options [15].

Software used as part of the database or its interface is also protected by copyright. Hence, same database may contain several copyright objects, as well as elements that are not protected by copyright.

Particular attention should be focused on the legal nature of satellite images. For example, due to satellite data we know for sure that over the past 30 years, Arctic sea ice cover has declined by 30 percent in September, the month that marks the end of the summer melt season. Satellite data also shows that snow cover over land in the Arctic has decreased, and glaciers in Greenland and northern Canada are retreating. These are only few examples. Satellite images are made through a complex technical process "involving remote satellite sensors recording of long electromagnetic spectrum waves. This recordings in an unprocessed digital format are transmitted to Earth servers where data is preliminary processed using an algorithm comparing new data to previously existing geospatial data"

[7]. In some cases, additional automated or non-automated image processing is used. As mentioned above, a satellite image is protected by copyright only if it has a creative component in the way it is presented. Whether satellite image is subject to copyright protection is a matter of disputes. In 2005, for example, the German Federal Supreme Court stated that the owners of satellite images did not have copyright [25]. A year later, several French courts stated that satellite images could be subjects to copyright protection, albeit with significant restrictions. To put it more simple, we can say that from legal standpoint in most countries minimally processed satellite images are not subjects to copyright protection.

Normally copyright protection appears automatically at the moment "the work" is created in an objective manner. No formal registration is requested. Exceptions apply. Several countries have mandatory registration rules for some types of creative objects (Turkey), other have voluntary registration procedures for all or some creative objects (Albania, Argentina, Brazil, USA, Russia and Canada). The qualification (volume) of the author's (creator's) rights are, with minor exceptions, similar all over the world. Normally, the right to allow reproduction or copying applies to both straight reproduction and the creation of works similar to the degree of confusion. Copying the database while

downloading information, if a copy of the database is made temporarily and exclusively to facilitate extraction of data from the standpoint of juridical qualification is puzzling. It is unclear whether such use can be considered a reproduction. The answer to this question depends on whether a copy of the database structure is retained on the user's computer drive or not. If a copy is created on the operational disk temporarily and automatically deleted and the memory storage period counts to few seconds, such use is normally not considered a reproduction [20]. If the database is stored on the disk and used as an access interface to the information, such use is to be considered a reproduction. Climate information is complex, requires structural mechanisms of collection and reference, otherwise it becomes a useless set of numbers [17]. Hence in real life any access to large amounts of climate information is associated with the need to acquire the right to use (license) the database structure, which significantly limits international exchange of climate information.

On a national level this problem is partially resolved by copyright restrictions. Continental Europe, Russia, Japan and a number of other countries adopted legal exceptions for private copying of certain types of databases for special categories of users, such as research or educational institutions. The

United States and United Kingdom develop a "fair use" doctrine that allows certain uses of copyrighted works without permission. The US doctrine explains this approach by the nature and purpose of use of copyright objects for research purposes which is to public benefit.

Climate change research requires observation data over a long period of time, tens and even hundreds of years. The IP protection term extension is becoming a problem for getting retrospective data. In accordance with the 1886 Bern Convention for the Protection of Literary and Artistic Works [1] and the 1952 World Copyright Convention [2], copyright protection covers at least 50 years period after death of the author. Some countries, including the United States and many EU members, have increased this period even further, to 70 or 75 years. In some cases, the term is extended even longer. Under U.S. law, certain copyright objects originally created in the service work mode may have a copyright protection period of up to 120 years [13].

Legal uncertainty related to retrospective climate data status often prevents its exchange. In case the necessary data is obtained 50, 70 or more years ago, it may be simply impossible to locate the owner and get his permission.

The consequences of violating copyright on climate data vary significantly in different jurisdictions and may lay in the

fields of civil, administrative and criminal law. The owner whose rights are violated has the right to recover from loss of profits caused by unauthorized database use. Climate researcher's activity is normally non-profit and such sanction is hard to apply. But substantial fines stated in legislation of some countries are a problem. For example, in the United States, a copyright holder may claim a fine for violation of his copyright, which could range from \$750 to \$30,000 for each violated copyright, and if the infringement has been intentional, the fine may rise to US\$150,000 [18].

EU database regulation has number of specific features. The 1996 Directive on The Legal Protection of Databases 96/9/EC [3] requires member-states to limit the use of copyright to climate data and apply copyright solely to the original database structure, while urging governments to enact regulations authorizing database owners to monitor the copying of non-copyrighted information. Art. 7 of the Directive specifies the conditions for granting this kind of rights to database owners, who according to the Directive are supposed to invest substantial resources in obtaining and classifying data. All EU member-states as well as some EU trading partners have implemented such rules into their legislation. Art. 7 is highly likely to be applied to Climate data. Under this regulation, the owner of

the database may make claims to persons who make unauthorized use, copying, transferring to third parties, and reusing the structure of the database or its essential part. The essentiality criteria are both quantitative and qualitative.

In 2005, the European Commission conducted a study on the influence of the 96/9/EC Directive on legal protection of databases, the analysis demonstrated that the directive was significantly slowing international cooperation of scientists [14]. The Commission proposed four options for addressing the problem: (1) to cancel entire Database Directive; (2) Partially cancel it in regards to empowering database owners to monitor the copying of information, but keeping in force provisions protecting IP rights for creative components of databases; (3) to clarify the scope of application: limit database owners' rights to monitor the use of non-copyrighted information; (4) maintain the status quo. Discussions within European structures on these topics continue, and the directive is in effect as of the November 2019.

Fortunately for climatologists, on the international political level governments generally recognize that broad application of IP rights to databases can negatively affect climatologist's research efforts [5]. On the 37th session of the Standing Committee on Copyright and Related Rights of WIPO held in

November 2018 in Geneva, Switzerland, a report on the progress in implementation of the "Plans for Action on Restrictions and Exclusions for the Period up to the 39th session of the SCCR" was presented, which confirmed the position to exempt educational and scientific institutions, libraries and a number of other non-profit entities from those required to comply with copyright protection rules. Unfortunately, some sets of climate data may be of commercial value and mentioned exceptions may not be applicable [9].

As mentioned above in some countries there is special regulation for environmental information. Normally, such rules apply to data collected and stored by government or public funds, and provide open access to such data for non-commercial purposes with restrictions to be used for public benefits.

However, despite some efforts taken by states to restrict the application of IP protection to environmental data, the problem is not resolved meanwhile global climate threats keep increasing. The efforts taken by specialized international organizations are mostly limited to discussions on the forms and limits of such restrictions. The Agreement on Enhancing International Arctic Scientific Cooperation though encourages governments to facilitate data access and exchange for research and educational purposes, qualifying it as a matter of public interest,

immediately returns the status quo by provision of Art. 3 that "parties shall, where appropriate, ensure effective protection and fair allocation of intellectual property rights, in accordance with the applicable laws, regulations, procedures, and policies as well as the international legal obligations of the Parties"[24].

Civil society is taking active steps to make progress seeing free climate data exchange as part of a human right to comfortable environment. In recent years, EU and US courts have begun to process three landmark cases directly related to global warming and sharing environmental information. Judicial watch, Inc. v. United States Department of Commerce was brought in 2015 - 2017 before US District Court of Justice [23]. The plaintiff, citing the Freedom of Information Act and the U.S. Constitution, demanded access to climate information subject to the IP rights of the National Oceanographic and Atmospheric Administration (NOAA). According to plaintiff's stance the lack of such access threatens the ability to timely react to climate change and thus violates the human rights to a safe environment. The Court generally took the Plaintiff's side with reservation that access to information should be granted whenever climate data could be separated from other IP rights. In May 2018 families from 10 European countries and a Finnish NGO, filed a

lawsuit against the European Union to the European Court of Justice [21]. The plaintiffs accuse the EU authorities of violating the environmental policy of the association and basic human rights and demanded the accelerated adoption of several acts' drafts targeted to limit the negative impact on the environment of industrial enterprises and ensuring open access to data resulting from monitoring the effects of global warming. On November 3, 2018, the Supreme Court and the Ninth U.S. Circuit Court of Appeals denied the U.S. government's request to reject the lawsuit of a group of young people supported by an ecologist NGO (Juliana vs. United States) [22]. The government referred exclusively to procedural grounds justifying its claim. The plaintiffs accuse the U.S. of deliberately misrepresenting climate data through application of IP laws and hence denying access to the data, which ultimately leads to, increased CO₂ emissions and endangering lives, health and environmental well-being in the country.

Conclusion

IP laws applicable to climate data without doubt create obstacles to scientific research by restricting access to the use of information and, as a result, making climatologists' efforts to solve global environmental problems less efficient. Part of the problem is being addressed by policies pursued by a

number of states and international organizations to provide open access to data obtained by state-run scientific centers or entities using government financing. The Arctic is on a forefront of international cooperation of ecologists and access to regional climate data is significantly facilitated by national and international regulations as well as open data access provided by various governmental agencies and their subsidiaries. However, without direct regulatory restrictions on the IP rights application to climate data, restrictions or bans on climate information access will keep being a problem. The removal of classified climate data from the list of copyright protected objects on national and international levels could become an important step in resolving global climate problems. Creating internationally recognized common technical standards for climate data collection and processing as well as developing standard software solutions available for free use to researchers around the world could be additional measures facilitating exchange of climate data. Examples of such measures already partially implemented can be found in the Agreement on Enhancing International Arctic Scientific Cooperation, which determined commonly accepted standards, formats and protocols as tools of facilitating data exchange requested to be implemented by the governments [24].

References

1. Bern Convention on the Protection of Literary and Artistic Works (1886) URL: <https://www.wipo.int/treaties/en/ip/bern/>
2. World (Geneva) Copyright Convention (1952) URL: <https://wipolex.wipo.int/en/text/172836>
3. Directive 96/9/EU of the European Parliament and the Council on Legal Protection of Databases dated 11.03.1996 URL: <https://wipolex.wipo.int/en/legislation/details/1409>
4. Climate change. A section on the official website of the United Nations. URL: <http://www.un.org/en/sections/issues-depth/climate-change/index.html>
5. Kirilenko, V.P., Alexeyev, G.V. International Law and Information Security of States. SPB.: SPBGUKIT, 2016.
6. Kondratiev, K.Y., Diachenko, L.N., Kozoder, V.V. Radiation Balance of the Earth. L.: Gidrometeoizdat, 1988.
7. Ocorbin, N.M., Sukhanov, S.I. Creating a Digital Model of the Terrain Based on High-resolution Space Images / Espacial data. 2007. No. P. 87-91.
8. The *Beijing Treaty on Audiovisual Performances* (2012) URL: <https://www.wipo.int/treaties/ru/ip/beijing/>
9. The text of the opinion of the 37th session of the Secretariat of the Standing Committee on Copyright and Related Rights of WIPO (2018). URL: https://www.wipo.int/meetings/ru/details.jsp?meeting_id=46444
10. Troitskiy, V. A. Technical Regulation in the Context of Sustainable Development / Izvestia of the Herzen State Pedagogical University. 2012. No. 153-1. P. 52-57.
11. Carroll, M. W. (2016). Intellectual Property and Related Rights in Climate Data. Research Handbook on Intellectual Property and Climate Change (2016). P. 12.
12. Feist Publications, Inc. v. Rural Telephone Service, Co., 1991 U.S. Lexis 1856 (March 27, 1991). URL: <https://supreme.justia.com/cases/federal/us/499/340/>
13. Garvin, P. (Ed.). (2011). Government Information Management in the 21st century: *International perspectives*. Ashgate Publishing, Ltd.
14. Gasaway, L.: Databases and The Law, (2006), University of North Carolina at Chapel Hill.
15. Key Publications, Inc. v. Chinatown Today Publishing Enterprises, Inc., 945 F.2d 509 (1991). URL:

<https://law.justia.com/cases/federal/appellate-courts/F2/945/509/289784/>

16. Meifa-Kaiser, M. (2006). Copyright Claims for Meteosat and Landsat Images Under Court Challenge. *J. Space L.*, 32, 293.

17. NASA, Goddard Space Flight Center, 'Global Change Master Directory'. URL: <http://gcmd.gsfc.nasa.gov/>

18. Reichman, J. H., & Okediji, R. L. (2012). When copyright law and science collide: empowering digitally integrated research methods on a global scale. *Minnesota Law Review*, 96(4), 1362.

19. Samuelson, P., Opsahl K. (1999), Licensing Information in the Global Information Market: Freedom of Contract Meets Public Policy, *Eur. Intellectual Property Review*, 21, 386.

20. Cartoon Network, LP v. CSC Holdings, Inc., 536 F.3d 121, 129–30 (2d Cir. 2008).

21. Armando Ferrão Carvalho and Others v. The European Parliament and

the Council, <http://www.lse.ac.uk/GranthamInstitute/litigation/armando-ferrao-carvalho-and-others-v-the-european-parliament-and-the-council/>

22. Rosen J., U.S. courts reject efforts to block youth climate trial, <http://www.sciencemag.org/news/2018/10/scientists-take-opposing-sides-youth-climate-trial>

23. Judicial Watch, Inc. v. United States Department of Commerce, <http://climatecasechart.com/case/judicial-watch-inc-v-united-states-department-of-com>

24. Agreement on Enhancing International Arctic Scientific Cooperation, signed at the Fairbanks Ministerial meeting, May11, 2017 <https://oaarchive.arctic-council.org/handle/11374/1916>

25. Meifa-Kaiser, M. (2006). Copyright Claims for Meteosat and Landsat Images Under Court Challenge. *J. Space L.*, 32, 293.

