



# ICRC

## **Constraints under International Law on Military Operations in, or in Relation to, Outer Space during Armed Conflicts**

**Working paper submitted by the International Committee of the Red Cross to the open-ended working group on reducing space threats through norms, rules and principles of responsible behaviours, as convened under United Nations General Assembly Resolution 76/231, and to the Secretary-General of the United Nations in reply to General Assembly Resolution 76/230 on “Further practical measures for the prevention of an arms race in outer space”**

3 May 2022

### Contents

I. General considerations.....	2
II. Existing limits under international law, including IHL, on military operations in relation to outer space.....	3
III. Specific rules limiting the use of weapons and other military operations in, or in relation to, outer space during armed conflicts.....	4
IV. Conclusions and recommendations.....	6

The International Committee of the Red Cross (ICRC) welcomes the intergovernmental initiatives aiming to prevent an arms race in outer space and to free it from conflict, taking place at the open-ended working group on reducing space threats through norms, rules and principles of responsible behaviours, convened under United Nations (UN) General Assembly Resolution 76/231,<sup>1</sup> and through submissions under General Assembly Resolution 76/230, which mandates the UN Secretary-General to “seek the views and proposals ... on the provision of guarantees for the prevention of an arms race in outer space and preserving outer space for peaceful purposes”.<sup>2</sup>

---

<sup>1</sup> UN General Assembly, Resolution 76/231 “Reducing space threats through norms, rules and principles of responsible behaviours”, UN Doc. A/RES/76/231, 24 December 2021, paras 5 and 6.

<sup>2</sup> UN General Assembly, Resolution 76/230 “Further practical measures for the prevention of an arms race in outer space”, UN Doc. A/RES/76/230, 24 December 2021, para. 7.

The ICRC appreciates the opportunity to take part in these initiatives. In line with its humanitarian mission and mandate, the ICRC submits this working paper<sup>3</sup> on the constraints under international law on military operations in, or in relation to, outer space during armed conflicts to contribute to the discussions of both initiatives.

## I. General considerations

The military use of space and space systems<sup>4</sup> has been an integral part of contemporary warfare for several decades. For example, armed forces rely on satellite navigation systems to enable precision navigation and targeting, on satellites to enable global communications – including for command and control – and on space-based monitoring systems that allow advance warnings of missile attacks, surveillance and reconnaissance.

As the role of space systems in military operations increases, the likelihood of these systems being targeted during armed conflicts, whether it be a ground component, a space component or any link between them, also increases. Possible threats to space systems include electronic warfare, cyber operations, directed energy attacks and the use of orbital-based and ground-based anti-satellite weapons.

It is important to stress that any use of force by States – be it through kinetic or non-kinetic means, using space- and/or ground-based weapon systems – remains governed by the UN Charter and the relevant rules of customary international law, in particular, the prohibition against the threat or use of force. International disputes must be settled by peaceful means, in outer space as in all other domains.

Military operations in, or in relation to, outer space<sup>5</sup> during armed conflicts could have significant impacts on civilians on earth because technology enabled by space systems permeates most aspects of civilian life, making the potential consequences of attacks on space systems a matter of humanitarian concern.<sup>6</sup> For example, civilian infrastructure needed for health care, transportation, communications, energy and trade is increasingly dependent on space systems. Space objects – particularly weather, communication, navigation, and earth observation/imaging satellites – also contribute to every phase of humanitarian work, from needs assessment to emergency relief delivery, from early recovery to disaster and conflict risk reduction. However, many of these civilian satellites, or some of their payloads, may also serve armed forces, and are therefore of a dual-use nature, which may make them military objectives.<sup>7</sup> Another issue of growing concern is space debris. Given the speed, location and duration of its travel, debris risks damaging other space objects that support safety-critical civilian activities and essential civilian services on earth.

---

<sup>3</sup> This paper is limited to legal and humanitarian questions related to military operations in, or in relation to, outer space during armed conflicts. It does not address questions relating to the legal framework applicable to military operations in, or in relation to, outer space in situations below the threshold of an armed conflict.

<sup>4</sup> For the purpose of this paper, the term “space system” is used to refer to any system that encompasses a space component (one or more space objects), a ground component (including ground stations for the launch, operation and/or use of the space component) and any link between them. The term “space object”, as defined in Article I(d) of the Convention on International Liability for Damage Caused by Space Objects of 1972 and in Article I(b) of the Convention on Registration of Objects Launched into Outer Space of 1974, “includes component parts of a space object as well as its launch vehicle and parts thereof”.

<sup>5</sup> For the purpose of this paper, military operations in, or in relation to, outer space include military operations in, to, from and through outer space and those against space systems, whether it be a space component, a ground component or any link between them.

<sup>6</sup> This paragraph provides only a summary of considerations for the human cost of military operations in, or in relation to, outer space. For a more detailed discussion, see ICRC, *The Potential Human Cost of the Use of Weapons in Outer Space and the Protection Afforded by International Humanitarian Law*, Position paper submitted to the Secretary-General of the United Nations on the issues outlined in UN General Assembly Resolution 75/36, 7 April 2021, p. 2.

<sup>7</sup> Dual-use space objects may become military objectives if their use for military purposes fulfils the definition under Article 52(2) of Protocol I of 8 June 1977 additional to the Geneva Conventions of 1949 (Additional Protocol I), i.e. “those objects which by their nature, location, purpose or use make an effective contribution to military action and whose total or partial destruction, capture or neutralization, in the circumstances ruling at the time, offers a definite military advantage”.

The ICRC is primarily concerned with the potential human cost for civilians on earth of the use of weapons and other military operations in, or in relation to, outer space during armed conflicts, and the protection afforded by international law, including international humanitarian law (IHL), against their effects.

## II. Existing limits under international law, including IHL, on military operations in relation to outer space

As affirmed by the Outer Space Treaty, international law applies to “activities in the exploration and use of outer space”.<sup>8</sup> If military operations in, or in relation to, outer space were to be carried out as part of an armed conflict, despite the long-term desire of the international community to prevent an arms race and conflict in outer space,<sup>9</sup> the following relevant international law, among others, applies:

- the UN Charter, which governs the lawfulness of the resort to force between States. It prohibits the threat or use of force, and mandates Member States to settle their international disputes by peaceful means.
- space law treaties, in particular the Outer Space Treaty, which recognizes the common interest of all mankind in the progress of the exploration and use of outer space for peaceful purposes.<sup>10</sup>
- the law of neutrality, which regulates relations between belligerent States and neutral States in times of armed conflict and serves to mitigate and contain the adverse effects of a conflict.
- IHL, also known as the law of armed conflict or *jus in bello*, which establishes limits on the right of belligerents to choose means and methods of warfare and rules on the conduct of hostilities to protect civilian populations, civilians and civilian objects from the danger arising from military operations.<sup>11</sup> It includes prohibitions and restrictions on the use of specific weapons, means and methods of warfare.

IHL constrains any military operations conducted in the context of an armed conflict, including those that occur in outer space or the effects of which extend to outer space, just as it constrains the use of any other weapon, means and methods of warfare in any armed conflict, whether new or old. The four Geneva Conventions of 1949 and Additional Protocol I of 1977 apply “to all cases of declared war or any other armed conflict which may arise between two or more of the High Contracting Parties”, and must be respected “in all circumstances”.<sup>12</sup> Most rules governing the conduct of hostilities today are part of customary IHL<sup>13</sup> and apply wherever hostilities take place during armed conflicts, including in, or in relation to, outer space. With regard to more detailed treaty rules, Article 49(3) of Additional Protocol I demonstrates that the protocol’s rules on the conduct of hostilities were meant to apply to all types of warfare that may affect civilians on land. This would include hostilities in outer space, or the effects of which extend to outer space. The applicability of IHL in outer space is confirmed by Article III of the Outer Space Treaty, which, as noted above, states that international law applies to activities in the use of outer space, and IHL forms part of international law. Furthermore, the International Court of Justice has recalled that the established principles and rules of IHL

---

<sup>8</sup> Article III of the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and Other Celestial Bodies (Outer Space Treaty), 1967; Paragraph 1 of Resolution A/76/231 more specifically affirms that military activities that take place in relation to outer space must be conducted in conformity with international law.

<sup>9</sup> UN General Assembly, UN Doc. A/RES/76/230, 24 December 2021, preamble and para. 2; UN General Assembly, UN Doc. A/RES/76/231, 24 December 2021, preamble.

<sup>10</sup> Outer Space Treaty, preamble, Articles I and IV(2).

<sup>11</sup> Articles 35, 48 and 51 of Additional Protocol I.

<sup>12</sup> Articles 1 and 2 common to the four Geneva Conventions of 1949; Article 1(3), Additional Protocol I.

<sup>13</sup> See Jean-Marie Henckaerts and Louise Doswald-Beck, *Customary International Humanitarian Law* (ICRC Customary IHL Study), ICRC/Cambridge University Press, 2005: [https://ihl-databases.icrc.org/customary-ihl/eng/docs/v1\\_rul](https://ihl-databases.icrc.org/customary-ihl/eng/docs/v1_rul).

applicable in armed conflict apply “to all forms of warfare and to all kinds of weapons”, including “those of the past, those of the present and those of the future”.<sup>14</sup>

It is important to underline that affirming the application of IHL to military operations in, or in relation to, outer space during armed conflicts does not legitimize or encourage the use of force in outer space, nor its militarization or weaponization. In fact, IHL imposes some limits on the militarization of, and the use of force in, outer space by prohibiting the development and use of weapons, means and methods of warfare in, or in relation to, outer space that would violate IHL, as explained below.

### III. Specific rules limiting the use of weapons and other military operations in, or in relation to, outer space during armed conflicts

As noted above, military operations in, or in relation to, outer space during armed conflicts are limited by international law. The following rules in IHL and the Outer Space Treaty are particularly relevant to the use of weapons and other military operations in, or in relation to, outer space during armed conflicts, including those designed or expected to disrupt, damage, destroy or disable space systems, whether it be a space component, a ground component or any link between them.

- The placement in orbit of objects carrying nuclear weapons or other weapons of mass destruction, the installation of such weapons on celestial bodies and the stationing of such weapons in outer space in any other manner is prohibited.<sup>15</sup>
- The establishment of military bases, installations and fortifications, the testing of any type of weapons and the conduct of military manoeuvres on celestial bodies are forbidden. The moon and other celestial bodies must be used exclusively for peaceful purposes.<sup>16</sup>
- Weapons that are by nature indiscriminate, or of a nature to cause superfluous injury or unnecessary suffering,<sup>17</sup> as well as a number of other specific types of weapon, are prohibited.<sup>18</sup> These prohibitions are not limited to the terrestrial domains.
- Military or any other hostile use of environmental modification techniques – namely any technique for changing, through the deliberate manipulation of natural processes, the dynamics, composition or structure of the earth or of outer space – having widespread, long-lasting or severe effects as the means of destruction, damage or injury is prohibited.<sup>19</sup>
- Direct attacks against civilians or civilian objects, including civilian space objects, are prohibited.<sup>20</sup> No space object nor any of its constituent parts may be attacked, unless and for such time as they would be military objectives.<sup>21</sup>

---

<sup>14</sup> International Court of Justice, *Legality of the Threat or Use of Nuclear Weapons*, Advisory Opinion, 8 July 1996, para. 86.

<sup>15</sup> Outer Space Treaty, Article IV(1); Article 3 of the Agreement Governing the Activities of States on the Moon and Other Celestial Bodies, 1979.

<sup>16</sup> Outer Space Treaty, Article IV(2).

<sup>17</sup> Rules 70 and 71, ICRC Customary IHL Study.

<sup>18</sup> Rules 72 to 84, ICRC Customary IHL Study; see also all the treaties regulating specific means and methods of warfare, as listed in the ICRC’s IHL treaties database: <https://ihl-databases.icrc.org/applic/ihl/ihl.nsf/vwTreatiesByTopics.xsp#view: id1: id2: id260:repeat1:1:labelAnchor>.

<sup>19</sup> Articles I and II, Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques, 1976.

<sup>20</sup> Rules 7 to 10, ICRC Customary IHL Study; Article 48, Additional Protocol I.

<sup>21</sup> Rule 10, ICRC Customary IHL Study; Article 52(2), Additional Protocol I.

- Indiscriminate attacks, namely those of a nature to strike military objectives and civilians or civilian objects without distinction, including civilian space objects, are prohibited.<sup>22</sup>
- Disproportionate attacks are prohibited, i.e. attacks which may be expected to cause incidental loss of civilian life, injury to civilians, damage to civilian objects, or a combination thereof, which would be excessive in relation to the concrete and direct military advantage anticipated.<sup>23</sup> When assessing the proportionality of an attack, all foreseeable direct and indirect incidental harm to civilians or damage to civilian objects in outer space or on earth must be considered.<sup>24</sup>
- In the conduct of military operations, including those in relation to outer space, constant care must be taken to spare the civilian population, civilians and civilian objects. All feasible precautions must be taken, notably in the choice of means and methods of warfare, to avoid, and in any event to minimize, incidental civilian casualties and damage to civilian objects both in outer space and on earth.<sup>25</sup>
- Attacking, destroying, removing or rendering useless objects indispensable to the survival of the civilian population is prohibited, including through military operations in relation to outer space.<sup>26</sup>
- Specially protected persons and objects, such as medical services<sup>27</sup> and cultural property,<sup>28</sup> must be protected and respected, including when carrying out military operations in relation to outer space.

In the ICRC's view, all these rules apply to, and therefore limit, kinetic and non-kinetic military operations against space systems during armed conflicts, including operations that would disable them without damaging them physically. When assessing the lawfulness of such operations, all foreseeable direct and indirect incidental harm to civilians and civilian objects in outer space and on earth must be considered, including when targeting a dual-use space object that has become a military objective. The risk of creating debris and the cascading threats that debris poses to civilian space objects must also be considered when applying these rules.

In addition, all feasible precautions must be taken to protect civilians and civilian objects against the effects of military operations in, or in relation to, outer space, which is an obligation that States must already implement in peacetime.<sup>29</sup> Measures that could be considered include segregating the military use of space objects from the civilian use of space objects; and working towards identifying space systems serving specially protected objects like hospitals and objects indispensable to the survival of the civilian population, such as

---

<sup>22</sup> Rules 11 and 12, ICRC Customary IHL Study; Article 51(4), Additional Protocol I. Indiscriminate attacks are those: (a) which are not directed at a specific military objective; (b) which employ a method or means of combat which cannot be directed at a specific military objective; or (c) which employ a method or means of combat the effects of which cannot be limited as required by IHL; and consequently, in each such case, are of a nature to strike military objectives and civilians or civilian objects without distinction.

<sup>23</sup> Rule 14, ICRC Customary IHL Study; Article 51(5)(b) and Article 57, Additional Protocol I.

<sup>24</sup> ICRC, *International Humanitarian Law and the Challenges of Contemporary Armed Conflicts*, ICRC, Geneva, 2015, pp. 42–43 and 52.

<sup>25</sup> Rules 15 to 21, ICRC Customary IHL Study; Article 57, Additional Protocol I. Feasible precautions are those precautions which are practicable or practically possible taking into account all circumstances ruling at the time, including humanitarian and military considerations. See Article 3(4) of Protocol II to the Convention on Certain Conventional Weapons (CCW), 1980; Article 1(5) of Protocol III to the CCW, 1980 and Article 3(10) of Amended Protocol II to the CCW, 1996.

<sup>26</sup> Rule 54, ICRC Customary IHL Study; Article 54, Additional Protocol I; Article 14, Protocol II of 8 June 1977 additional to the Geneva Conventions (Additional Protocol II).

<sup>27</sup> See, for example, Article 19, Convention (I) for the Amelioration of the Condition of the Wounded and Sick in Armed Forces in the Field, 1949; Article 12, Convention (II) for the Amelioration of the Condition of Wounded, Sick and Shipwrecked Members of Armed Forces at Sea, 1949; Article 18, Convention (IV) relative to the Protection of Civilian Persons in Time of War; Article 12, Additional Protocol I; Article 11, Additional Protocol II; Rules 25, 28 and 29, ICRC Customary IHL Study.

<sup>28</sup> See, for instance, Article 53, Additional Protocol I; Article 16, Additional Protocol II; Rules 38 and 39, ICRC Customary IHL Study.

<sup>29</sup> Article 58, Additional Protocol I; Rules 22 to 24, ICRC Customary IHL Study.

drinking water installations and supplies, and irrigation networks.<sup>30</sup> If a space object is exclusively dedicated to civilian use, the State of registry should register it as such,<sup>31</sup> clearly indicating its protected status under IHL.

#### IV. Conclusions and recommendations

Despite the long-term desire of the international community to explore and use space for peaceful purposes, space systems have been employed for military purposes since the dawn of the space era. As the role of these systems in military operations during armed conflicts increases, the likelihood of these systems being targeted also increases, with potentially significant impacts for civilians on earth.

Military operations in, or in relation to, outer space do not occur in a legal vacuum but are constrained by existing international law, notably the UN Charter, the Outer Space Treaty, IHL and the law of neutrality. Affirming that international law, including IHL, constrains military operations in, or in relation to, outer space during armed conflicts neither encourages the weaponization of outer space, nor legitimizes hostilities in outer space. While IHL preserves a minimum degree of humanity in times of armed conflict, notably to protect civilians, the ICRC's contribution is made in line with the aim of the UN General Assembly resolutions to prevent an arms race in outer space and to free it from conflict.

Indeed, the ICRC urges States to consider the risk of humanitarian consequences when taking any decision with regard to military operations in relation to outer space, at national or multilateral levels. In particular, in light of the risks of significant civilian harm, States may decide to set general prohibitions or specific limits with regard to weapons, hostilities or other military operations in relation to outer space for a range of reasons, including humanitarian ones, as they did in the Outer Space Treaty. If new legally binding instruments or other norms, rules and principles are to be developed in this regard, they must be consistent with and should build on and strengthen the existing legal framework, including IHL.

The ICRC is grateful for the opportunity to share its views through this working paper. It also stands ready to lend its expertise to any future discussion on this matter, as States deem appropriate.

---

<sup>30</sup> ICRC, *International Humanitarian Law and the Challenges of Contemporary Armed Conflicts*, ICRC, Geneva, 2015, p. 43; See also footnote 26 above.

<sup>31</sup> This is in line with Article IV(1)(e) of the Convention on Registration of Objects Launched into Outer Space, which requires each State of registry to furnish to the Secretary-General of the United Nations information concerning each space object carried on its registry, including the general function of the space object, and from time to time to provide additional information concerning the space object.