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Activity Report for International Strategic Advisor December 2025

March 28, 2026

I arrived in Tachikawa on December 3, 2025, and departed on December 13, 2025. I took up residence in the Akaike Guest House, conveniently located on the NIPR/ROIS grounds, for the duration of my stay.

In 2025, there was not DSWS conference planned for that year (I had attended DSWS 2023 and it was an excellent meeting; I will attend future meetings if possible). Instead of the DSWS, there was the 16th NIPR polar science symposium December 2-5, 2025. I attended several sessions and found the meteorology session very stimulating.

On December 5, as part of the NIPR symposium, there was an interdisciplinary session on Polar Data Science convened by my host Masaki Kanao and his NIPR/ROIS-DS colleagues: Yoshimasa Tanaka, Kunio Takahashi, Jun'ichi Okuno, Masayoshi Kozai, Naohiko Hirasawa, and Akira Kadokura.

For this interdisciplinary session, I delivered the presentation, *Cross-Domain Data Governance*. The theme of this presentation was to highlight two international Arctic initiatives involving multiple participating countries. The first isa federated Arctic data search initiative launched over a decade ago. The World Data System International Technology Office created a stream of work that lead to POLDER (Polder Data Discovery Enhancement Research). POLDER is now under the banner Polar Data Search, with continuing work that is now focused on both polar regions. The second is the circumpolar Super Dual Auroral Radar Network (SuperDARN), for which Japan is a member and I chair the Advisory Committee for SuperDARN Canada. The network operates radars monitoring the near-Earth space environment. As a global scientific network, SuperDARN has its own challenges in data sharing and overall interoperability. The WDS-ITO was in a position to take data governance for Arctic facilities and apply that knowledge to assist SuperDARN's effort to modernize its governance and data sharing policies – thereby demonstrating the transferability of what otherwise might appear to be domain-specific data governance.

The other presentation I delivered toward the end of my period as Special Advisor was *Certification Frameworks for Scientific Data Repositories: Strengthening Repository Trustworthiness*. This reflects work I commissioned via a sub-committee of the Scientific Committee for the World Data System. I am the Chair the WDS Scientific Committee, and had noticed that many of our members found the CoreTrustSeal Certification process for new certifications and renewals onerous. Our sub-committee examined the potential role for other national and international sources of certifications, and also developed a process for on-ramping new data repositories through a lighter version of CTS. This paper has been accepted for publication in 2026 in *Data Science*.

Between these two presentations I had several meetings with Masaki Kanao and Jens Klump from CSIRO in Australia. I had previously met Jens at the DSWS 2023 meeting, but we had much more time to share knowledge and perspectives on this extended visit to Tokyo. I also had the pleasure of meeting Akira Kadokura, Hiroe Tsubaki, and Toshiyuki Shimono and our discussions were on a wide range of topics. With Dr Shimono, we had extensive discussions about the need for balancing access to, and the security of, sensitive socio-economic data of the general public, and the data science requirements to make this happen. It was interesting to compare jurisdictions: Japan, Canada, and the EU. In the latter case, the GO FAIR Foundation and the WDS frequently engage on the development of FAIR Implementation Profiles for sensitive data. To me, there is great potential for mutual learning and even possible interoperability.

We also visited the polar ice collections and the meteorite collections – both of which I found fascinating and they left a very strong impression.

Toward the end of our period, we had a very interesting in-depth seminar from Dr Naoko Kato-Nitta on her paper *Evaluating COFID-19 Information and Risk-Averse Behaviors: Insights for Conjoint and Clustering Analysis in the UK, Japan, and Taiwan*. This was an excellent session, and showed the data science power of those associated with ROIS-DS in the social sciences. I circulated the paper to my colleagues in the Office of the Chief Science Advisor, Canada. We drew many important lessons from this paper and its methodology for our own work.

I found the spectrum of work in ROIS-DS very interesting. I came away with the impression that the level of effort and accomplishment in the various centres varies considerably, attributable to the timing and pace of their creation – just an evolutionary fact. Perhaps on the occasion of the next DSWS, I will be able to come back to ROIS with a specific mission to collaborate with more of the centres, focusing on mixed research methods work involving data science on socio-economic issues. I am involved in the Convention on Biological Diversity, and have been part of Canada's Delegation to COP15 & COP16, particularly working on the access and benefits issues associated digital sequence information on genetic resources – the next phase in ABS leading from the Nagoya Protocol. My research group is creating FAIR biodiversity databases in Canada, and linking them to AI tools, indicators, and tools for monitoring biodiversity. This is a rich area of data science worth exploring collaboratively.

Comparator Organizations: Regarding PEDSC, collaborators and comparator organizations would include the Norwegian Polar Institute, the British Antarctic Survey, Polar Knowledge Canada, Amundsen Science, and to the South, the Australian Antarctic Data Centre. Naturally, with the Fifth International Polar Year (2032-2033) fast approaching, many of our countries are aligning to develop the year's program. Canada has been recently engaging with Nordic countries in a series of bi-lateral discussions, and ought to continue to do similarly with Japan.

When ROIS-DS became a Network member of the World Data System in February 2025, it was a welcome event for the WDS. As a Joint Support-Centre for Data Science Research, ROIS-DS is unique among our members because it is a collaborative research institute that promotes data science throughout Japan. Comparator organizations performing similar national coordination and promotion functions would include the Digital Research Alliance Canada, and the Australian Research Data Commons.

An interesting model that Japan, Canada and Australia could study further is the Leiden Initiative for FAIR and Equitable Science (LIFES), which is an outgrowth of activity from the GO FAIR Foundation. LIFES develops FAIR data and services for data visitation, based on FAIR data preservation, privacy preserving data stewardship, and equitable data reuse. Interestingly, LIFES includes many private sector companies as founding members so they are part of the data-to-innovation continuum from the outset. Arguably, The Netherlands are expert at private-public-partnerships, and in this case the business model might lead to sustainable data preservation and services which would be of interest to any national innovation system. Other organizational models worth considering are transnational in nature, serving regional interests. The Latin American Open Data Initiative (ILDA) is an interesting initiative for researchers at ROIS-DS to consider, particularly those working with sensitive data from social sciences and humanities research. ILDA's has a human rights and political position on data, and seeks to strengthen communities and build capacity across Latin America. Whereas ROIS-DS, LIFES and ILDA are all WDS members, the African Open Science Platform (AOSP) has yet to join, but perhaps will in 2026. With regional offices for a centralized platform, AOSP is creating activity nodes (e.g. open data for AI) as well as capacity building and data stewardship training.

Recommendations: Following my observations about different models for providing national and international data services and coordination functions, my *first recommendat*ion to ROIS-DS is to ensure that the next DSWS meeting has a well-developed theme on international and regional data science collaboration. The above mentioned organizations, and others, could be brought together to share insights that would enhance ROIS-DS' ability to work with like-minded neighboring countries to strengthen data science in the regions. My *second recommendation* relates to my observation above that within ROIS-DS there are many themes and initiatives underway, but what remains less certain is their overall data coordination and interaction with one another. ROIS-DS is sustaining many research programs, and has a large employee complement and many assets. I have commented this might related to how various projects were incepted, but it might also be a function of number and presence of personnel within themes, and I need for better coordination between themes. My *third recommendation* is concerns the concerns the need to have an 'evergreen' roadmap for data infrastructure. Data generation in many fields is increasing exponentially, and the types of data and metadata become more complex. At the same time, researchers expect more sophisticated data services. ROIS-DS has a critical role to play in deciding overall strategy for data federation of distributed assets, or centralization where it makes more sense. Equally, a long term human resource plan needs to be in place, unless it is already. In many contexts, it is the human factor that limits research just as much as limitations on infrastructure.

Once again, I wish to thank Masaki Kanao and his colleagues for their wonderful hospitality, engaging discussion, and collegiality. It was an honor to be invited as a Special Advisor, and an enriching time at NIPR and ROIS-DS.

Respectfully submitted,

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