

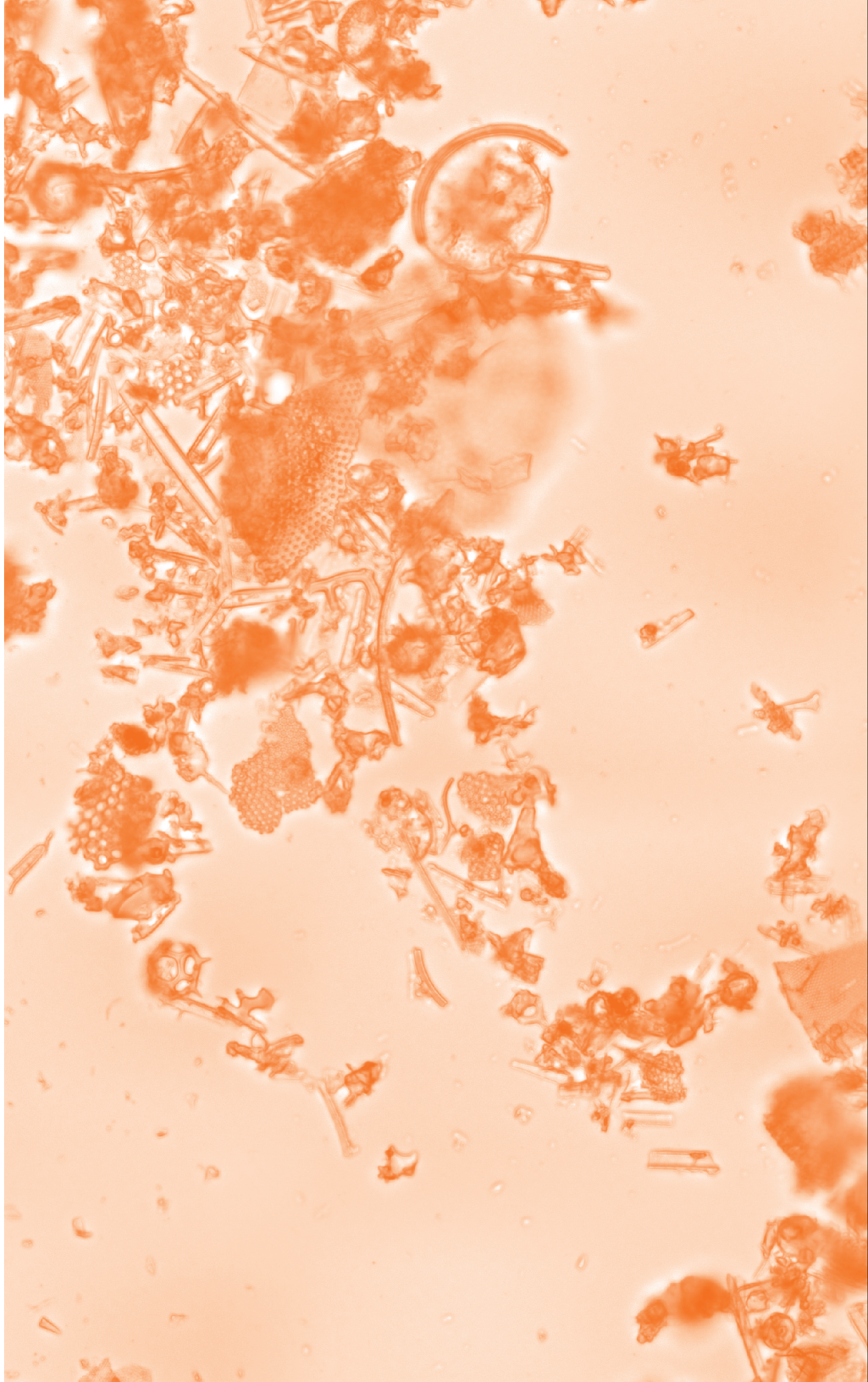
A large, vertical, orange-tinted image on the left side of the page. It shows a complex, dense field of microscopic or material structures, possibly biological cells or synthetic materials, rendered in various shades of orange and brown. The structures are irregular and interconnected, creating a rich, textured appearance.

Viscosity—Mobilizing Materialities

Karen Lutsky, Ozayr Saloojee, and Emily Eliza Scott, editors

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Viscosity—Mobilizing Materialities

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FRONTIER CLIMATES – Managing the Global Commons

Peter Mörtenböck and Helge Mooshammer

From experimental seabed mining in the Pacific to resource extraction in outer space and from Arctic geoengineering projects to cloud seeding programs in the Arabian Desert, many critical sites of resource exploitation are governed by frontier climates. The frontier combines characteristics of the periphery – geographical remoteness, demographic marginalization, ideological oblivion – and thereby enables things to emerge that would not otherwise exist. Its inherently expansionary character makes the frontier a site of interaction and confrontation. It is not a given space, but rather created through a series of advances aiming to structure a field of options. In other words, the frontier is shaped by the ongoing presence of what can be understood as a frontier mentality. In *Frontier Climates* (2017), a cartographic study of current resource frontiers, we trace the forces and ideologies as well as the materialities and representations that allow for this mentality to crystallize into action. Through a collection of sites that engender distinct frontier operations, the series of maps addresses the making of politico-material frontier climates as an active force in neoliberal globalization.



Installation view of *Frontier Climates, World of Matter: Mobilizing Materialities*, Katherine E. Nash Gallery, 2017

The United Nations Environment Programme's (UNEP) Law Division, an entity committed to the progressive development of international environmental law, identifies four global commons: the High Seas, the Atmosphere, Antarctica, and Outer Space – resource domains guided by the principle of the common heritage of mankind.¹ In recent years, advances in technology and science have enabled regional economic and military alliances to gain greater access to and control of these domains, highlighting the need for international treaties and conventions to govern global commons. In the absence of efficient institutional and regulatory frameworks, terrestrial, marine and celestial matter has become the battleground for a small set of large players spearheading encroachments on and the destruction of global commons for the purpose of trade, resource and security advantages. Mapping out the decline of the four global commons identified by international law, *Frontier Climates* traces these processes as they are unfolding as well as the historical, cultural, scientific and representational genealogies that have facilitated the current dynamics.

Performing Resource Frontiers and the Enclosure of the Global Commons

The current development of new spatial frontiers depends on the production of trans-territorial symbolic and material arrangements – interactions across varied distances, circuits of comprehensive commercial infrastructures, mobilisation of global constituencies, etc. – that have more to do with each other than with the geographies in which they are located. The agency of this emerging infrastructure space,² as in the case of lunar settlement activities or in the newly opened ground for polar cities, floating nuclear power plants and deep sea data centres combines communicative and operative efficacy in an extremely radical manner. It fully embraces the capacity of frontier climates to reconstruct the relationship between governments, designers, investors, territories, and the public.

1 The concept of Common Heritage of Mankind was first mentioned in the 1954 Hague Convention for the Protection of Cultural Property in the Event of Armed Conflict and was articulated in its full form by diplomat Arvid Pardo to the First Committee of the United Nations General Assembly (UNGA) in November 1967. UN General Assembly (UNGA), First Committee Debate, UN Docs A/C.1/PV.1515–1516, 1 November 1967.

2 For recent work on the rise of infrastructure space, see for instance: Keller Easterling, *Extrastatecraft: The Power of Infrastructure Space* (London and New York: Verso, 2014); Ilka and Andreas Ruby (eds.), *Infrastructure Space* (Berlin: Ruby Press, 2017); Ross Exo Adams, 'Becoming-Infrastructural', e-flux Architecture, 2 October 2017, <http://www.e-flux.com/architecture/positions/149606/becoming-infrastructural/>.

A reconceptualised interplay of rules (government), cities (habitat), and economic development (investment structures) thereby comes into force, one that yields an increasing range of experimental arrangements driven both by design and mobilisation, material substance and logistic function. In this matrix, the frontier is not confined to a particular place. It acts as a provisioning system that allows for the disaggregation and rechanneling of different forces, using its own set of protocols to transport materials, values and agendas across different fields of endeavour, ranging from the design of the built environment to the manipulation of resource flows and from the physical manifestation of political ideologies to the territorial control of entire populations. Fragmentation and temporariness are key characteristics of these operations, as is the cultivation of ever new varieties of supply. Most importantly though, the technologies and cultural references utilised to realize the combined economic-governmental vocation behind these globally occurring yet fractured developments hinge on acts of inhabitation.

What is emerging in this context is a new kind of spatial practice that is embedded in a climate of frontier processes. Aligned to shifting trajectories and forms of investment, its endeavours are not just means to an end but processes through which different interests converge – modes of interaction and revaluation rather than a straight-forward approach to shaping spatial objects or environments. By making things happen in the most speculative manner possible, it connects the potential materiality of a future condition with a set of repertoires that are anchored in the past. In this process the artful staging of frontiers allocates, engineers and dramatizes different degrees of attention, different languages and temporalities. One such example is the media frenzy around flagpoles planted on potentially profitable seabed areas across the world, such as the titanium flag planted by Russian veteran explorers on the North Pole seabed in 2007 in order to lay claim to a vast stretch of hydrocarbon-rich underwater territory in the Arctic. Other examples are the global race for new shipping routes, recently exacerbated by China's "Polar Silk Road" proposal, and the surge of alluringly named artificial land masses raised from the ocean for the purpose of shoring up claims to exclusive economic zones. Staking out claims on purported *terrae nullius* to develop and control high-capacity domains, infrastructural ventures are put to work by actively performing the frontiers of future development.

Demonstrating the potential of the frontier in performative acts of transgression is more than a spectacle to impress the rest of the world. It is a political technology used to prepare the enclosure of the

commons. On a planetary scale, the four global commons – the High Seas, the Atmosphere, Antarctica, and Outer Space – are increasingly under threat, even if the grab for global commons is often framed by a pretext of protection, echoing the “tragedy of the commons” rhetoric that is usually drawn upon when justifying unilateral moves involving enclosure, privatization and marketization.³ Garrett Hardin’s much-cited argument that the unrestricted pursuit of everyone’s own best interest leads to the erosion of common resources – the so-called tragedy of the commons⁴ – has paved the way for the development of interdisciplinary frameworks and government policies in which coercive legislation, certainty and property rights are given priority over systems of unmanaged access for all.



Installation detail of *Frontier Climates*, *World of Matter: Mobilizing Materialities*, Katherine E. Nash Gallery, 2017

More often than not, the enclosure of the commons, both in terms of the social and environmental processes it ignites and as a particular mode of power relations, turns out to benefit larger players wielding sufficient control over knowledge, technologies and infrastructures. By contrast, the concept of the common heritage of mankind – applied by international bodies to distribute costs and benefits – is persistently

³ There is a striking parallel here with the widely employed argument that the enclosures of common land in England from the 1600s onwards – replacing a relational system of binding rights and duties by a market economy based on property and trade – contributed to an Agricultural Revolution entailing more efficient land use, which led to improved living conditions (more food, better health) for all.

⁴ Garrett Hardin, ‘The Tragedy of the Commons’, *Science* 162 (1968), 1243-1248.

used to safeguard universal rights in relation to resources we hold in common. The dilemma of both concepts lies not only in their commitment to the political and historical background against which they were outlined (issues of decolonization, interstate relations and resource security characteristic of the late 1960s)⁵ but also in their obsessive attention to the *management* of resources, a practice that takes for granted that well-defined regulations would be sufficient to avoid environmental conflict and ecological destruction. Yet climate change, extreme weather events, air pollution and other forms of environmental degradation that we are experiencing today constitute a political crisis as much as they are an ecological one. They are part of a wider political ecology of outdated human-centred assumptions about the mastery and appropriation of the Earth.⁶ Our contention is thus that rather than focusing on the *management* of resources, it is vital to discuss the politics of different value regimes that are created around the production of resource frontiers and how we can actively intervene in them in favour of less anthropogenic approaches. What is revealed by the current pressure on the global commons is the lack of such alternative frameworks and the urgent need for them.

From the High Seas to Outer Space: The Future of the Global Commons

International frameworks for the protection of the high seas include The United Nations Convention on the Law of the Sea (UNCLOS) and instruments of the International Maritime Organization and the United Nations Environment Programme’s Regional Seas Conventions designed to regulate use of this resource domain. On the ground, scientific research has become a key factor in the establishment of the high seas as frontier territory, particularly when it comes to accurately mapping this territory’s boundaries, which has significant implications for seabed mining and the ongoing struggle around determining the submerged extension of profitable land masses. Nationalist fervour notwithstanding, sovereign rights of access to the riches of the seas are increasingly being overtrumped by infrastructural power. Often held by multinational corporations, this infrastructural power rests on the control of large-scale machinery, high-tech excavation and collection equipment, cargo handling systems, storage facilities, and a worldwide network of technical and commercial partners. Small ethnic communities, which in theory should have equal rights to and act as

⁵ See Surabhi Ranganathan, ‘Global Commons’, *The European Journal of International Law* 27(3) (2016), 693-717.

⁶ See, for instance, TJ Demos, *Decolonizing Nature: Contemporary Art and the Politics of Ecology* (Berlin: Sternberg Press, 2016).

guardians of global commons, are left with little choice other than to comply with the neoliberal agenda of monetizing everything that can be of economic value.

We are currently seeing a veritable rush to explore new resource opportunities brought about by the effects of the Anthropocene: new shipping routes are opening up around the Arctic ice cap and the competition to stake territorial claims in Antarctica is heating up. Yet truly conquering a frontier entails settling it and making environments previously perceived as hostile inhabitable. As a way of camouflaging genuine concerns about human-induced alterations to the global eco-balance, infrastructural investments to exploit the rich resources of the polar regions are being dressed up with a sense of adventure, a futuristic aesthetics borrowing from the glamour of 1970s thrillers, and imageries of sustainable community living. Environmental degradation is skilfully disguised in such a way as to make it seem that the dramatic shrinking of the minimum extent of Arctic sea ice offers welcome opportunities for floating sea cities and that the problems posed by 100-mile long cracks in Antarctica's ice shelves can be effectively solved by inventing self-moving modular building systems. Portrayed as the path to turning resource-rich global commons into profitable frontier territories, a whole range of skills, from environmental design to inventive lifestyle concepts, and from entrepreneurial energies to artistic imagination are being enlisted in order to cast shifts in the global eco-balance as challenges that can be overcome by human intelligence.

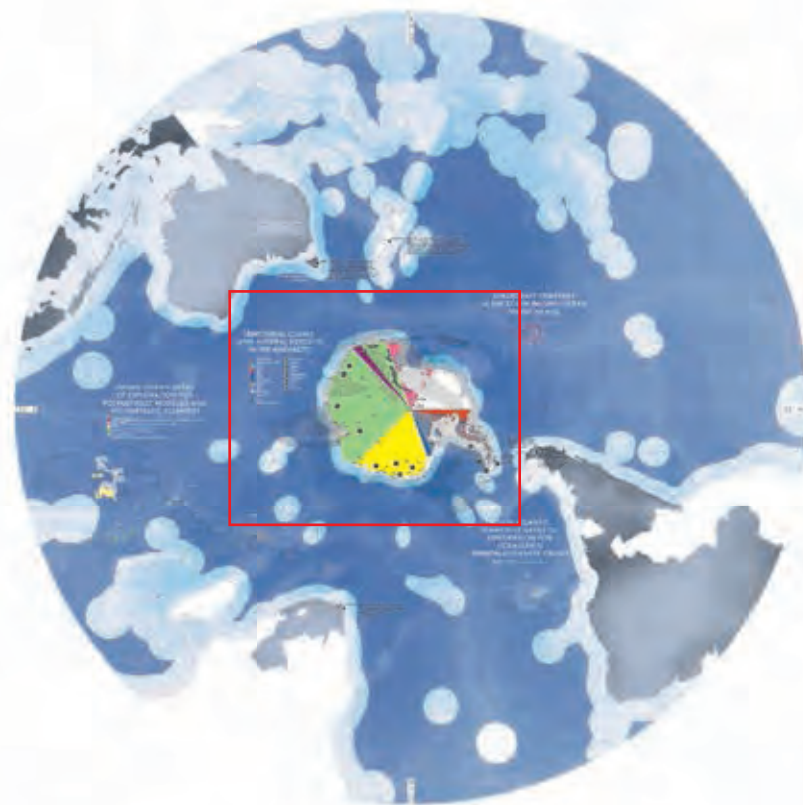
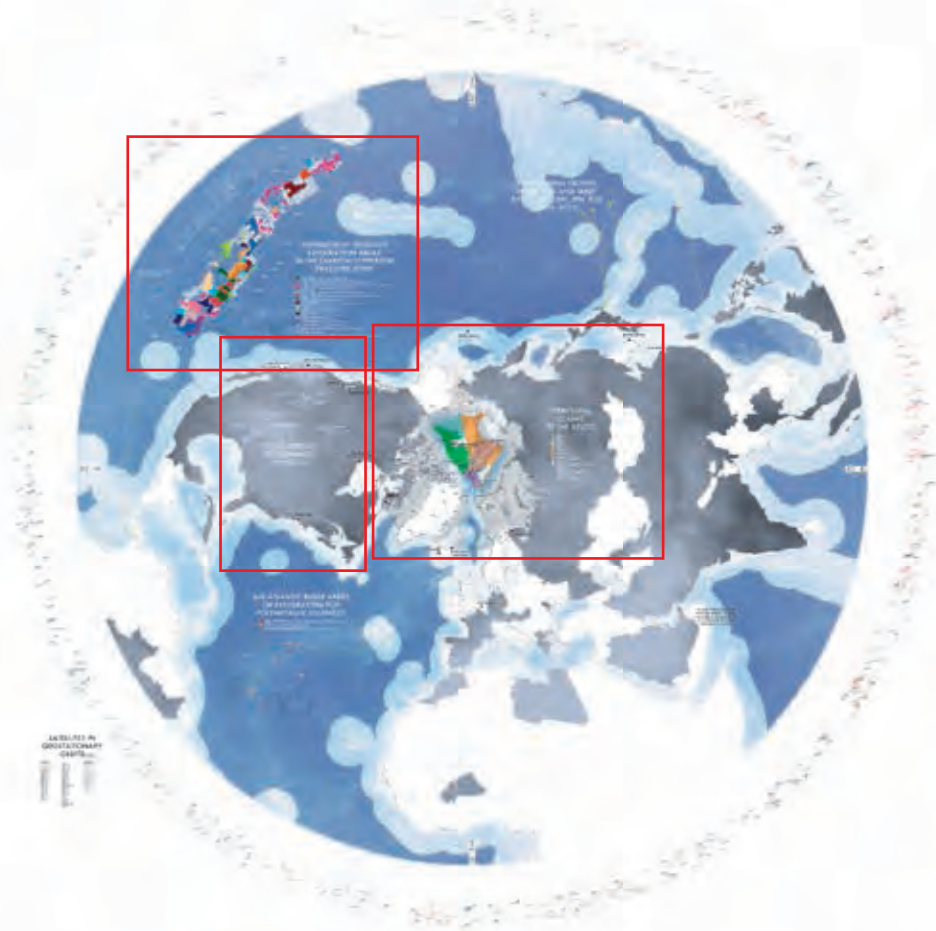
While a territorially-based quest for new frontiers has long powered the advance of the capitalist economy and imperial politics, the rise of new atmospheric technologies has opened up another avenue: rather than searching for new territories and exploring hitherto untapped resources, the new frontier can now be created through human manipulation of our environments. So far, interventions have focused on the manipulation of Earth and climate systems, such as weather-control projects or even more radical terraforming strategies, to counter global warming. Experiments with cloud seeding and solar radiation management are well underway as part of policies designed to commandeer and control the climate of the Earth. Though military or any other "hostile" use of environmental engineering was banned in 1977 by the UN Convention on the Prohibition of Military or Any Other Hostile Use of Environmental Modification Techniques, support for weather modification technologies as a means of controlling the world's climate is currently on the rise. This support is informed by environmental discourses centring on the human capacity to "improve" environmental benefits. In the process, nature is being redeveloped in

accordance with the needs of rapidly growing populations, atmospheric self-regulation "restored," and large swathes of wasteland "returned" to nature.



Installation detail of *Frontier Climates, World of Matter: Mobilizing Materialities*, Katherine E. Nash Gallery, 2017

In physical terms, outer space has long appeared as the most distant and inaccessible frontier. Today though, the technological race is on to bring economic exploitation of galactic resources within everyday reach. The accompanying narrative of "taming", "cultivating" and "civilizing" these uninhabited spheres follows longstanding patterns of frontier integration – normalizing the occupation of "wild" territories through domestication. And, as in previous scenarios of frontier integration, a heady mix of actors is involved, including pioneering technology and information giants, Silicon Valley-style entrepreneurs determined to make their ventures work, radical ideologists in quest of new territory, and expansionist states pursuing their goals through both official and unofficial channels. What is different in contemporary frontier climates is that the disruptive force unleashed by new waves of frontier exploration has itself become the object of normalization. Championing a permanent and all-engrossing frontier moment as a catalyst of innovation and economic growth has become a pretext for mining the future, be it by expediting extra-terrestrial resource acquisitions, by encouraging the recognition of property rights for celestial resources, or by forging strategic alliances to secure economic access to asteroids and other near-Earth objects. It is this fetishization of frontier climates that is becoming the biggest threat to safeguarding the future of global commons.



COUNTRIES WITH ACTIVE CLOUD SEEDING PROGRAMMES



EXCLUSIVE ECONOMIC ZONES (EEZ)



AREAS LICENSED FOR DEEP SEA MINING

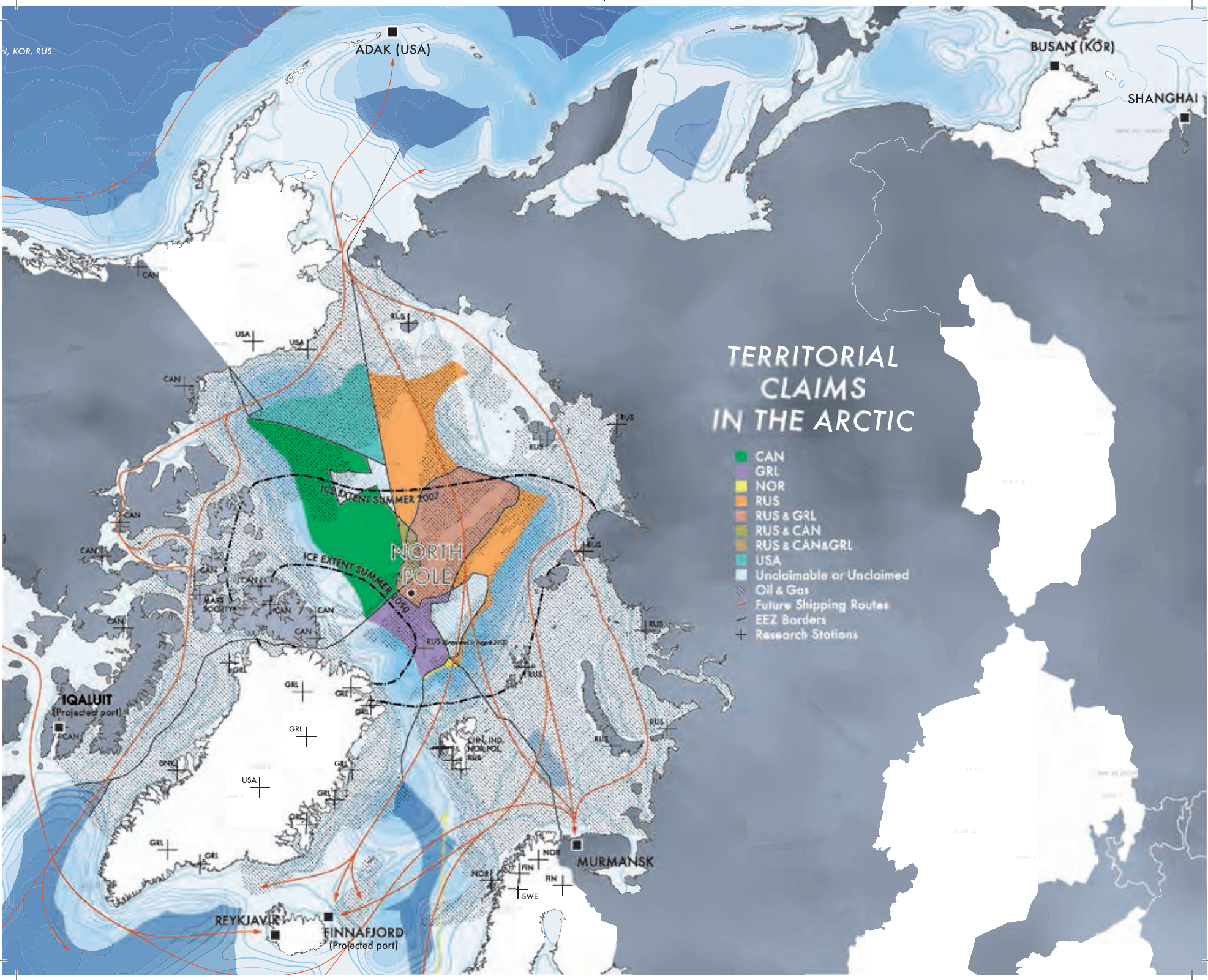


MAN-MADE OBJECTS IN GEOSTATIONARY ORBITS



TERRITORIAL CLAIMS IN THE POLAR REGIONS





TERRITORIAL CLAIMS IN THE ARCTIC

- CAN
- GRL
- NOR
- RUS
- RUS & GRL
- RUS & CAN
- RUS & CAN&GRL
- USA
- Unclaimable or Unclaimed
- Oil & Gas
- Future Shipping Routes
- EEZ Borders
- + Research Stations

N, KOR, RUS

ADAK (USA)

BUSAN (KOR)

SHANGHAI

NORTH POLE

ICE EXTENT SUMMER 2007

ICE EXTENT SUMMER 2010

IQALUIT
(Projected port)

REYKJAVIK

FINNAFJORD
(Projected port)

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CAN

USA

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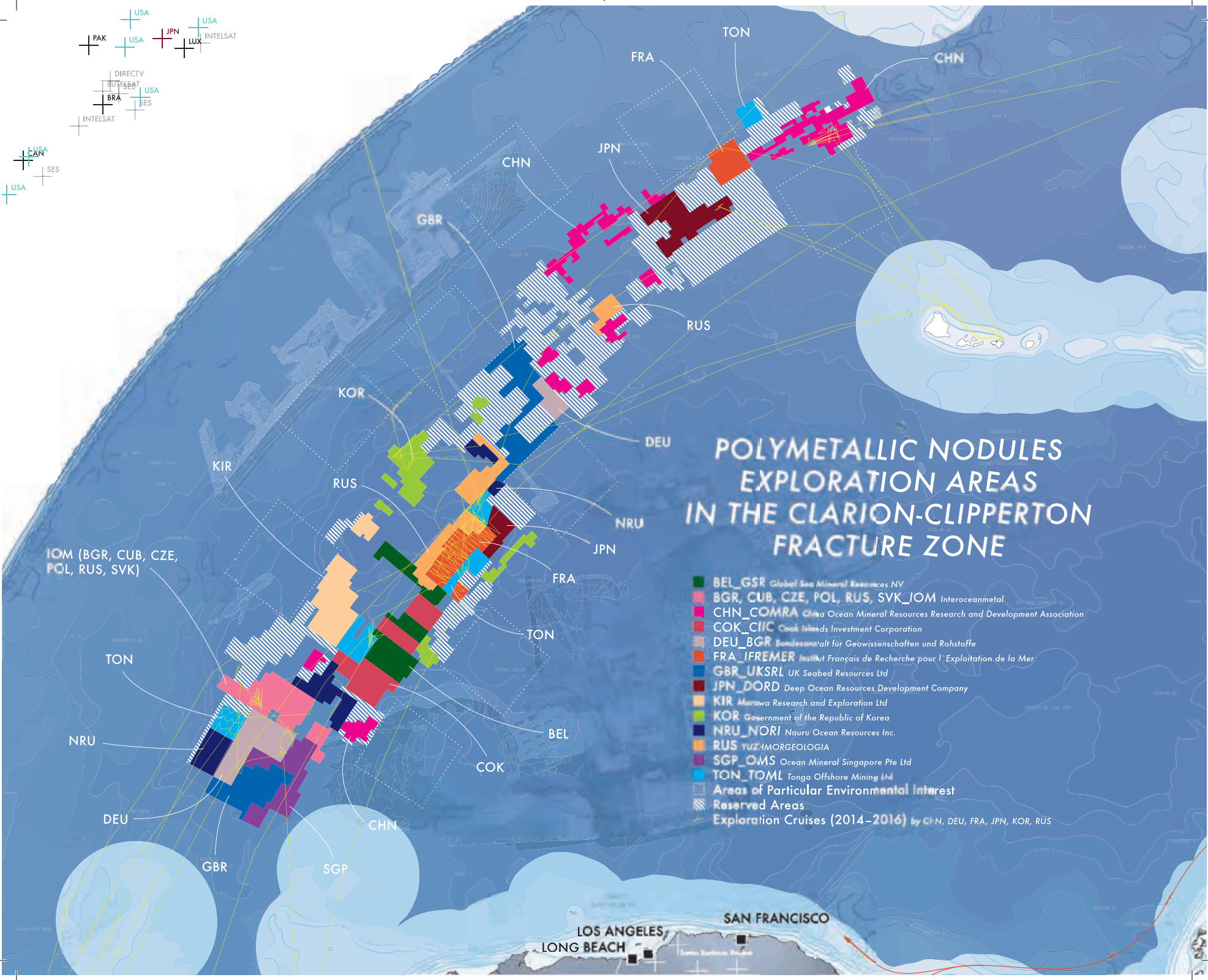
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POLYMETALLIC NODULES EXPLORATION AREAS IN THE CLARION-CLIPPERTON FRACTURE ZONE

- BEL_GSR *Global Sea Mineral Resources NV*
- BGR, CUB, CZE, POL, RUS, SVK_IOM *Interoceanmetal*
- CHN_COMRA *China Ocean Mineral Resources Research and Development Association*
- COK_CIIC *Cook Islands Investment Corporation*
- DEU_BGR *Bundesanstalt für Geowissenschaften und Rohstoffe*
- FRA_IFREMER *Institut Français de Recherche pour l'Exploitation de la Mer*
- GBR_UKSRL *UK Seabed Resources Ltd*
- JPN_DORD *Deep Ocean Resources Development Company*
- KIR *Marawa Research and Exploration Ltd*
- KOR *Government of the Republic of Korea*
- NRU_NORI *Nauru Ocean Resources Inc.*
- RUS_YUZHMORGEOLGIA
- SGP_OMS *Ocean Mineral Singapore Pte Ltd*
- TON_TOML *Tonga Offshore Mining Ltd*
- Areas of Particular Environmental Interest
- Reserved Areas
- Exploration Cruises (2014–2016) by CHN, DEU, FRA, JPN, KOR, RUS

IOM (BGR, CUB, CZE, POL, RUS, SVK)

SAN FRANCISCO
LOS ANGELES
LONG BEACH

