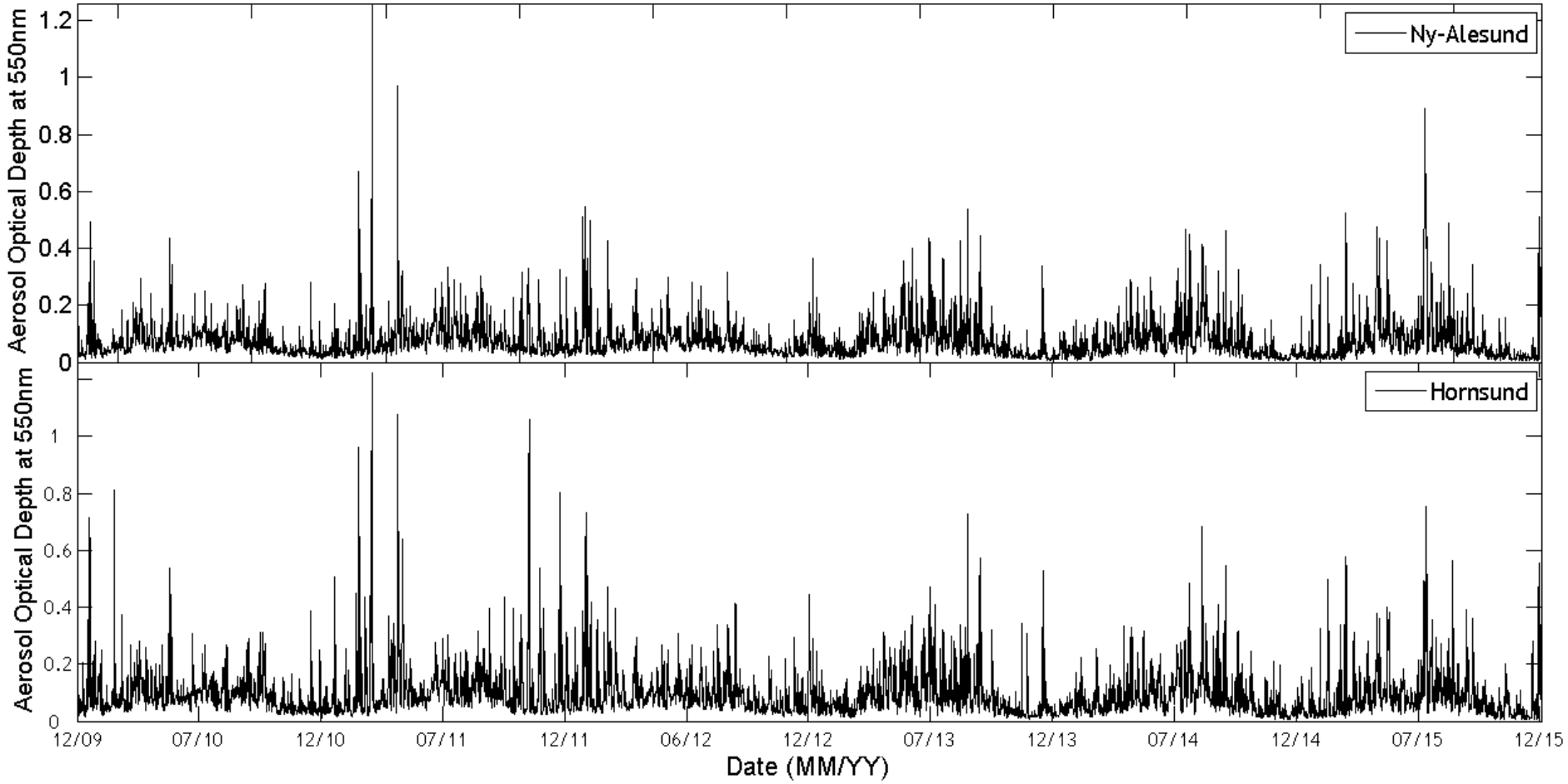
Air-Sea Interaction team

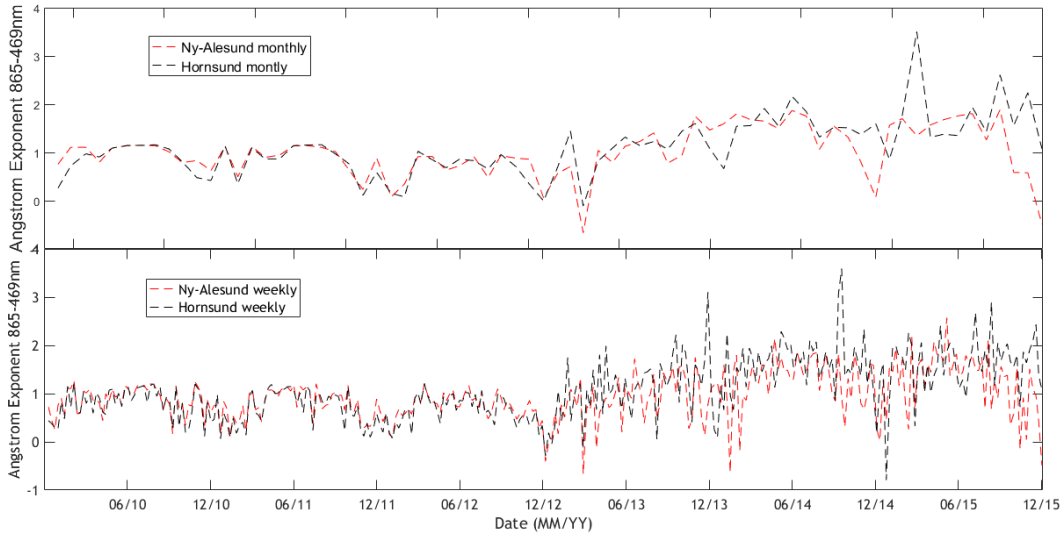
Data from 2010-2015 in two locations:
Ny-Alesund and Hornsund

3h AOD at 550nm in Ny-Alesund and Hornsund MACC model

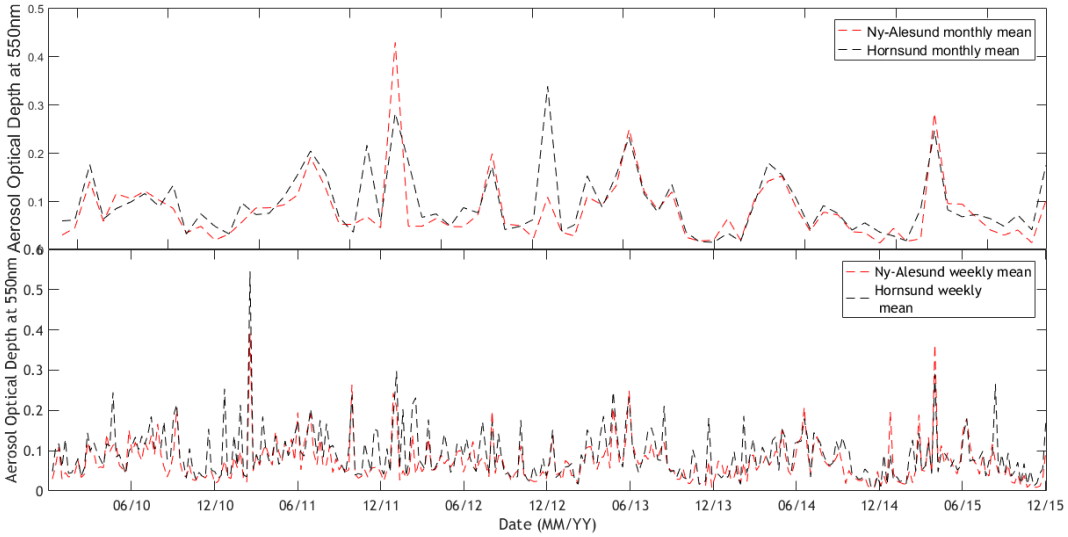


Comparison of monthly and weekly data

Weekly versus monthly mean based on data of AE from MACC model



Weekly versus monthly mean based on data of AOD from MACC model



Annual means

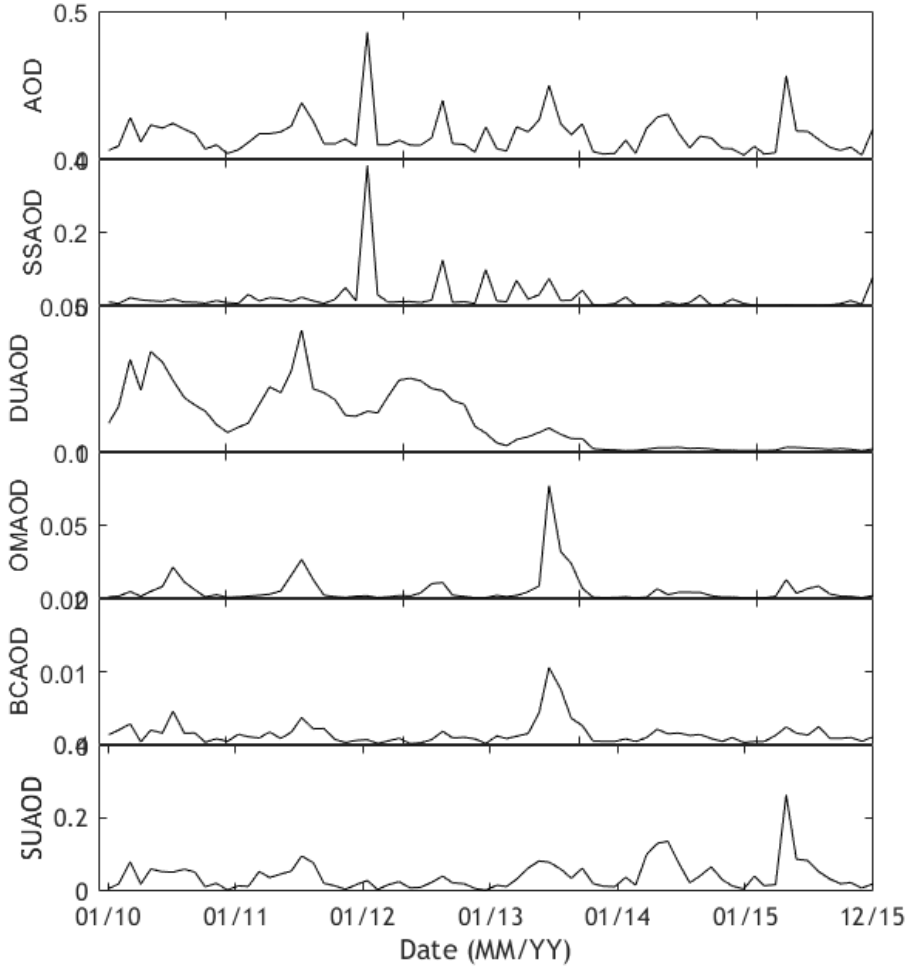
Hornsund						
	2010	2011	2012	2013	2014	2015
AOD 469nm	0.0490	0.0612	0.3364	0.0178	0.0395	0.1798
AOD 550nm	0.0475	0.0575	0.3377	0.0147	0.0355	0.1743
AOD 670nm	0.04449	0.0520	0.3387	0.0116	0.317	0.1694
AOD 865nm	0.0405	0.0429	0.3380	0.0093	0.0146	0.0888
AOD 1240nm	0.0345	0.0307	0.3335	0.0053	0.0236	0.1584
SSAOD 550nm	0.0313	0.0268	0.3258	0.0018	0.0184	0.1433
DUAOD 550nm	0.0073	0.0120	0.0060	0.0007	0.0005	0.0018
OMAOD 550nm	0.0014	0.0011	0.0008	0.0005	0.0006	0.0022
BCAOD 550nm	0.0005	0.0003	0.0003	0.0004	0.0005	0.0017
SUAOD 550nm	0.0070	0.0173	0.0048	0.0112	0.0155	0.0254
AE 865-469	0.4171	0.5876	-0.0055	1.0818	1.5930	1.0799

Ny-Alesund						
	2010	2011	2012	2013	2014	2015
AOD 469nm	0.0201	0.0492	0.1082	0.0228	0.0149	0.1052
AOD 550nm	0.0191	0.0447	0.1082	0.0194	0.0131	0.1008
AOD 670nm	0.0171	0.0383	0.1074	0.0160	0.0114	0.0965
AOD 865nm	0.0136	0.0286	0.1050	0.0093	0.0146	0.0888
AOD 1240nm	0.0090	0.0090	0.0166	0.1003	0.0091	0.0077
SSAOD 550nm	0.0076	0.0125	0.0981	0.0052	0.0056	0.0766
DUAOD 550nm	0.0067	0.0122	0.0064	0.0007	0.0004	0.0010
OMAOD 550nm	0.0007	0.0015	0.0004	0.0006	0.0004	0.0019
BCAOD 550nm	0.0005	0.0006	0.0002	0.0005	0.0003	0.0011
SUAOD 550nm	0.0036	0.0179	0.0031	0.0124	0.0064	0.0202
AE 865-469	0.6250	0.8881	0.0570	1.4641	0.0704	-0.4858

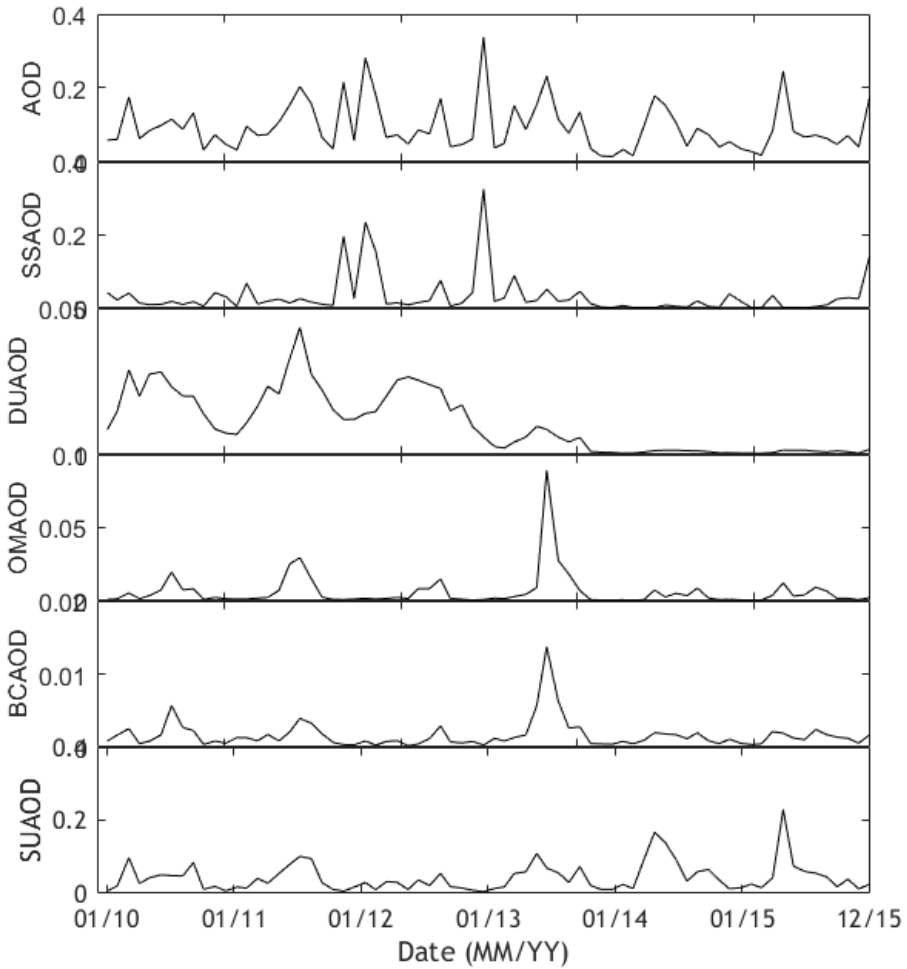
Aerosol content

AOD- Aerosol Optical Depth
BCAOD-Black Carbon Aerosol Optical Depth at 550nm
SSAOD-Sea Salt Aerosol Optical Depth at 550nm
DUAOD-Dust Aerosol Optical Depth at 550nm
SUAOD-Sulphate Aerosol Optical Depth at 550nm
OMAOD-Organic Matter Aerosol Optical Depth at 550nm

Ny-Alesund

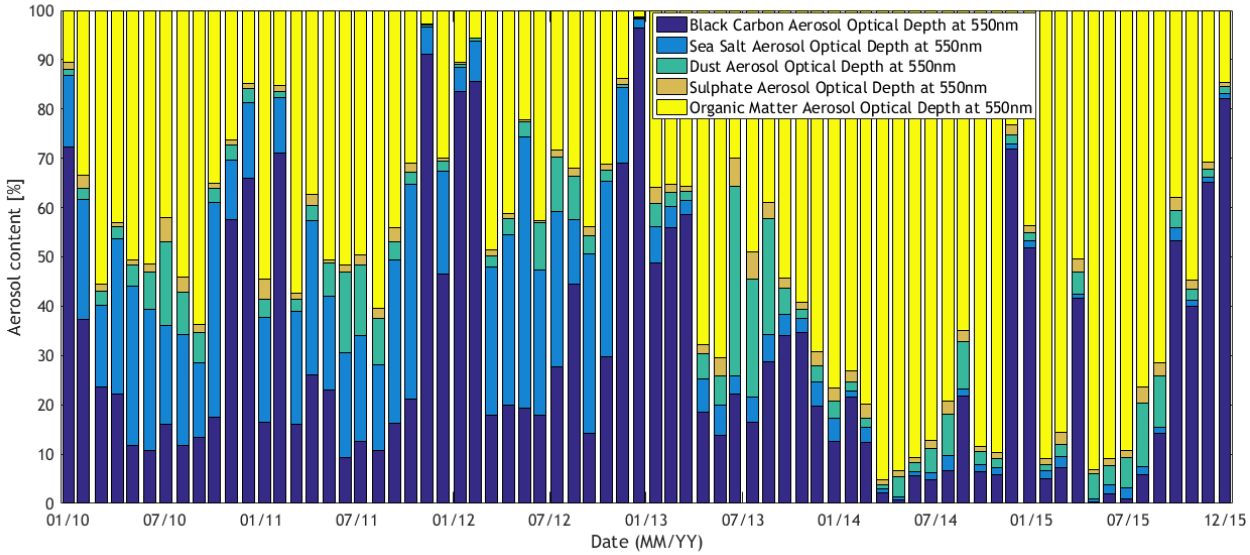


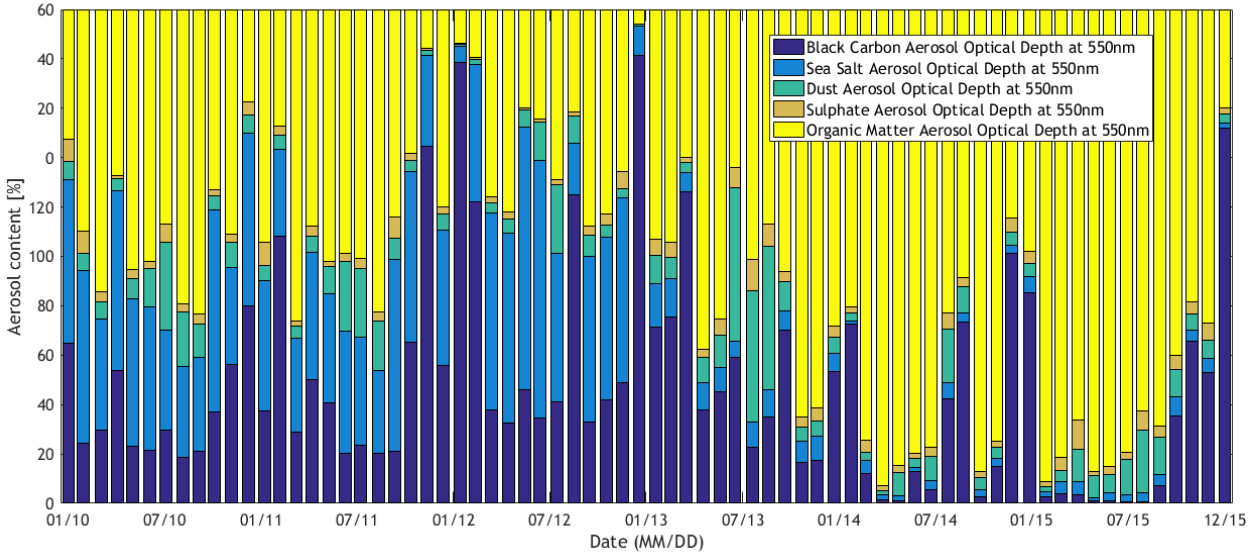
Hornsund



Aerosol content

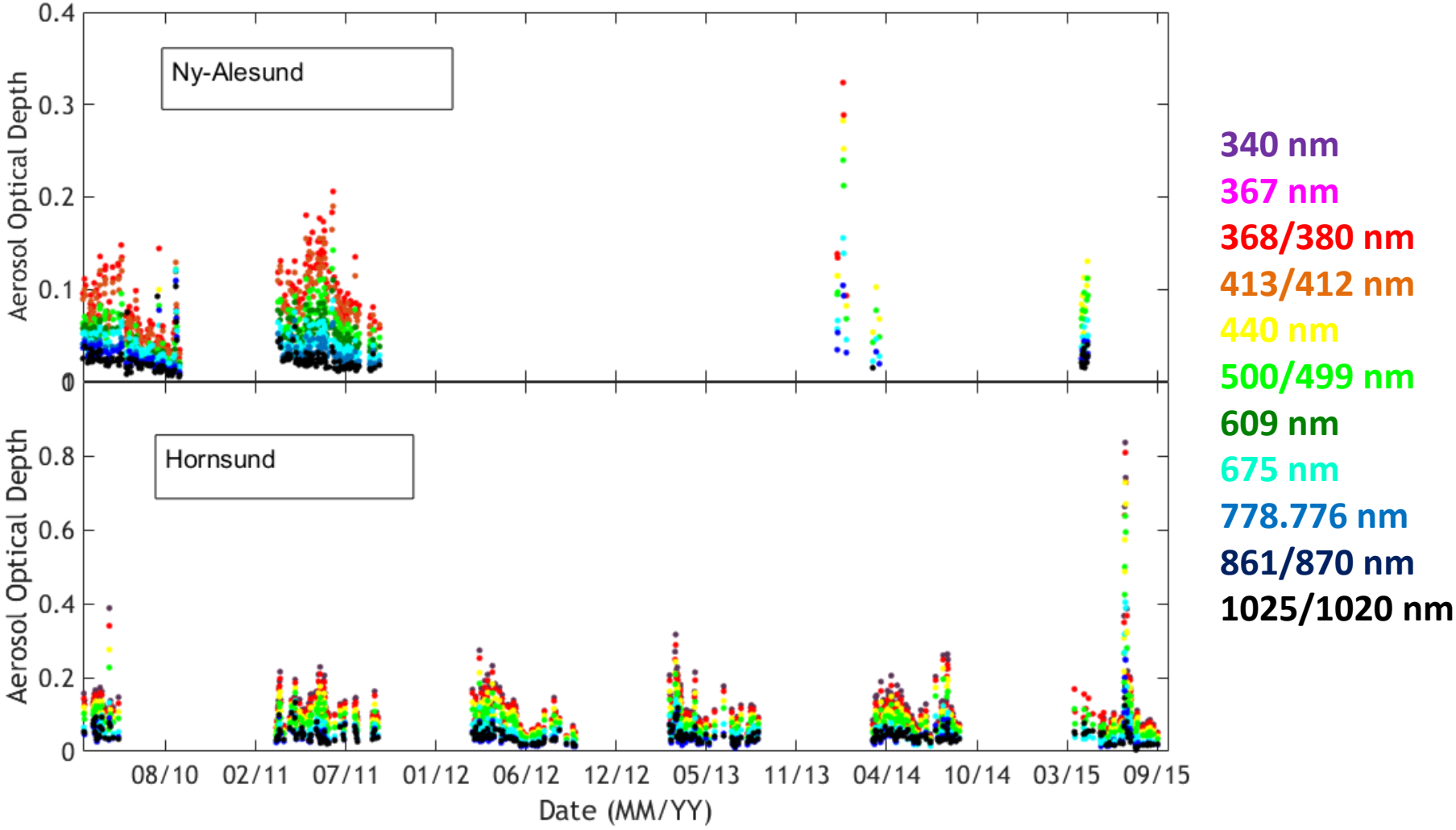
Monthly mean of each parameter based on MACC model



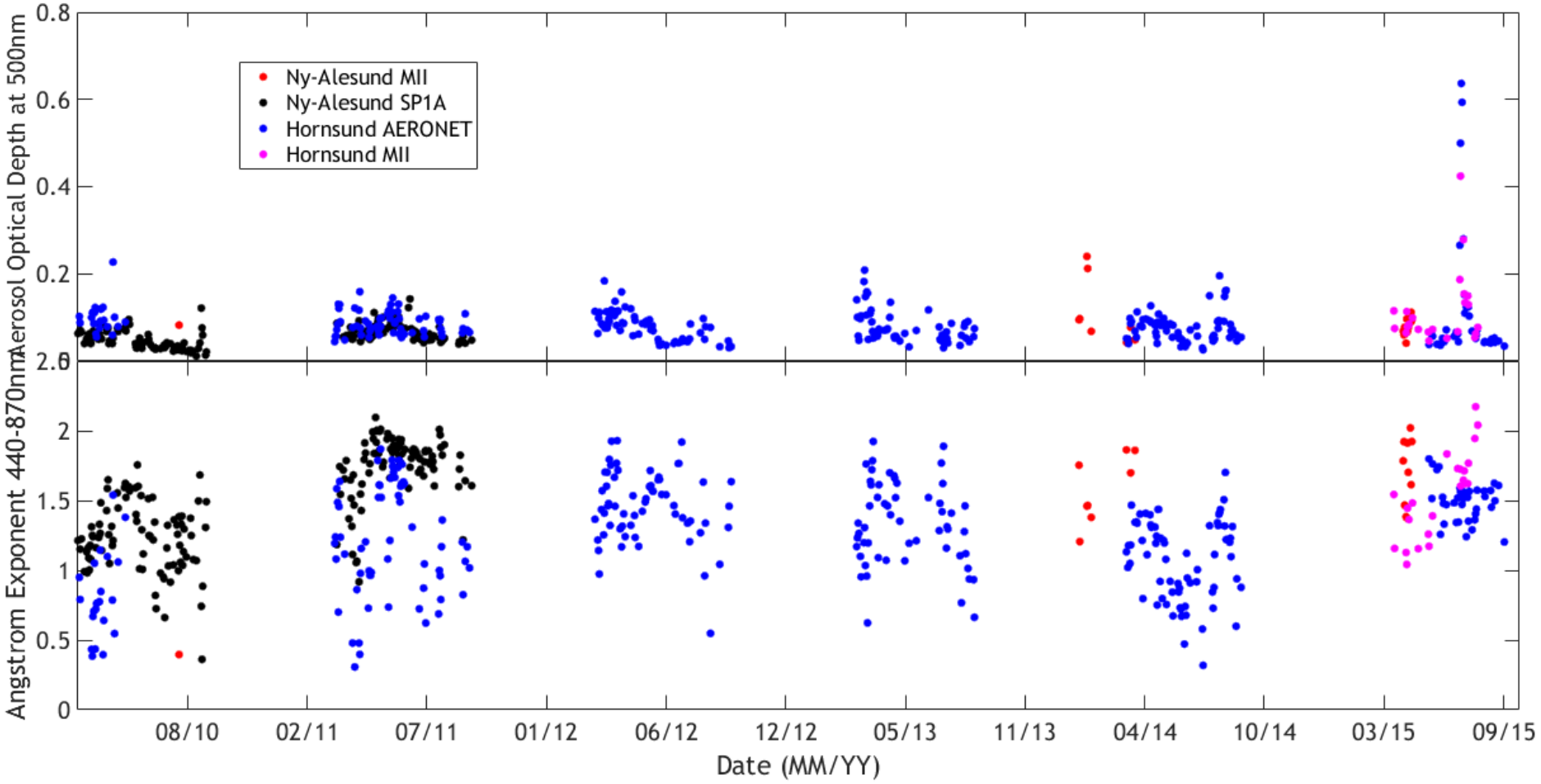


AERONET DATA
AWIPEV SP1A
MICROTOPS II (IOPAS,UW,IAREA)

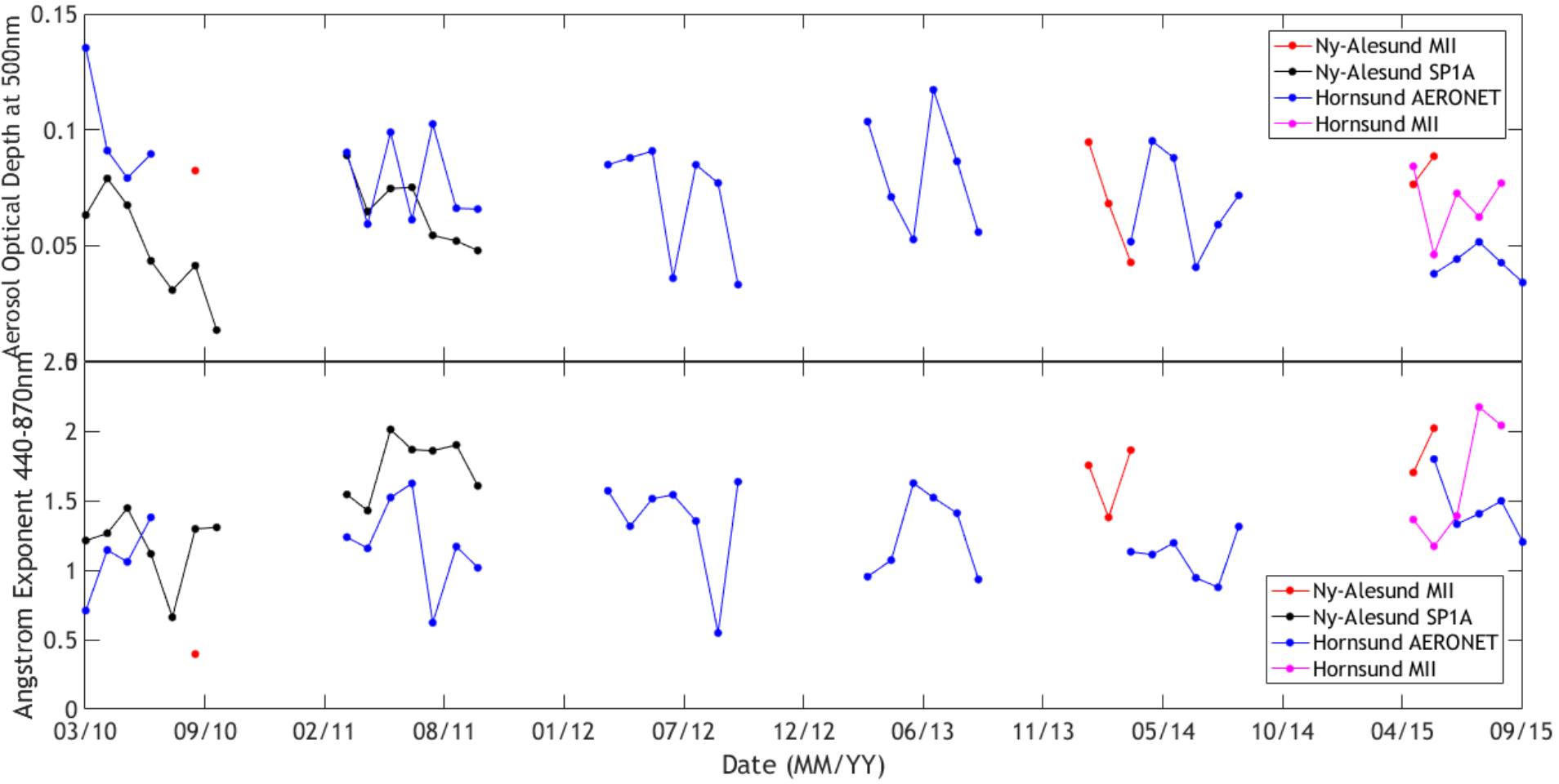
Aerosol Optical Depth, daily mean



AOD and AE, daily mean



AOD and AE, monthly mean



Annual means

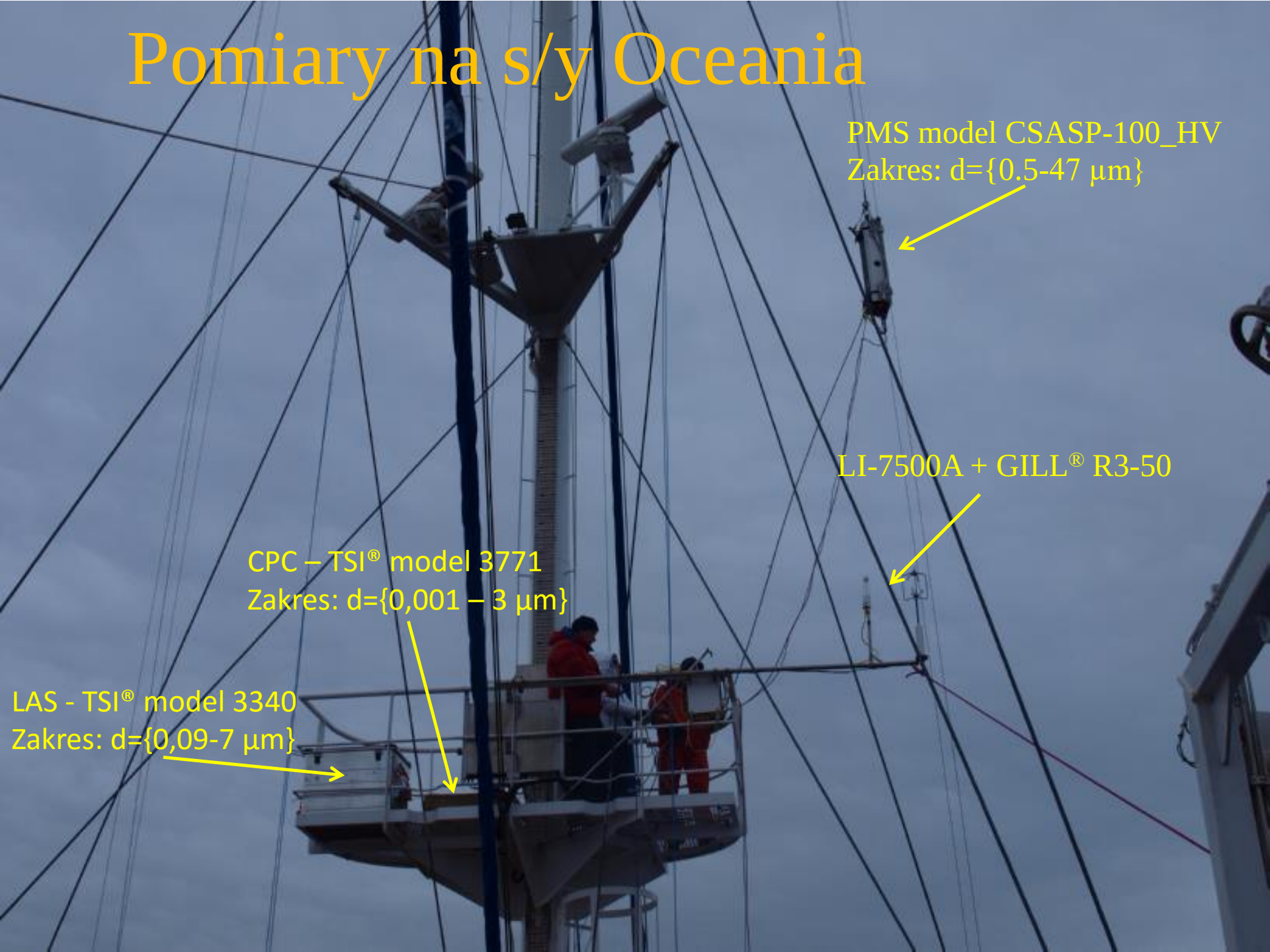
Hornsund MII	
	2015
AOD 368/380 nm	0.1049
AOD 440 nm	0.0919
AOD 500/499 nm	0.0769
AOD 675 nm	0.0382
AOD 861/870 nm	0.0228
AOD 1020/1025 nm	0.0124
AE 440-870 nm	2.0406

Ny-Alesund MII			
	2010	2014	2015
AOD 368/380 nm	0.1443	0.0932	-
AOD 440 nm	0.0997	0.0536	0.1041
AOD 500/499 nm	0.0823	0.0428	0.0886
AOD 675 nm	0.0610	0.0221	0.0477
AOD 861/870 nm	0.0774	0.0151	0.0263
AOD 1020/1025 nm	-	0.0152	0.0209
AE 440-870 nm	0.3961	1.8628	2.0203

Ny-Alesund SP1A		
	2010	2011
AOD 367 nm	-	0.0648
AOD 368/380 nm	0.0256	0.0585
AOD 413/412 nm	0.0224	0.0617
AOD 500/499 nm	0.0136	0.0479
AOD 609 nm	0.0132	0.0382
AOD 675 nm	0.0137	0.0288
AOD 778/776 nm	0.0085	0.0225
AOD 861/870 nm	0.0086	-
AOD 1020/1025 nm	0.0055	0.0181
AE 440-870 nm	1.3075	1.6063

Hornsund AERONET						
	2010	2011	2012	2013	2014	2015
AOD 340 nm	0.1468	0.0927	0.0523	0.0739	0.1022	0.0514
AOD 368/380 nm	0.1302	0.0893	0.0495	0.0692	0.0933	0.0490
AOD 440 nm	0.1071	0.0772	0.0410	0.0605	0.0834	0.0414
AOD 500/499 nm	0.0895	0.0658	0.0332	0.0558	0.0717	0.0341
AOD 675 nm	0.0527	0.0441	0.0190	0.0432	0.0434	0.0204
AOD 861/870 nm	0.0388	0.0387	0.0136	0.0326	0.0347	0.0183
AOD 1020/1025 nm	0.0335	0.0375	0.0159	0.0348	0.0314	0.0197
AE 440-870 nm	1.3795	1.0170	1.6354	0.9327	1.3132	1.2027

Pomiary na s/y Oceania



Wyniki

AREX 2013:

- **strumienie – 4 h pomiarów;**
- **koncentracje– 20 dni pomiarowych;**

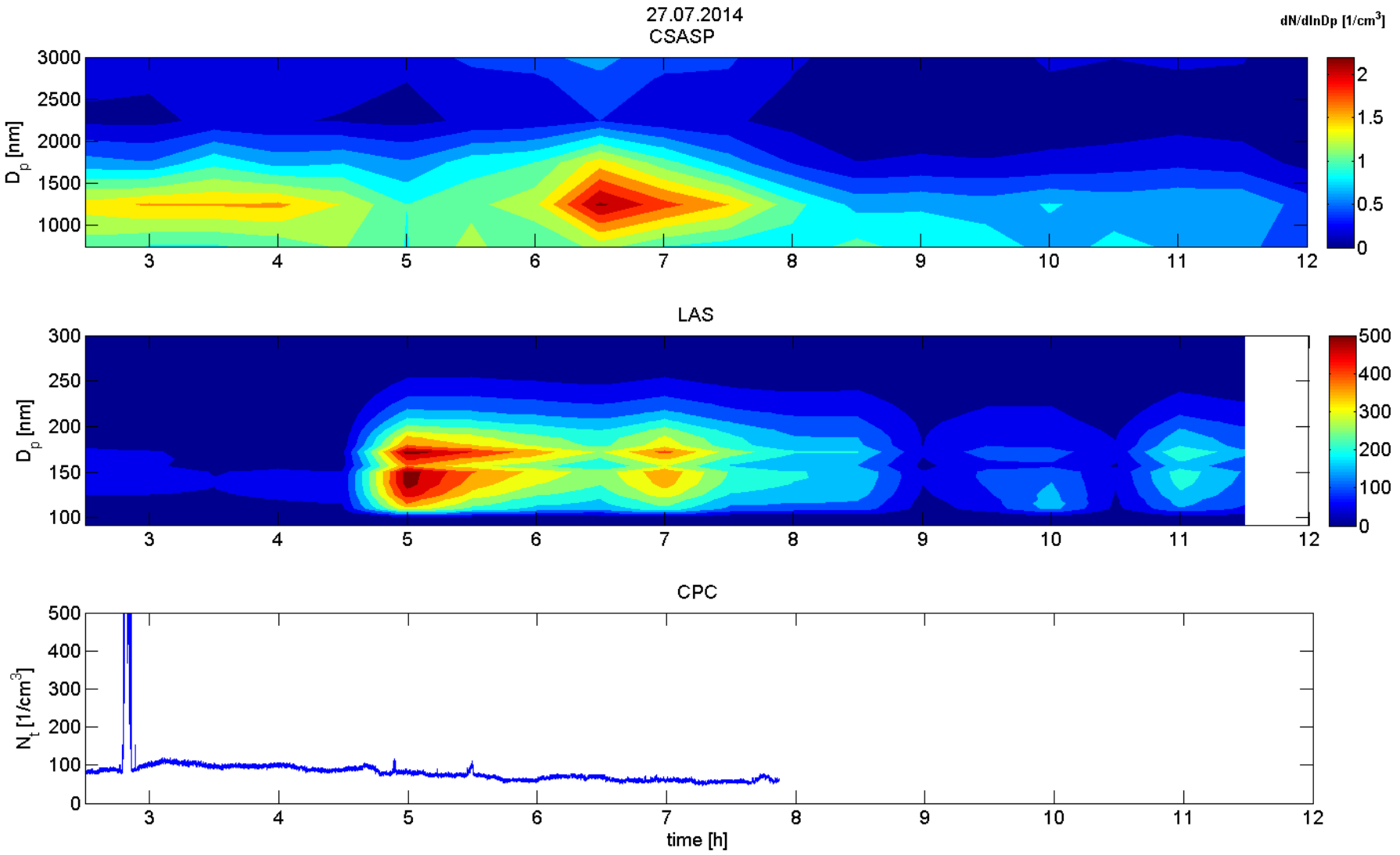
AREX 2014:

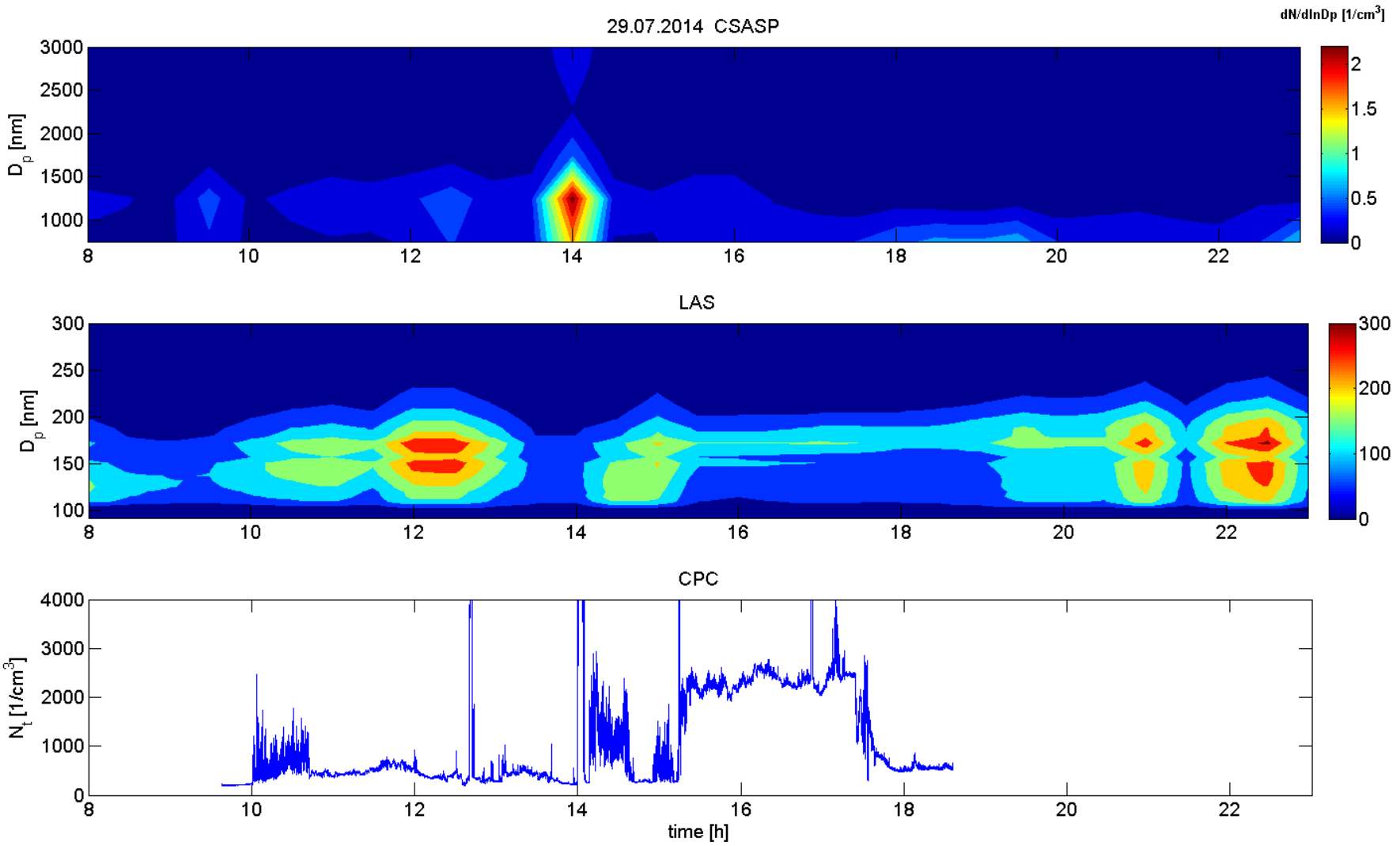
- **strumienie – 6 h pomiarów;**
- **koncentracje – 26 dni na oceanie, 24 dni pomiarowych we fiordach;**

AREX 2015:

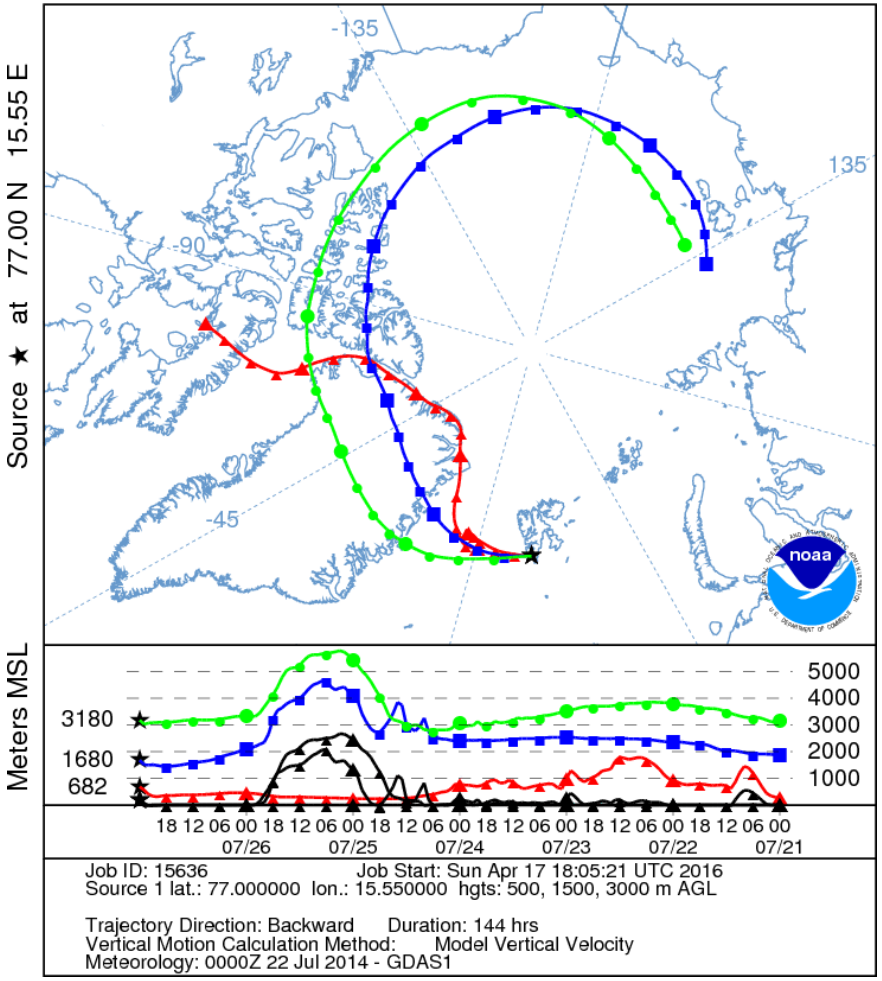
- **strumienie – 7 dni pomiarowych, łącznie 14 h pomiarów**
- **koncentracje – 30 dni pomiarów na oceanie, 15 dni we fiordach**

Przykładowe wyniki - Hornsund




29.07.2014 CSASP
dN/dlnDp [1/cm3]
3000
2500
2000
1500
1000
Dp [nm]
2
1.5
1
0.5
0
8
10
12
14
16
18
20
22
LAS
300
250
200
150
100
Dp [nm]
300
200
100
0
CPC
4000
3000
2000
1000
0
Nt [1/cm3]
time [h]

NOAA HYSPLIT MODEL
Backward trajectories ending at 0000 UTC 27 Jul 14
GDAS Meteorological Data



NOAA HYSPLIT MODEL
Backward trajectories ending at 1200 UTC 29 Jul 14
GDAS Meteorological Data