



OEWG48

Bangkok
13-17 July 2026

Enhancing the regional atmospheric monitoring of substances controlled by the Montreal Protocol (decision XXXVII/1)

Report by the Ozone Secretariat and the Advisory Committee of the General Trust Fund for Financing Activities on Research and Systematic Observations Relevant to the Vienna Convention

Progress in implementation of decision XXXVII/1

Since MOP37 progress has been made in:

- The Ozone Secretariat's development of an online tool for estimating the costs for establishing and operating a monitoring station
- The evaluation of the suitability of potential sites for monitoring emissions of controlled substances situated within the regions and near locations identified by the Advisory Committee of the General Trust Fund and preparation for possible next steps towards establishing monitoring activities at the potential sites
- The consideration of a funding window to support pilot projects under the Multilateral Fund for the Implementation of the Montreal Protocol

Online costing tool

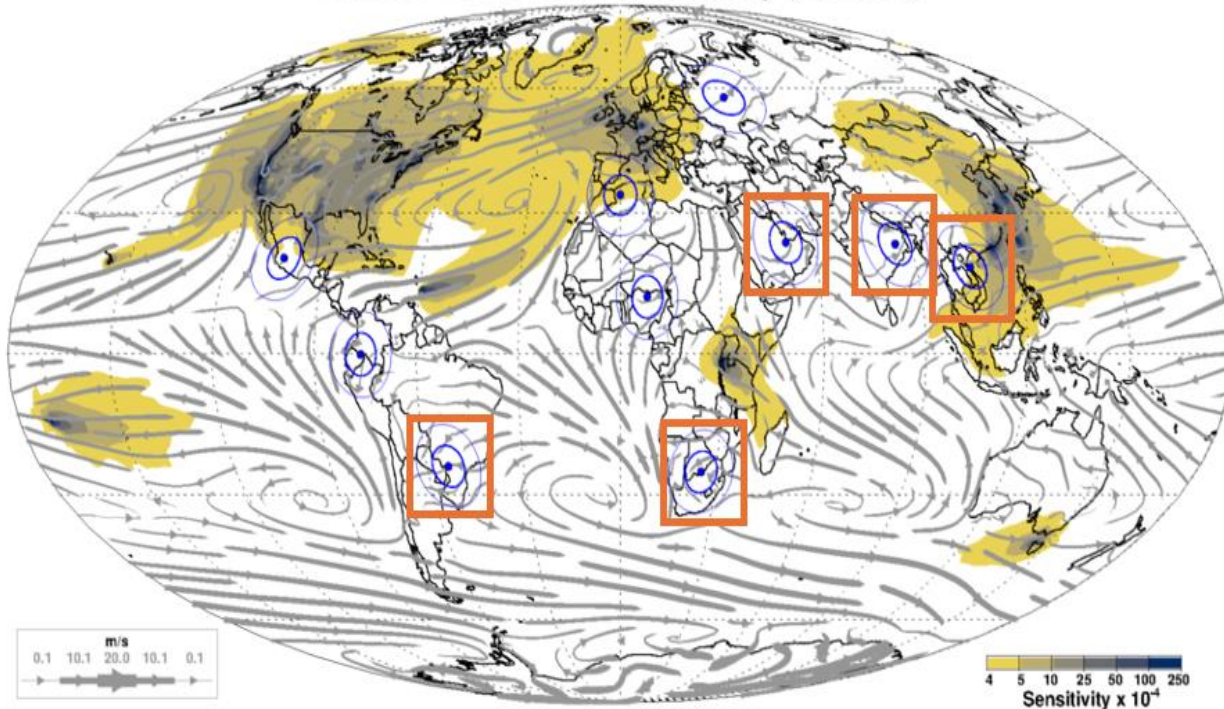
- Based on the Secretariat's updated cost estimates for the establishment and operation of a monitoring station, presented at MOP37, the Secretariat undertook to develop an online interactive tool to enable parties estimate such costs taking into account their national circumstances
- A first version of the tool is available at the following temporary link:

<https://tinyurl.com/OzoneATMTool>

- Work on improving the tool's functionality is underway
- Parties are kindly invited to test the current version of the tool and provide comments and suggestions to the Secretariat, via e-mail, by **31 August 2026** to support the preparation of a final version to be launched at MOP38 later this year

Regions and locations identified by the Advisory Committee to fill gaps in regional atmospheric monitoring of controlled substances

Annual Emissions Sensitivity (current)



Shaded areas show the sensitivity of existing stations to regional emissions

Prioritized regions/locations

- Southern Asia (India/Bangladesh)
- South-East Asia (Viet Nam)
- Southern Africa (Botswana/South Africa)
- Middle East (Saudi Arabia)
- Central/Southern South America (Brazil/Argentina)

Regions/locations not yet prioritized

- North Africa (Algeria)
- North America (Mexico)
- Northern South America (Ecuador)
- Eastern Europe (Russian Federation)
- West Africa (Nigeria)



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Continuation of evaluating site suitability in identified regions

- Secretariat's visit to WMO to identify available existing infrastructure near the locations selected by the Advisory Committee in under-sampled regions – focus on the 5 prioritized regions
- Presentation of study outcomes to the Advisory Committee at its 20th online meeting (9 March 2026)
- Committee's agreement to focus the next phase of work on exploring the interest of parties in the prioritized regions in hosting such monitoring activities



Expression of interest by concerned parties

- Informal consultations held by an Advisory Committee co-chair with country representatives and scientists in five countries in the five priority regions (Brazil, India, Saudi Arabia, South Africa and Viet Nam) to clarify technical and scientific issues related to the possible establishment of stations
- To date, three parties (Brazil, South Africa and Viet Nam) have notified the Secretariat of their interest in continuing discussions to explore the possibility of establishing monitoring stations in their territories or in establishing such stations



Establishment of a funding window under the MLF

- At its 98th meeting (June 2026), the Executive Committee of the MLF adopted decision 98/62, establishing a funding window for support of pilot projects to enhance regional atmospheric monitoring of controlled substances

The full decision is reproduced in document:
[UNEP/OzL.Pro.WG.1/48/INF/5](#)

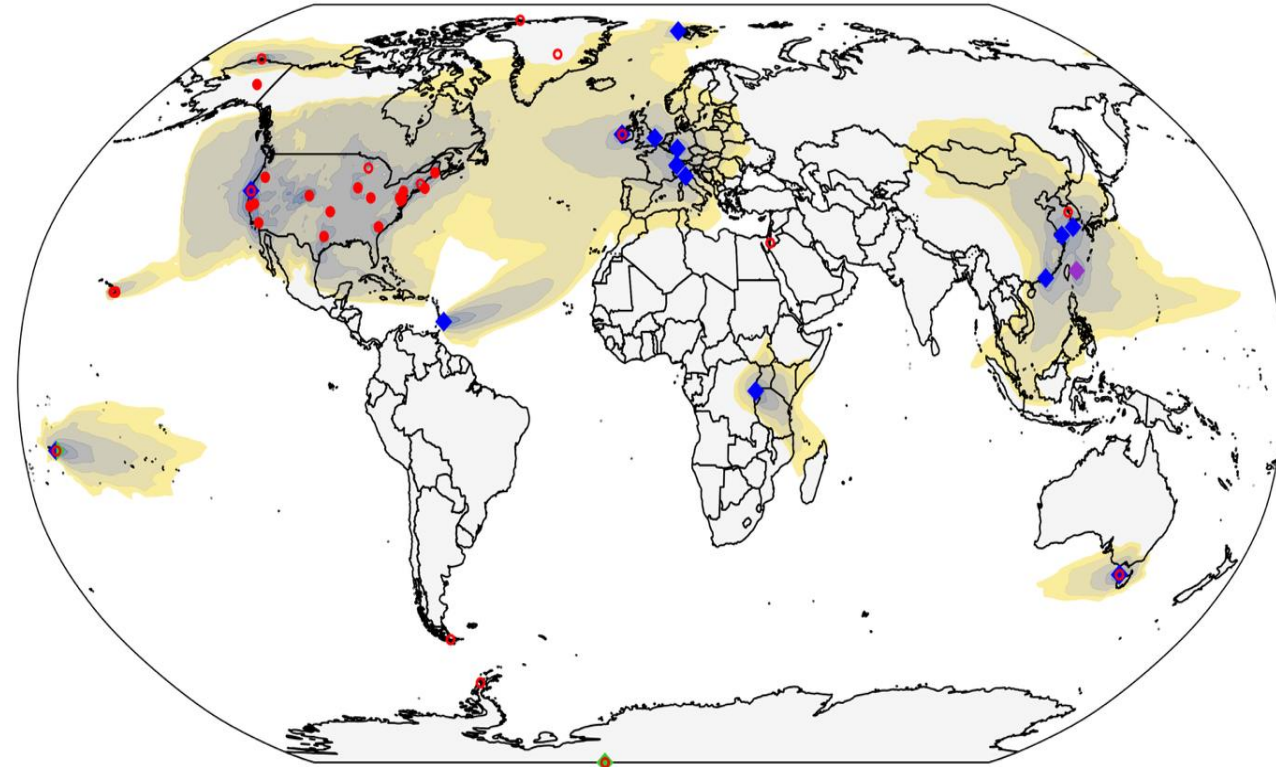


Evaluating the suitability of potential sites for monitoring regional emissions of controlled substances

Need for monitoring Montreal Protocol (MP) gases:

During the accountability phase, the parties may wish to know how the regional emissions of MP gases are changing to ensure the success of the Protocol

Goal: Fill the large gaps in monitoring and enable the parties to be aware of regional (and global) emissions for their consideration

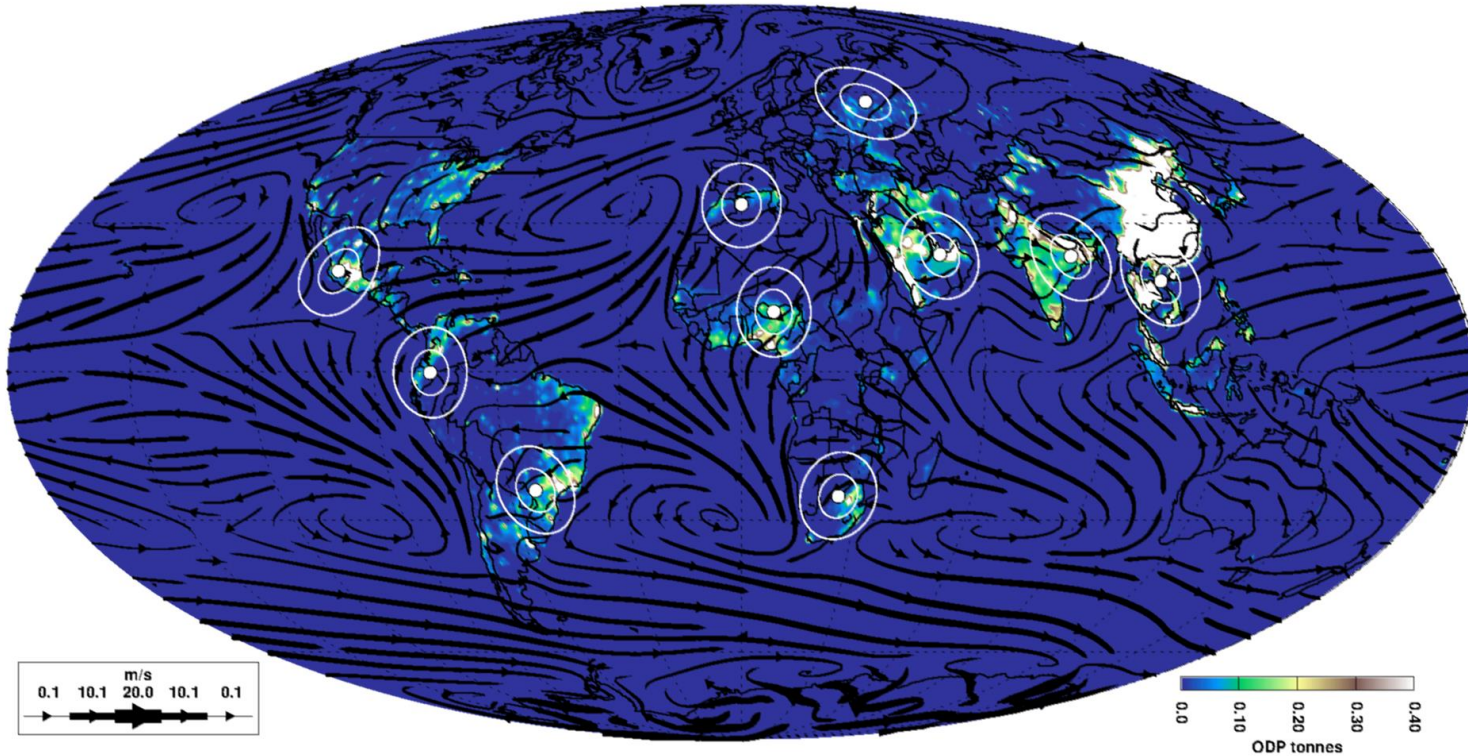


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Potential locations for monitoring emissions



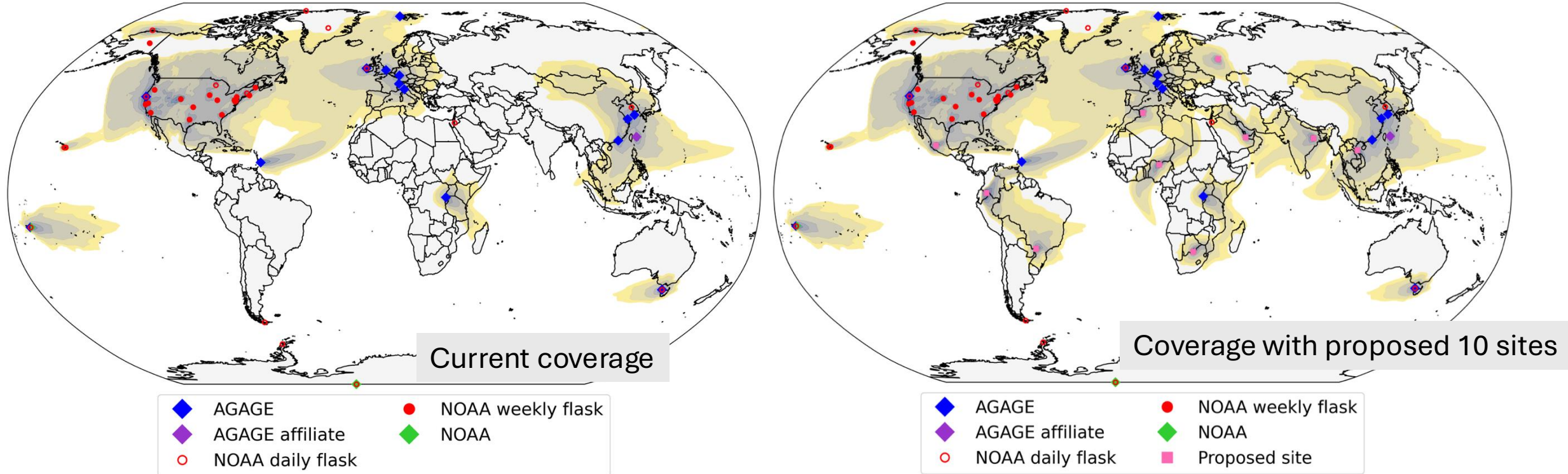
- Circles 500 and 1000 km around sampling sites, indicate the approximate regions the sites could sample
- The central points are potential suggested monitoring sites
- Based on the wind field at 50 meters above ground
- The plot shows the likely regions with large future emissions of MP gases
- **Sites chosen may need new OSSEs**

HFC/CFC-11/CFC-12/CCl₄ consumption estimates for regions are available at:

https://acd-ext.gsfc.nasa.gov/People/Newman/sfc_wind/surface_wind_climo_v3.html

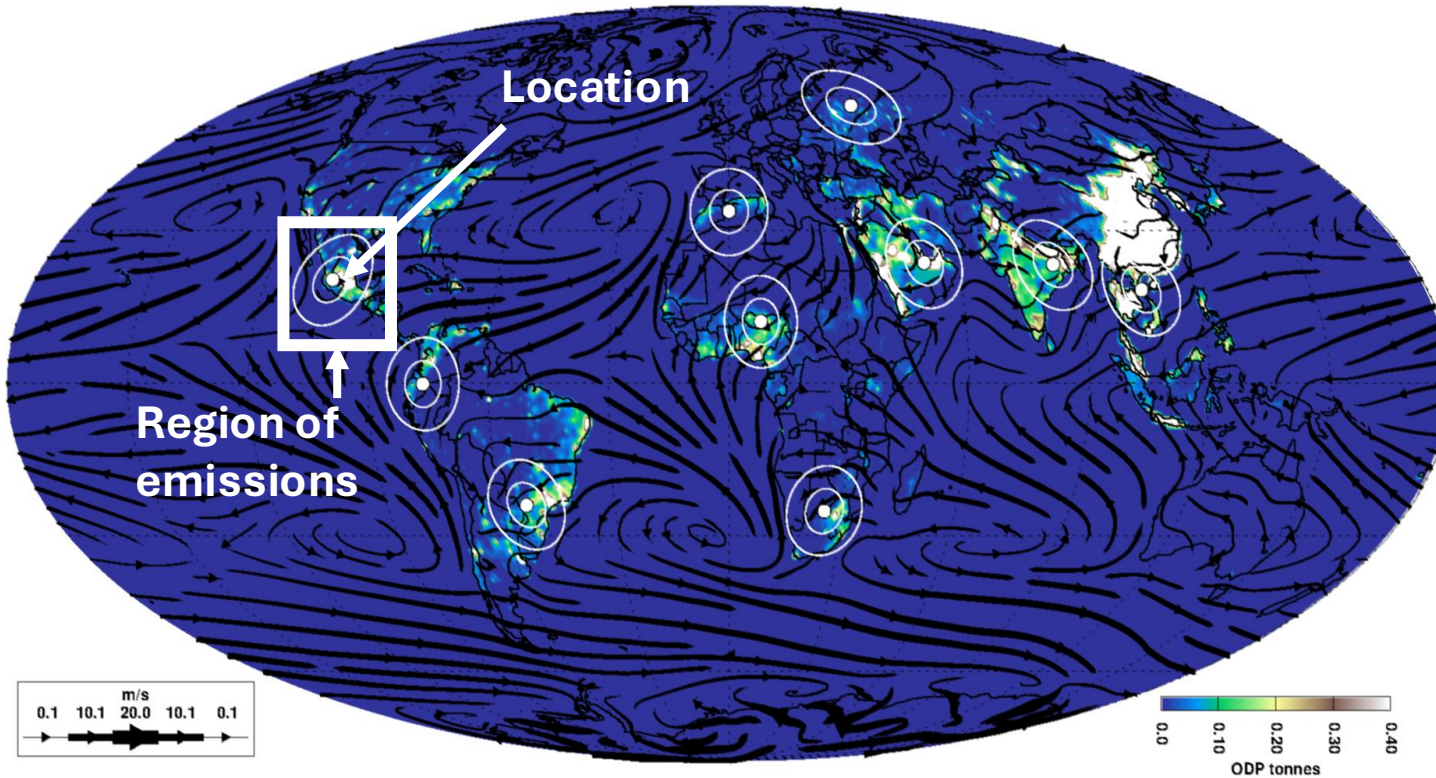
HCFC consumption data by Luke Western (Univ. of Bristol), shown in the above link. Similar results are obtained when consumption of other MP gases is used. Wind field analyses by Paul Newman (NASA/GFFC/UMBC).

Selected ten locations fill major gaps in emissions



- Extending to ten proposed locations provides better global coverage
- OSSEs carried out for the proposed ten sites (annual footprint is shown, but seasonal footprints available)
- Collaboration with other partners (e.g. NGO-funded) would enhance coverage and shorten selection efforts
- Additional funding (ExCom decision 98/62) to expand and continue monitoring beyond the pending EU funding

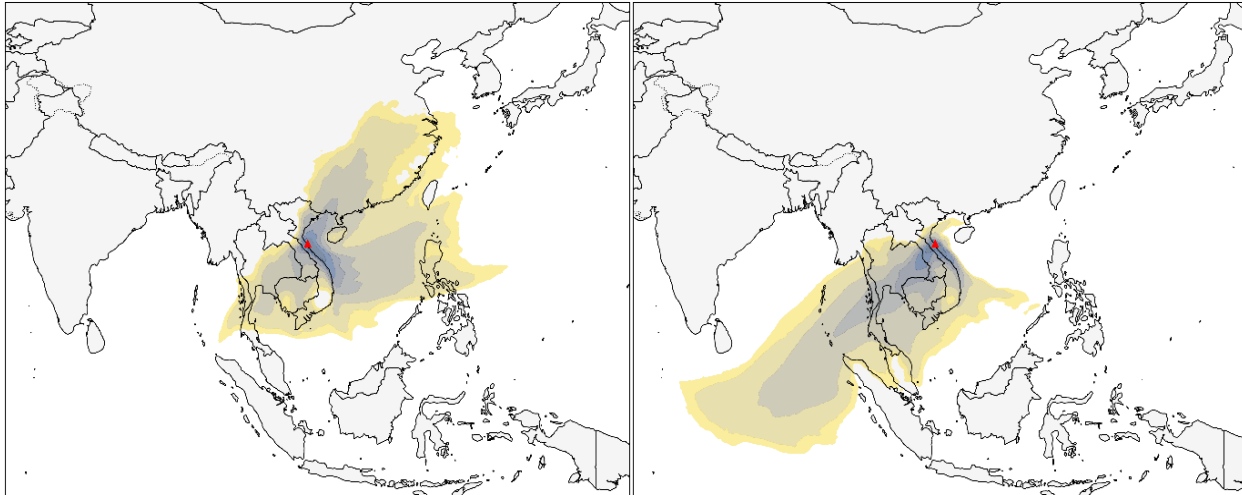
Definition of terms



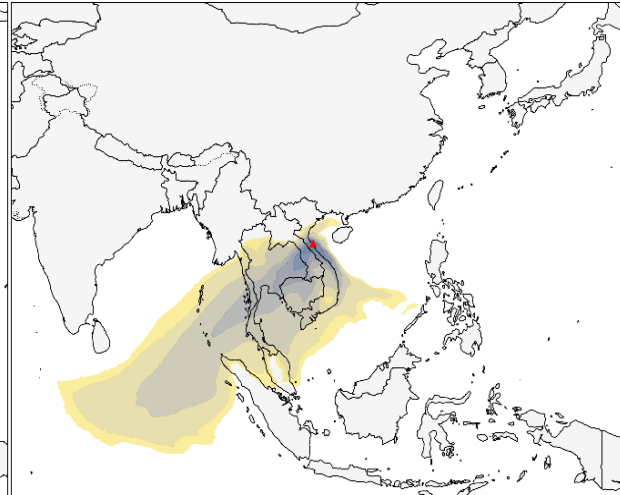
- Region** - Geographical area from which emissions occur
- Location** - Geographical area suitable for monitoring from region of interest
- Site** - Exact place for monitoring
- Station** - Physical infrastructure to be built up (or existing) suitable for monitoring

Stations may sample different regions in different seasons

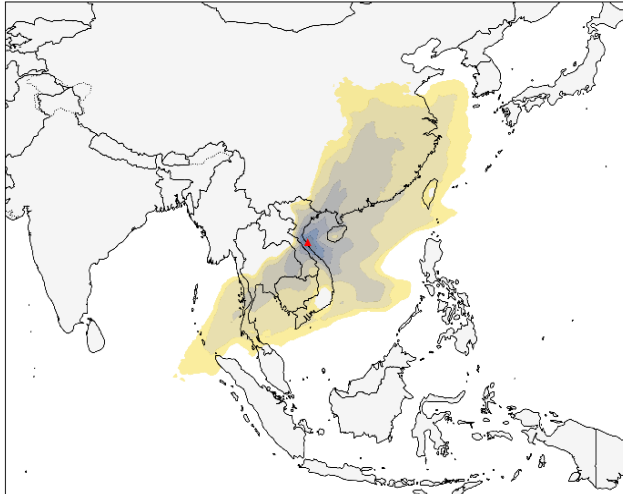
Lat: 18.2°N, Long: 106.3°E, height 20 m above ground level



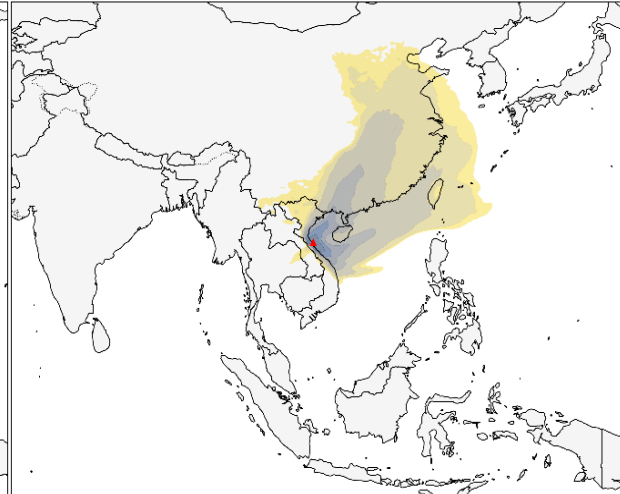
(a) March - May



(b) June - August



(c) September - November



(d) December - February

- Essential to examine multiple seasons
- Need for multi-year measurement
- Seasonality also helps locate emission regions
- OSSEs for the potential sites in 5 countries are available
- Once, specific potential sites have been identified, OSSEs at those sites can also be finalized (if it is far from the identified location or has different orography)



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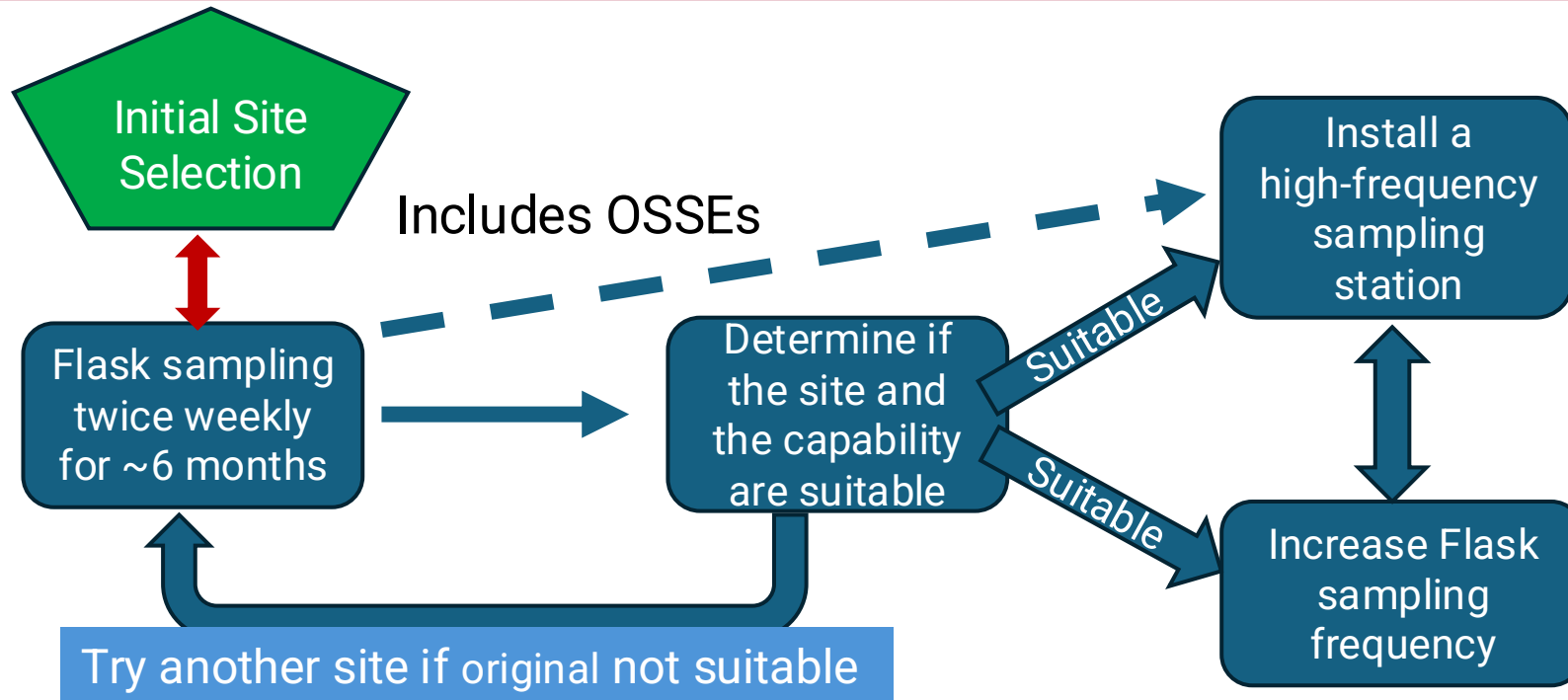
Essential needs for a successful station - beyond science

Messages from the whitepaper, workshop, pilot project and extensive discussions

- Scientific capability, interest, and willingness to be a part of the effort
- OSSEs for the specific site before setting up a station
- Infrastructure – Electricity, AC, internet connectivity, roads, security, etc.
- Logistical support to transport sampling flasks through customs and other regulations (especially for the “survey period”)
- Additional analytical capabilities are emerging (USA, European and Chinese facilities)
- A common propagation (calibration) standard to place measurements on a common footing (AGAGE and NOAA networks frequently intercompare and provide calibration standards).
One additional calibration center in Europe has been funded and another in China is on its way – greatly expanding calibration propagation
- Sharing data with the scientific community for extensive examination & placing data in accessible data centres

Flowchart for establishing monitoring stations

Phased approach - endorsed by the Advisory Committee at its 19th meeting (2 October 2025)



- Information on survey studies by other entities help with site selection (e.g., 7 sites for flask sampling by Georgetown University)
- Enhanced analytical and calibration facilities (More are coming online)
- Consistent with the MLF approach

- Once a station (and associated personnel expertise) is "tested and found suitable", consider establishing high-frequency measurement instrumentation at the site (can happen after 6-24 months of data collection)
- There is flexibility in the timelines
- Data sharing is essential for better analyses and confidence in data and calculated emissions

Advisory Committee work and emerging considerations

■ Expanded Advisory Committee

- The Advisory Committee, historically consisting of 10 members and WMO as observer, was expanded in March 2025 to include 6 additional experts in controlled substance monitoring and an observer from the MLF secretariat; its work is now led by two Co-Chairs
- Workload is divided between two groups with complementary expertise in monitoring ozone/UV and controlled substances, but decisions are endorsed by the entire Committee
- The Committee has also been providing relevant advice to the MLF secretariat

■ Emerging considerations

- Consistency in processes between the General Trust Fund, the MLF and the associated implementing agencies for rapid decision-making and implementation
- Possible reconciliation of operational and research-oriented approaches for timely and effective implementation



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Thank you for your attention