



Aerosol Size Distribution in the marine regions

Piotr Markuszewski¹, Tomasz Petelski¹, Tymon Zielinski¹, Paulina Pakszys¹,
Agata Strzalkowska¹, Przemyslaw Makuch¹, Jakub Kowalczyk¹

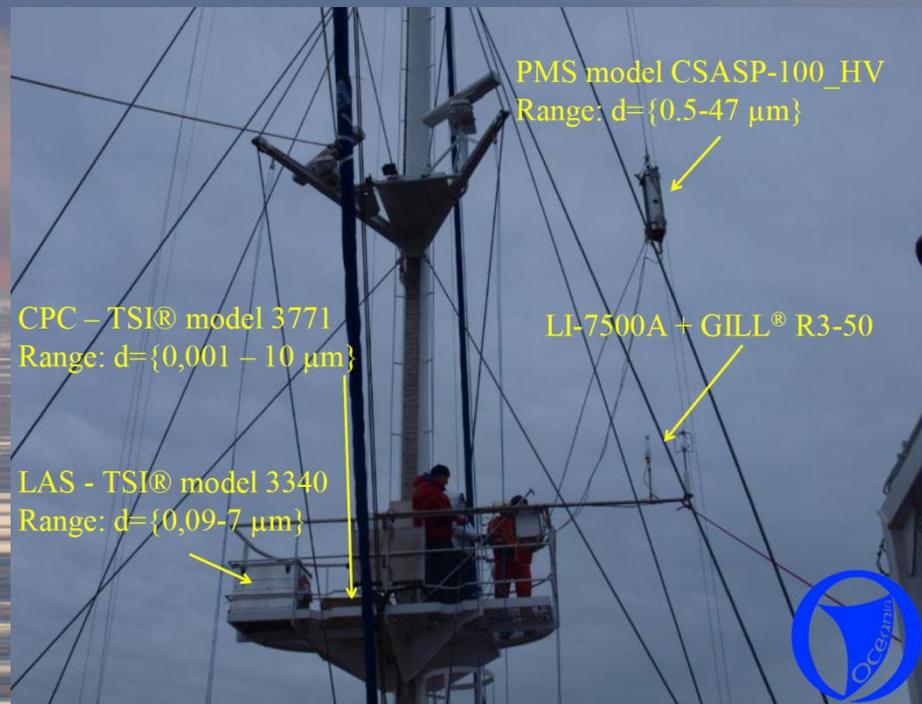
¹Institute of Oceanology (pmarkusz@iopan.gda.pl), Polish Academy of Sciences



Ovadnevaite et al. (2014): "Sea spray aerosol (SSA) is an important component of the aerosol population in the marine environment, and given that 70% of the Earth's surface is covered by oceans, it contributes significantly to the global aerosol budget (Vignati et al., 2010). In addition, sea spray aerosol plays an important role in climate, with both direct (Bates et al., 2006; Mulcahy et al., 2008; Vaishya et al., 2011; Rap et al., 2013) and indirect radiative effects (O'Dowd et al., 1999; Andreae and Rosenfeld, 2008)."



s/y Oceania



PMS model CSASP-100_HV
Range: $d = \{0.5-47 \mu\text{m}\}$

CPC - TSI® model 3771
Range: $d = \{0,001 - 10 \mu\text{m}\}$

LI-7500A + GILL® R3-50

LAS - TSI® model 3340
Range: $d = \{0,09-7 \mu\text{m}\}$



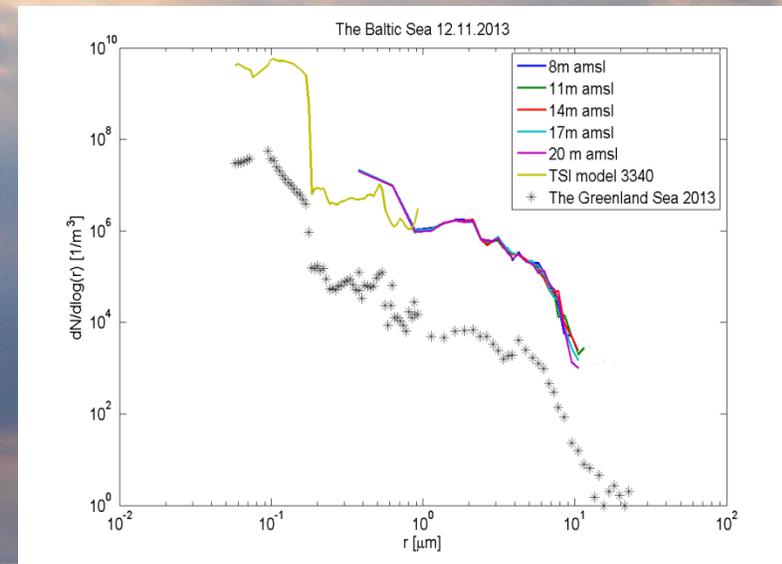
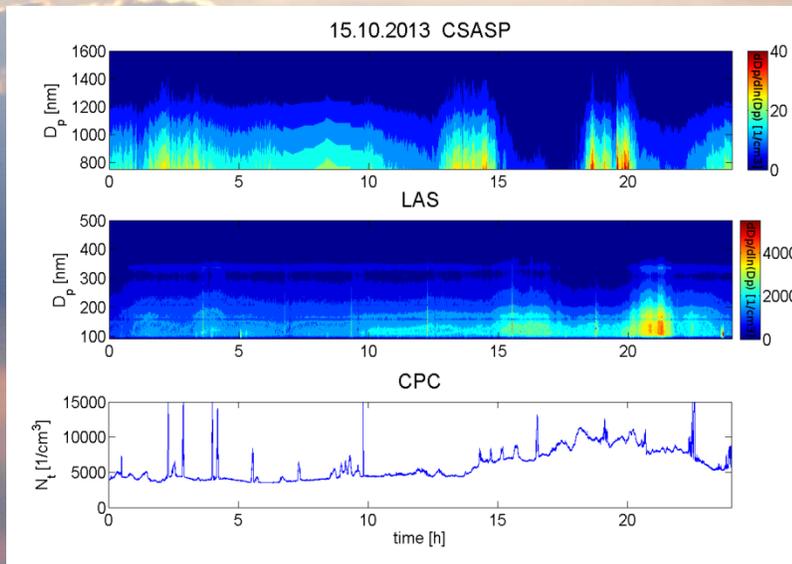
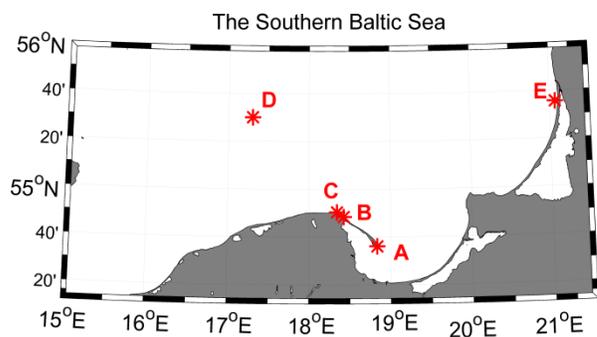
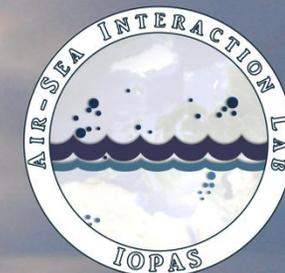
Source	Natural Global	
	Min	Max
Sea spray	1400	6800
including marine POA	2	20
Mineral dust	1000	4000
Terrestrial PBAP	50	1000
including spores		28
Dimethylsulphide (DMS)	10	40
Monoterpenes	30	120
Isoprene	410	600
SOA production from all BVOCs	20	380



Aerosol Size Distribution in the marine regions

Piotr Markuszewski¹, Tomasz Petelski¹, Tymon Zielinski¹, Paulina Pakszys¹,
Agata Strzalkowska¹, Przemyslaw Makuch¹, Jakub Kowalczyk¹

¹Institute of Oceanology (pmarkusz@iopan.gda.pl), Polish Academy of Sciences



Grants in which we participate in:
**iAREA: IMPACT OF ABSORBING AEROSOLS
ON RADIATIVE FORCING IN THE EUROPEAN ARCTIC**

SatBaltyk:
Satellite Monitoring of the Baltic Sea environment

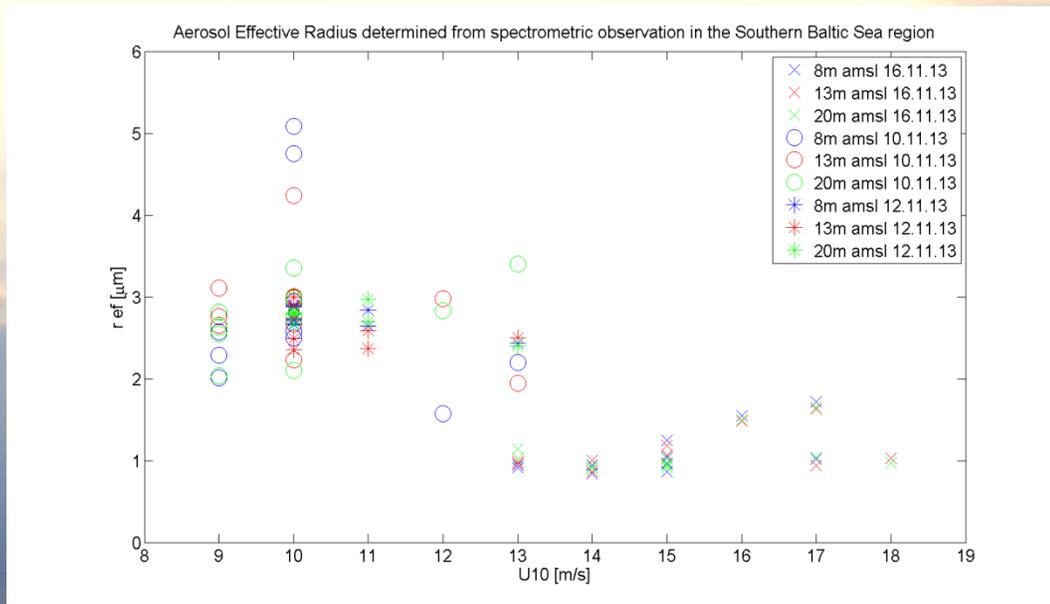
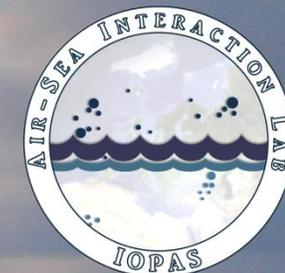


**INNOVATIVE
ECONOMY**
NATIONAL COHESION STRATEGY

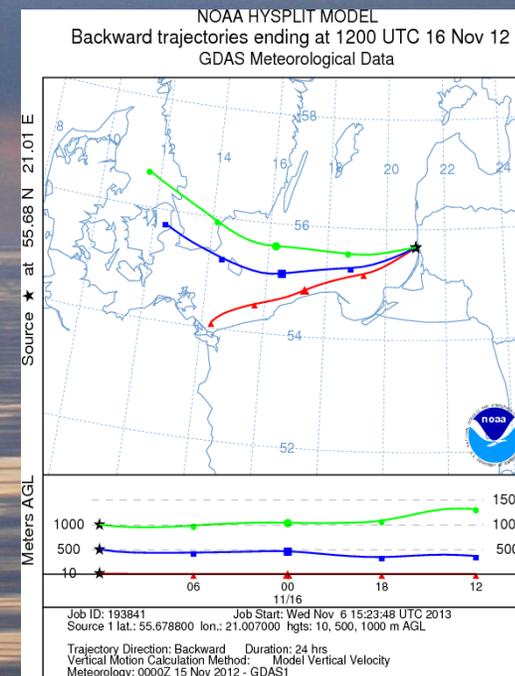
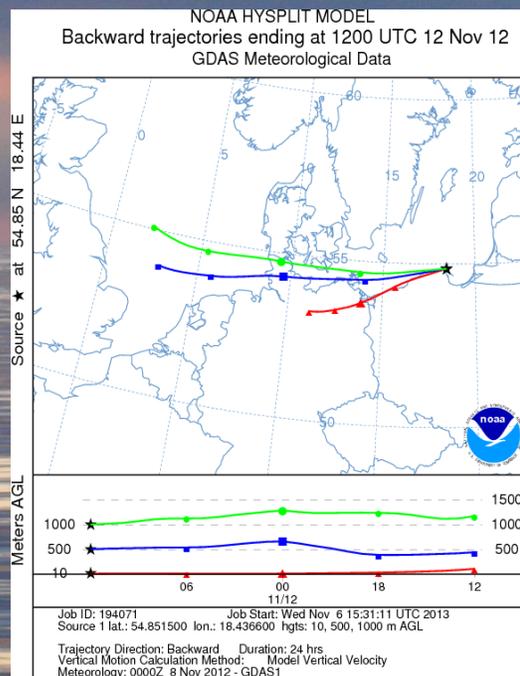
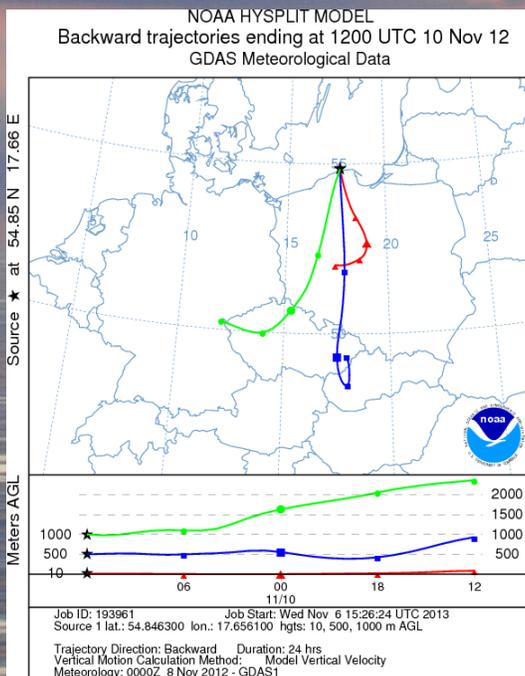


EUROPEAN UNION
EUROPEAN REGIONAL
DEVELOPMENT FUND





$$r_{eff} = \frac{\int r^3 n_N(r) dr}{\int r^2 n_N(r) dr} [\mu m]$$





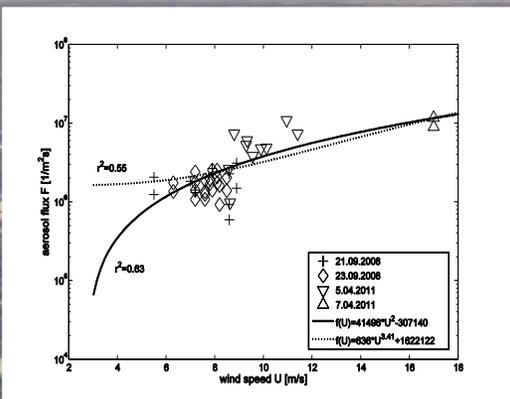
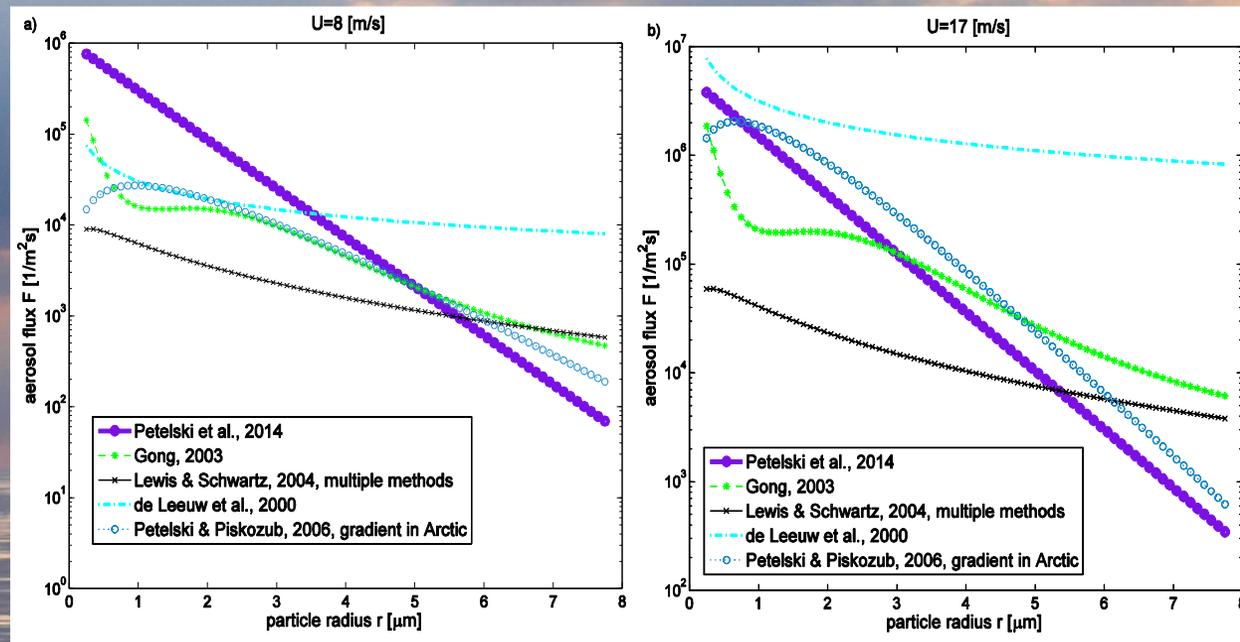
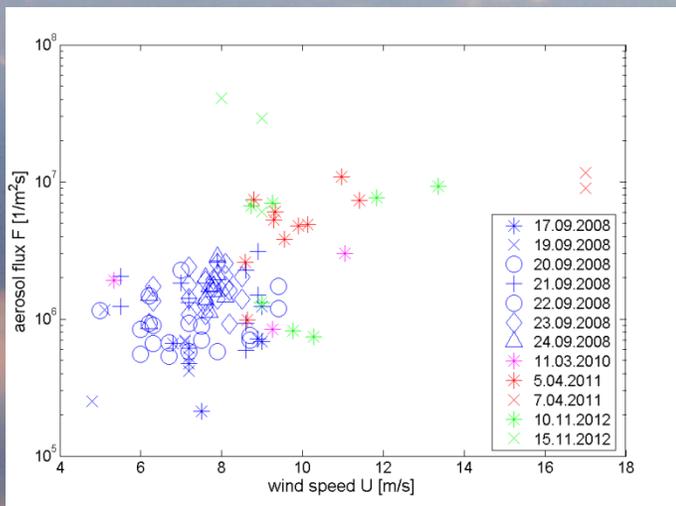
Marine aerosol fluxes in marine boundary layer determined by using vertical aerosol gradient and Sea Salt Generation Function for the Baltic Sea



$$F(U, r) = f_1(U) f_2(r)$$

$$F_1(U) = AU^2 + B$$

$$F_2(r) = (-1/2a) \exp[2a(r - r_{\min})]$$



$$F(U, r) = (18251 * U^2 - 135085) \exp(-1.24 * r)$$



s/y Oceania



Name: s/y Oceania
Owner: Polish Academy of Sciences, Institute of Oceanology, Sopot, Poland
Harbour: Gdańsk - Nowy Port
Call sign: SQOC
Dimensions: 48.9 m / 9.0 m / 3.9 m
Displacement: 370 T
Main engine: Diesel, 600 kW MTU
Bow thruster: 70 HP
Generator: 110 kW
Masts: 3, each 32 m high
Sails: 280 m², electric setting
Cruising speed: 9 kts
Max. speed: 12 kts
Crew: 13, **Scientists:** 14
Endurance: 1 month
Range: unlimited (except polar area in winter)
Source: <http://www.iopan.gda.pl/oceania.html>

DECK EQUIPMENT

- Rotating stern frame 2.5 T 6 m
- 2 side frames
- 3 measuring booms
- 2 measuring balconies
- 2 deep lifts RAPP- HYDEMA 5000 m and 2000 m ø6
- 2 shallow lifts 300 m ø6 and ø10 x 6 wires
- 2 net lifts 500 m ø3, 300 m ø5
- Elevator trawl 2000 m ø10
- Hydraulic crane 1 T
- 2 Weather stations VASSALLA
- 2 working inflatables 4.8 m, engines 40 KM YAMAHA

PLAN REJISÓW s/y "Oceania" w 2014 roku

STYCZEŃ	LUTY	MARZEC	KWIECIEŃ	MAJ	CZERWIEC	LIPIEC	SIERPIEŃ	WRZESIEŃ	PAŹDZIERNIK	LISTOPAD	GRUDZIEŃ
1	2	3	4	5	6	7	8	9	10	11	12
13	14	15	16	17	18	19	20	21	22	23	24
25	26	27	28	29	30	31					

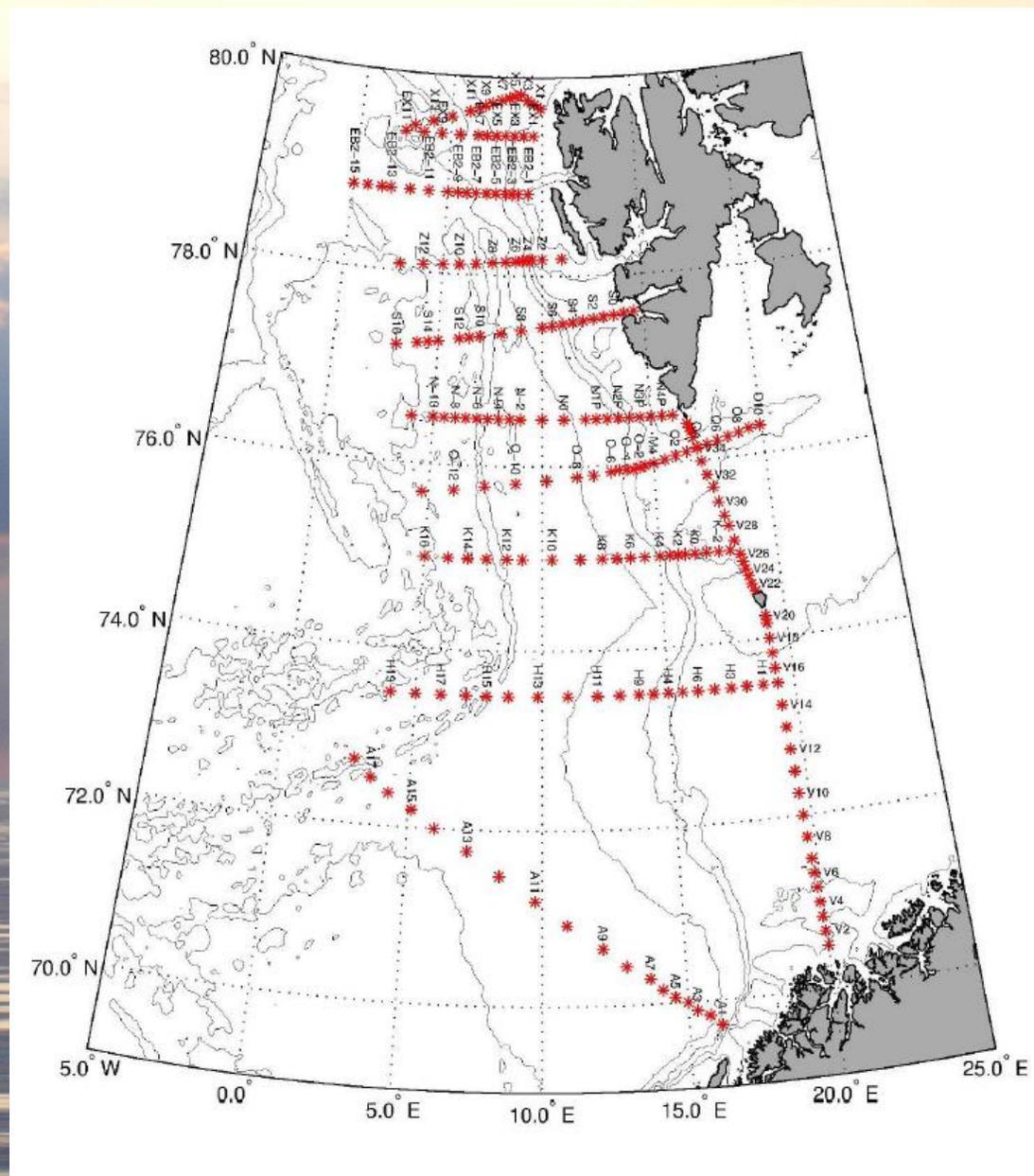
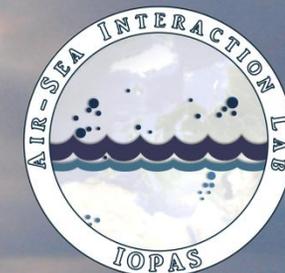
ZESTAWIENIE DNI REJISOWYCH:

styczeń.....	5
luty.....	20
marzec.....	14
kwiecień.....	24
maj.....	25
czerwiec.....	25
lipiec.....	31
sierpień.....	24
wrzesień.....	26
październik.....	23
listopad.....	17
grudzień.....	5
OGÓLEM:	240

■ - niedziela
■ - święta wolne od pracy
■ - soboty



Arex – Arctic Experiment

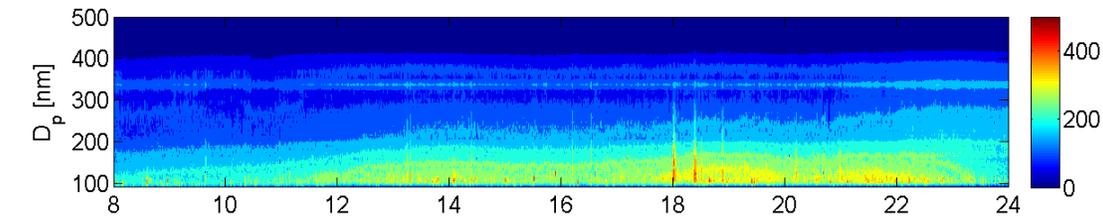
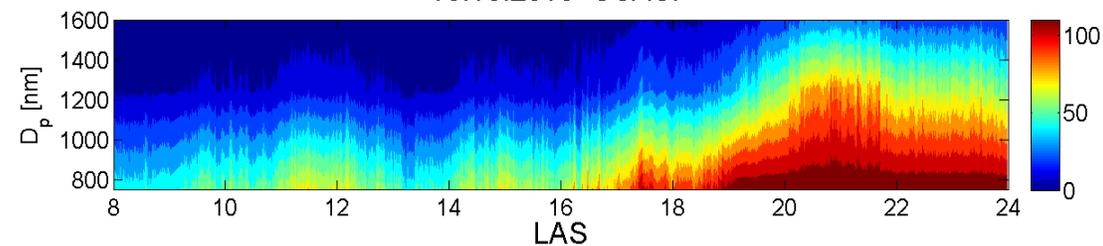




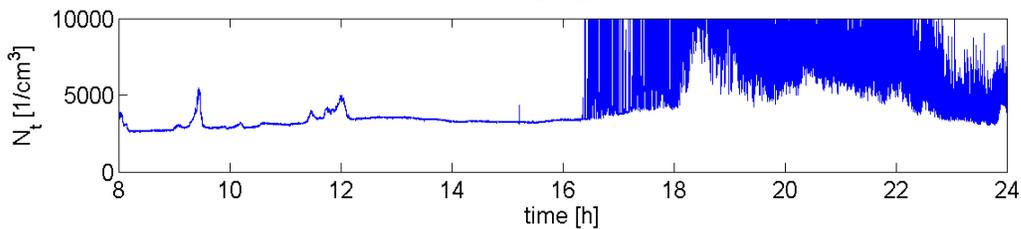
Exemplary data from our november cruise



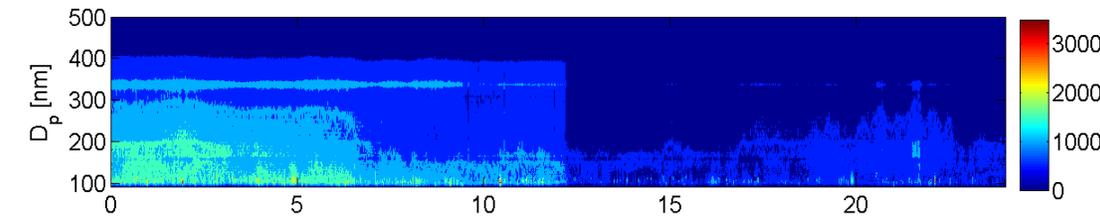
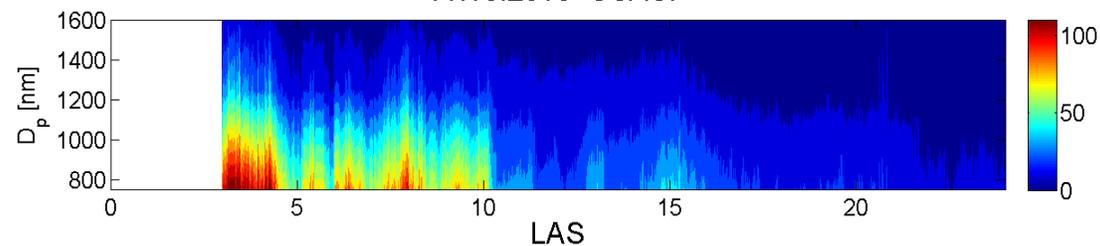
10.10.2013 CSASP



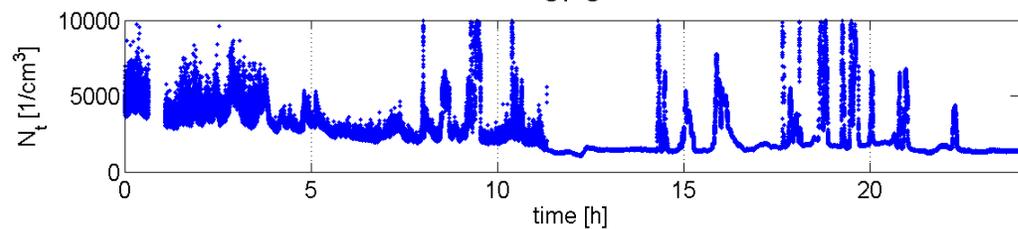
CPC

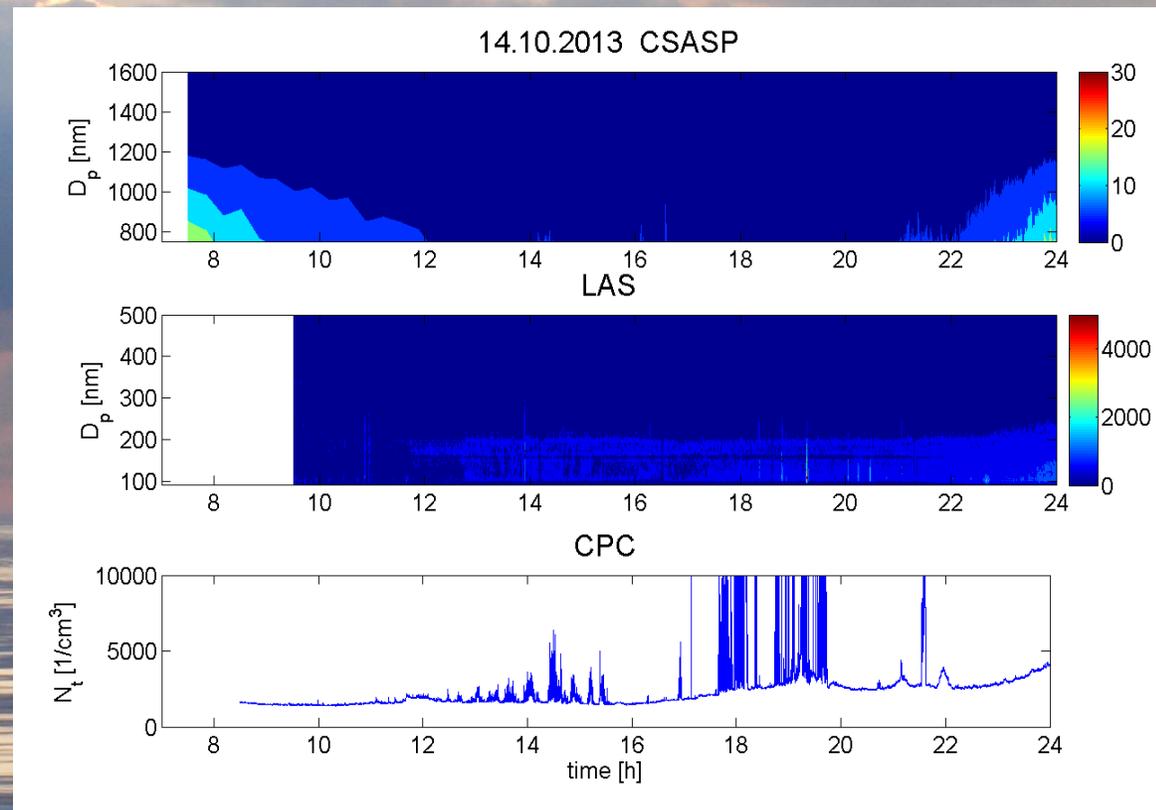
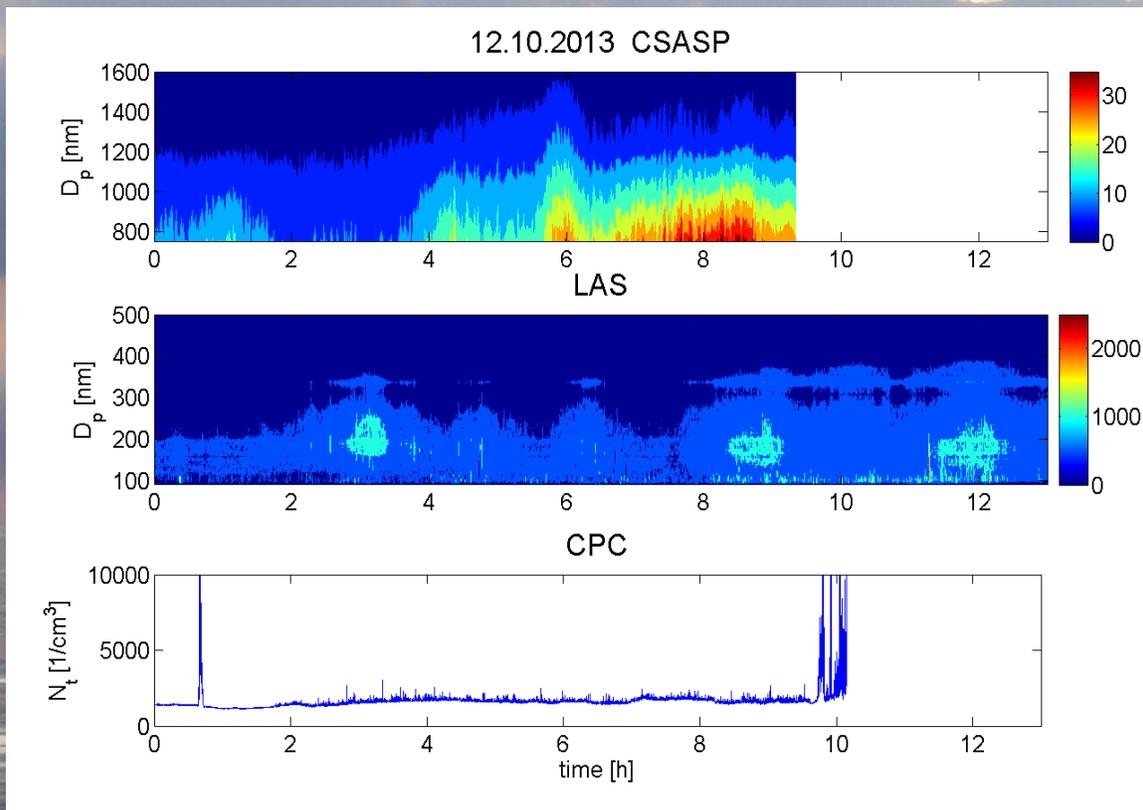


11.10.2013 CSASP



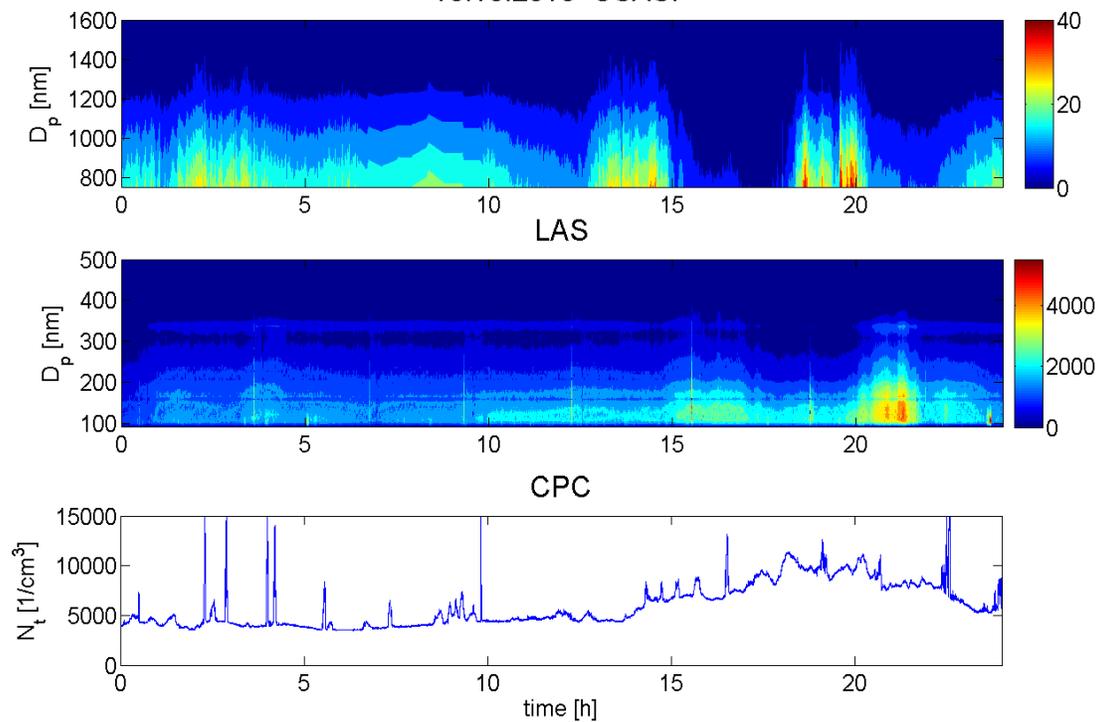
CPC



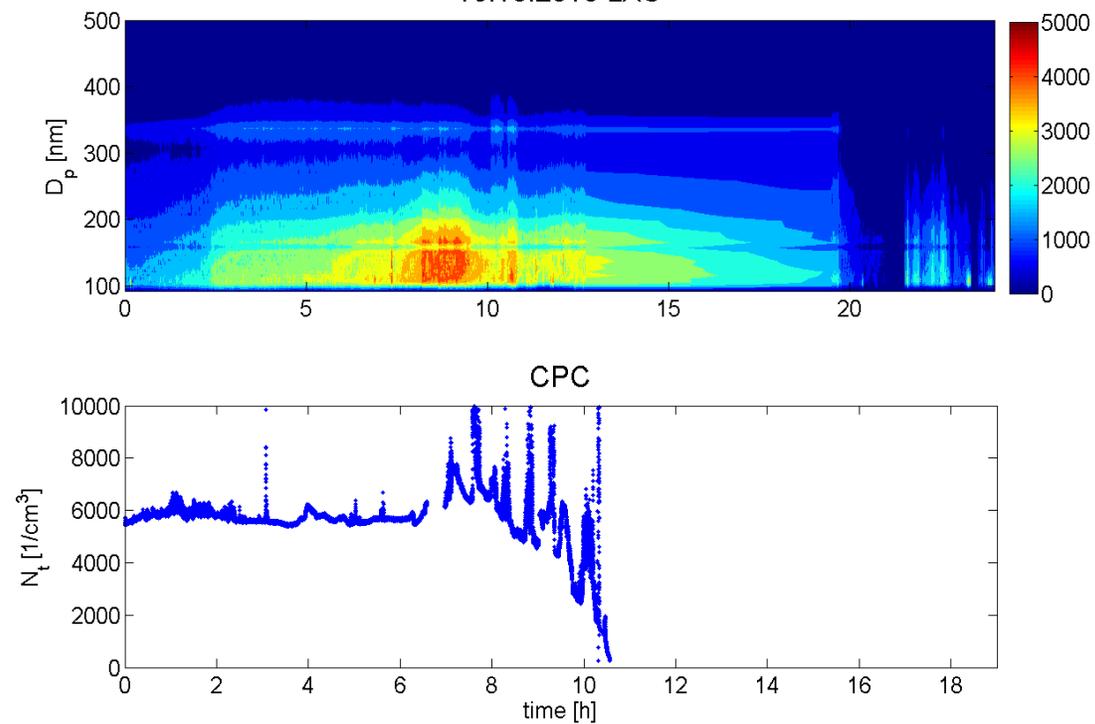




15.10.2013 CSASP

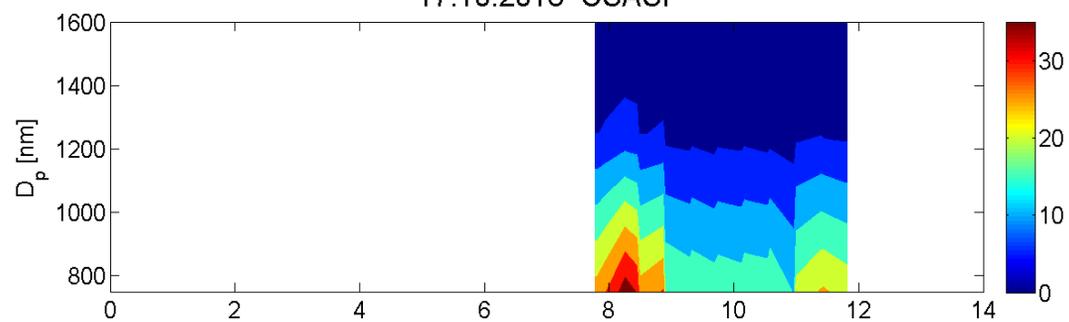


16.10.2013 LAS

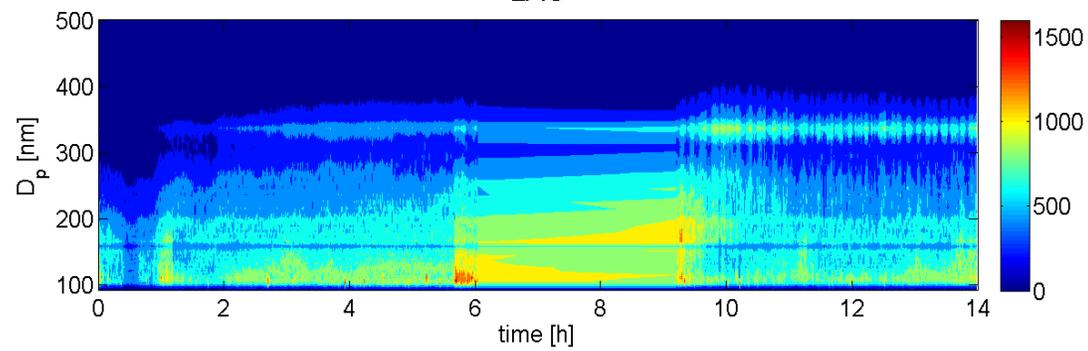




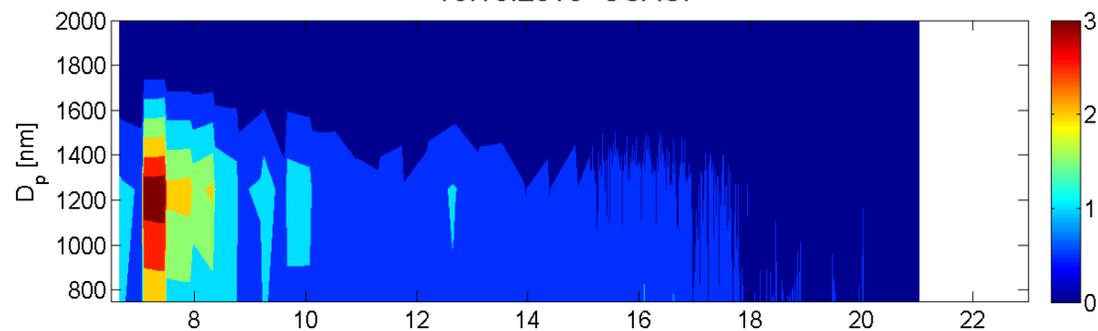
17.10.2013 CSASP



LAS



18.10.2013 CSASP



LAS

