70th Meeting of AGAGE Scientists and Cooperating Networks
Hosted by Scripps Institution of Oceanography at
The Scripps Seaside Forum
La Jolla, CA
2-6 December 2024

Agenda V1 20241105

Meeting Details:

The meeting will be held in-person at the Scripps Seaside Forum in La Jolla, CA. The meeting will have a hybrid option to accommodate remote attendance. All times listed in the agenda are Pacific Standard Time (PST/UTC–8).

Remote Access – LINK TBD
Please see the end of this document for additional information.

Notes:

Speakers are to provide presentation files ***no later than one day in advance of their talk*** to the following folder: LINK TBD

Please name files as follows prior to upload: Agenda#_LastName_PresentationName. As an example, "2a_O'Doherty_MaceHeadReport.pptx".

There will be moderators for the morning and afternoon sessions. The role of the moderators will be to: start and resume the sessions in a timely manner; ensure that presentations have been uploaded in advance; introduce the topics and speakers; make sure that the action items for their topics are addressed; strike a balance between keeping to the schedule and allowing adequate time for discussion; and determine if any last-minute requests for additions to your session can be accommodated.

Names in italics in the schedule denote those who will contribute to the agenda item, but who will not attend the meeting in person.

Sunday, 1 December 2024

AGAGErs attending the meeting arrive.

Monday, 2 December 2024

Morning Session Moderator – TBD

09:00-09:15 1. AGAGE70 Opening Session

a. Introductions. Introduce new members and special guests. Provide reminder concerning the confidentiality of the report and the presentation materials. Note that last-minute requests for additions to the agenda will have to be vetted by Ron Prinn, Ray Weiss, and the relevant Session Moderator. **(Prinn, Hannun)**

b. Meeting logistics. **(Ganesan, O'Doherty, Hannun)**

ACTION Recurring – For future meetings, and whenever possible, Hannun will set the start times for each morning at the same time to avoid confusion among the group.

09:15-10:30 2. Reports on the present status of AGAGE stations and the performance of their instruments (prepare electronic copy of written report and **be as brief as possible by noting only outstanding issues**)

a. *Mace Head, Ireland.* **(O'Doherty, Young, Spain, Stanley, Pitt)**

b. *Tacolneston, UK.* **(Stanley, Pitt, O'Doherty, Young)**

c. *Ragged Point, Barbados.* **(Young, O'Doherty, Hall, Montzka, Vimont)**

d. *Cape Matatula, American Samoa.* **(Mühle, Weiss, Harth, Schmidt, Hall, Montzka, Vimont, NOAA Station Officer, Vasel)**

e. *Trinidad Head, California.* **(Mühle, Weiss, Harth, Dickau, Schmidt, Hall, Montzka, Vimont)**

f. *Cape Grim (Tasmania) and Aspendale, Australia:* Instrument and data status. *Southern Hemisphere Archive:* Status and funding. **(Krummel, Mitrevski, Fraser, Stavert)**

10:30-11:00 Morning Coffee Break

11:00-13:00 2. Reports on the present status of AGAGE stations and the performance of their instruments (continued)

g. *Zeppelin (Ny Ålesund), Norway.* **(Lunder, Hermansen, Schmidbauer)**

h. *Jungfraujoch and Dübendorf, Switzerland.* **(Vollmer, Schlauri, Reimann)**

i. *Monte Cimone, Italy.* **(Maione, Arduini, Young)**

j. *Gosan, South Korea.* **(S. Park)**

k. *Hateruma and Ochiishi, Japan.* **(*Saito*)**

l. *Mt. Mugogo, Rwanda.* Status of CO_2, CH_4, CO, and N_2O Picarro optical instruments and measurements. Medusa performance at UR-CST Kigali Laboratory **(Ntwali, Olszewski, Munyampundu, Prinn, Young, Vollmer, Salameh, Mühle)**

m. *Taunus Observatory, Schmitten, Germany.* **(Engel, Wagenhäuser)**

n. *Xichong, China.* (**Zhu, Chen, Li, Weiss, Salameh**)

o. *Dongtan, China.* (**Yao, Weng, Weiss, Salameh**)

13:00-14:00 Lunch

Afternoon Session Moderator – TBD

14:00-14:30 18. NOAA GML/HATS Station Reports **(Hall, Montzka, Vimont)**

14:30-15:30 17. CMA Shangdianzi Station: Data and issues. **(Sun, Zhou)**

15:30-16:00 Afternoon Coffee Break

16:00-17:30 3. AGAGE Calibration

a. AGAGE vs. AGAGE-derived calibration standards. Use of AGAGE and AGAGE-derived in publications. **(Weiss, Prinn, Mühle, Rigby, All)**

Tuesday, 3 December 2024

Morning Session Moderator – TBD

09:00-10:30 4. AGAGE GC-MD and GC-MS performance and upgrades

a. Current status and plans for Medusa Stirling cooling upgrades. **(Mühle, Weiss, Harth, Krummel, Young, O'Doherty, Vollmer, Salameh, Kim)**

b. Software and documentation status report. **(Salameh)**

c. Progress report on SIO's work to upgrade the GC-MD with new Valco Universal Electrical Actuators. **(Weiss, Harth, Schmidt, Gonzalez, Mühle, Krummel, Young, O'Doherty, Vollmer, Salameh, Kim)**

d. General station hardware issues: Medusa traps. Sampling Pumps. Filaments. Medusa upgrade status (UPS, Moxas, watchdog timer, additional temperature sensors). **(Vollmer, Mühle, Weiss, Salameh, Arduini, Wagenhäuser, Schmidt, O'Doherty, Young, Krummel, Schlauri, All)**

10:30-11:00 Morning Coffee Break

11:00-12:00 4. AGAGE GC-MD and GC-MS performance and upgrades (continued)

e. General Station software/driver issues: git (version control software) to track changes within the site-instrument/data and the site-instrument/integrator folder. Drivers (serial card, BD pressure sensors), gccontrol.auto. **(Vollmer, Mühle, Young, Wagenhäuser, All)**

f. AGAGE/NOAA CFC-113 discrepancy and the CFC-113/a and CFC-114/a isomer separations **(Vollmer, Montzka, Mühle, Hall, Vimont, Arduini, Wagenhäuser, Weiss, Salameh, Harth, Krummel, Engel, Laube, O'Doherty, Stanley, Rust)**

Note: Items (g), (h), and (i) will be addressed during the odd-numbered AGAGE meetings. They will not be discussed during AGAGE70.

g. Demonstration of the recommended data review procedure for one (or more) random station(s). **(Mühle)**

ACTION Recurring – All station maintainers to ensure data quality continuously.

h. Periodic adjustments of peakIDs, SIM runfiles, and integration parameters. Continuous data QA/QC. **(Mühle)**

ACTION Recurring – All station maintainers to update peakIDs, SIM runfile, and integration parameters once a month, keeping in mind retention-time drift and retention-time jumps at column changes.

i. Simplified new Medusa data-processing software for quaternary drift and blank corrections, including some examples. **(Mühle, Salameh, Vollmer, Young)**

12:00-13:00 5. Funding Issues

ACTION Recurring – Each new year, all AGAGErs to send Prinn and Bartholomay complete references (citations) of all papers published in the previous year that use AGAGE data in a substantive way, including calibrations, for posting on the AGAGE website. These references and abstracts will serve as the basis for Prinn's submission to Jucks for NASA's annual report to Congress.

a. AGAGE stations, calibration, data analysis, and modeling funding.
   i. USA (Trinidad Head, La Jolla, Cape Matatula), AGAGE calibration, AGAGE data analysis and modeling (NASA central funding). **(Jucks, Prinn, Weiss)**
   ii. Ireland, UK (Mace Head, Tacolneston, NASA, UK Department for Energy Security and Net Zero (DESNZ), NERC). **(O'Doherty, Ganesan, Young, Prinn, Jucks)**
   iii. Barbados (Ragged Point, NASA, NOAA). **(Young, O'Doherty, Prinn, Jucks, Hall, Montzka, Vimont)**
   iv. Australia (Cape Grim and Aspendale, CSIRO Environment / BoM, NASA). **(Krummel, Fraser, Jucks, Prinn)**
   v. Switzerland (Jungfraujoch, FOEN). **(Reimann, Vollmer)**
   vi. Norway (Zeppelin, NILU). **(Lunder, Hermansen, Schmidbauer)**
   vii. Italy (Monte Cimone, U. Urbino, CNR). **(Maione, Arduini)**
   viii. China (Fudan, SUSTech). **(Yao, Zhu)**
   ix. Japan (Hateruma and Ochiishi, NIES). **(Saito)**
   x. Rwanda (Mt. Mugogo, Rwanda Space Agency (RSA), MIT). **(Ntwali, Prinn, Munyampundu)**
   xi. Germany (Taunus Observatory, U. Frankfurt). **(Engel, Wagenhäuser)**
   xii. Korea (Gosan, KNU). **(S. Park)**

b. NOAA GML/HATS stations, calibration, data analysis, and modeling funding. **(Hall, Montzka, Vimont)**

13:00-14:00 Lunch

Afternoon Session Moderator – TBD

14:00-15:30 6. Intercomparisons, intercalibrations, collaborations, and assessments.

a. Comparisons of AGAGE versus NOAA (GML) for approximately 35 species at common sites. Comparisons between AGAGE and other laboratories (e.g., CSIRO, U. Heidelberg, MPI-BGC, NIES) at common sites. Need for improved visibility of intercalibrations, especially between AGAGE and GML (put on AGAGE, GML, and ESS-DIVE websites)? Krummel's NOAA/AGAGE calibration factors vs. IHALACE. HCFC-124 scale. **(Krummel, Young, O'Doherty, Hall, Montzka, Vimont, Weiss, Wang, Saito, Mühle, Reimann, etc.)**

ACTION Recurring – The AGAGE-NOAA/GML intercomparisons factor table for a robust subset of species has been included in the AGAGE history paper in Earth

System Science Data (ESSD). Krummel to work with Bartholomay and Hall to publish this table on their respective web sites, to be updated regularly.

b. Brief NDACC Report. Issues relevant to interactions with AGAGE. **(Hannun, Kennedy, Jucks, Prinn, Weiss)**

15:30-16:00 Afternoon Coffee Break

16:00-17:00 15. AGAGE Public Outreach – On-line publicity and assessments. Updates regarding the move of the AGAGE website to NASA. Discussion on an updated AGAGE outreach slide showing the new station map, funding agencies, and research entities. Updates on posting AGAGE monthly means plots and content to Wikipedia. **(Ganesan, Krummel, Wang, Mühle, O'Doherty, Stell, Young, Rigby, Bartholomay)**

17:00- 11. New AGAGE Steering Committee Meeting. Location TBD. – **Prinn, Weiss, Ganesan, Krummel, Mühle, O'Doherty, Park, Rigby, Vollmer, Yao**

Wednesday, 4 December 2024

Morning Session Moderator – TBD

09:00-10:30 7. Data Reviews for both GC-MD and GC-MS systems using the new pre-meeting electronic data review system. Please suggest new compounds not on the list below **in advance**.

a. Review of Medusa and ADS data. Reviewed at the last meeting (compounds in italics also were reviewed for ADS): NF_3, CF_4, PFC-116, PFC-218, PFC-318, C_4F_{10}, C_6F_{14}, SF_6, SF_5CF_3, SO_2F_2, HFC-23, HFC-32, HFC-125, HFC-134a, HFC-143a, HFC-152a, HFC-227ea, HFC-236fa, HFC-245fa, HFC-365mfc, HFC-43-10mee, HCFC-22, HCFC-124, HCFC-132b, HCFC-133a, HCFC-141b, HCFC-142b, HFO-1234yf, HFO-1234ze(E), HCFO-1233zd(E), CFC-11, CFC-12, CFC-13, CFC-112, CFC-113, CFC-114, CFC-115, H-1211, H-1301, H-2402, CH_3Cl, CH_3Br, CH_3I, CH_2Cl_2, $CHCl_3$, CCl_4 (sites without GC-MD), CH_2Br_2, $CHBr_3$, CH_3CCl_3, TCE (skip), PCE, ethyne (skip), ethene (skip), ethane, propane, c-propane, benzene, toluene (skip), COS, desflurane, and $ClCH_2CH_2Cl$. **(Young, Salameh, Mühle, Krummel, Wang, Weiss, O'Doherty, Fraser, Prinn, Kim, Montzka, Hall, Vimont, Maione, Arduini, All)**

b. Review of GC-MD data. GC-MD species reviewed at the last meeting: CH_4, N_2O, CFC-11, CFC-12, CFC-113, $CHCl_3$, CH_3CCl_3 CCl_4, H_2, and CO. Review of optical instrument data. Review of optical instrument data at AGAGE sites with GC-MDs; compare with GC-MD data. **(Young, Salameh, Mühle, Krummel, Wang, O'Doherty, Prinn, Weiss, Fraser, All)**

10:30-11:00 Morning Coffee Break

11:00-11:10 Welcome from SIO Director Margaret Leinen

11:15-13:00 7. Data Reviews for both GC-MD and GC-MS systems (continued).

c. Revisiting the pollution algorithms. **(Manning, Rigby, Wang, Kim, Salameh, S. Park, Mühle)**

d. Overview of the global emissions from the AGAGE network. **(Western)**

e. Updates on the Xichong station in Shenzhen, Guangdong Province, and the Dongtan station in the Yangtze Delta. Review of recent Xichong and Dongtan station ODS5-Pro data. Progress report on porting ODS5-Pro data into the AGAGE database. (**Zhu, Yao, Yu, Chen, Xu, Salameh**)

13:00-14:00 Lunch

Afternoon Session Moderator – TBD

14:00-15:30 8. AGAGE data issues **(Young, Salameh, Mühle, O'Doherty, Spain, Stanley, Krummel, Fraser, Wang, Reimann, Vollmer, Lunder, Hermansen, Schmidbauer, Prinn, Weiss, All)**

ACTION Recurring – Shortly before or during each meeting, Mühle to download the 'data issues list' periodically and provide it to Wang for posting. Note that the 'data issues list' is an Excel spreadsheet shared via Google Docs.

a. Discussion of methods for importing NOAA flask data into GCcompare. **(Salameh, Mühle, Montzka, Vimont, Krummel, Engel)**

b. Proposed new NetCDF formats for AGAGE internal use and public version. Creation of combined instrument records for the archive. **(Rigby, Salameh, Wang, Manning, Young, Kim)**

c. Global AGAGE modeling plans. Discuss the best way to share global emissions internally. **(Western, Rigby)**

d. Requests for publication of "preliminary" AGAGE data and emissions estimates **(Rigby, Western, others)**

15:30-16:00 Afternoon Coffee Break

16:00-17:00 9. Future Meetings

AGAGE71 and later meetings. For the time being, plan that all future meetings have a hybrid option.

Note locations of AGAGE 1-60 and AGAGE 65-67 meetings: La Jolla, Barbados, Tasmania, MIT-Endicott, Ireland, La Jolla, Bristol, Melbourne, Hilton Head, La Jolla, Ireland, La Jolla, Barbados, Melbourne, Boulder, La Jolla, Ireland, MIT-Endicott, Melbourne, Eureka, Barbados, Hawaii, Ireland, New Zealand, American Samoa, La Jolla, Wengen, MIT-Endicott, Oslo, Melbourne, Barbados, Florence, Hobart, Tsukuba, Ireland, La Jolla, Grindelwald, MIT-Endicott, Samoa, La Jolla, Beijing, Melbourne, Bristol, La Jolla, Boulder, Urbino, Jeju Island, MIT-Endicott, Ascona, La Jolla, Barbados, Hawaii, Ny-Ålesund, Tasmania, Ireland, Bologna, Beijing, MIT-Endicott, Weggis, La Jolla, Dübendorf, Frankfurt, Bologna, MIT-Endicott, Bristol, and La Jolla.

Hosting institutions summary to-date – U. Bristol (14), SIO (13), CSIRO (9), MIT (7), NOAA (6), Empa (5), U. Urbino (4), NILU (2), CMA (2), Georgia Tech (1), NIES (1), SNU (1), U. Frankfurt (1).

ACTION Recurring – NOAA colleagues to confer with Hannun when scheduling their annual meeting to avoid conflicts with the spring AGAGE meetings (i.e., AGAGE71, AGAGE73, AGAGE75, etc.).

a. AGAGE71 – May/June 2025. Barbados **(Young)**

b. AGAGE72 and beyond. **(Krummel, Maoine, Ntwali, Lunder, Kennedy, Hannun, All)**
- Fall 2025 – TBD, potentially Sicily
- Spring 2026 – Cape Grim, Australia – Krummel would like to host an AGAGE meeting in concert with the 50th Anniversary of Kenaook/Cape Grim in 2026
- Fall 2026 – TBD
- Spring 2027 – Ny Ålesund – Lunder has offered to host another meeting in Ny Ålesund
- Kigali, Rwanda?
- China

17:00-17:30 10. AGAGE Ad Hoc Updates

a. Status of new updated version of AGAGE ESSD (2018) "History" paper focusing on post-2018 measurements, station status, personnel, accomplishments, and publications **(Prinn, Weiss, All)**

b. Status report from AGAGE steering committee. **(Rigby, Prinn, Weiss, All)**

18:30 Informal group gathering at The Shore Rider. Appetizers will be provided. Drinks and dinner will be available for purchase.

Thursday, 5 December 2024

Morning Session Moderator – TBD

09:00-10:30 12. Scientific results from AGAGE and Cooperating Networks

Time allotments for talks are listed as 20 minutes (15 + 5); 15 minutes (12 + 3); or 10 minutes (8 + 2). When requesting a talk, please specify the amount of time needed.

a. Talks TBD

10:30-11:00 Morning Coffee Break

11:00-13:00 12. Scientific results from AGAGE and Cooperating Networks (continued)

b. Talks TBD

13:00-14:00 Lunch

Afternoon Session Moderator – TBD

14:00-15:30 12. Scientific results from AGAGE and Cooperating Networks (continued)

c. Talks TBD

15:30-16:00 Afternoon Coffee Break

16:00-17:30 13. New and potentially new AGAGE instrumentation, species, and stations

a. Brief review of non-Medusa and non-optical instruments. Progress report on CSIRO using an accurate QTOFMS instrument. **(Mitrevski, Krummel, Vollmer, Salameh)**

b. Brief report on Empa's and METAS' progress on the APRECON-GC-quadMS (METAS) and APRECON-GC-TOF-MS (Empa). **(Schlauri, Vollmer, Reimann)**

c. Update on commercialization plans and proposals/projects with industry (traps, Medusa, GC-TOF-MS). **(Vollmer, Young, Weiss, Lerner, Salameh, Mühle)**

d. An introduction to the new Chinese National Key R&D Project and the instrument development **(Yao, Yu, Xu, et al)**

e. New sampling and in-situ measurement sites in Himalayan region, including Medog Station on the southern slope of the Himalayas and Qomolangma Station **(Wu, Yao)**

f. New measurements from Hanimaadhoo and Bhola Island. **(Ganesan, O'Doherty, Young)**

Friday, 6 December 2024

Morning Session Moderator – TBD

09:00-10:30 16. AGAGE Optical Instruments

a. Optical data review, including core AGAGE sites and select sites within the regional networks, with a focus on background concentrations within each of the regional networks and instrumental diagnostic parameters. **(Kim, Pitt, Stanley)**

ACTION Krummel to distribute the CSIRO CRDS data-flagging document to the Optical Working Group members.

b. Discussion of recent optical instrument issues that are pertinent to the network. **(Kim, Stanley, Krummel, Salameh, Pitt)**

c. Discussion of optical calibration methods. **(Stavert, Kim, Weiss, Andrews, Crotwell, Young, O'Doherty, others)**

d. Discussion of alternative/emerging optical instruments, including recent test results. **(Kim, others)**

10:30-11:00 Morning Coffee Break

11:00-12:00 14. Brief update on data archival

a. Report on ALE/GAGE data now available on ESS-DIVE for public access: Timetable for CO updates? Table of Medusa compound status and tiers. Independent AGAGE data archive. A proposed AGAGE observational data archive format. **(Wang, Krummel, Mühle, Prinn, Weiss, Salameh, Jucks, Manning, Rigby, Fraser, O'Doherty)**

b. Georgia Tech (Shadow) and SIO systems for team data access: AGAGE data available through April 2023? Status of AGAGE ftp site (ftp://shadow.eas.gatech.edu/pub/outgoing/agage/)? **(Wang, Salameh)**

c. Japanese World Data Center: Consistency with ESS-DIVE? Updating problems? **(Wang)**

ACTION Recurring – Wang to check AGAGE data on WDCGG to make sure that it is consistent with the AGAGE web site.

d. AGAGE data (including optical data) in NetCDF format for AGAGE and ESS-DIVE websites. **(Rigby, Wang)**

e. Archival of air archive data. Plans for firn data. **(Adam, Wang, Rigby)**

12:00-12:30 19. Appreciation, Acknowledgments, and Awards. Meeting adjourned. **(Prinn, Weiss, Hannun, others)**

Workshops

SIO plans to host several optional workshops for attendees on Friday afternoon and Saturday. Locations and times will be provided in a future version of the agenda.

Friday, 6 December 2024

Time TBA Optical Instruments – *Location TBD*

14:00-17:00 Calibrations – *Location TBD*

Saturday, 7 December 2024

09:00-12:00 GCWerks – *Location TBD*

12:00-14:00 Lunch (not provided)

14:00-17:00 Instruments – *Location TBD*

Remote Access Information

If you will be presenting, check to ensure your sharing permissions are set correctly using Webex's test meeting site:
https://www.webex.com/test-meeting.html (Note that on MacOS you must enable System Preferences/Privacy/Screen Recording for Webex and restart Webex for change to take effect.)

Please sign in to the meeting with your full name (first and last names).

Join from the meeting link:
Link TBD

Join by meeting number:
Meeting number (access code):
Meeting password:

Join from a mobile device (attendees only / no speakers):
Call-in toll number (US/Canada):

Join by phone:
Call-in toll number (US/Canada):
Global call-in numbers:

Tip: Webex can call you. Log in to the meeting and for Audio option using carat next to the mute/unmute button select: "Call me at." Enter your phone number and WebEx will call you.

Need help? Go to https://help.webex.com/

IMPORTANT NOTICE: This Webex service includes a feature that allows audio and any documents and other materials exchanged or viewed during the session to be recorded. By joining this session, you automatically consent to such recordings. If you do not consent to the recording, discuss your concerns with the meeting host prior to the start of the recording or do not join the session. Please note that any such recordings may be subject to discovery in the event of litigation.