

OPRI-SPF Virtual Seminar

**Subsea cable development and security prospects:
From the Pacific Islands to the Arctic Sea
Hosted by the Ocean Policy Research Institute of
the Sasakawa Peace Foundation (OPRI-SPF)**

8th, October 2021

Aims of the Seminar／本セミナーのねらい

Today's complex geopolitical dynamics make the safety and structural integrity of the undersea cable network a major security concern: from the ocean depths to their landing zones, be them the sandy beaches of the Pacific Islands or the frozen shores of the Arctic. Actually, those two regions, which until recently were on the sidelines, are now coming to the fore of the subsea cable global scene. Fibre-optic connectivity in the Pacific Islands has improved markedly over the last decade. However, cable expansion has become an arena in which long-established regional partners, like Australia and the United States, vie for diplomatic clout and infrastructural positioning vis-à-vis a new subsea cable logistics powerhouse: the People's Republic of China. The resulting "security anxiety" has effected the suspension, diversion and reconstitution of several cable line projects.

Meanwhile, much farther North, a trans-Arctic sea cable route is becoming realizable against the backdrop of rising sea temperatures and technological advancement. The new data highway would link northern Europe with Russia, Japan, China and North America along the Northeast Passage, making internet less vulnerable and, at the same time, opening a vector of regional development. It then appears that the incentive for cooperation among Arctic stakeholders is solid. Yet, not dissimilarly from the Pacific Island case, convergence of interests is counterpoised by security concerns and geopolitical algebra.

In light of this situation, the Ocean Policy Research Institute of the Sasakawa Peace Foundation (OPRI-SPF) has invited up-and-coming researchers from overseas to examine the challenges and prospects of submarine cable networks, which are expected to expand in the future.

今日の複雑な地政学的ダイナミクスにより、海底ケーブルネットワークの安全性や構造上の完全性は、安全保障のあり方を検討する上での主要な懸案事項となっています。これは深海のみならず、太平洋島嶼国の砂浜や極域の凍てつく海岸などの陸地までに及ぶものです。これらの地域はつい最近まで傍観者とも言うべき地域でしたが、海底ケーブルネットワークの進展により、世界規模で脚光を集めつつあります。

例えば、太平洋島嶼域における光ファイバーの接続性は、この10年間で格段に向上しました。しかし、ケーブルネットワークの拡張はオーストラリアや米国などのこれまでの主要国が、新たな海底ケーブルネットワークの大国として台頭しつつある中国に対して、外交上の影響力や国際的なインフラ整備における地位を互いに競う場となりつつあります。その結果、これまでに存在しなかった「安全保障上の不安」を理由として、いくつかのケーブル敷設プロジェクトが中断や転用、再構築される状況が生じています。

一方、はるか北方の極域では、海水温の上昇と急速な技術の発展を背景として、北極海を横断する新たなケーブルネットワークが形成されつつあります。北極海航路に沿って北欧やロシア、日本、中国、北米を結ぶ新しいデータハイウェイは、インターネットの脆弱性を軽減すると同時に、地域発展の新たな方向性を提示するものとなることが想定されています。このような想定を踏まえると、北極圏の主要なステークホルダーが新たなケーブルネットワークの形成に向けて協力するインセンティブは確固たるものであると考えられます。しかし、太平洋島嶼域における事例と同様に、新たなケーブルネットワークによってもたらされる利益は、安全保障上の懸念や地政学的な要因によって相殺されかねないという課題を抱えてもいます。

そこで、笹川平和財団海洋政策研究所 (OPRI-SPF) は、海底ケーブルネットワークをめぐる国内外の状況を踏まえ、今後拡大が予想される海底ケーブルネットワークの課題と展望について、海外の新進気鋭の研究者を招き、みなさまとの検討を通じて、そのあり方を提示したいと考えています。

Program (プログラム)

15:00 開会挨拶／Opening Remarks

阪口 秀 (笹川平和財団海洋政策研究所長)

Dr. Hide SAKAGUCHI (President, OPRI-SPF)

15:05 趣旨説明／Introduction to This Seminar

赤松友成 (笹川平和財団海洋政策研究所海洋政策研究部長)

Dr. Tomonari AKAMATSU (Director of Policy Research Department, OPRI-SPF)

15:10 報告①／Presentation ①

アマンダ・H・A・ワトソン (オーストラリア国立大学
アジア太平洋学部太平洋学科研究員)

Dr. Amanda H A WATSON (Research Fellow, the Department of Pacific Affairs, Coral Bell School of Asia Pacific Affairs, Australian National University (Australia))

15:30 報告②／Presentation ②

ダリア・シュベッツ (ポンペウ・ファブラ大学法学部兼任教授)

Dr. Daria SHVETS (Adjunct Professor, Faculty of Law, Pompeu Fabra University (Spain))

15:50 質疑応答・討論Q&A/ Discussion

進行: 赤松友成

Moderator: Dr. Tomonari AKAMATSU (OPRI-SPF)

討論: ファブリツィオ・ボッツアート (笹川平和財団

海洋政策研究所海洋政策研究部特任研究員)

Commentator: Dr. Fabrizio BOZZATO (Senior Research Fellow, OPRI-SPF)

16:55 閉会挨拶／Closing Remarks

角南 篤 (笹川平和財団理事長)

Dr. Atsushi SUNAMI (President, SPF)

Speaker s' Profile (登壇者略歴)

【Dr. Amanda H A WATSON (アマンダ・H・A・ワトソン)】

Dr. Amanda H A Watson is a research fellow with the Department of Pacific Affairs at Australian National University. Dr. Watson's research focuses on communication and information technologies in the Pacific region, including mobile telephones, the internet and social media, with attention on personal use, strategic use and regulatory issues. Her work has been published in various academic journals. She has also written book chapters, blog posts, policy briefs, discussion papers, book reviews and reports.



オーストラリア国立大学太平洋学部の研究員として、携帯電話やインターネット、ソーシャルメディアなど、太平洋地域における通信・情報技術を中心に、個人的な利用や戦略的な利用、規制の問題などに関する調査研究に取り組んでいる。その研究成果はさまざまな学術雑誌に掲載されているのみならず、さまざまな書籍の分担執筆や政策提言の取りまとめ、研究ノート、書評などの執筆も行っており、高い評価を受けている。

【Dr. Daria SHVETS (ダリア・シュベッツ)】

Dr. Daria Shvets, Adjunct Professor, Faculty of Law, Pompeu Fabra University (Barcelona, Spain). Dr. Shvets specialized in International Law at the Lomonosov Moscow State University (Moscow, Russian Federation), where she earned a LLM and held the position of teaching assistant. She pursued further studies at the University of Stockholm (Stockholm, Sweden) and earned her PhD in International Public Law from the Pompeu Fabra University (Barcelona, Spain). Her Doctoral Dissertation is titled: "The International Legal Regime of Submarine Cables: A Global Public Interest Regime". She frequently publishes on undersea cables issues including submarine cables affairs in the Arctic region.



M. V. ロモノソフ・モスクワ国立総合大学(モスクワ大学)(ロシア連邦)で国際法を専攻し、法学修士を取得するとともに、ティーチング・アシスタントを務める。その後、ストックホルム大学(スウェーデン王国)で学び、ポンペウ・ファブラ大学(スペイン)において、「海底ケーブルをめぐる国際法上の規制について—地球規模の公益体制—(仮訳)」と題する博士論文を提出し、博士号を取得している。現在はポンペウ・ファブラ大学(スペイン・バルセロナ)法学部兼任教授として、北極圏における海底ケーブル問題を含め、海底ケーブル問題に関するさまざまな論説や解説を多く発表している。

Speaker s' Profile (登壇者略歴)

【Dr. Fabrizio BOZZATO (ファブリツィオ・ボッツアート)】

Dr. Fabrizio Bozzato is specialized in international relations and keenly interested in Indo-Pacific thalassopolitics. He holds a Ph.D. in Political Science (Graduate Institute of International Affairs and Strategic Studies, Tamkang University, Taiwan), an M.A. in International Relations (University of Tasmania, Australia) and a Master in Political Science (University of Milan, Italy). His areas of research include the blue economy, science diplomacy and Holy See-China relations. Dr. Bozzato is frequently asked to comment for international media on issues of geopolitics and diplomacy. Signally, he has the honor of serving as Ambassador (non-resident) of the Sovereign Order of Malta to the Republic of Nauru.



政治学修士(イタリア・ミラノ大学)、国際関係学修士(オーストラリア・タスマニア大学)、政治学博士(台湾・潭康大学国際関係戦略研究所)をそれぞれ取得し、国際関係論、特にインド太平洋をめぐる海洋政治学を専門としている。主たる研究分野はブルーエコノミー、科学外交、バチカン市国と中国の関係などであるが、地政学や外交に関する問題について、国際的なメディアからの取材多数。また、ナウル共和国駐劄エルサレム、ロードス及びマルタにおける聖ヨハネ主権軍事病院騎士修道会(マルタ騎士団)特命全権大使も(非常駐)も務めている。

【Dr. Tomonari AKAMATSU (赤松 友成)】

Dr. Tomonari Akamatsu is Director at Policy Research Department of OPRI, SPF. He was educated theoretical physics at Tohoku University and received Ph.D. (agriculture) from Nihon University in 1996. His majors are underwater bioacoustics and passive acoustic monitoring of aquatic creatures. He was a senior researcher of National Research Institute of Fisheries Science until 2019 and temporarily studied at National Institute of Polar Research and Thomas Hunt Morgan School of Biological Sciences, University of Kentucky as a visiting scholar.



1989年に東北大学大学院理学研究科物理学修了後、水産庁水産工学研究所勤務。同研究所より1997年国立極地研究所客員研究員、1999-2000年にケンタッキー大学生物科学科客員研究員として派遣。改組に伴い2000年独立行政法人水産総合研究センター水産工学研究所 主任研究員、2015年国立研究開発法人水産総合研究センター中央水産研究所 主任研究員を経て、2020年1月より笹川平和財団海洋政策研究所海洋政策研究部長。

Speaker s' Profile (登壇者略歴)

【Dr. Atsushi SUNAMI (角南 篤)】

Dr. Atsushi Sunami is the President of the Sasakawa Peace Foundation. He is also Director of the SciREX center and Executive Advisor to the President at the National Graduate Institute for Policy Studies (GRIPS) and Guest Professor at the Research Organization for Nano & Life Innovation at Waseda University. He is currently serving as a member of the Basic Policy Group under the Committee on National Space Policy in the Cabinet Office, also as Chair of the Space Utilization Promotion Round-table under the Minister for Space Policy in the Cabinet Office. In addition, he is a member of the Innovation Strategy for Security and Safety at the Cabinet Office and on the Advisory Board for the Promotion of Science and Technology Diplomacy in the Ministry of Foreign Affairs, Japan. He holds a BSFS from Georgetown University and an MIA and PhD in Political Science from Columbia University.

ジョージタウン大学で外交科学士を、コロンビア大学で国際関係学修士および政治学博士をそれぞれ取得し、現在は笹川平和財団理事長。政策研究大学院大学SciREXセンター長・学長特別補佐、早稲田大学ナノ・ライフ・イノベーション研究機構客員教授を兼任。現在、内閣府宇宙開発委員会基本政策部会委員、内閣府宇宙開発担当大臣の下での宇宙利用推進懇談会座長などを務める。また、内閣府「安心・安全イノベーション戦略」委員、外務省「科学技術外交の推進に関する懇談会」委員なども務めている。



【Dr. Hide SAKAGUCHI (阪口 秀)】

Dr. Hide Sakaguchi is President of the Ocean Policy Research Institute of the Sasakawa Peace Foundation (OPRI-SPF). Prior to joining OPRI in 2021, he served as Research Associate at Kobe University, Principal Research Scientist at the Commonwealth Scientific and Industrial Research Organisation (CSIRO) of Australia, Adjunct Professor at the Earthquake Research Institute of the University of Tokyo, and Executive Director of the Japan Agency for Marine-Earth Science and Technology (JAMSTEC). Dr Sakaguchi is specialized in Computer Science, Geoscience, and Engineering. He received a Ph.D. from the Graduate School of Agriculture, Kyoto University in 1995.

神戸大学助手、オーストラリア連邦科学産業研究機構(CSIRO)主席研究員、東京大学地震研究所客員教授、海洋研究開発機構(JAMSTEC)理事を経て、2021年より笹川平和財団海洋政策研究所長。専門分野はコンピュータサイエンス、地球科学、エンジニアリング。1995年に京都大学大学院農学研究科にて博士号を取得。



Synopsis of Presentation (報告概要)

Undersea internet cables in the Pacific region (太平洋地域における海底インターネットケーブル)

Dr. Amanda H A Watson
(アマンダ・H・A・ワトソン)

Considerable activity has occurred in recent years with the laying of undersea internet cables for Pacific Island countries, with further expansion to come. In 2007, just four Pacific Island countries were connected to an international undersea internet cable, but there has been a substantial increase in cable deployment and nearly all will be connected within the next few years.

This presentation will: introduce the undersea internet cables in the Pacific region; share the promises that tend to be made in relation to new cables; consider whether such promised benefits can be realised; and reflect on questions related to geopolitics, cybersecurity and reliability.

近年、太平洋島嶼国周辺海域においては海底インターネットケーブルの敷設が盛んに行われており、今後もさらなる拡大が見込まれている。2007年時点では、国際的な海底インターネットケーブルに接続されていた太平洋島嶼国はわずか4ヶ国であったが、海底インターネットケーブルの敷設は急速に進められており、今後数年以内にほぼ全ての国が接続されることが見込まれている。

本報告においては、太平洋地域の海底インターネットケーブルを概観するとともに、新しいケーブルと関連して取り交わされる傾向がある約束を共有し、そのような約束に基づく利益が実現できるかどうかを検討する。そして、地政学、サイバーセキュリティ、信頼性に関連する問題について考察することを目指す。

Synopsis of Presentation

Submarine cable development and security prospects In the Arctic region

(海底ケーブル開発と安全保障の展望—北極圏を事例として—)

Dr. Daria SHVETS
(ダリア・シュベッツ)

An extensive network of submarine cables covering the ocean seabed is considered critical infrastructure for communications. All continents except for Antarctica are currently connected via modern fiber optic cables providing the capacity to carry almost all Internet traffic of the world. However, in the remote Arctic region with severe climate conditions laying of submarine cables is a pioneer industry. Only several projects have been developed during the last years. As of the day, no transarctic cable connecting Europe with Asia has been laid although it is estimated to significantly increase the speed of connection between two continents. This summer, the Russian state-driven submarine cable project «Polar Express» was announced to be finished in 2026 promising to bring high connectivity to the Arctic but at the same time possibly raise tension and security concerns in this unique region. Through the prism of the Arctic region, this presentation aims at discussing submarine cable projects in the most northern area of the world, address their legal regime under international law providing an overview of the legal specificity of the Arctic regulation, and open discussion on the role of non-Arctic states claiming to take part in the discussion of the Arctic connectivity infrastructure.

海底を覆うように張り巡らされた海底ケーブルのネットワークは、通信の重要なインフラと考えられている。現在、南極大陸を除くすべての大陸が最新の光ファイバーケーブルで結ばれており、世界中のほぼ全てのインターネット通信を伝送することが可能である。しかし、厳しい気候条件を持つ遠隔地の北極圏では、海底ケーブルの敷設は先駆的な産業となっており、ここ数年で開発されたプロジェクトはわずか数件である。また、ヨーロッパとアジアを結ぶ北極海横断ケーブルが敷設されると、2つの大陸間の接続速度が大幅に向上すると期待されているが、現在のところ、敷設の目途は立っていない。今夏、ロシア国営の海底ケーブルプロジェクト「ポーラー・エクスプレス」が2026年に完成すると発表されたが、北極圏に高い接続性をもたらすと同時に、このユニークな地域に緊張と安全保障上の懸念をもたらす可能性が示唆されている。

本報告では北極圏という切り口から、世界最北の地で行われる海底ケーブルプロジェクトについて議論するとともに、国際法上の法的規制を取り上げ、北極圏の規制の法的特異性を概観する。そして、北極圏の接続インフラの議論に参加することを主張する非北極圏諸国の役割について考察することを目指す。

Undersea internet cables in the Pacific



Photo source: Shutterstock

Dr Amanda H A Watson
Research Fellow
8 October 2021

Undersea internet cables



Photo source: Samoa Observer
(<https://www.samoaoobserver.ws/category/article/167371>)

Talk outline

- Undersea internet cables in the Pacific
- Promises and hopes
- Ongoing research regarding mobile internet pricing in PNG
- Geopolitics, cybersecurity and reliability

Undersea internet cables



Photo source: Interchange
(<https://interchangevu.wordpress.com/1cn2/>)



Photo source: Samoa Submarine Cable Company*

* (<http://www.samoasamoa.com/fiji-samoa-submarine-cable-system-reaches-final-stage-enhancing-submarine-connectivity-across-the-pacific-islands/>)

Undersea internet cables

A submarine cable system comprises four main portions:

- (a) the wet side,
- (b) the beach manhole,
- (c) the submarine cable landing station, and
- (d) the backhaul.

Reference: Infocomm Development Authority of Singapore. (2008). International sharing: International gateway liberalization: Singapore's experience. Paper presented at the 8th Global Symposium for Regulators, Pattaya, Thailand. Page 5.

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Undersea internet cables

Alternative technologies: satellite



Photo source: Kacific (<https://kacific.com/>)

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Undersea internet cables

Alternative technologies: satellite



Image source: SES (<https://www.ses.com/our-coverage/o3b-meo>)

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Undersea internet cables

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Undersea internet cables in the Pacific



Map available in Part 1 of a recent publication

Map source: CartoGIS ANU (based on information provided by Amanda H A Watson)

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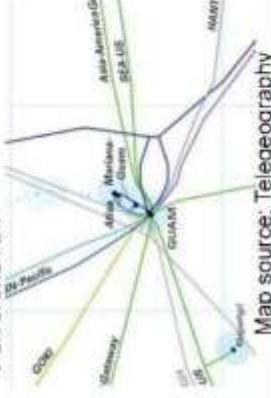
Undersea internet cables in the Pacific

There are Pacific Island nations with no cable connection at present, although there are more being planned.

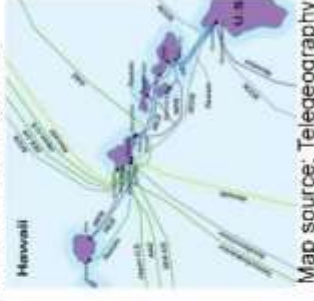
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Undersea internet cables in the Pacific

Both Guam and Hawaii have multiple connections to the USA and elsewhere, so any Pacific cable to Guam or Hawaii is valuable.



Map source: Telegeography



Map source: Telegeography

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Promises and hopes

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Promises and hopes

Coral Sea Cable System



Image source: Coral Sea Cable System (<https://www.coralseacablesystem.com.au/about/>)

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Promises and hopes

Coral Sea Cable System in PNG:
PNG's then communication minister, Sam Basil, said in April 2018 that it will be 200 times faster than the existing cables and will reduce the cost of internet.

Source: Radio New Zealand (<https://www.rnz.co.nz/international/pacific-news/355485/cable-to-png-and-solomons-described-as-transformative>)

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Promises and hopes

Kumul cable in PNG:



Image source: PNG DataCo (<https://www.pngdataco.com/wholesale-internet/>)

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Promises and hopes

Kumul cable in PNG:
PNG DataCo CEO Paul Komboi was quoted in May 2020 as saying that the Kumul cable would allow much cheaper, faster and more efficient internet.

Source: Post-Courier (<https://postcourier.com.pg/fiber-optic-future-of-communication-in-png/>)

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Promises and hopes

Kumul cable in PNG:

Kumul Telekom Holdings Limited deputy chair Ruben Kautu was quoted in March 2020 as saying that the Kumul cable would reduce internet prices.

Source: Post-Courier (<https://postcourier.com.pg/internet-users-to-enjoy-affordable-data-kautu/>)
See also: The National (<https://www.thenational.com.pg/cable-to-help-cut-internet-prices/>)

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Promises and hopes

Manatua cable in Niue



Two photos taken at the launch of the Manatua cable in Niue in May 2021.
(Source: Niue Chamber of Commerce)

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Promises and hopes

Manatua



Image source: Avaroa Cable Ltd (<https://www.avaroacable.com/the-manatua-cable/>)

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Ongoing research



The Kumul submarine cable network laid around 100km from the coast of Niue last Monday.
- National Geographic

Photo source: The National

(<https://www.thenational.com.pg/submarine-cable-network-a-milestone-achievement-for-png-china/>)

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Mobile internet prices in PNG with Picky Airi and Moses Sakai



Image source: Moses Sakai

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Geopolitics, cybersecurity and reliability

Mobile internet prices in PNG with
Picky Airi and Moses Sakai

Overall, our assessment is that there has been no perceptible decrease in mobile internet prices in PNG since the Coral Sea Cable System was launched in December 2019.

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Geopolitics

“Undersea cables, which have far greater data capacity than satellites, have emerged as a sensitive area of diplomacy in the Pacific, given their central role in international communications”, according to Jonathan Barrett.

Source: Reuters

(<https://www.reuters.com/article/australia-pacific-coast/australia-looks-to-boost-chinese-bid-for-undersea-cable-project-sources-id/USKBN2960L3>)

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Geopolitics

“Huawei Technologies Co Ltd, a global telecom equipment maker, has been subjected to repeated rounds of U.S. sanctions and allegations that its products could be used by Beijing for spying, a charge consistently denied by the Chinese company”, according to Jonathan Barrett.

Source: Reuters

(<https://www.reuters.com/article/us-huawei-pacific/identifies-all-but-chinese-bid-for-undersea-cables-project-sources-idUSKBN29RULZ>)

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Geopolitics: Coral Sea Cable System

Coral Sea Cable System



Image source: Coral Sea Cable System (<https://www.coralseacablesystem.com.au/about/>)

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Geopolitics

Taiwan has also expressed concerns.

“Taiwan has claimed that China is backing private investment in Pacific undersea cable networks as a way to spy on foreign nations and steal data from its rivals.”

Source: Newsweek

(<https://www.newsweek.com/taiwan-china-spy-nations-steal-data-undersea-cable-networks-kiribati-connectivity-project-1555846>)

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Geopolitics: Coral Sea Cable System

The government of Solomon Islands had reportedly organised for a Chinese company to lay a cable from Solomon Islands to Australia.

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Geopolitics: Coral Sea Cable System

The government of Solomon Islands had reportedly organised for a Chinese company to lay a cable from Solomon Islands to Australia.

But the Australian government stepped in to fund the project instead.

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Geopolitics: East Micronesia Cable



Map available in Part 1 of a recent publication
Map source: CartoGIS ANU (based on information provided by Amanda H A Watson)

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Geopolitics: Coral Sea Cable System

According to Prof Murai Jun, Dean of the API Institute of Geoeconomic Studies, regarding Australia's investment in the Coral Sea Cable System, "it shut out Huawei Marine which had originally been contracted by the Solomon Islands government to lead the project".

Source: Japan Times
(<https://www.japantimes.co.jp/opinion/2021/02/23/commentary/world-commentary/api-network-building/>)

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Geopolitics: East Micronesia Cable

A recent tender process for the East Micronesia cable, which was to be funded by the World Bank and the Asian Development Bank, elicited warnings from the U.S. to the Federated States of Micronesia, Nauru and Kiribati "about security threats posed by a Chinese company's cut-price bid".

Source: Reuters
(<https://www.reuters.com/article/china-pacific-east-micronesia-cable-idUSKBN2606L2>)

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Geopolitics: East Micronesia Cable

Such concerns may have been behind a decision to declare all three bids as invalid.

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Geopolitics: East Micronesia Cable

Nauru was to be connected by the East Micronesia Cable.

There are now reportedly two options for Nauru.

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Geopolitics: East Micronesia Cable

Nauru has reportedly been considering a cable route that would connect to Solomon Islands (allowing internet traffic to flow on to Australia from there).

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Geopolitics: East Micronesia Cable

Another possibility is that the U.S. may step in to fund a cable following the same route as initially planned.

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Cybersecurity

Cybersecurity “was regularly raised in consultations, but the capacity needs in this area were unclear” (Caldwell, 2021, p. 139).

Reference: Caldwell, J. (2021). Listening to Pacific security practitioners: Determination, skills and diversity. *Development Bulletin*, 82, 136-140. Retrieved from <https://crawford.anu.edu.au/rmap/devnet/dev-bulletin.php>

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Cybersecurity

New undersea internet cables in the Pacific region have “increased the risks of Pacific Island nations becoming victims of cyberattacks and cybercrime” (Rudolph, Creese and Sharma, 2020, p. 53).

Reference: Rudolph, C., Creese, S., & Sharma, S. (2020). Cybersecurity in Pacific Island nations. *Communications of the ACM*, 63(4), 53-54. Retrieved from <https://dl.acm.org/doi/pdf/10.1145/3378550>

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Cybersecurity

“The recent or forthcoming connection of undersea cables to Pacific states were a major driver of cyber risk perception” (Caldwell, 2021, p. 139).

Reference: Caldwell, J. (2021). Listening to Pacific security practitioners: Determination, skills and diversity. *Development Bulletin*, 82, 136-140. Retrieved from <https://crawford.anu.edu.au/rmap/devnet/dev-bulletin.php>

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Cybersecurity

“One main issue is the lack of qualified people to support governments, companies, education, and the public in general” (Rudolph, Creese and Sharma, 2020, p. 54).

Reference: Rudolph, C., Creese, S., & Sharma, S. (2020). Cybersecurity in Pacific Island nations. *Communications of the ACM*, 63(4), 53-54. Retrieved from <https://dl.acm.org/doi/pdf/10.1145/3378550>

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Reliability

- Natural disasters (Watson, 2021)
- Regulatory issues
- Financial issues
- Monopolies

Reference: Watson, A. H. A. (2021). Telecommunication security in the Pacific region. *Development Bulletin*, 82, 131-135. Retrieved from <https://crawford.anu.edu.au/rmap/devnet/dev-bulletin.php>

Undersea internet cables in the Pacific



Photo source: Shutterstock

Dr Amanda H A Watson
Research Fellow
8 October 2021

“Submarine cable development and security prospects in the Arctic region”

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(@arcelona, Spain)

OPRI-SFF VIRTUAL SEMINAR
Subsea cable development and security prospects:
From the Pacific Islands to the Arctic Sea
08.10.2021

1

Roadmap

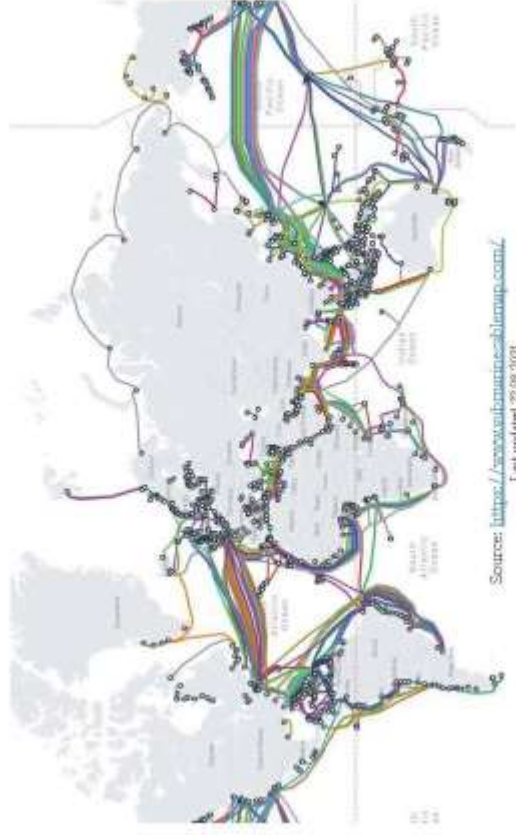
1. Introduction.
2. The legal regime of submarine cables under international law.
3. Submarine cables regulation in the Arctic.
4. Overview on submarine cable projects in the Arctic
 - Completed projects
 - Projects of the first transarctic submarine cable
 - Polar Express submarine cable.
5. Security concerns in the Arctic region.
6. Conclusion.

2

1. Introduction

- Undersea, marine, submerged... = submarine cables (international law wording).
- Approximately 95-98% of all international communications are currently carried by submarine fiber optic cables.
- More than 400 submarine cables are in operation worldwide.
- Tremendous importance for global communications.
- There are only several projects in the Arctic.
- Polar Express is the first transarctic cable under construction.

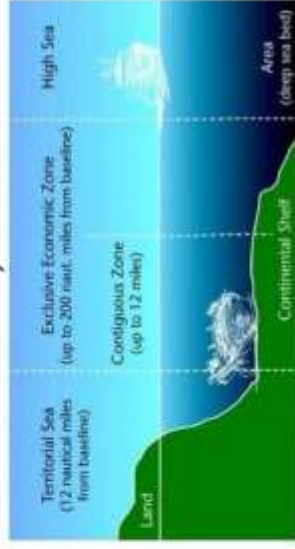
3



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2. The legal regime of submarine cables under international law (1)

- United Nations Convention on the Law of the Sea 1982 ("Constitution of the oceans"): 9 articles



Source: www.kjglibrics.in

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2. The legal regime of submarine cables under international law (3)

- Relevant international agreements covering certain aspects of submarine cables installation and maintenance or cable ship operations
 - International Regulations for Preventing Collisions at Sea 1972
 - Convention on the prevention of marine pollution by dumping 1972
 - Convention on the protection of underwater cultural heritage 2001, etc.) and other.
- Resolutions of international organizations on submarine cables (International Maritime Organization resolutions, International Telecommunications Union recommendations).

UNCLOS 1982 is the main international agreement governing submarine cables.

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2. The legal regime of submarine cables under international law (2)

- UNCLOS does not make specific reference to the Arctic.
- Article 234 refers to environmental protection over ice-covered waters.
- UNCLOS does not effectively regulate the Arctic and it remains to be a domain of domestic governance.
- Submarine cables in the Arctic are subject to exercise of rights by coastal states in accordance with UNCLOS and depending on the maritime zone where they are laid.

3. Submarine cables regulation in the Arctic (1)

- No unique legal regime in comparison to the Antarctic Treaty (1959) system.
- Several international agreements in place:
 - The Svalbard Treaty (1920) regulating the status of Svalbard
 - The Arctic Cooperation Agreement (1988) between the United States and Canada on the question of navigation in Northwest Passage.
- The work of the Arctic Council (established in 1991) in producing several legally binding agreements:
 - Agreement on cooperation on aeronautical and maritime search and rescue in the Arctic (2011)
 - Agreement on cooperation on marine oil pollution preparedness and response in the Arctic (2013)
 - Agreement on enhancing international Arctic scientific cooperation (2017).
- No specific international regulation exists for the cables in the Arctic and UNCLOS together with domestic laws of Arctic countries are main sources of cable governance.

3. Submarine cables regulation in the Arctic (2)

Soft law instruments (without binding legal force)

- Illusant declaration
"Notably, the law of the sea provides for important rights and obligations concerning <...>the protection of the marine environment, including ice-covered areas <...> and other uses of the sea".
- Official statements
"Electronic communication services considerably improve both the safety and the quality of life for everybody who lives in, works in or visits the Arctic – be it indigenous peoples, local communities and businesses, tourists, or researchers. We therefore put it high on our agenda to improve connectivity in the Arctic" (Ambassador Aleksis Harkonen, Chair of the Senior Arctic Officials, 22 March 2019).
- Task Force on Improved Connectivity in the Arctic (TICCA) 2017 Report "Improving Connectivity In The Arctic" produced in 2019.
"fiber-optic cable is the primary way Internet and other traffic is transmitted between continents or countries separated by the high seas <...> providers need to select their submarine fiber routes carefully, given the risk of ice scour in some areas, and to ensure reliable service backup plans to carry end-users' traffic if a submarine cable breaks during the winter months when weather conditions can make repair infeasible".⁹

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3. Submarine cables regulation in the Arctic (3)

- Rockjaviik declaration, 2021 (paragraph 15):
"Emphasize as appropriate, the importance of responsible, low-emission and sustainable investment in, and development of, resilient infrastructure such as enhanced energy, connectivity and transport networks, that will benefit Arctic communities, helping to provide them with meaningful access to relevant public services, recognize the importance of collaboration with the private sector...".
- Russian chairmanship in the Arctic Council in 2021-2023, all-responsible governance for a sustainable Arctic (Arctic Council website)
3. Socio-Economic Development "A key condition for the well-being and prosperity of the Arctic is its sustainable economic development. The Russian Chairmanship will be further promoting constructive economic cooperation in the region, developing of reliable energy infrastructure, sustainable transport routes, including shipping, telecommunication systems, food production sector, improving the conditions for sustainable investment flows, encouraging innovations and entrepreneurship, business financing."

4. Overview on submarine cable projects in the Arctic (Completed projects)

- "Svalbard Undersea Cable System" of 2,714 km length providing a broadband connection between Svalbard and mainland Norway (2004).



Source: www.submarinecablemap.com

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4. Overview on submarine cable projects in the Arctic (Completed projects)

- "Greenland Connect" cable system is a 4500 km submarine cable connecting Canada, Greenland and Iceland (2009).



Source: www.greenlandconnect.com

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4. Overview on submarine cable projects in the Arctic (Completed projects)

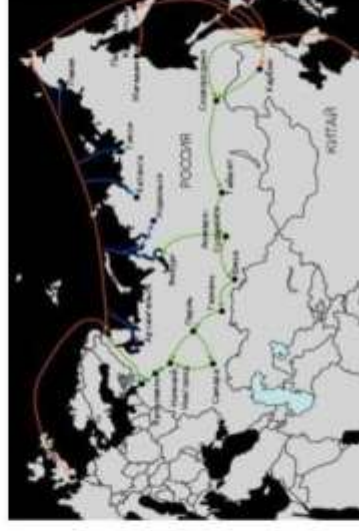


- **"Greenland Connect North", 680 km** line on the west coast of Greenland (2017).

Source: www.submarinecablemap.com

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4. Overview on submarine cable projects in the Arctic (the first transarctic submarine cable)



- **ROTACS (Russian Optical Transarctic Cable System)** to connect Tokyo and London emerged in early 2000s but has not entered into construction phase.

Source: www.rotacsglobal.net

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4. Overview on submarine cable projects in the Arctic (the first transarctic submarine cable)



Source: www.telcomnamblog.com

- **Polarnet Cable Project (2012)**. Extensive marine survey operations were conducted but the project received no further development.

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4. Overview on submarine cable projects in the Arctic (the first transarctic submarine cable)



- **Arctic Connect Project** cable system initiated by Finnish company Cinia to connect Norway with Tokyo. Currently is set on hold for further assessment as announced in May 2021.

Source: thebarentsobserver.com

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4. Overview on submarine cable projects in the Arctic (the first transarctic submarine cable)



- **Quintillion Submarine Cable System** was initially planned to connect Tokyo with London but so far only received implementation of the first stage, a cable line connecting small towns on the west coast of Alaska (2017).

Source: www.submarinecableworld.com

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4. Overview on submarine cable projects in the Arctic (Polar express)

- **Polar Express submarine cable (2020-2026).**



Source: arcticpostalspace.com

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The unique project of a transarctic submarine fiber-optic communication line with total length of 12,650 km. The project will connect Murmansk to Vladivostok along the shortest route from Europe to Asia.
On 7th of August 2021 the first 4 km was laid next to Yenherka.

4. Overview on submarine cable projects in the Arctic (Polar express)

- Polar Express cable is fully state-driven.
 - Customer: Ministry of transport, Federal agency for maritime and river transport
 - Contractor/developer: Rosmorport
 - Operator: Marsat
 - Main contracting organization: Perspective Technologies Agency
- The cable is being laid in continuation of the Russian Arctic Strategy until 2035:
 - n) Construction of transarctic magistral subsea fiber optic line connected by local lines with biggest ports and cities of the Arctic zone.

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5. Security concerns in the Arctic region

- The Russian Federation's total control over the cable material infrastructure under domestic law.
- Increase of the Russia's isolation in cyberspace (facilitation of "Runet" establishment promoted by the Russian government).
- Russian potential control on the data transmitted by cable.
- Human security of Arctic communities in cyberspace.
- Environmental security in the course of cable installation.
- Increase of conflict potential in the Arctic (Russian Arctic Development Strategy until 2035, 1.3 (ж)).
- Other.

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6. Conclusion

- International law does not foresee specific legal regime for submarine cables in the Arctic, domestic law prevails.
- Submarine cables are getting more and more attention as the infrastructure of future for the Arctic.
- The Polar Express cable may complicate relations in the region between the Russian Federation and other Arctic and non-Arctic states.
- There is still time for the Arctic Council to address submarine cables and come to a common conclusion on their status in the Arctic.

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Thank you for your attention!

For any questions:
daria.shvets@upf.edu.

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[illegible]A vertical image showing a clear blue sky above a body of water, which transitions into a rocky shoreline with green vegetation at the bottom. The image is divided into horizontal bands by thin blue lines, suggesting a template for a document or a series of frames.

[illegible]A vertical image showing a clear blue sky above a body of water, which transitions into a rocky shoreline at the bottom. The image is divided into horizontal bands by thin blue lines. The sky is a uniform light blue, while the water shows some texture and ripples. The rocky shore at the bottom is composed of dark, jagged rocks with some green vegetation.

