

UN GESAMP WORKING GROUP 38

THE ATMOSPHERIC INPUT OF CHEMICALS TO THE OCEANS

2024 Annual Report to SCOR by the Co-Chairmen of GESAMP Working Group 38

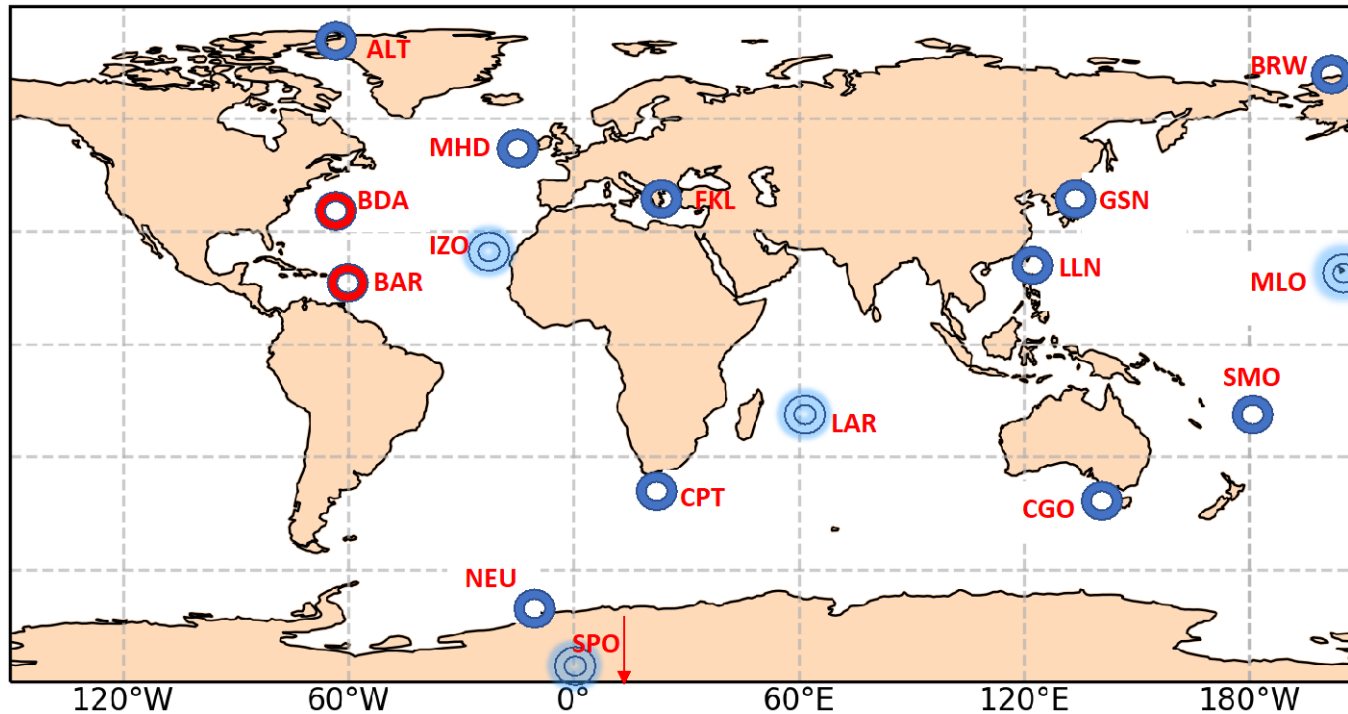
Robert Duce and Timothy Jickells

During the past year, GESAMP WG 38 has focused its attention on the following four areas:

- 1) In cooperation with GESAMP WG 40, completed a GESAMP Reports and Studies document entitled “The Atmospheric Transport of Microplastics to and from the Ocean: Proceedings of a GESAMP International Workshop” as well as a “Summary for Policymakers”;**
- 2) Began development of a paper from a workshop in South Africa on the ocean management and policy implications of the air/sea exchange of nutrients over the southwest Indian Ocean;**
- 3) Organized a session on air/sea chemical exchange at the 2024 European Geosciences Union General Assembly in Vienna, Austria in April, 2024, and**
- 4) Held an organizational meeting in May, 2024 at the University of East Anglia in the United Kingdom for a new initiative entitled “Research priorities for improving global flux estimates of atmospheric deposition to the ocean”.**

1) Microplastics “Reports and Studies” document from GESAMP

Possible Marine Atmospheric Microplastics Sampling Sites



● WMO/GAW sites ● Free troposphere WMO/GAW sites ● Other permanent sites

ALT Alert (Canada) BAR (Barbados) BDA (Bermuda) BRW (Barrow, Alaska) CGO (Cape Grim, Australia)

CPT (Cape Point, South Africa) FKL (Finokalia, Greece) GSN (Gosan, Korea) IZO Izana (Canary Islands, 2373 m)

LAR (La Reunion, 2160 m) LLN (Lulin, Taiwan) MHD (Mace Head, Ireland) MLO (Mauna Loa, Hawaii, 3397 m)

NEU (Neumayer, Antarctica) SMO (American Samoa) SPO (South Pole, Antarctica, 2841 m)

2) Began development of a paper from a workshop in South Africa on the ocean management and policy implications of the air/sea exchange of nutrients over the southwest Indian Ocean.

The report from this workshop has been delayed but the causes of the delays have hopefully now been overcome and we hope to deliver both a scientific paper and a reports and study document in the coming months.

3) Organized a session on air/sea chemical exchange at the 2024 European Geosciences Union General Assembly in Vienna, Austria in April 2024.

For the eleventh year in a row WG 38 organized a session on the atmospheric input of chemicals to the ocean for the 2024 European Geosciences Union meeting, held in Vienna, Austria in April – “Air-Sea Exchanges: Impacts on Biogeochemistry and Climate”. Oral and poster papers at this session were presented by a combination of WG 38 members and other scientists.

4) Developed plans for a new initiative entitled “Research priorities for improving global flux estimates of atmospheric deposition to the ocean”.

This initiative is a joint effort between GESAMP Working Group 38, WMO’s Global Atmospheric Watch (GAW), and Future Earth’s Surface Ocean - Lower Atmosphere Study (SOLAS). The problem is that both mathematical/computer models of the transport and deposition of chemicals from the atmosphere to the ocean, and the techniques for the actual physical and chemical measurement of these fluxes have significant weaknesses and flaws. To date there has been absolutely no holistic effort to address the current weaknesses of, and how to improve, the measurement and modelling of the fluxes of different gaseous and particulate substances between the atmosphere and the ocean.

In May 2024 representatives from GESAMP WG 38, GAW, and SOLAS met virtually at the University of East Anglia to develop plans for a workshop to address this issue. Following that initial planning meeting it was decided to hold the in-person workshop at the University of Crete in Heraklion, Greece in April 2025. Potential attendees at the workshop are now being identified, considering gender, career level, and geographical balance.

Support for this workshop has been obtained from WMO and from SOLAS.

Thank You!