Invitation to participate in PREDICT

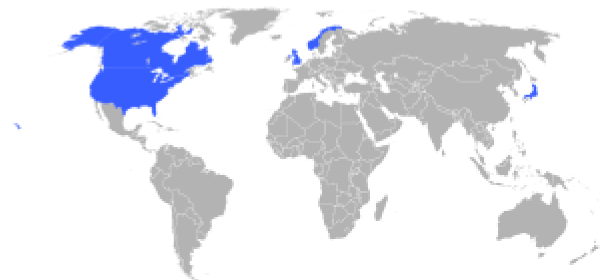
Time: 13 (lunch) to 15 (lunch) of November, 2013
Venue: Oslo Science Park, Oslo, Norway

PREDICT is a new climate model intercomparison initiative, and will be launched in Oslo in November. The project will be initiated jointly with the kick-off meeting for the Norwegian Research Council project NAPEX (Natural and Anthropogenic influence on Precipitation and EXtreme events).

In PREDICT a number of different climate models will be used to explore whether differences in precipitation at present and future projections can be linked to differences in forcing mechanisms. The fact that various climate forcers (e.g., CO_2, BC, sulphate) have different influences on precipitation was explored in e.g., Andrews et al. (2010), Kvalevåg et al. (2013) and Ming et al. (2010). We will build upon these studies and seek to understand more of the differences in precipitation and extreme precipitation in the climate models, e.g., by the use of idealized experiments where the input data of each model will be nearly identical.

Registration deadline: **November 1st.**
Register at: http://cicero.uio.no/NAPEX

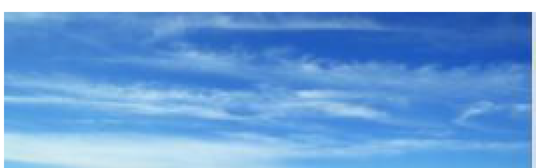
PREDICT
PREcipitation Driver Intercomparison projeCT



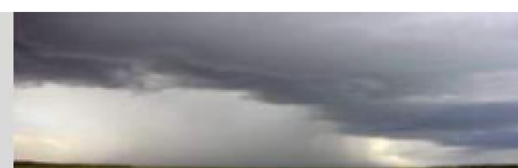
Confirmed participating models:

- National Center for Atmospheric Research (NCAR) Community Earth System Model CESM1
- Hadley Center Climate Model HadGEM2
- Goddard Institute for Space Studies (GISS) ModelE
- SPRINTARS

Participants and collaborators of NAPEX:
Dr. Gunnar Myhre, Dr. Bjørn H. Samset, Dr. Øivind Hodnebrog and Dr. Jana Sillmann (CICERO, Norway), Prof. Piers M. Forster (University of Leeds, UK), Dr. Drew T. Shindell (NASA GISS, USA), Dr. Toshihiko Takemura (Kyushu University, Japan), Dr. Jimy Dudhia (NCAR, USA), Dr. Olivier Boucher (CNRS, France), Dr. Francis Zwiers (CCCma, Canada), Dr. Slava Kharin (CCCma, Canada), Dr. Jean-François Lamarque (NCAR, USA)



NAPEX
Natural and Anthropogenic influence on Precipitation and EXtreme events



Sponsored by the Research Council of Norway

Black carbon concentrations and radiative forcing:

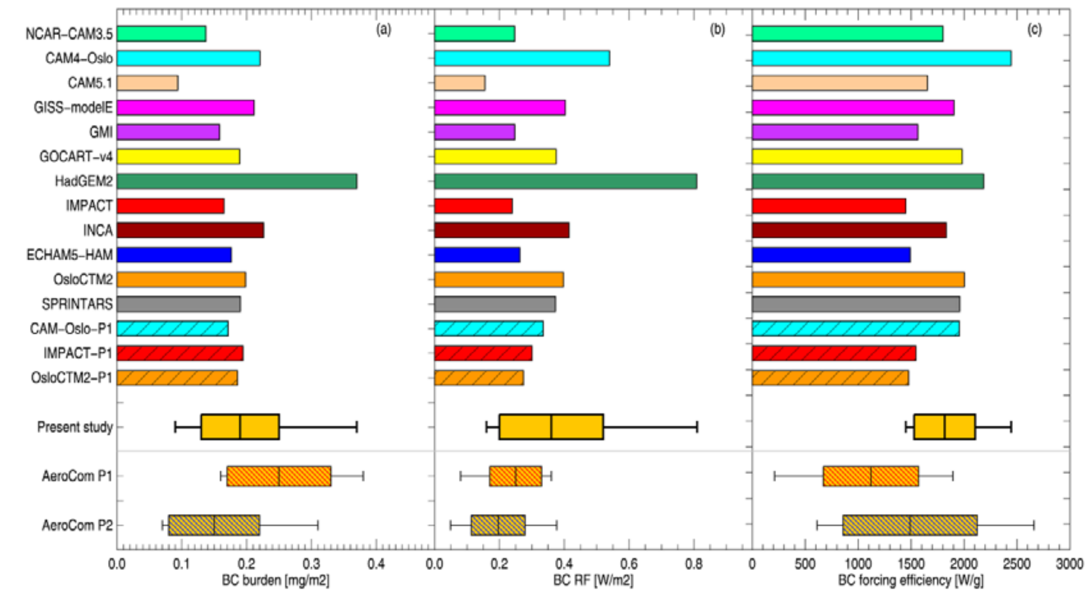
A comparison of vertical profiles from flight campaigns with AeroCom Phase 2

AeroCom, Hamburg, September 2013

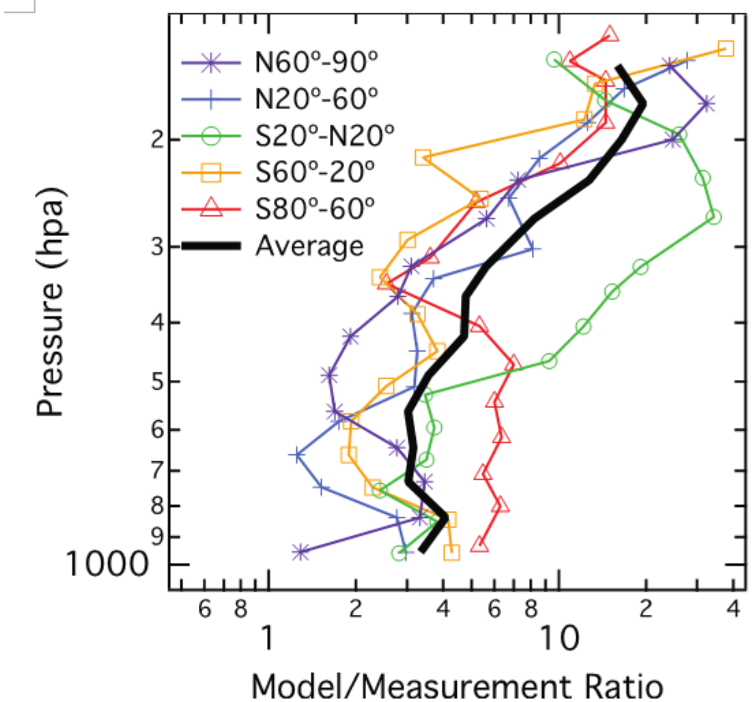
Bjørn H. Samset, Gunnar Myhre
Flight data via S. Schwarz, N. Oshima, Y. Kondo, A. Herber
Model data from various AeroCom modellers

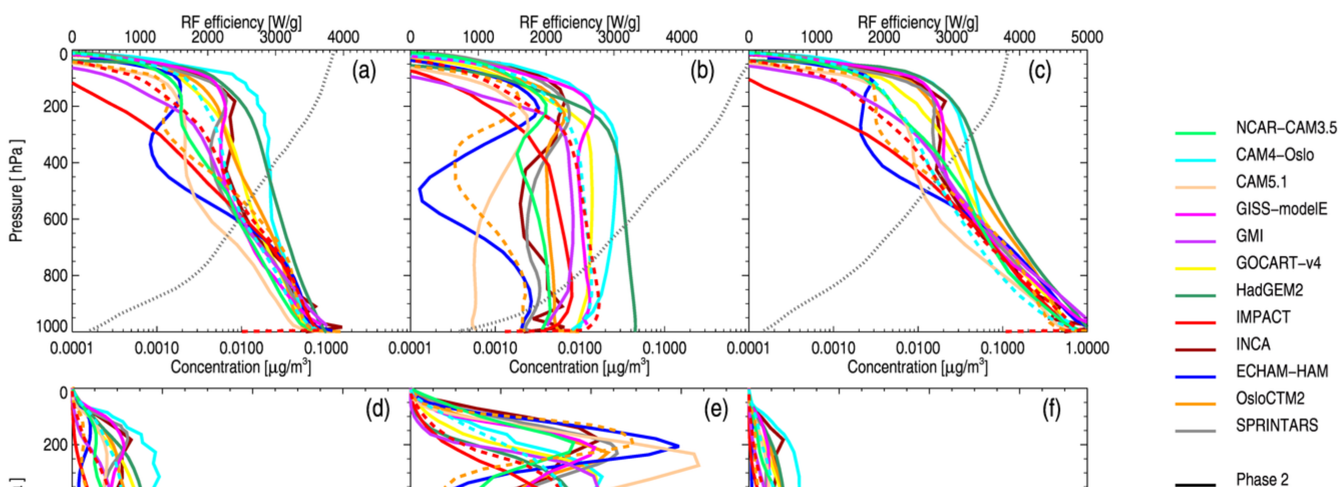
Motivation

Samset et al., ACP, 2013



Schwarz et al., GRL, almost accepted.





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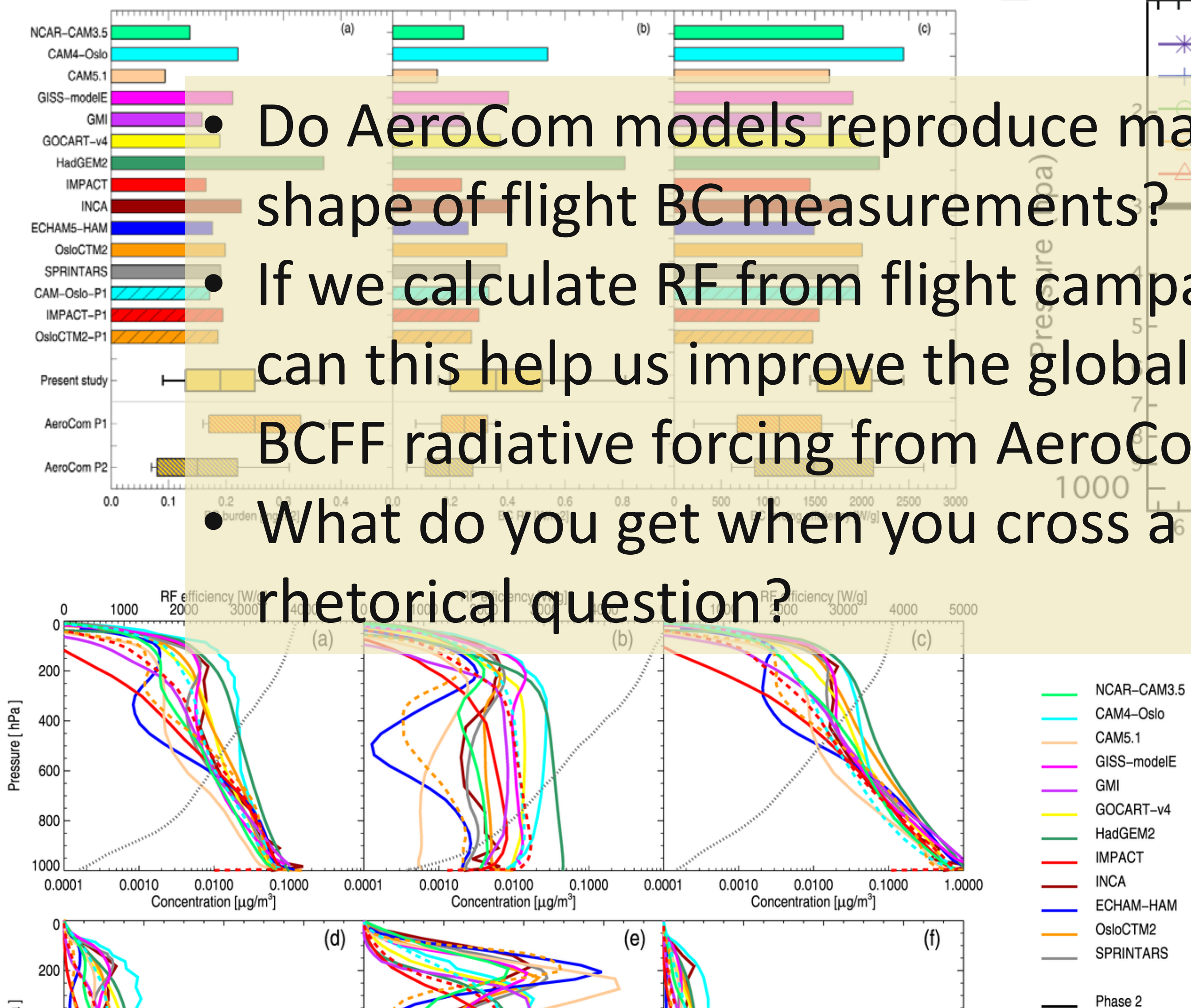
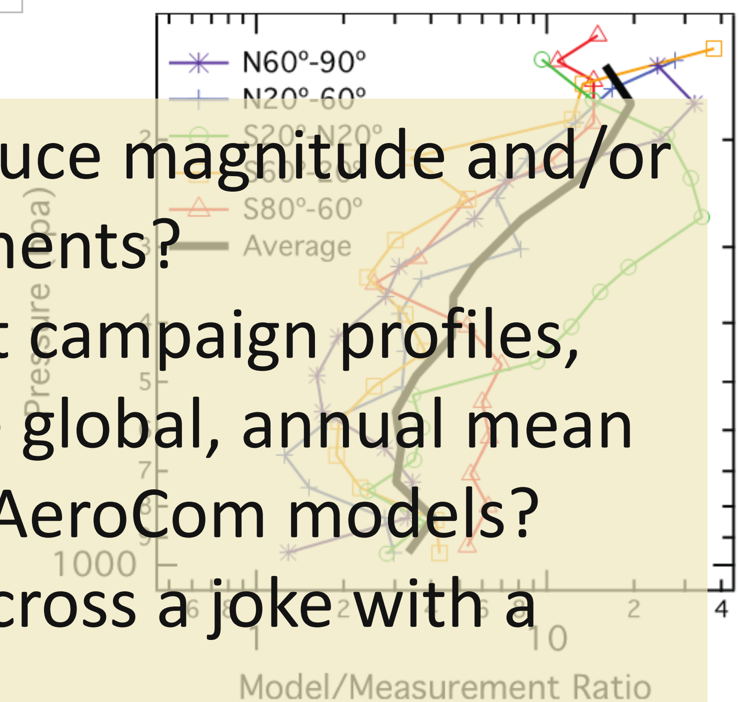
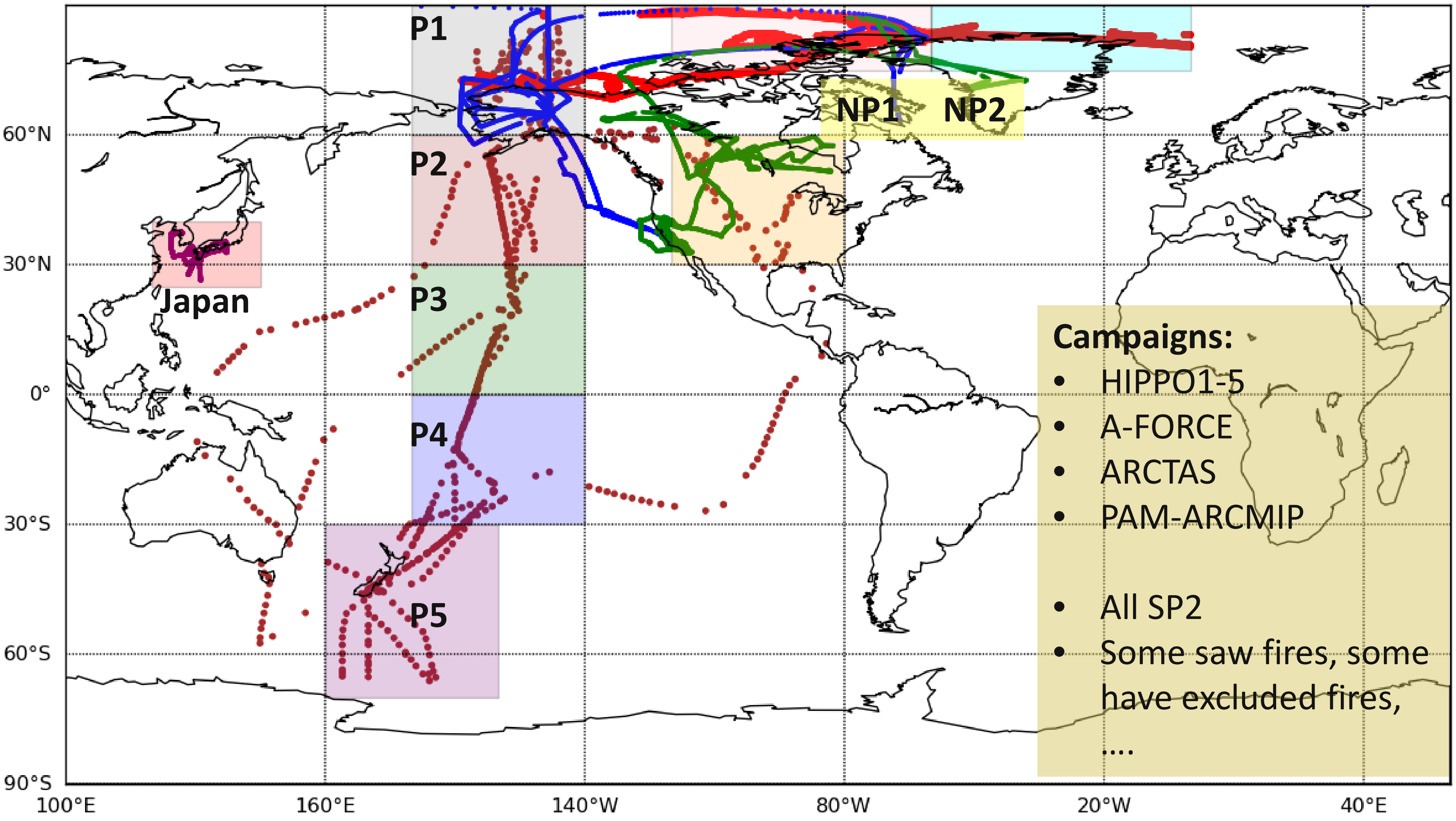


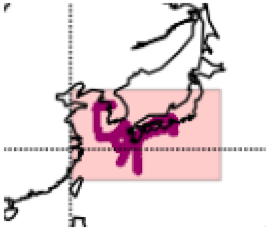


- Do AeroCom models reproduce magnitude and/or shape of flight BC measurements?
- If we calculate RF from flight campaign profiles, can this help us improve the global, annual mean BCFF radiative forcing from AeroCom models?
- What do you get when you cross a joke with a rhetorical question?

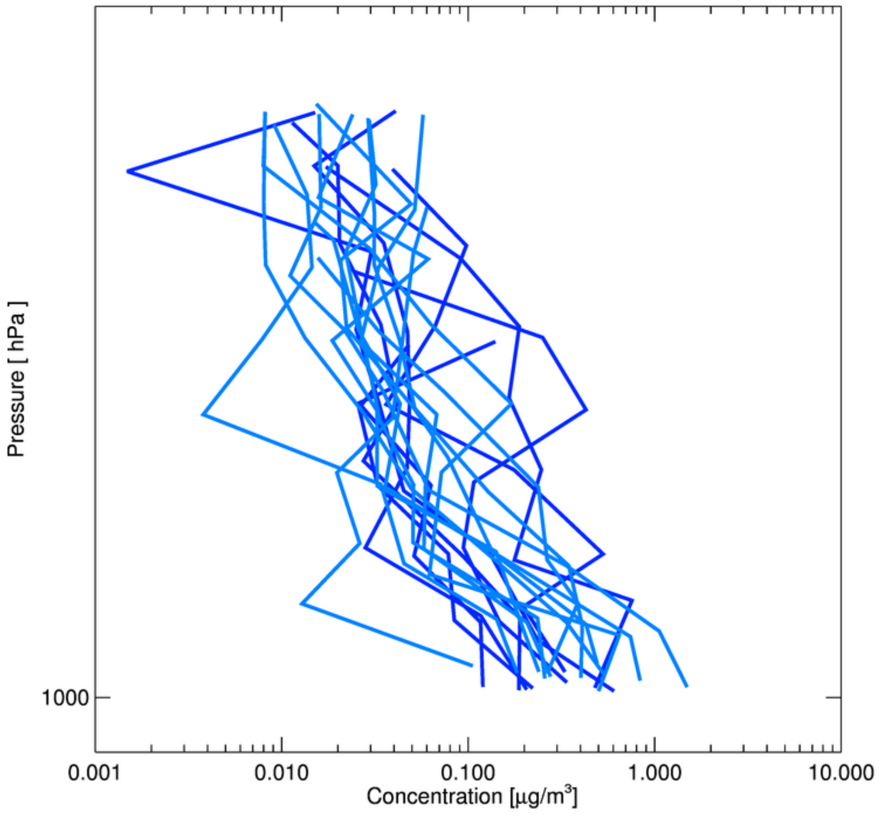
Regions, campaigns, flight paths

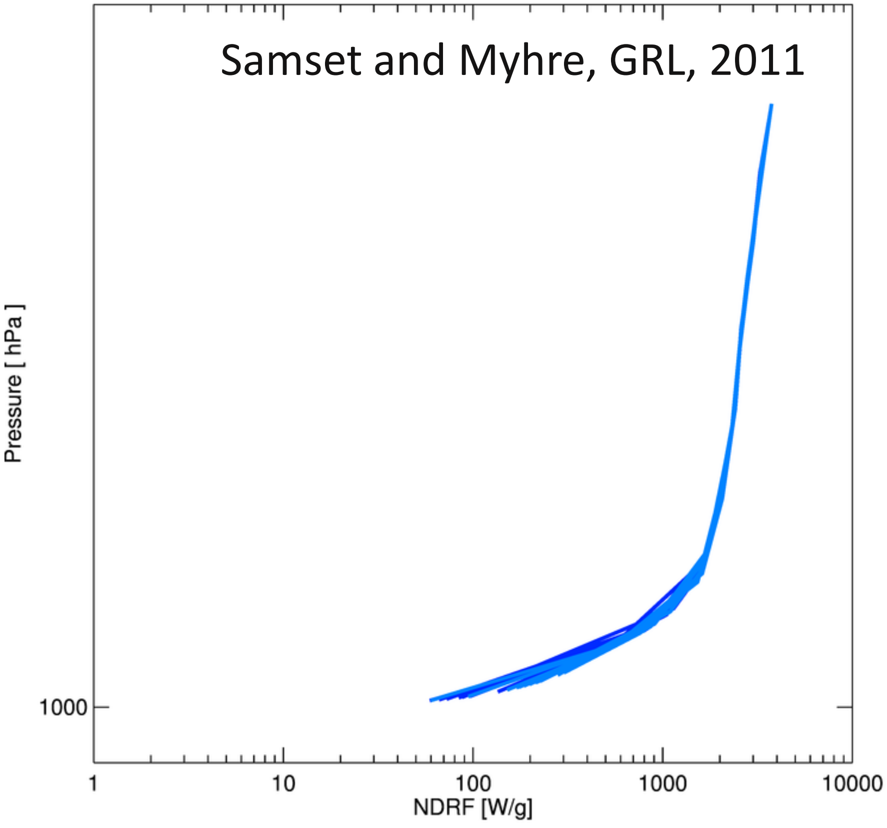
(NB: Regions P5 and NP2 are not fully analysed)

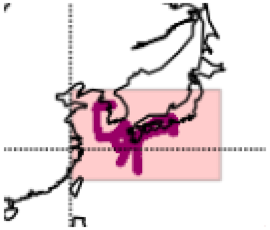




Japan: A-FORCE







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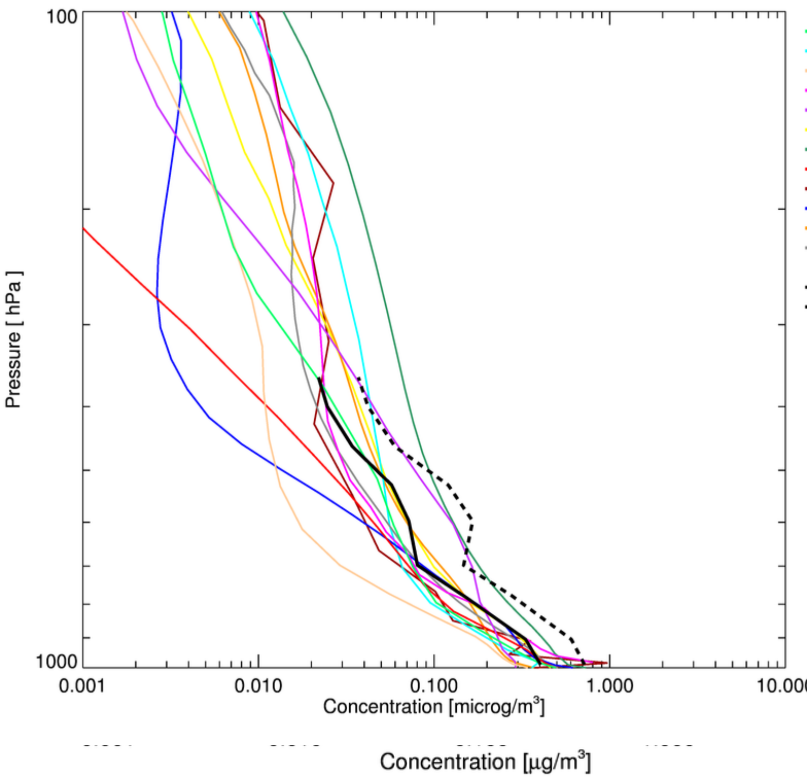

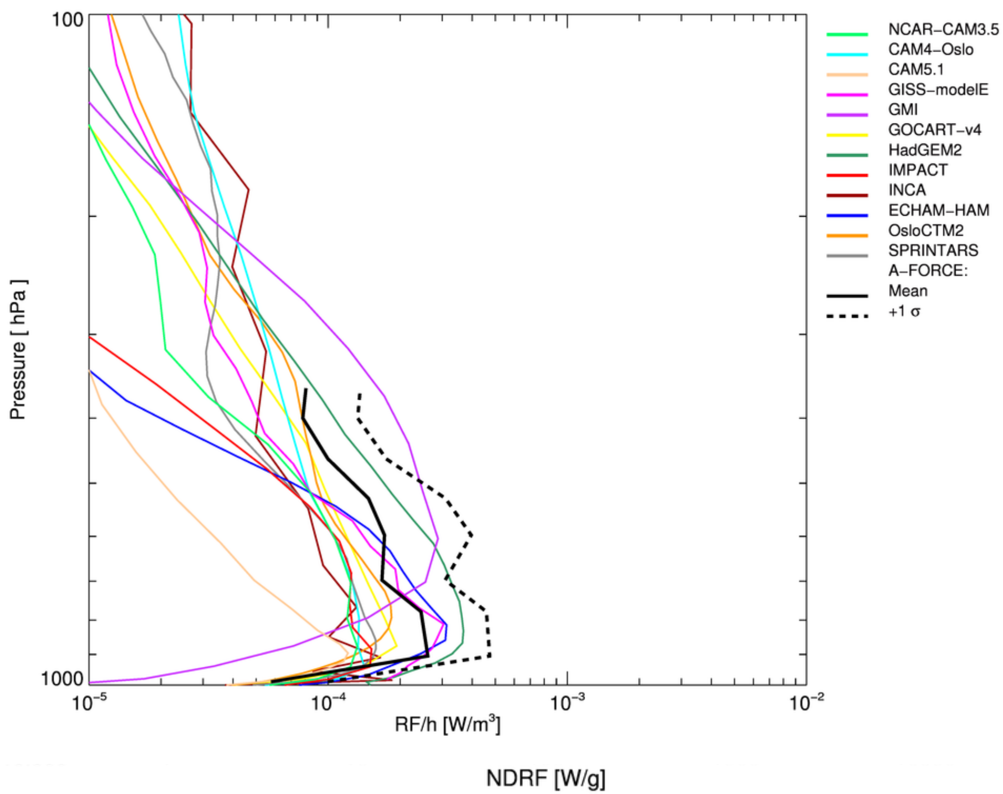

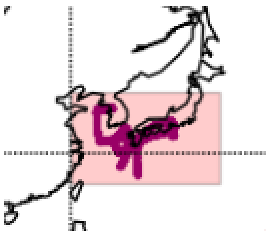

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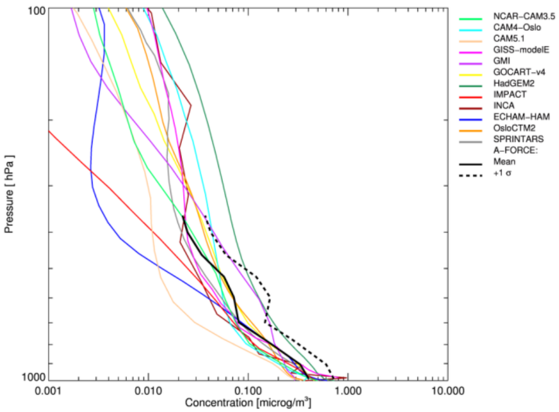
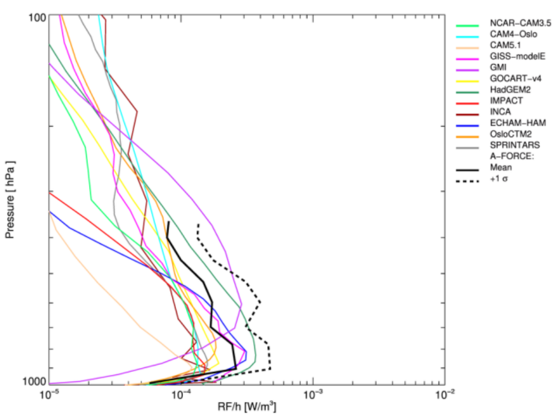
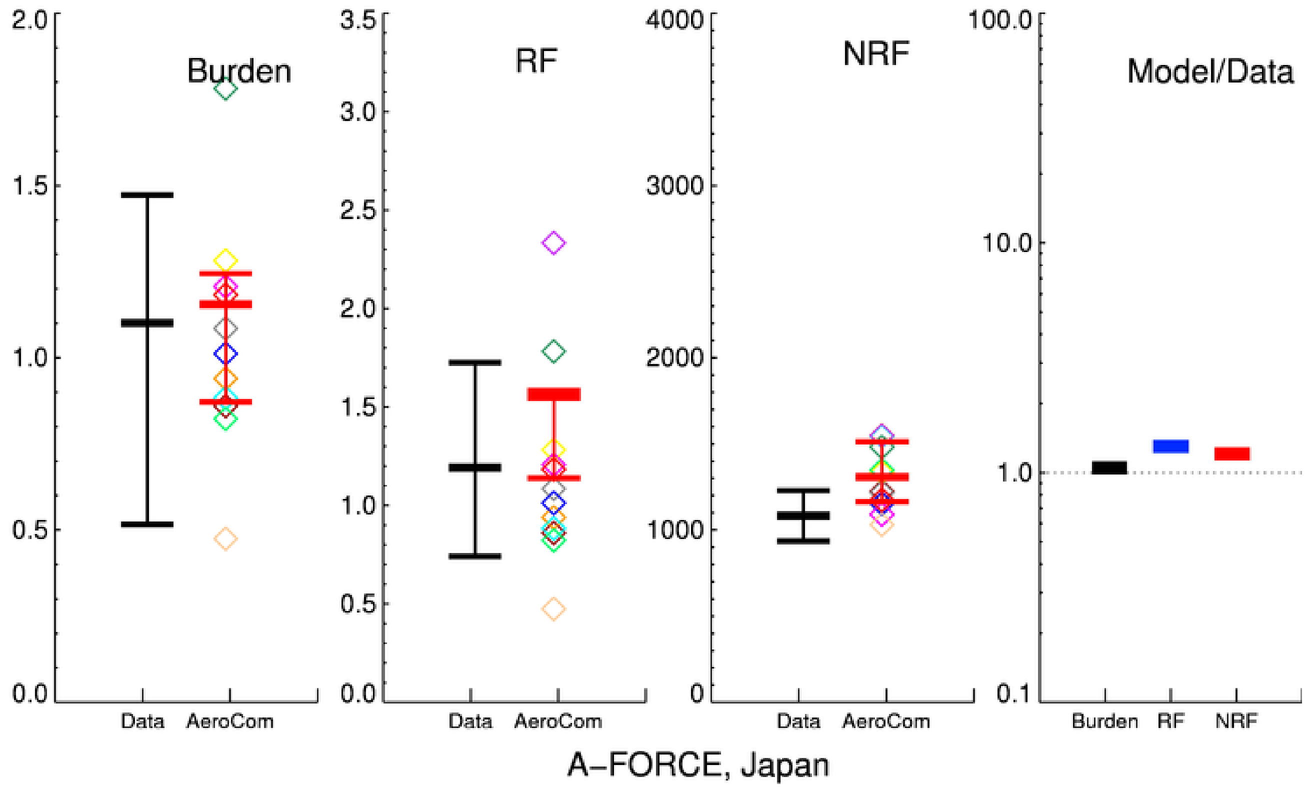
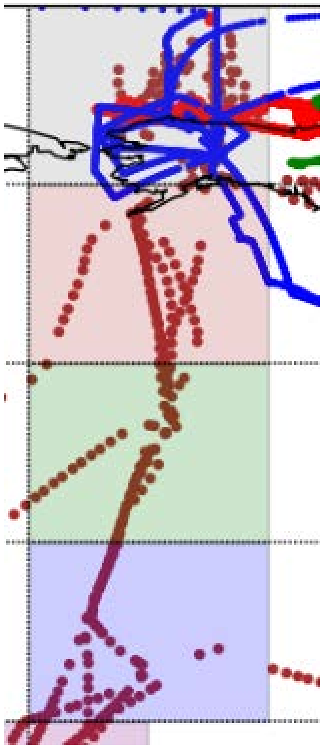


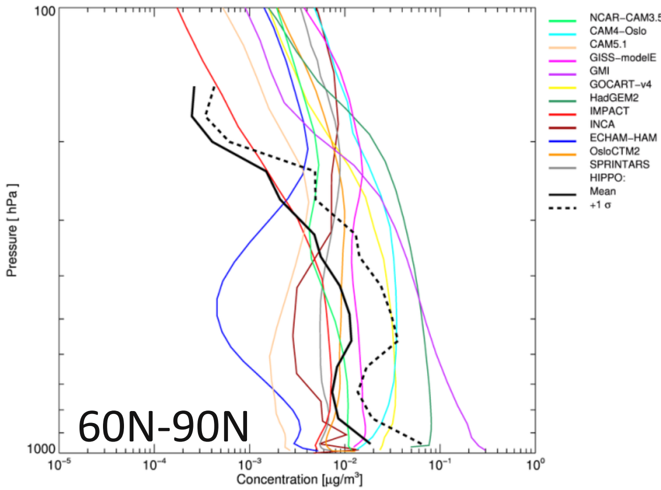


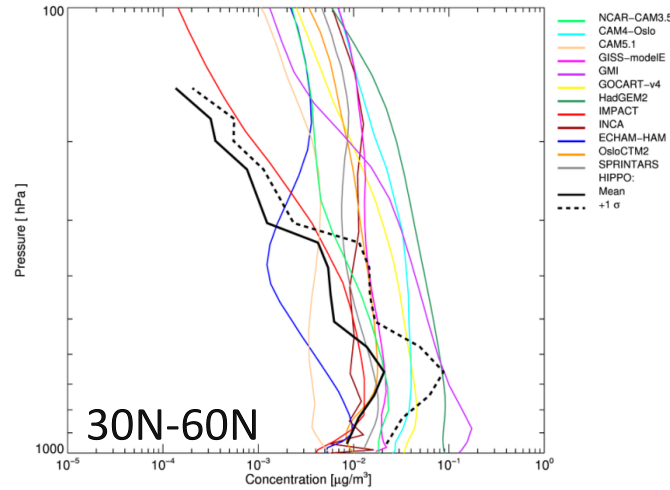


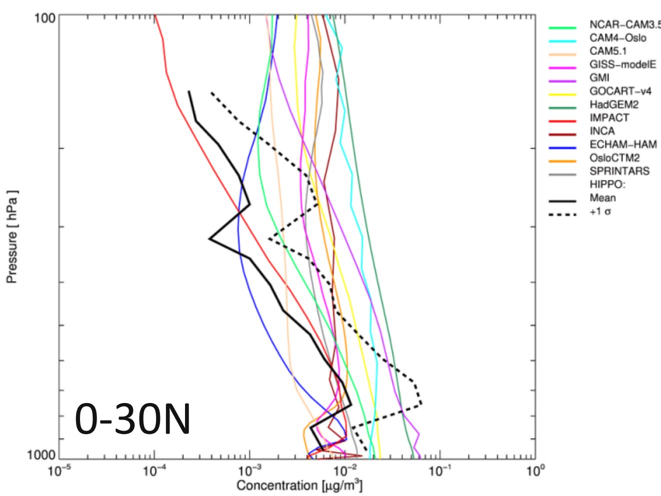
[mg/m2] [W/m2] [W/g] [1]

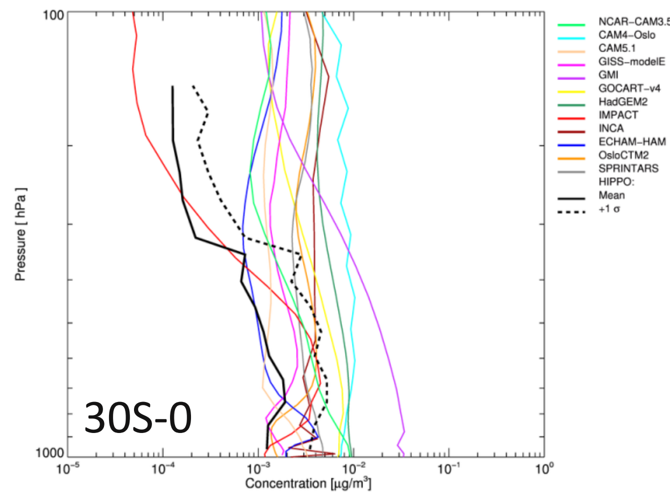
HIPPO 1-5 average



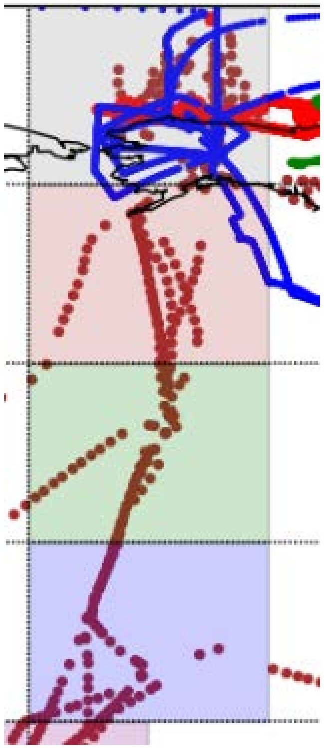


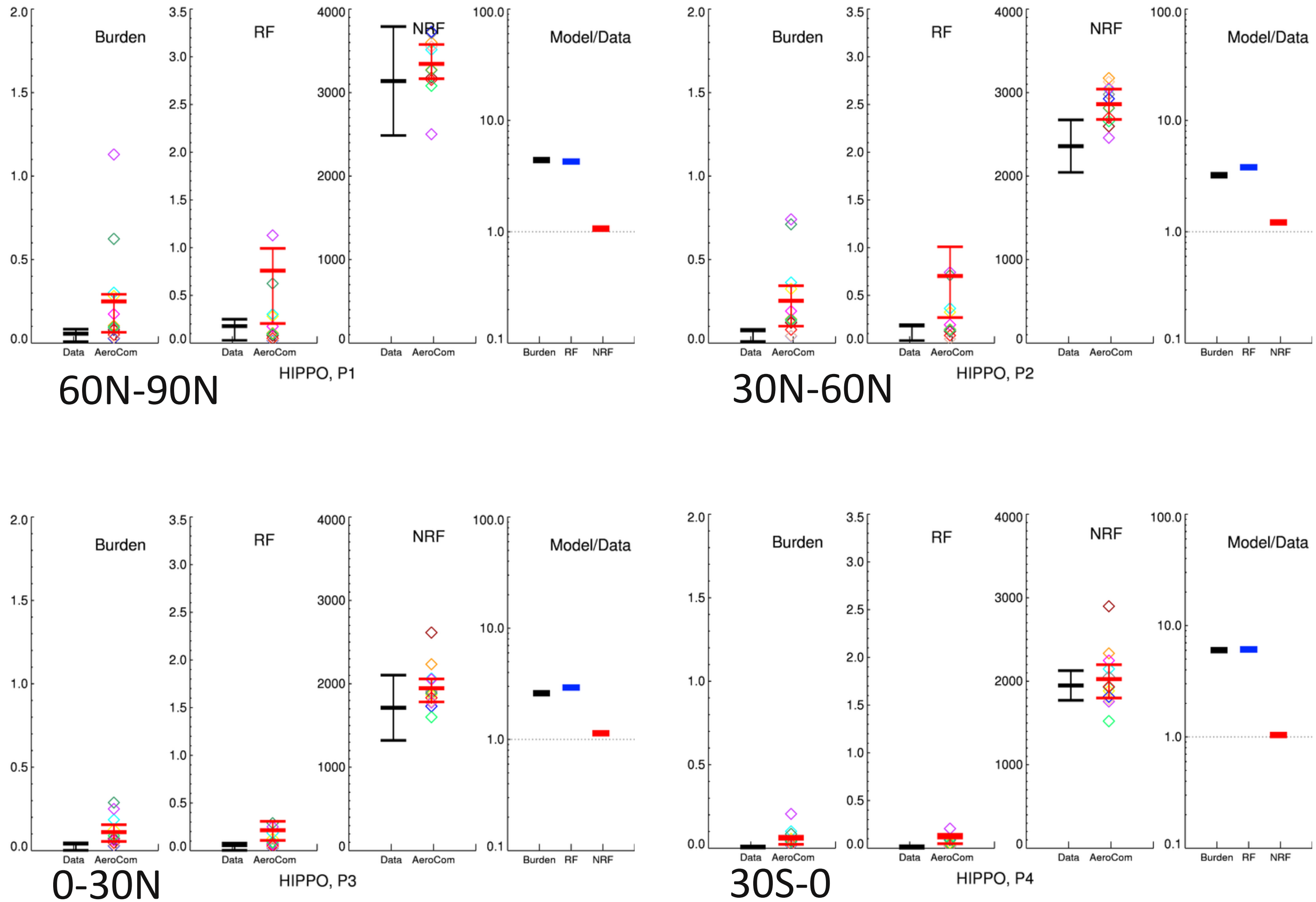




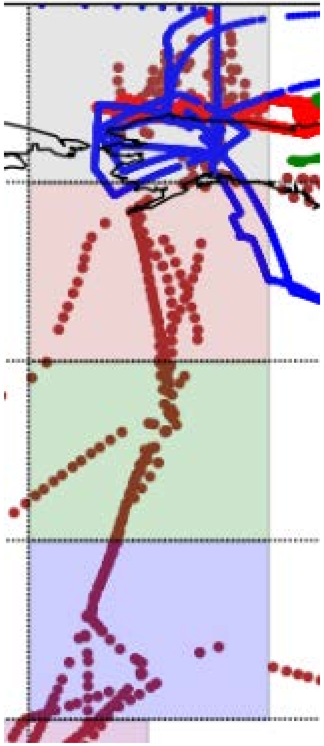


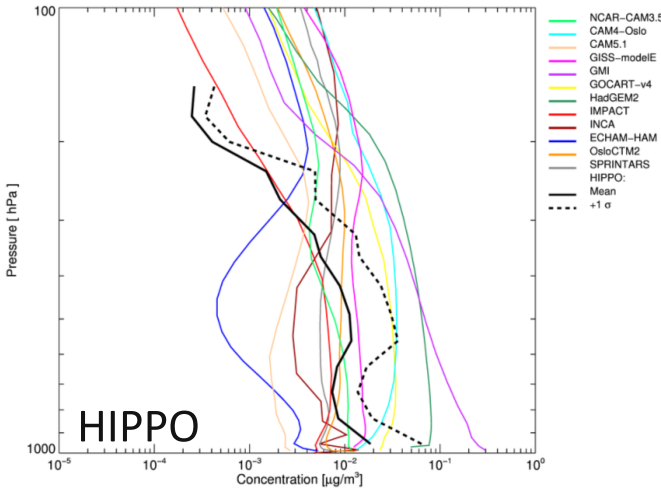
HIPPO 1-5 average

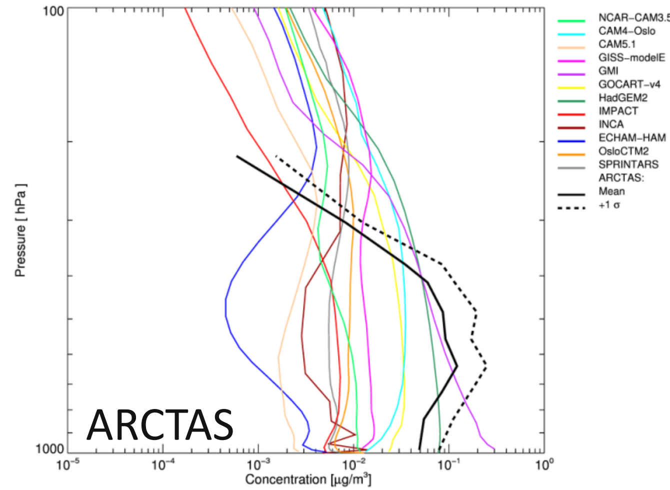


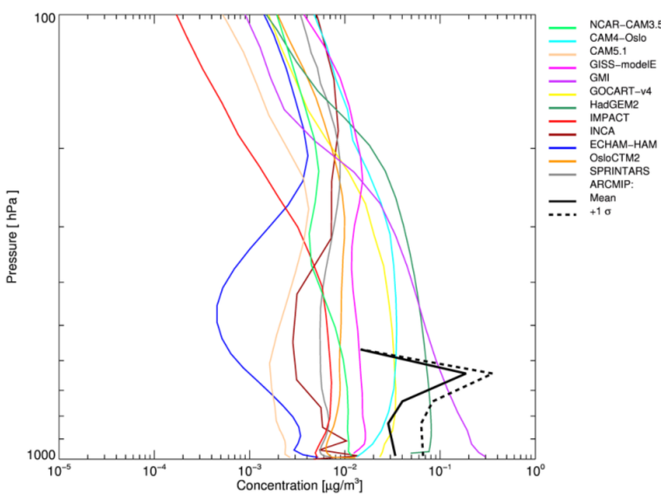


60N-90N, three campaigns

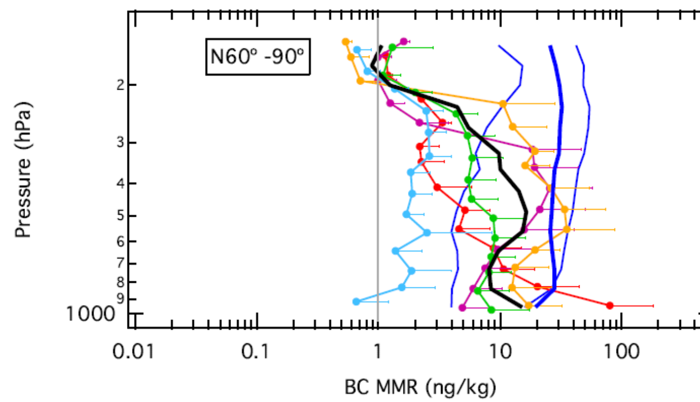




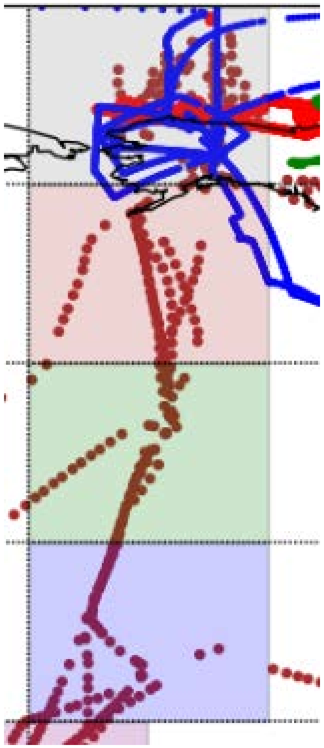


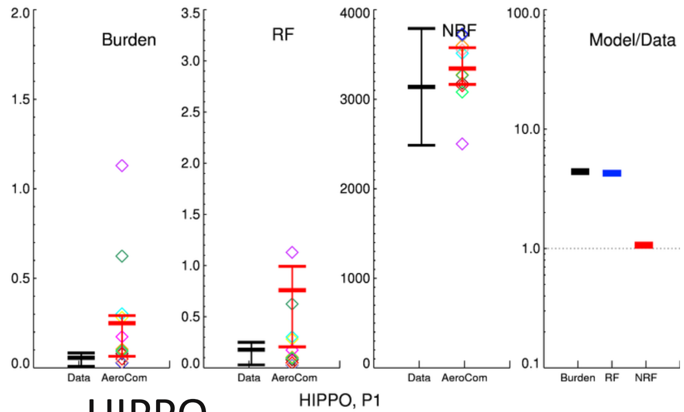


PAM-ARCMIP

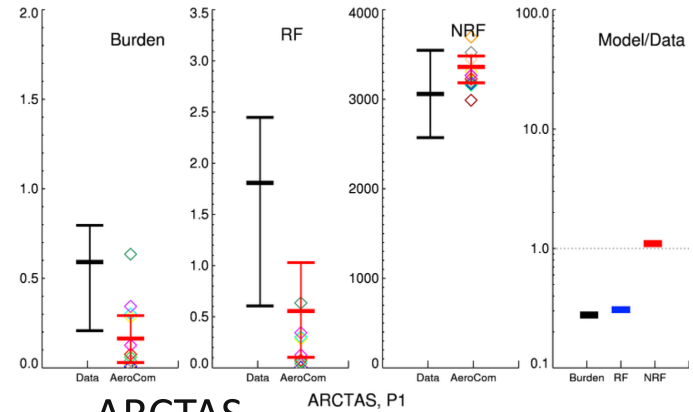


60N-90N, three campaigns

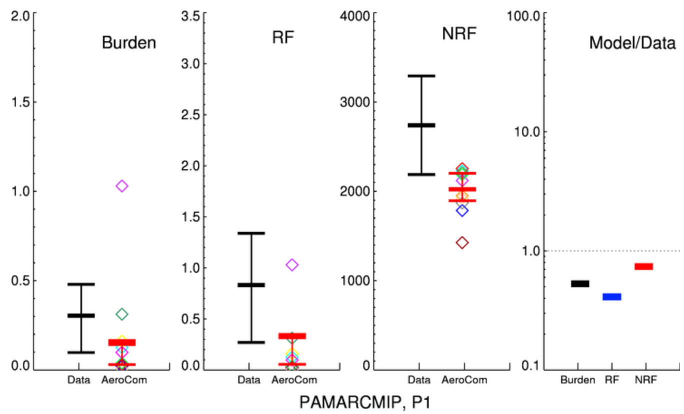




HIPPO

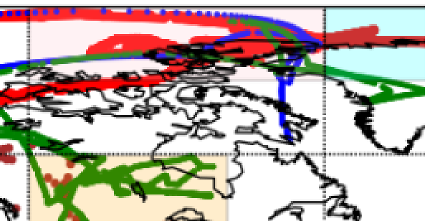


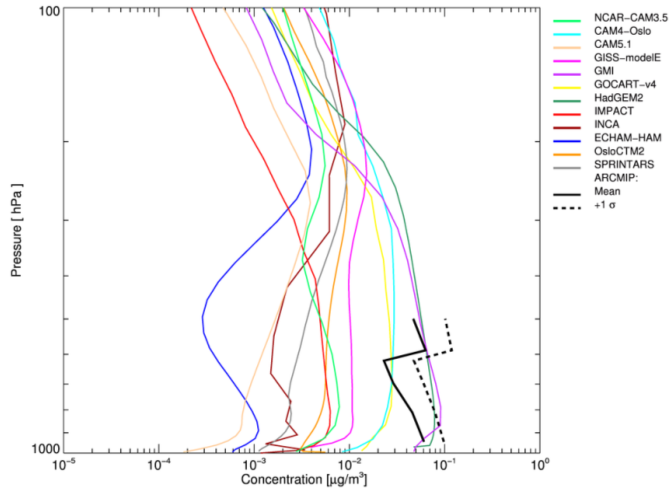
ARCTAS



PAM-ARCMIP

North polar, two campaigns





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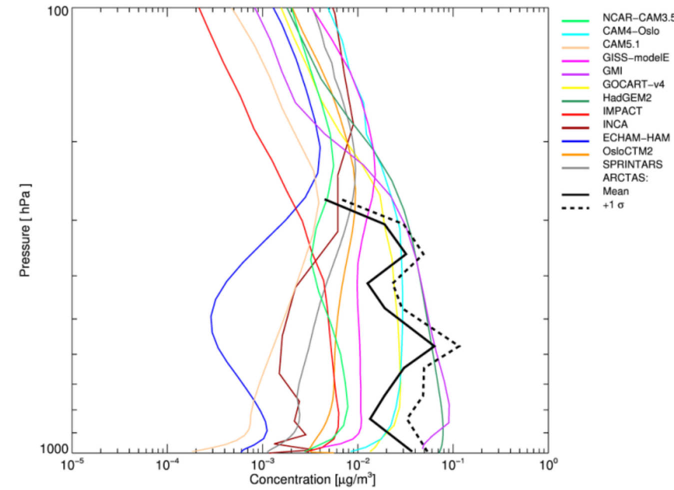
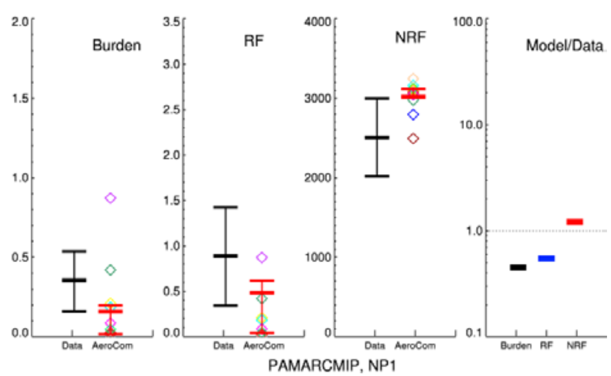
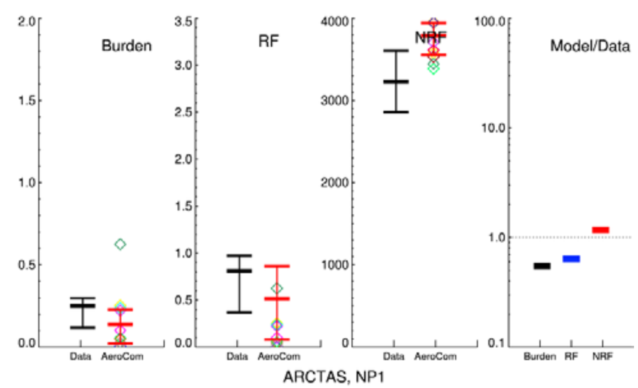
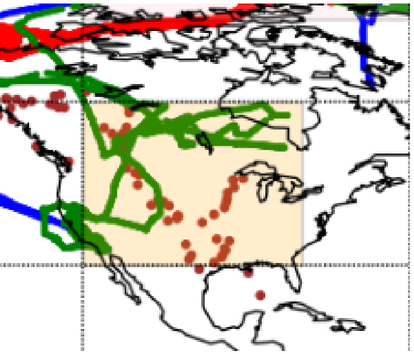


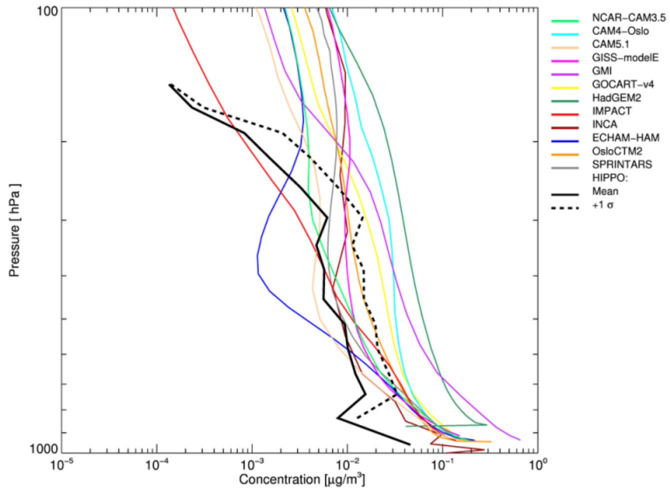
ARCTAS



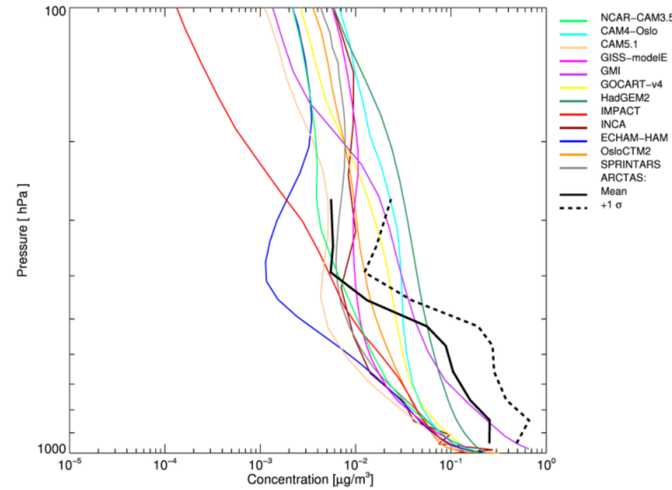


America, two campaigns





HIPPO



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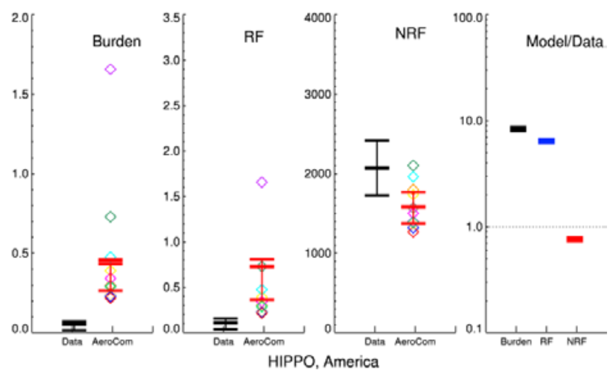
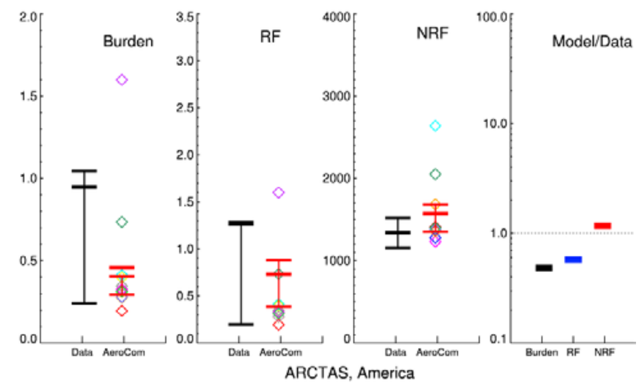
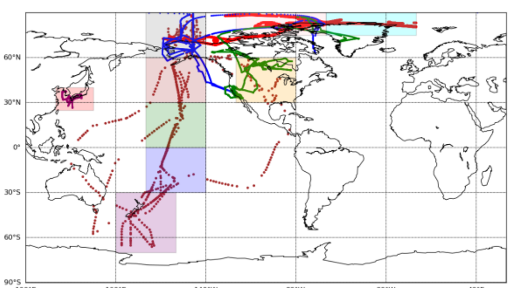




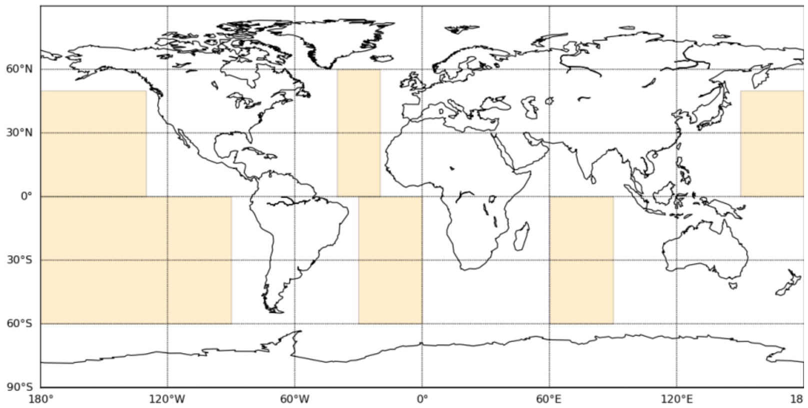
BCFF 1850-2000 RF from AeroCom ensemble

Region	Model mean RF	Fraction of globe	Fraction of global RF	StdDev
Global	0.20	1.00	1.00	0.00
America	0.25	0.02	0.03	0.01
Japan	**0.77**	**0.01**	**0.04**	**0.01**
P1	0.22	0.01	0.01	0.00
P2	0.31	0.02	0.03	0.01
P3	0.13	0.03	0.02	0.01
P4	**0.05**	**0.03**	**0.01**	**0.01**
P5	0.05	0.02	0.01	0.00
NP1	0.20	0.003	0.003	0.002
NP2_1	0.20	0.003	0.003	0.002
NP2_2	0.19	0.001	0.001	0.001
	[W/m2]			
Areas covered		0.15	0.14	



«Fraction of RF» means fraction of total extra energy absorbed due to BCFF forcing within this region

Global BCFF RF weighted by HIPPO data



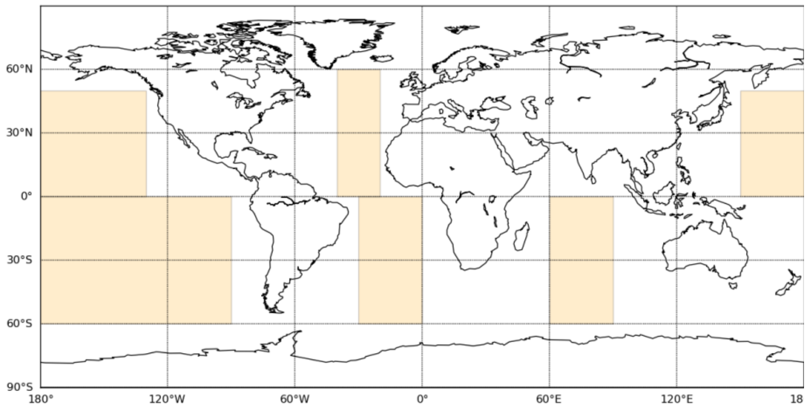
[W/m2]

Case	Global average BCFF RF
AeroCom mean	**0.202**
«Remote» scaled to 0	0.165
«Rest of world» scaled to 0	0.036
«Remote» scaled to HIPPO	**0.178**

«Remote»: 29% of globe
16% of RF

Scaling global RF to HIPPO measurements in «remote» regions lowers global mean by 12%

Global BCFF RF weighted by HIPPO data



«Remote»: 29% of globe
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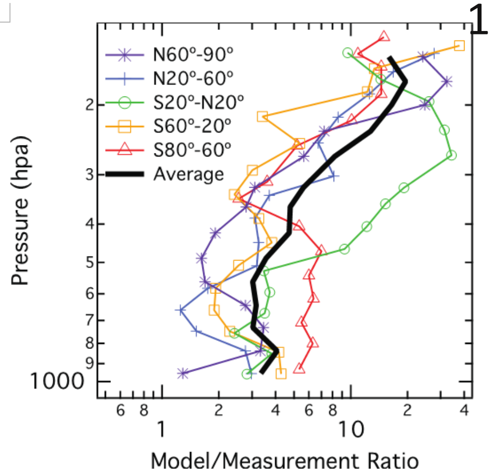

[W/m2]

Case	Global average BCFF RF
AeroCom mean	**0.202**
«Remote» scaled to 0	0.165
«Rest of world» scaled to 0	0.036
«Remote» scaled to HIPPO	**0.178**
Model RF fraction above 200hPa	0.237
Scale remote and high alt.	**0.135**

Scaling global RF to HIPPO measurements in «remote» regions lowers global mean by 12%
Adding scaling above 200hPa causes total reduction by 33%

Conclusions

- AeroCom overestimates HIPPO in remote, Pacific regions at all altitudes, from a factor of ~2 close to the ground to ~20 above 200hPa
- AeroCom reproduces A-FORCE over/close to the Japan source region
- At low to mid altitudes, seasonal dependencies dominate when comparing campaigns. Need to correlate flight times with fire data.
- At high altitudes, above ~200hPa, both models and campaigns indicate a constant value for BC concentration
- Scaling AeroCom model mean BCFF radiative forcing by HIPPO information in remote regions and at high altitudes brings global, annual mean forcing down by a third.

Thank you for listening. (Now comment.)

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Thank you for listening. (Now comment.)

(What do you get when you cross a joke with a rhetorical question?
You get the sentence above…)