

# Communicating Environmental Information in Global Contexts: Addressing Barriers Through Digital Technologies

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## Abstract

Can Information and Communication Technologies (ICTs) help to overcome barriers that prevent effective dissemination and use of scientific information, especially information addressing serious environmental concerns? Drawing primarily on evidence of use of publications produced by a UN-based intergovernmental organization, this study examines how ICTs can be used to promote both the dissemination and use of environmental grey literature.

## Introduction

- While the quantity of scientific information, much of which is published as grey literature, has increased significantly over the past century, various barriers can impede its awareness and use.
- This literature, often freely available online, contains important information regarding local and/or international issues.
- Environmental concerns are identified and addressed, e.g., the health of the oceans by the Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP), and climate change by the Intergovernmental Panel on Climate Change (IPCC).
- Citation analysis techniques provide insights into how grey literature publications are, or are not, being used.
- Comparison of the use patterns of GESAMP's publications with IPCC's, in conjunction with ICT use by each agency, shows where barriers with regard to location and use of grey literature can be reduced.

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## Research Questions

- Are there differences in citation patterns between the organizations in this case study?
- How can ICTs, such as Google Maps, be used to show where grey literature is or is not used?
- How are access/use barriers addressed, and how successfully are the barriers mitigated (see Fig. 1 and Table 1)?

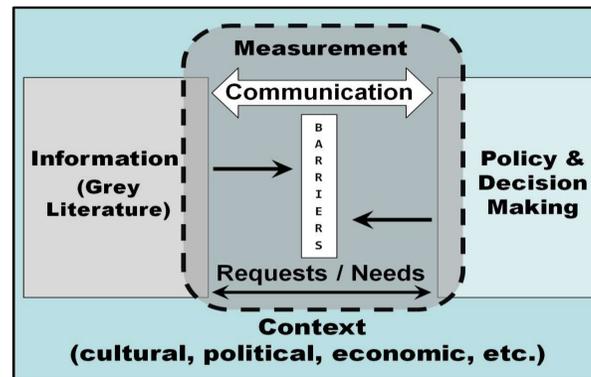


Figure 1. Guiding Framework

## Methods

- Citation searches were conducted with Google Scholar for two reports: one published by GESAMP (which we have studied previously) and, for comparison, one by IPCC.
- Papers returned by Google Scholar (in which the reports were cited) were cross-referenced to sources indexed by Web of Science.
- Google Scholar results also indexed by Web of Science were selected for analysis since the latter provides an address for the first-listed authors of the citing papers (discerning the location of authors in Google Scholar results can be difficult / impossible).
- The locations of the first-listed authors were charted on Google Maps (Fig. 2).

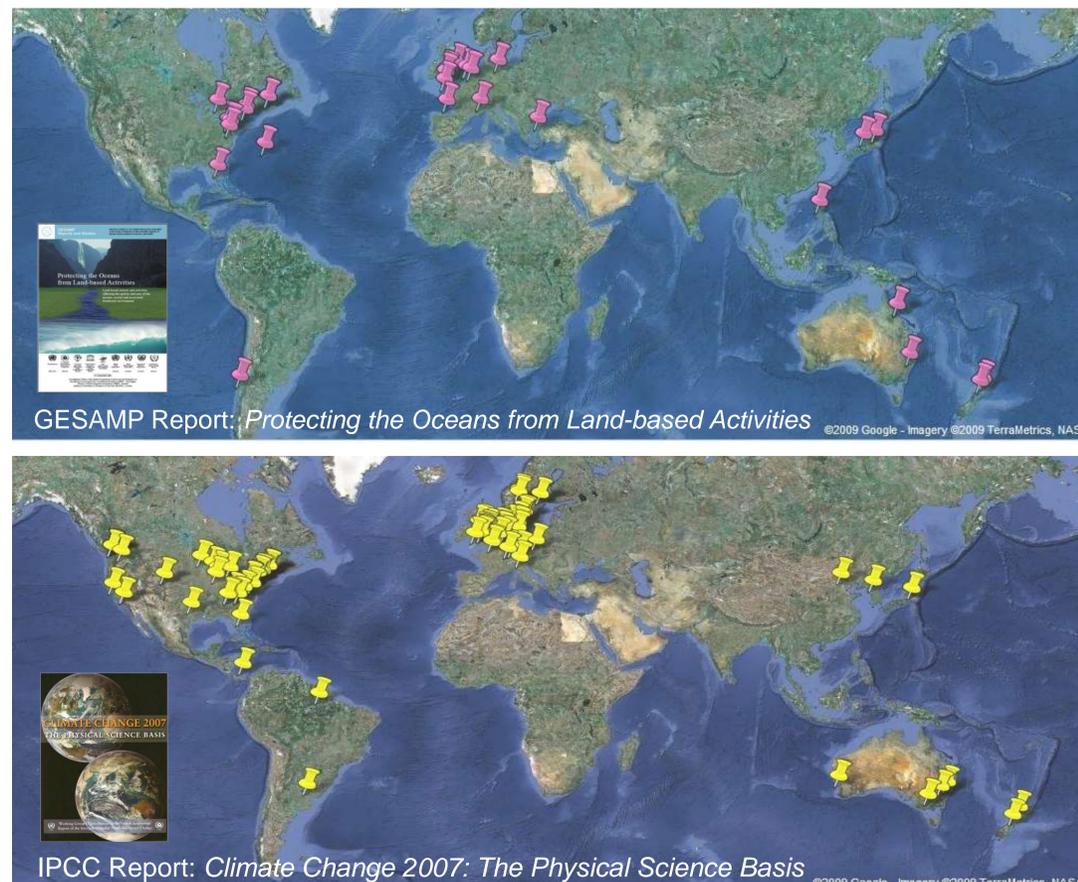


Figure 2. Location of First-Listed Authors of Citing Papers

## Results & Discussion

- Substantially fewer citations to GESAMP's report were located than to IPCC's. The latter report also demonstrated a wider geographic range of locations of citing authors (Fig. 2).
- Climate change is currently a global, hot-button issue, which partially explains the broader citation base of the IPCC report.
- Citations to the IPCC report can also be attributed to the agency's use of ICTs that overcome barriers to information dissemination (Table 1).

GESAMP	Barrier	IPCC
Not indexed as a Google Scholar source	Indexing	Indexed as a Google Scholar source
Free access to reports, but requires registration	Easy Online Access	Free, "one-click" access to reports
English only (for report used in the case study; other reports and meeting documents have been translated)	Language	English; policymaker and technical summaries in Arabic, Chinese, French, Russian, Spanish; several non-UN translations
Low communication and awareness	Promotion	High communication and awareness
Areas affected by the digital divide show little evidence of information use	Lack of ICTs	Areas affected by the digital divide show little evidence of information use

Table 1. Comparison of Barriers to Information Access

- Web of Science selectively indexes sources; comprehensive citation data for each report was not mapped.
- Locations of only first-listed authors of citing papers was recorded; all other locations in multi-authored papers are not noted.

## References

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