

Space, Climate Change and the Arctic: remote sensing activities for the benefit of Greenland Inuit communities

The global reach of climate change is accompanied by an asymmetric impact on human communities. Those standing at a lower level of development are the most affected, although little contributing to the causes of climate change. In this framework, remote sensing activities play an essential role in coping with the disruptive consequences of climate change in remote regions. After having briefly referred to the international legal framework governing climate action, this essay highlights how the legal regime governing remote sensing is oriented towards sustainable development and underlines how remote sensing can directly help Polar indigenous communities in fighting climate change.

Climate change has become the paramount environmental issue of the last decades. The United Nations have promoted awareness that climate change is a common concern of humankind by holding global conferences on environment and sustainable development in Rio de Janeiro (1992 and 2012), Johannesburg (2002) and New York (2015). The international response to climate change finds its legal framework in the UN Framework Convention on Climate Change setting out a regime aimed at stabilizing atmospheric concentrations of greenhouse gases to avoid “dangerous anthropogenic interference with the climate system.” In 2015, the 21st session of the Conference of the Parties (COP21) adopted the Paris Agreement, binding parties to take efforts to maintain a global temperature rise below 2 degrees Celsius for this century (see Cordini, Marchisio, Fois, 2017). The 2030 Agenda (A/RES/70/1, 21 October 2015) identifies climate change as “one of the greatest challenges of our time” (par. 14) and as an impediment to the achievement of sustainable development. Within the framework of the Agenda, climate change is the object of Sustainable Development 13 (Climate Action) which urges to take prompt actions on climate change mitigation, adaptation, impact reduction and early warnings through an integrated approach based on national policies, education, awareness-raising and institutional capacity (see Mayer, 2018).

As remote sensing activities allow to monitor global environmental change in a manner not possible with other techniques, their important role in fighting climate change and enhancing sustainable development has been widely recognized in UN instruments. Especially, these latter identify Earth Observation (EO) as a key decision-making tool for better management of water resources, natural disasters and climate monitoring. In addition, information acquired through EO contribute to the implementation of environmental law obligations (Lafferranderie 2005, p. 23; Ito 2011, p. 116). UNFCCC binds States to communicate to the COP the information related to the implementation of the Convention, among which also fall those acquired through remote sensing. Satellite can be used to verify States own emissions inventory reports and contribute to the assessment of Nationally Determined Contributions required by the Paris Agreement (MacFaul pp. 197-199; Aganaba-Jeanty, Huggins, 2019, p. 312).

The legal regime governing remote sensing activities is embedded in the UN Principles Relating to Remote Sensing of Earth from Outer Space (A/RES/41/65, 3 December 1986). The Principles are specifically oriented to realize sustainable development objectives as they encompass “sensing of the Earth’s surface from space [...] for the purpose of improving natural resources management, land use and the protection of the environment.” According to Principle I remote sensing activities shall be conducted for the benefit and in the interests of all States with particular regard to the needs of developing countries. This special attention to the needs of the States most affected by environmental issues finds its subsequent elaboration in the global partnership-based approach to sustainable development. The Principles also stress the fundamental role of international cooperation, which can be defined as a “procedural super principle” both in international space law and international environmental law (Marchisio 1997 p. 343; 2004 p. 1313; 2009 p. 144, 149-151). Indeed, cooperation

in the exchange of information related to climate change is also provided by the UNFCCC and by the Paris Agreement.

At international level, there are several programmes providing remotely sensed data for tackling climate change. The Global Climate Observing System, co-sponsored among others by the World Meteorological Organization and the United Nations Environment Programme, heavily relies on satellite data for regularly assessing Essential Climate Variables (Aganaba-Jeanty, Huggins, 2019, p. 312). The Global Earth Observation System of Systems by the Group of Earth Observation is a set of coordinated, independent EO information and processing systems that facilitates the sharing of environmental data (see Uhler, Chen, Gabrynowicz, Janssen, 2009). Building on the previous Global Monitoring for Environment and Security (GMES), in 2014 the European Commission established the Copernicus Programme (Regulation No 377/2014), in partnership with the European Space Agency and the European Environment Agency. Copernicus is a civil, user-driven programme aimed at developing environmental information services based on EO data. The decision to establish European space based environmental monitoring services derived from the EU concern about environmental issues, for which the Union is also party to several multilateral environmental agreements (Masson-Zwaan, Hofmann, 2019 Ch. 3 § 13.3.C). Copernicus environmental data and information are made available on a full, open and non-fee basis to public and private institutions (Smith, Doldirina, 2017, p. 264).

Remote sensing activities are also oriented towards fighting the destructive consequences of climate change on the Arctic, whose ocean, atmosphere and land are continuously monitored by several satellites. The European Commission, which has applied for observer status in the Arctic Council, has recognized the Arctic as a “specific priority area” in the activities of Copernicus space component (EC 2018/621), within the framework of the EU Arctic Policy. The Arctic Council has recognized satellites’ effectiveness in enhancing the sustainable development of the region (CAFF, 2015). In this context, one of the most innovative remote sensing applications provides Arctic Inuit communities with EO-based information that helps them to navigate safely over the sea ice and harvest food, coping with unpredictable ice melting due to climate change. Satellites monitor the ice status around the communities and the derived data are used to create maps delineating conditions suitable for travel. Started in the community of Qaanaaq, the service is progressively being extended to all Greenland communities and users can conveniently access to these data layers through web sites and mobile phone apps.

Remote sensing services for Inuit communities on the one hand constitute a relevant implementation of the obligation to strengthen global response to climate change provided by related international conventions. On the other hand, they are highly relevant under the indigenous peoples’ rights profile. Indeed, making their lands unsuitable for decent living conditions, climate change is a driver of displacement for these communities (see IPCC 2014). Remote sensing is therefore a pivotal instrument for Inuit communities to cope with the challenges posed by climate change, promoting resilience and adaptation strategies and enhancing the implementation of SDG 13.

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European Union Legislation

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European Union, Joint Communication To The European Parliament And The Council, An integrated European Union policy for the Arctic, Brussels, 27.4.2016 JOIN (2016) 21

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Online resources

Copernicus website www.copernicus.eu

Global Earth Observation System of Systems on Group of Earth Observation website <https://www.earthobservations.org/geoss.php>

Global Climate Observing System website <https://gcos.wmo.int/en/home>

Greenland Community Ice Information Service, Copernicus Marine Service Use Cases ,Version 2.4, available at <https://marine.copernicus.eu/wp-content/uploads/use-cases/greenland-community-ice-information-service-2.4.pdf>

Greenland Community Ice Information Service Website <http://floedge.polarview.org/>