

International Space Law and the Environment

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Governance and Legal Perspectives on Space Activities in Earth Orbit and Beyond

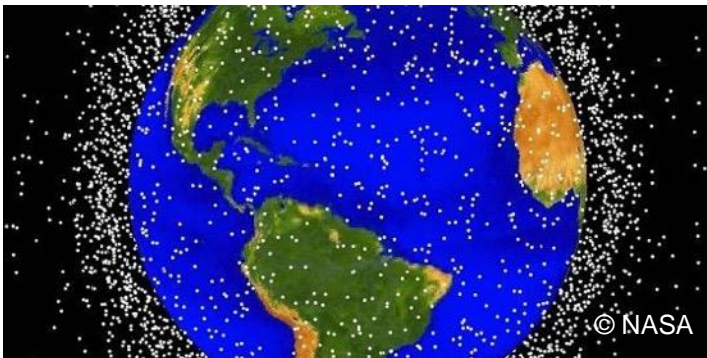


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Outer space and the environment

- More and diverse actors, more activity, more objects in space
- Need to ensure long-term sustainability of space activities (LEO!)
- Need to protect environment of Earth & celestial bodies
- **Issues:**
 - Risk of congestion, collision
 - Harmful interference
 - Backward/forward contamination
- **Remedies:**
 - Hard law; soft law; industry practices; capacity building

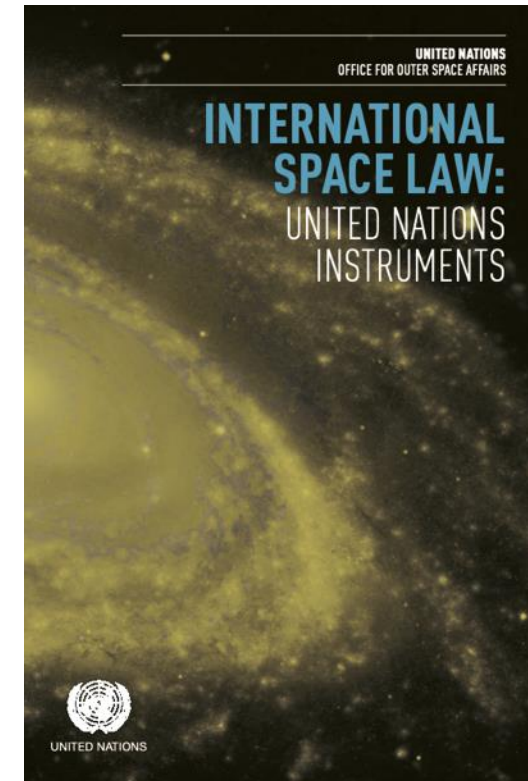


Hard law and the environment

e.g., Outer Space Treaty:

- **Art III:** international law applies
 - Incl. environmental law, case law
- **Art. VI:** international responsibility
 - Authorization/supervision)
- **Art. VII:** international liability
 - For damage caused by space object)
- **Art. VIII:** registration, jurisdiction & control
 - Ownership '*at eternam*'

- **Art. IX:**
 - Cooperation and mutual assistance, due regard for interests of other states
 - Avoid harmful contamination of celestial bodies & adverse changes in earth's environment
 - Harmful interference with activities of other states: consultation



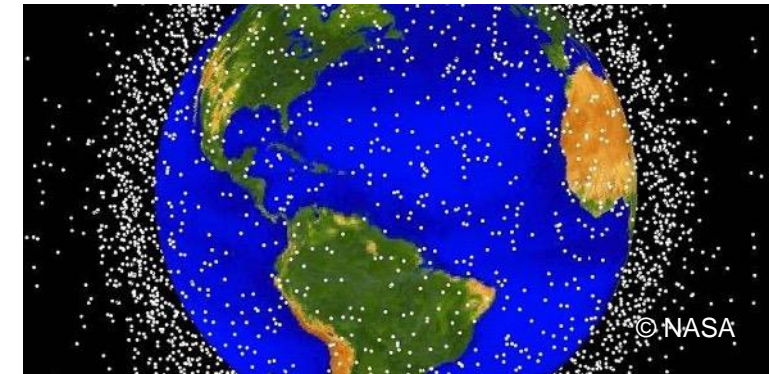
Soft law and the environment

- Soft law may be voluntary, but it is not without obligations
- UN (and other) Space **Debris Mitigation** Guidelines
 - Not legally binding, 'guidelines'
 - But find way into national law
- UN **Long-term Sustainability** guidelines
 - Need to be implemented in national law
- Recently adopted UNCOPUOS agenda items that may lead to new instruments
 - **Space Traffic Management**
 - **Small satellites**
 - **Dark & Quiet Skies**



Debris mitigation: legal issues

- No rules in treaties, term not mentioned
 - No duty to not create debris
 - No definition of space object
 - Collision: no standard of fault for damage
 - Crash: difficulty of identification, recovery/return
 - Potential liability for as long as object is in orbit



Debris remediation: legal issues

- No rules in treaties, term not mentioned
 - No duty to clean up debris
 - Who pays, e.g., polluter pays principle
 - Consent / permission of owner needed for removal by 3rd party
 - Who owns recovered parts, if any
 - What if damage to a 3rd satellite in space, or on earth/in the air
 - What if the wrong satellite is picked up (national security, IP)



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Harmful interference: legal issues

- No definition, no clear prohibition
 - Only obligation is to consult
 - Current issue of interference by large constellations with astronomy
 - States must take into consideration the interests of all stakeholders during authorization/supervision process
 - States which experience interference can request consultation



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Contamination: legal issues

- Contamination of other planets by terrestrial organisms (**forward**)
- Contamination of the Earth by extra-terrestrial organisms (**backward**)
- COSPAR Planetary Protection Policy, rev. 2020
 - Standards to guide compliance with art. IX OST
 - Not legally binding, recognized by COPUOS
 - Implemented by states, IGO, since 50+ years
- **5 categories** of planetary protection, depending on
 - Type of **mission** (e.g., orbiter, lander, sample return)
 - Target **body** (e.g. Moon, Mars, asteroid)



Industry initiatives, capacity building



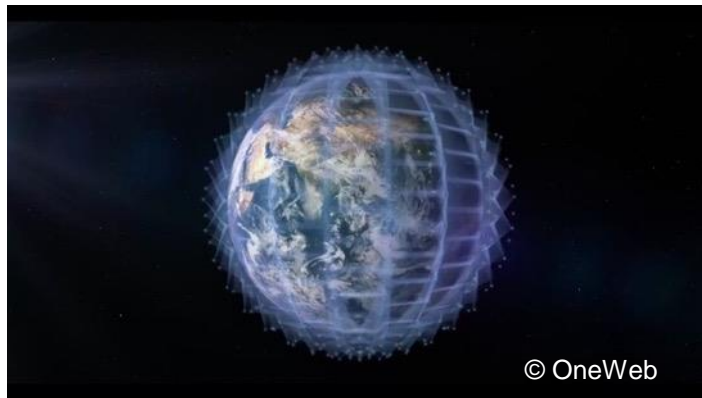
- Industry is convinced that action is needed
- Bottom-up approach is emerging, e.g.,
 - Net Zero space initiative
 - Space Sustainability Rating
 - Space Safety Coalition
 - Debris removal & STM technology development
 - SpaceX trials to darken satellites for less reflection of sunlight
- Also a need for capacity building, e.g.,
 - UNOOSA/ITU guidance on registration, frequency management
 - SWF Handbook for new space actors



In conclusion: environmental concerns increase

- Difficulty to reach consensus in COPUOS
- New issues
 - Large constellations
 - More congestion, collisions, debris, and interference
 - Human missions to Moon and Mars
 - Update PPP
 - Planetary missions by private entities
 - Risk of non-compliance

SOLUTIONS? International coordination & regulation (COPUOS), national implementation, supervision, industry self-regulation



Thank you!

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