

From Observation to Participation: Redefining Cartography for Sustainable Development Through a Small Island Workshop

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Cartography for Sustainable Development refers to the use of maps to support decisions that balance present needs with the well-being of future generations. Maps can help share a coherent narrative to support informed policies, business and personal decision making (Le Sourd & Ricker, 2025). To better understand and represent the phenomena they map, cartographers benefit from direct engagement with the places and communities affected by sustainability challenges. Small islands, while they contribute the least to climate change, are among the first to experience its effects, including sea-level rise, rising temperatures, and increasing storm frequency and severity (Nurse and Moore, 2005). Islands have all the same sustainability challenges as continents, only more condensed and visible due to their small land sizes. Islands are knowledge leaders for climate change adaptation and resilience and offer creative and effective solutions to a number of sustainability challenges (Ratter, 2018).

A paradigm shift is needed, mapping global sustainability challenges requires first localized understanding, in-place engagement. Utilizing the inaugural workshop of the ICA Commission on Cartography and Sustainable Development held in Aruba, we address the critical disconnect between international cartographic theory and the urgent spatial data needs of vulnerable communities. This workshop in Aruba offered an opportunity to replace externally produced representations of vulnerable places instead toward participatory, situated, and locally grounded mapping practices.

There is a spatial data "knowledge gap" where maps are often created *about* vulnerable regions rather than with them. First, it is difficult for local islanders to visit international academic conferences due to their remoteness and expensive travel costs. Secondly, it is important for the international cartographic community to visit small islands, to observe their unique sustainability challenges and learn firsthand from islands. For these reasons, the ICA Commission on Cartography and Sustainable Development sought to answer the following core questions: **The Knowledge Gap:** What specific spatial data and cartographic expertise are missing for local governments and NGOs on islands to effectively combat climate change? **Methodological Shift:** How can international experts transition toward genuinely participatory mapping that meets societal sustainable development needs?

Methodology: In-Place Engagement in Aruba

To answer these questions, the Commission held its inaugural workshop at the University of Aruba in January 2026. The aim was to bring cartographers and islanders together directly in an environment facing sustainability challenges and solutions. Attendees and presenters included representatives from the University of Aruba, local government agencies, NGOs, and the International Cartographic Association. The research approach utilized three primary methods of situated learning:

- **Experiential Observation (The Sustainable Island Tour):** Led by Eric Mijts alongside faculty and students from the Sustainable Island Solutions through Science, Technology, Engineering, and Mathematics (SISSTEM) academic program, participants embarked on an island tour. This allowed cartographers and locals to witness firsthand the tension between economic development (tourism) and environmental preservation, illuminating a sustainable world beyond digital datasets.
- **Stakeholder Knowledge Exchange:** The Commission held structured meetings with local government officials. The aim was to understand how local authorities currently use—or aspire to use—cartography to achieve a sustainable world. Rather than imposing external solutions, the goal was to engage in two way dialogue with the local audience.

- **Scholarly Presentations:** Traditional format, yet exciting and diverse perspectives were offered related to the topic of cartography for a sustainable world.

The workshop created an initial platform for connecting global cartographic debates with localized climate realities. Recognizing local communities as the ultimate makers and users of these maps led to several immediate reflections and future directions. Discussions addressed topics related to: Global spatial datasets are often too coarse for small islands. Discussions with local authorities highlighted a need for more fine-scale mapping. Capacity Building over Map Production: Island communities do not just need finished maps from external experts; they require methodological know-how and open-source tools to achieve data sovereignty and manage their spatial infrastructure independently.

The exchange of research culminated in a series of collaborative presentations and the foundational framework for a joint academic paper. The workshop established a direct, ongoing dialogue between international cartographic experts and local Aruban policymakers, immediate network building.

Long-Term outcomes and future directions focused on curriculum development: By offering our expertise and listening to local authorities, the Commission identified critical themes to include in future teaching and research agendas to ensure they meet actual societal needs. The workshop also solidified a commitment to creating participatory maps *in place*. Future directions involve empowering island communities to dictate the narrative of their spatial data, ensuring outcomes will be scalable and more impactful in the future.

The Aruba workshop for Cartography an Sustainable Development suggests that, for cartography to be truly sustainable, the discipline must physically and methodologically meet vulnerable communities where they are. As the ICA looks toward the future, integrating the localized, lived experiences of island communities into global cartographic practices will be essential for building maps that not only visualize a changing world but actively contribute to its survival. We therefore position this workshop not as an endpoint, but as a starting point for a broader research and teaching agenda. Future work will focus on translating these early reflections into more systematic participatory mapping frameworks, collaborative teaching activities, and locally relevant cartographic outputs. In this sense, the Aruba workshop serves as a catalyst for reframing cartography for sustainable development: from observation toward participation, and from mapping places to mapping with communities.



Figure 1. Workshop participants on the Sustainable Aruba Island Tour (left) and Meeting with ICA commission members and local government officials from Aruba (right).

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References

- Nurse, L., & Moore, R. (2005). Adaptation to Global Climate Change: An Urgent Requirement for Small Island Developing States. *Review of European Community & International Environmental Law*, 14(2), 100–107. <https://doi.org/10.1111/j.1467-9388.2005.00430.x>
- Ratter, B. M. W. (2018). Introduction to the Geography of Small Islands. In B. M. W. Ratter (Ed.), *Geography of Small Islands: Outposts of Globalisation* (pp. 1–24). Springer International Publishing. https://doi.org/10.1007/978-3-319-63869-0_1
- Sourd, G. L., & Ricker, B. (2025). Cartography for global sustainable development agendas: Informing public policies with geospatial information and knowledge for people, places and planet*. *International Journal of Cartography*, 11(3), 428–457. <https://doi.org/10.1080/23729333.2025.2532942>