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NA4 Data Assurance Halocarbon Measurements

Aims and Progress

Overview WP4/NA4

* To Establish a calibration matrix that relates the calibration scales of each laboratory to one another. This will enable the creation of an integrated, European halocarbon database

* To Establish a quality assurance system for European halocarbons measurements with a calibration standard center and a system of routinely comparing secondary(tertiary) and working(quaternary) standards with the primary AGAGE calibration scales maintained by Scripps Institution of Oceanography (SIO).

* To integrate and harmonise trace gas measurements in Europe, with the result of having a sustainable and reliable observation network for highly time-resolved data across Europe.

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Progress and outlook WP4/NA4

* Calibration standards with a common calibration scale are in use at a number of halocarbon measurement facilities

  University of Bristol (UK), Mace Head (Ireland), Empa (Switzerland), NILU (Norway), University of Urbino (Italy), University of Frankfurt (Germany), University of Krakow (Poland), NUIG (Ireland), Zugspitze (Germany).

* A round-robin set of calibration standards is currently in progress …**problems** ☹

* Halocarbon Data are present on EBAS (Mace Head, Mt. Cimone, Zeppelin, Jungfraujoch). Data through to 31 October 2014. Next 6-month update in Dec 2015

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Deliverables & Milestones

- **D4.1, 4.2, 4.6, 4.9** Stainless steel canister as tertiary calibration standards for halocarbons (month 6, 26, 41)

- **D4.3, 4.4, 4.7, D4.10** Round-robin intercomparison with an ensemble of 4 standards with different concentrations (month 11, 12, 27, 42)

- **D4.5** Recommendations for good practice in halocarbon measurements (month 12)

- **D4.8, 4.11, 4.12** Internally consistent data set **of halocarbon measurements** (month 27, 44, 48)

- **MS13** Delivery of calibration cylinders (month 3)

- **MS14** First filling of calibration cylinders (month 4)

- **MS15, 16, 22** Analysis of calibration standards (month 6,12, 41)

- **MS17, 20, 23** Completion of round-robin comparisons (month 12, 27, 42)

- MS18 Good practice documentation (month 12)

- **MS19, 21, 24:** Calibration results posted to central database (month 12, 27, 44)

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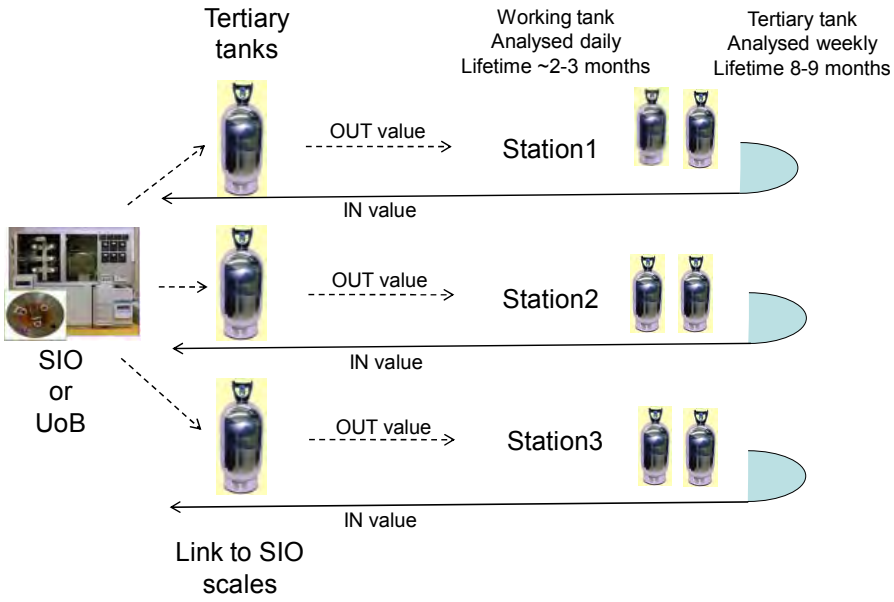
WP4 Data Assurance Halocarbon Measurements

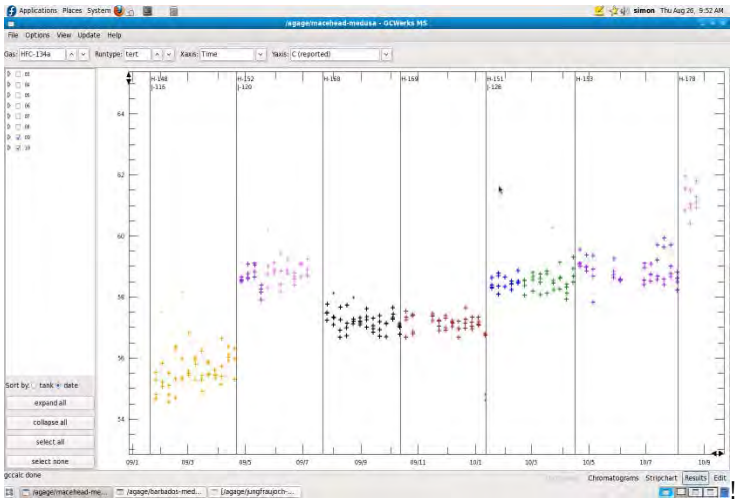
Scientific Highlights

Scientific highlights WP4

Halocarbon Calibration



Species	Scale	Species	Scale
SF_6	SIO-05	**CFC-11**	SIO-05
CF_4	SIO-05	**CFC-12**	SIO-05
C_2F_6	SIO-07	**CFC-13**	SIO-UB-p
C_3F_8	SIO-07	**CFC-113**	SIO-05
c-C_4F_8	SIO-10-p	**CFC-114**	SIO-05
HFC-23	SIO-07	**CFC-115**	SIO-05
HFC-32	SIO-07	**H-1211**	SIO-05
HFC-134a	SIO-05	**H-1301**	SIO-05
HFC-152a	SIO-05	**H-2402**	NOAA-1992-p
HFC-125	UB-98	**CH_3Cl**	SIO-05
HFC-143a	SIO-07	**CH_3Br**	SIO-05
HFC-227ea	Empa-2005	**CH_3I**	NOAA-Dec09
HFC-236fa	Empa-2009-p	**CH_2Cl_2**	UB-98
HFC-43-10mee	SIO-10-p	**CH_2Br_2**	NOAA-Jul10-p
HFC-365mfc	Empa-2003	**$CHCl_3$**	SIO-98
HFC-245fa	Empa-2005	**$CHBr_3$**	NOAA-Dec09-p
HCFC-22	SIO-05	**CCl_4**	SIO-05
HCFC-141b	SIO-05	**CH_3CCl_3**	SIO-05
HCFC-142b	SIO-05	**$CHCl=CCl_2$**	UB-98
HCFC-124	NOAA-2003B	**$CCl_2=CCl_2$**	NOAA-2003B
HCFC-123	-		



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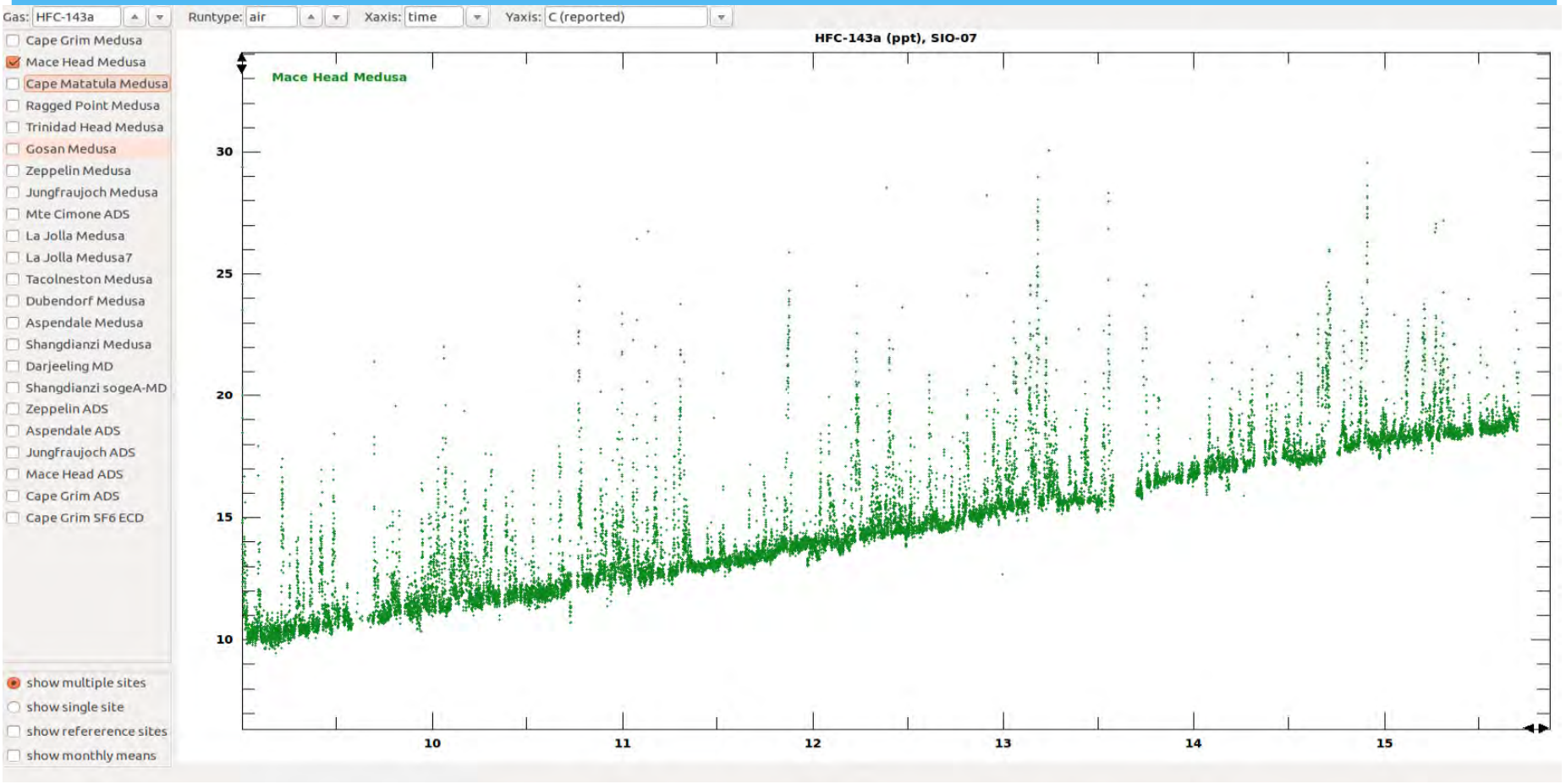
HFC-143a at MHD



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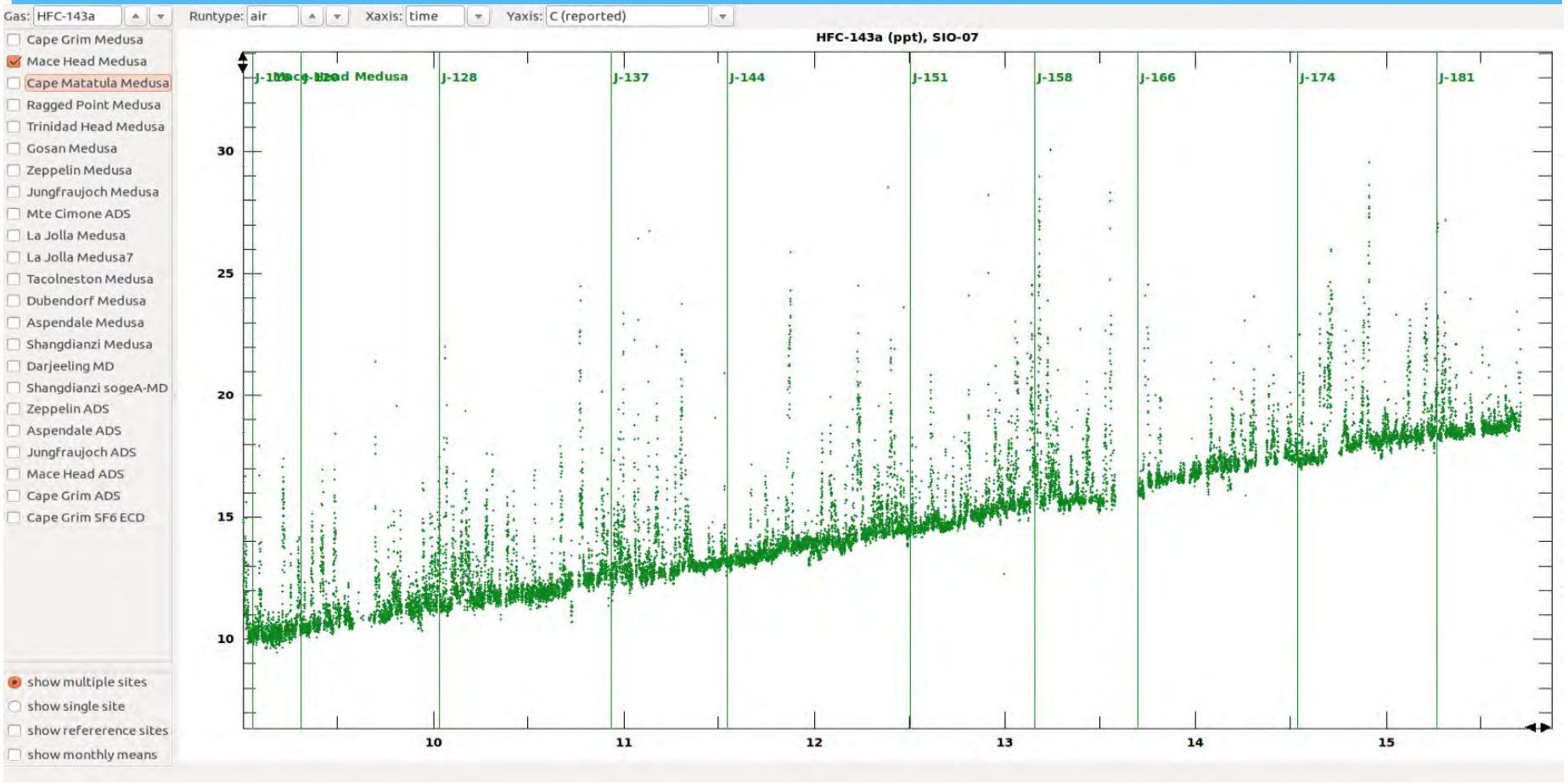
HFC-143a at MHD



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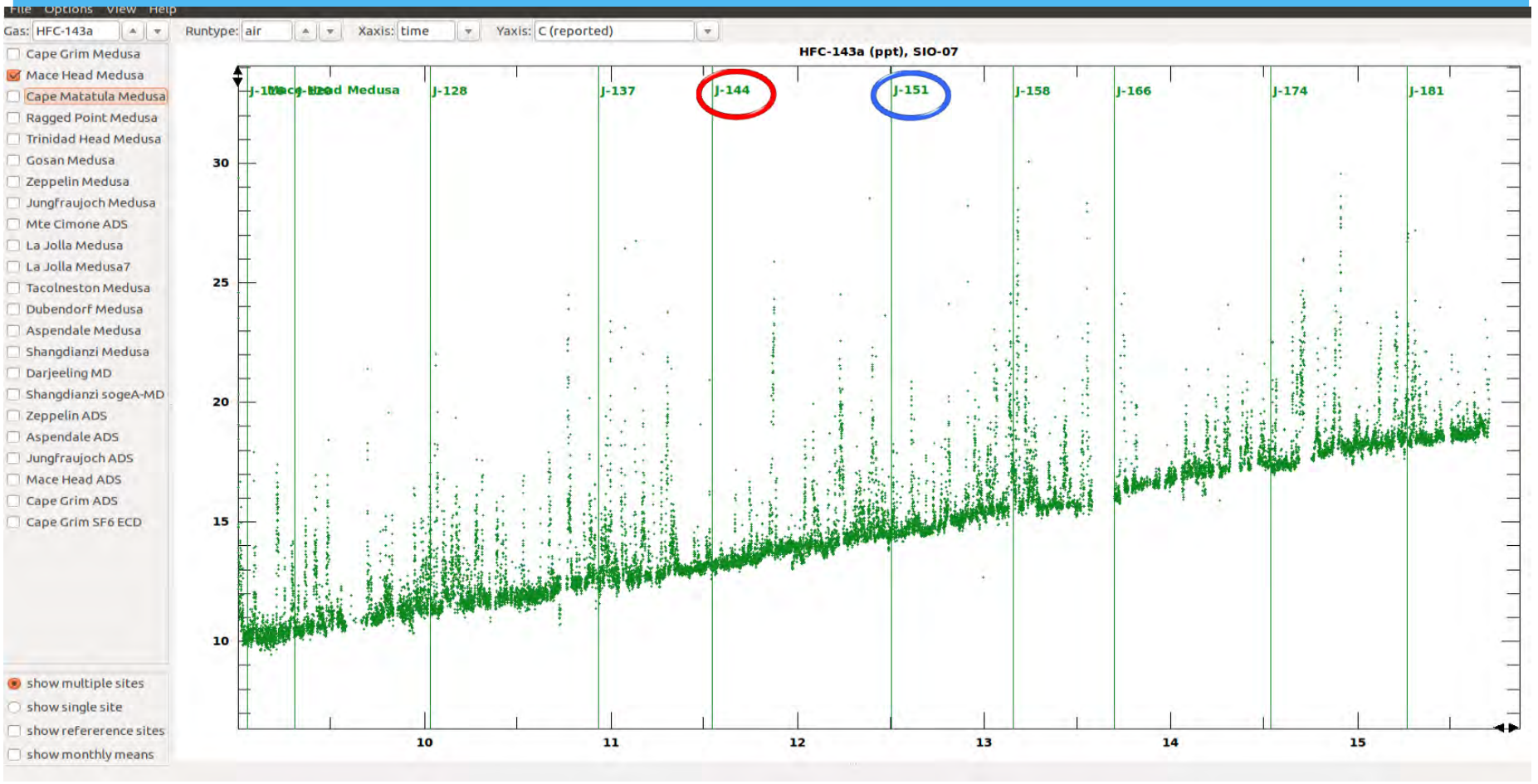
HFC-143a at MHD



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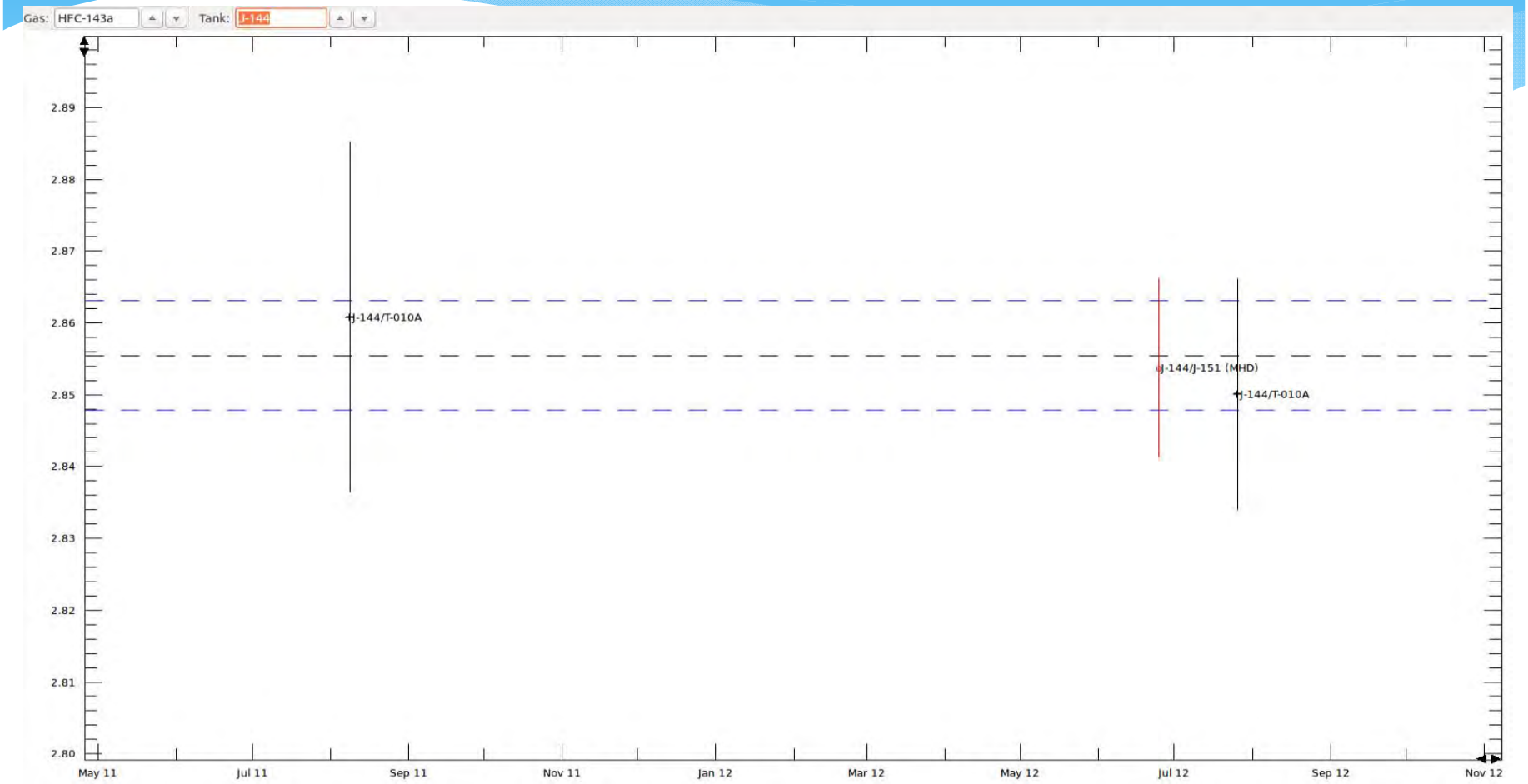
HFC-143a at MHD



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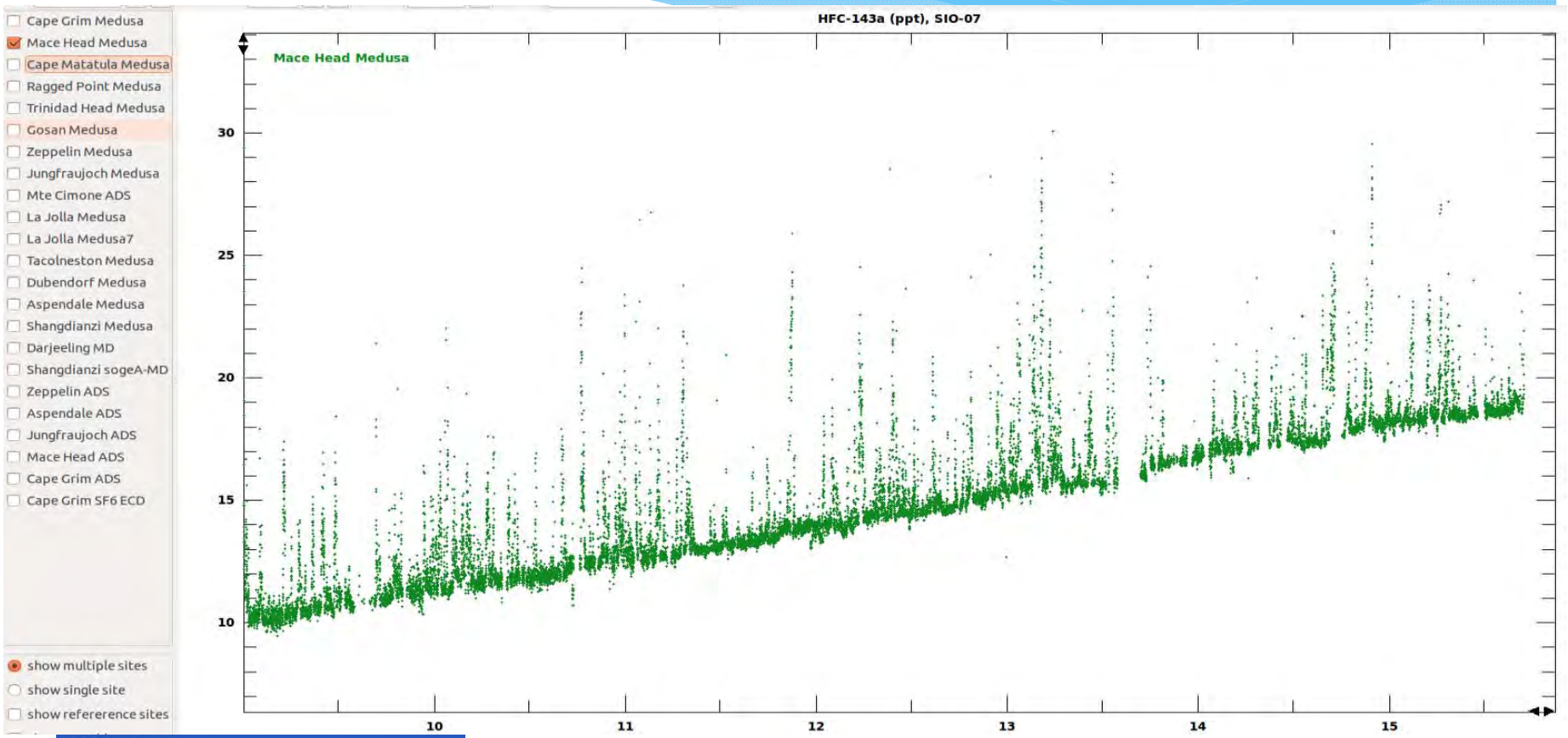
HFC-143a at MHD



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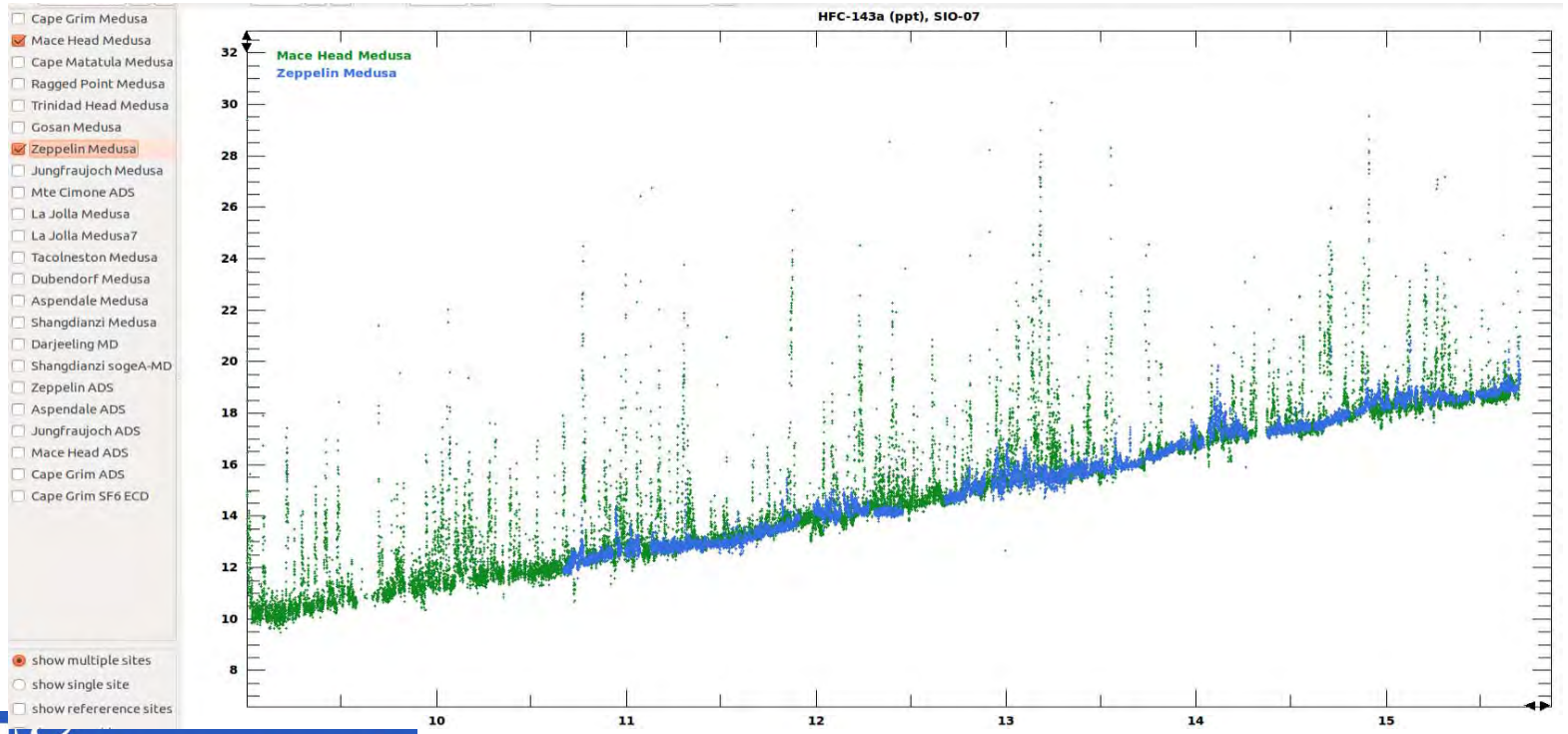
HFC-143a at MHD, ZEP



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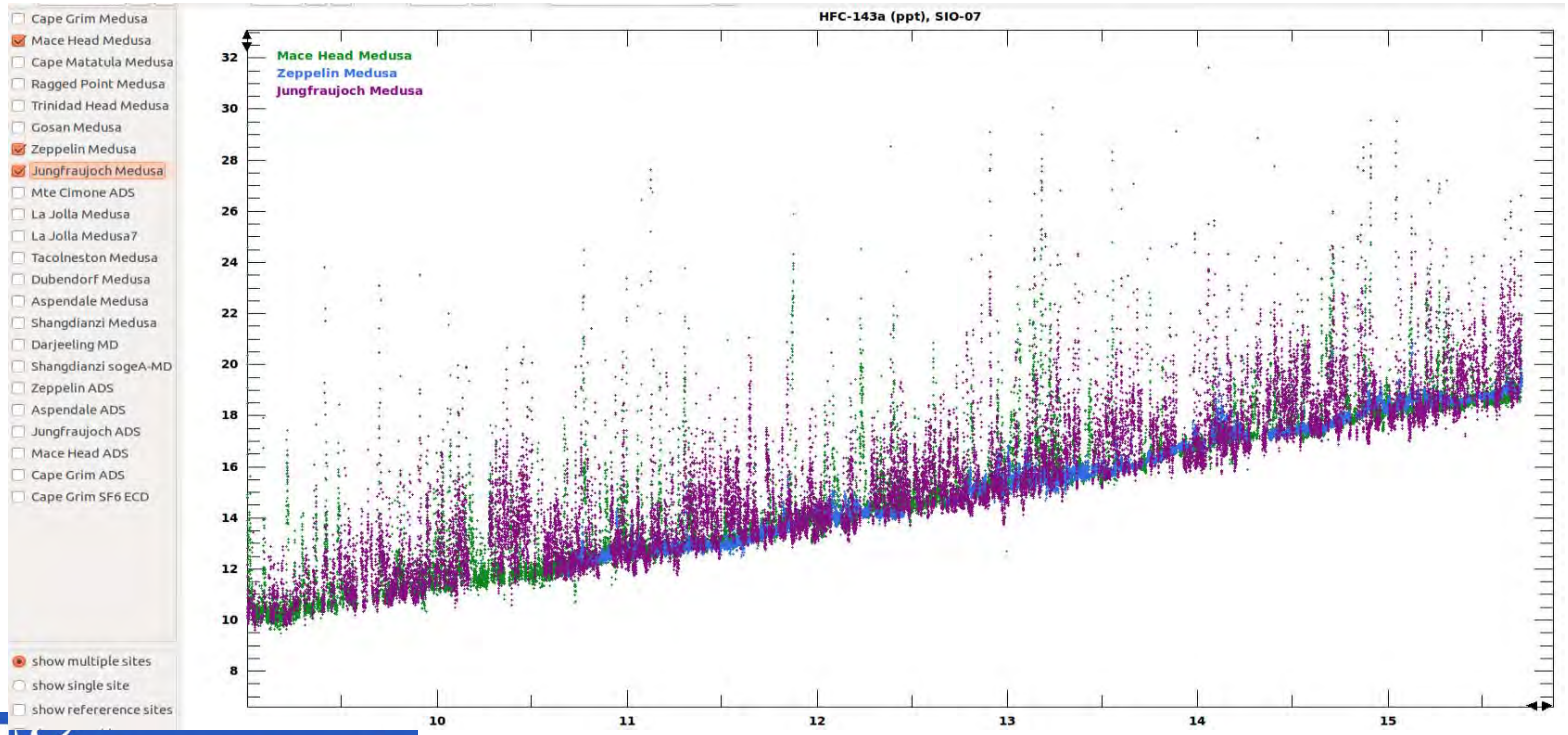
HFC-143a at MHD, ZEP, JFJ



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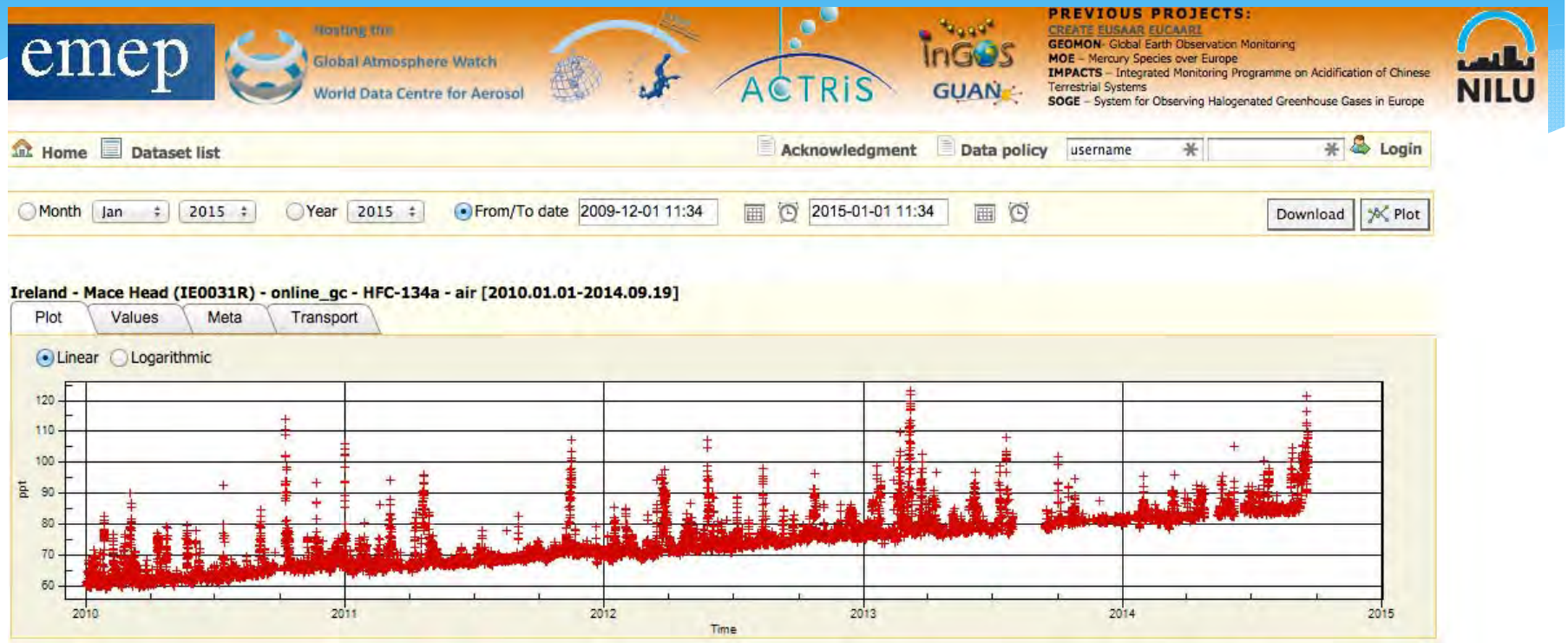
Halocarbon data via Ebas



http://ebas.nilu.no

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InGOS

Good Practice Guide

In situ measurements

- Temperature control, air inlet

Flask Sampling

- Sampling protocols, logistics

Filling Standards

- Cylinders, evacuation & conditioning
- Water vapour, sample filling
- Testing/certification

Analysing Tanks

- Fittings, regulators, repetitions,
- Keeping records