# Maritime Aerosol Network (MAN) as a component of AERONET – current status



GSFC Aerosol Update, March 29, 2011

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# Maritime aerosol network as a component of AERONET – first results and comparison with global aerosol models and satellite retrievals

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Andrew Sayer, GEST and NASA/GSFC





### "It is very difficult, Sasha, to run free of charge network"

### Dr. Michael King, January 2009





Microtops instruments currently in the network have five channels but they may have one of two configurations: 340, 440, 675, 870, 936nm or 440 500, 675, 870, and 936nm. In addition, the instrument has built-in temperature and pressure sensors as well as the ability to log accurate time and geographical position using a GPS. The Microtops instruments are calibrated at the NASA Goddard Space Flight Center (GSFC) calibration facility via a transfer calibration procedure between the Microtops and the master Cimel sun photometer at GSFC, which has a calibration traceable to a Langley calibration of a Cimel sun photometer on Mauna Loa, Hawaii. In general, the estimated uncertainty of the aerosol optical depth in each channel does not exceed plus or minus 0.02, which is slightly higher than the uncertainty of AERONET field (not master) instruments

Additional information on data processing and quality may be found by choosing the "Data" link in the left column.

#### MAN Publication Reference

Smirnov, A., B. N. Holben, I. Slutsker, D. M. Giles, C. R. McClain, T. F. Eck, S. M. Sakerin, A. Macke, P Croot, G. Zibordi, P. K. Quinn, J. Sciare, S. Kinne, M. Harvey, T. J. Smyth, S. Piketh, T. Zielinski, A. Proshutinsky, J. I. Goes, N. B. Nelson, P. Larouche, V. F. Radionov, P. Goloub, K. Krishna Moorthy, R. Matarrese, E. J. Robertson, and F. Jourdin (2009), Maritime Aerosol Network as a component of Aerosol Robotic Network.

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#### Level 1.5 | Level 2.0

The table below provides information for past, ongoing and planned cruises. The Ship column provides links to the information and data for each cruise. The Region column provides a KML file to view the cruise in Google Earth.

Year	Ship	Region	Status
2004	RV Akademik Sergey Vavilov	Atlantic Ocean Transect, Southern Ocean	Completed
2005-2006	RV Akademik Fedorov	Atlantic Ocean Transect, Antarctica	Completed
2006-2007	RV Akademik Fedorov	Atlantic Ocean Transect, Antarctica	Completed
2007	Ecklonia	Atlantic Ocean near South African Coast	Completed
2007	RV Polarstern	Atlantic Ocean Transect	Completed

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#### + Data Display

AERONET Site Lists
+ Text Format
Google Earth Format
+ All Lists



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ZUCE         Iberng Sea         Complete           2008         CCGS Amundsen         Beaufort Sea         Complete           2008         Trans Future 5         Pacific Ocean Transect         Complete           2008         RP FLIP         Santa Barbara Basin         Complete           2008         RRS James Clark Ross         Atlantic Ocean Transect         Complete           2008         RRV Islandia         Cape Verde         Complete           2008         RV Islandia         Cape Verde         Complete           2008         RV V Islandia         Cape Verde         Complete           2008         RV Valaria S. Merian         Central and Tropical Atlantic         Complete           2008         RV Maria S. Merian         Central and Tropical Atlantic         Complete           2008         RV Marias S. Merian         Central and Tropical Atlantic         Complete           2008         RV Marios G. Langseth         Tropical Pacific         Complete           2009         Norwegian Sun         Southern Atlantic and Pacific         Complete           2009         RV Marcus G. Langseth         Tropical Pacific         Complete           2009         RV Marcus G. Langseth         Tropical Pacific Ocean         Complete
2008         CCGS Amundsen         Beaufort Sea         Complete           2008         Trans Future 5         Pacific Ocean Transect         Complete           2008         RP FLIP         Santa Barbara Basin         Complete           2008         RRV Alliance         Ligurian Sea         Complete           2008         RV Islandia         Cape Verde         Complete           2008         RV Islandia         Central and Tropical Atlantic         Complete           2008         RV Marion-Dufresne         South Indian Ocean         Complete           2008         RV Matoro-Dufresne         South Indian Ocean         Complete           2008         RV Matoro-Dufresne         South Indian Ocean         Complete           2008         RV Matoro-Dufresne         South rensect         Complete           2009         RV Mataemik Fedorov         Atlantic Ocean transect         Complete           2009         RV Marcus G. Langseth         Tropical Pacific         Complete           2009         RV
2008         Trans Future 5         Pacific Ocean Transect         Completer           2008         RP FLIP         Santa Barbara Basin         Completer           2008         NRV Alliance         Ligurian Sea         Completer           2008         RRS James Clark Ross         Atlantic Ocean Transect         Completer           2008         RV Islandia         Carribean Sea, Pacific Ocean         Completer           2008         RV Islandia         Carribean Sea, Pacific Ocean         Completer           2008         RV Maria S. Merian         Central and Tropical Atlantic         Completer           2008         RV Maria S. Merian         Central and Tropical Atlantic         Completer           2008         RV Marion-Dufresne         South Indian Ocean         Completer           2008         RV Marion-Dufresne         South Indian Coean         Completer           2009         RV Akademik Fedorov         Atlantic Ocean transect         Completer           2009         Norwegian Sun         Southern Atlantic and Pacific         Completer           2009         RV Hasperides         Pacific Ocean         Completer           2009         RV Hasperides         Pacific Ocean         Completer           2009         RV Hesperides         Pacif
2008         RP FLIP         Santa Barbara Basin         Completed           2008         NRV Alliance         Ligurian Sea         Completed           2008         RR James Clark Ross         Atlantic Ocean Transect         Completed           2008         RV Islandia         Cape Verde         Completed           2008         RV Islandia         Cape Verde         Completed           2008         RV Islandia         Carribean Sea, Pacific Ocean         Completed           2008         RV Indriarstern         Atlantic Ocean transect         Completed           2008         RV Maria S. Merian         Central and Tropical Atlantic         Completed           2008         RV Marion-Dufresne         South Indian Ocean         Completed           2008         RV Marion-Dufresne         Southern Atlantic and Pacific         Completed           2009         RV Asagar Kanya         Bay of Bengal         Completed           2009         Norwegian Sun         Southern Atlantic and Pacific         Completed           2009         RV Marcus G. Langseth         Tropical Pacific         Completed           2009         RV Marcus G. Langseth         Tropical Pacific         Completed           2009         RV Marcus G. Langseth         Tropical Pacific
2008     NRV Alliance     Ligurian Sea     Completed       2008     RRS James Clark Ross     Atlantic Ocean Transect     Completed       2008     RV Islandia     Cape Verde     Completed       2008     RV Polarstern     Atlantic Ocean transect     Completed       2008     RV Marian S. Merian     Central and Tropical Atlantic     Completed       2008     RV Marian S. Merian     Central and Tropical Atlantic     Completed       2008     RV Marian S. Merian     Central and Tropical Atlantic     Completed       2008     RV Marion-Dufresne     South Indian Ocean     Completed       2008     RV Meteor     Pacific Ocean     Completed       2008     RV Marous G. Langseth     Tropical Pacific     Completed       2009     Norwegian Sun     Southern Atlantic and Pacific     Completed       2009     RV Marcus G. Langseth     Tropical Pacific     Completed       2009     RV Marcus G. Langseth     Tropical Pacific     Completed       2009     RV Marian Dufresne     South Indian Ocean     Completed       2009     RV Academik     Baltic Sea     Completed       2009     RV Academik     Baltic Sea     Completed       2009     RV Academik     Black Sea     Completed       2009     RV Par
2008         RRS James Clark Ross         Attantic Ocean Transect         Completer           2008         RV Islandia         Cape Verde         Completer           2008         NOAA Ronald H. Brown         Carribean Sea, Pacific Ocean         Completer           2008         RV Polarstern         Attantic Ocean transect         Completer           2008         RV Maria S. Merian         Central and Tropical Attantic         Completer           2008         RV Maria S. Merian         Central and Tropical Attantic         Completer           2008         RV Marion-Dufresne         South Indian Ocean         Completer           2008         RV Mateor         Pacific Ocean         Completer           2008-2009         RV Asager Kanya         Bay of Bengal         Completer           2009         RV Akademik Fedorov         Attantic Ocean transect         Completer           2009         RV Marcus G. Langseth         Tropical Pacific         Completer           2009         RV Hasperides         Pacific Ocean         Completer           2009         RV Alademik Fedorov         Attantic Sea         Completer           2009         RV Hasperides         Pacific Ocean         Completer           2009         RV Hasperides         Pacific Ocean
2008         RV Islandia         Cape Verde         Completed           2008         NOAA Ronald H. Brown         Carribean Sea, Pacific Ocean         Completed           2008         RV Polarstern         Atlantic Ocean transect         Completed           2008         RV Maria S. Merian         Central and Tropical Atlantic         Completed           2008         RV Maria S. Merian         Central and Tropical Atlantic         Completed           2008         RV Marion-Dufresne         South Indian Ocean         Completed           2008-2009         RV Akademik Fedorov         Atlantic Ocean transect         Completed           2009         Norwegian Sun         Southern Atlantic and Pacific         Completed           2009         RV Marcus G. Langseth         Tropical Pacific         Completed           2009         RV Hesperides         Pacific Ocean         Completed           2009         RV Hesperides         Pacific Ocean         Completed           2009         RV Hesperides         Pacific Ocean         Completed           2009         RV Oceania         Baltic Sea         Completed           2009         RV Marion Dufresne         South Indian Ocean         Completed           2009         RV Marion Dufresne         South Indian O
2008         NOAA Ronald H. Brown         Carribean Sea, Pacific Ocean         Completed           2008         RV Polarstern         Atlantic Ocean transect         Completed           2008         RV Maria S. Merian         Central and Tropical Atlantic         Completed           2008         RV Maria S. Merian         Central and Tropical Atlantic         Completed           2008         RV Marion-Dufresne         South Indian Ocean         Completed           2008-2009         RV Akademik Fedorov         Atlantic Ocean transect         Completed           2009         Norwegian Sun         Southern Atlantic and Pacific         Completed           2009         Norwegian Sun         Southern Atlantic and Pacific         Completed           2009         RV Marcus G. Langseth         Tropical Pacific Ocean         Completed           2009         RV Marcus G. Langseth         Tropical Pacific Ocean         Completed           2009         RV Oceania         Baltic Sea         Completed           2009         RV Oceania         Baltic Sea         Completed           2009         RV Marion Dufresne         South Indian Ocean         Completed           2009         RV Marion Dufresne         South Indian Ocean         Completed           2009         RV
2008       RV Polarstern       Atlantic Ocean transect       Completed         2008       RV Maria S. Merian       Central and Tropical Atlantic       Completed         2008       RV Maria S. Merian       Central and Tropical Atlantic       Completed         2008       RV Marian-Dufresne       South Indian Ocean       Completed         2008       RV Meteor       Pacific Ocean       Completed         2008-2009       RV Akademik Fedorov       Atlantic Ocean transect       Completed         2009       Norwegian Sun       Southern Atlantic and Pacific       Completed         2009       RV Marcus G. Langseth       Tropical Pacific       Completed         2009       RV Marcus G. Langseth       Tropical Pacific       Completed         2009       RV Hesperides       Pacific Ocean       Completed         2009       RV Academik       Baltic Sea       Completed         2009       RV Academik       Baltic Sea       Completed         2009       RV Academik       Baltic Sea       Completed         2009       RV Alarion Dufresne       South Indian Ocean       Completed         2009       RV Palarstern       Atlantic Ocean Transect       Completed         2009       RV Akademik       Black Sea
2008         RV Maria S. Merian         Central and Tropical Atlantic         Completed           2008         RV Marion-Dufresne         South Indian Ocean         Completed           2008         RV Meteor         Pacific Ocean         Completed           2008         RV Meteor         Pacific Ocean         Completed           2008-2009         RV Akademik Fedorov         Atlantic Ocean transect         Completed           2009         RV Akademik Fedorov         Atlantic Ocean transect         Completed           2009         RV Macues G. Langseth         Tropical Pacific         Completed           2009         RV Hesperides         Pacific Ocean         Completed           2009         RV Hasperides         Pacific Ocean         Completed           2009         RV Hasperides         Pacific Ocean         Completed           2009         RV Hasperides         Pacific Ocean         Completed           2009         RV Hasinco Dufresne         South Indian Ocean         Completed           2009         RV Marion Dufresne         South Indian Ocean         Completed           2009         RV Polarstern         Atlantic Ocean Transect         Completed           2009         RV Akademik         Black Sea         Completed
2008         RV Marion-Dufresne         South Indian Ocean         Completed           2008         RV Meteor         Pacific Ocean         Completed           2008-2009         RV Sagar Kanya         Bay of Bengal         Completed           2008-2009         RV Akademik Fedorov         Atlantic Ocean transect         Completed           2009         RV Akademik Fedorov         Atlantic Ocean transect         Completed           2009         RV Marcus G. Langseth         Tropical Pacific         Completed           2009         RV Marcus G. Langseth         Tropical Pacific         Completed           2009         RV Hesperides         Pacific Ocean         Completed           2009         RV Oceania         Baltic Sea         Completed           2009         RV Oceania         Baltic Sea         Completed           2009         RV Marion Dufresne         South Indian Ocean         Completed           2009         RV Marion Dufresne         South Indian Ocean         Completed           2009         RV Akademik         Black Sea         Completed           2009         RV Akademik         Black Sea         Completed           2009         RV Islandia         Cape Verde         Completed           2009
2008         RV Meteor         Pacific Ocean         Completed           2008-2009         RV Sagar Kanya         Bay of Bengal         Completed           2008-2009         RV Akademik Fedorov         Atlantic Ocean transect         Completed           2009         Norwegian Sun         Southern Atlantic and Pacific         Completed           2009         RV Marcus G. Langseth         Tropical Pacific         Completed           2009         RV Hesperides         Pacific Ocean         Completed           2009         RV Hesperides         Pacific Ocean         Completed           2009         RV Oceania         Baltic Sea         Completed           2009         RV Marion Dufresne         South Indian Ocean         Completed           2009         RV Polarstern         Atlantic Ocean Transect         Completed           2009         RV Islandia         Cape Verde         Completed           2009         RV Islandia         Cape Verde         Completed           2009         RV Standaven
2008-2009         RV Sagar Kanya         Bay of Bengal         Completed           2008-2009         RV Akademik Fedorov         Atlantic Ocean transect         Completed           2009         Norwegian Sun         Southern Atlantic and Pacific         Completed           2009         RV Marcus G. Langseth         Tropical Pacific         Completed           2009         RV Marcus G. Langseth         Tropical Pacific         Completed           2009         RV Hasperides         Pacific Ocean         Completed           2009         RV Hesperides         Pacific Ocean         Completed           2009         RV Oceania         Baltic Sea         Completed           2009         RV Adaron Dufresne         South Indian Ocean         Completed           2009         RV Baruna Jaya IV         Java Sea         Completed           2009         RV Akademik         Black Sea         Completed           2009         RV Akademik         Black Sea         Completed           2009         RV Islandia         Cape Verde         Completed           2009         RV Jan Mayen         Norwegian, Greenland Seas         Completed           2009         RV Jan Mayen         Norwegian, Greenland Seas         Completed
Coords-2009         RV Akademik Fedorov         Atlantic Coean transect         Complete           2009         Norwegian Sun         Southern Atlantic and Pacific         Complete           2009         RV Marcus G. Langseth         Tropical Pacific         Complete           2009         FORV Sagar Sampada         Arabian Sea         Complete           2009         FORV Sagar Sampada         Arabian Sea         Complete           2009         RV Marcus G. Langseth         Tropical Pacific         Complete           2009         RV Marcus G. Langseth         Tropical Pacific         Complete           2009         RV Alantic Cean         Complete         Complete           2009         RV Oceania         Baltic Sea         Complete           2009         RV Marion Dufresne         South Indian Ocean         Complete           2009         RV Akademik         Black Sea         Complete           2009         RV Akademik         Black Sea         Complete           2009         RV Islandia         Cape Verde         Complete           2009         RV Academik         Black Sea         Complete           2009         RV Souraina         Baltic Sea         Complete           2009         RV Academik
Construction         Southern Attactics         Southern Attactics         Southern Attactics           2009         Norwegian Sun         Southern Attactics and Pacific         Completed           2009         FORV Sagar Sampada         Arabian Sea         Completed           2009         FORV Sagar Sampada         Arabian Sea         Completed           2009         RV Hesperides         Pacific Ocean         Completed           2009         RV Oceania         Baltic Sea         Completed           2009         RV Oceania         Baltic Sea         Completed           2009         RV Ceania         Baltic Sea         Completed           2009         RV Marion Dufresne         South Indian Ocean         Completed           2009         RV Akademik         Black Sea         Completed           2009         RV Islandia         Cape Verde         Completed           2009         RV Islandia         Cape Verde         Completed           2009         RV Islandia         Baltic Sea         Completed           2009         RV Islandia         Baltic Sea         Completed           2009         RV Islandia         Baltic Sea         Completed           2009         RV Klio Moana         Nortwegian
2009       RV Marcus G. Langseth       Tropical Pacific       Completed         2009       RV Hasperides       Pacific Ocean       Completed         2009       RV Hesperides       Pacific Ocean       Completed         2009       RV Oceania       Baltic Sea       Completed         2009       RV Polarstern       Atantic Ocean Transect       Completed         2009       RV Islandia       Cape Verde       Completed         2009       RV Islandia       Cape Verde       Completed         2009       RV Stantia       Baltic Sea       Completed         2009       RV Jan Mayen       Norwegian, Greenland Seas       Completed         2009       RV Kilo Moana       North Pacific Ocean       Completed         2009       RV Kilo Moana       Norwegian, Greenland Seas       Completed         2009       RV Voceania       Norwegian, Greenlan
2009     FV Resperides     Completes       2009     FV Sagar Sampada     Arabian Sea     Completes       2009     RV Hesperides     Pacific Ocean     Completes       2009     RV Alance     Ligurian Sea     Completes       2009     RV Oceania     Battic Sea     Completes       2009     RV Oceania     Battic Sea     Completes       2009     RV Baruna Jaya IV     Java Sea     Completes       2009     RV Marion Dufresne     South Indian Ocean     Completes       2009     RV Palarstern     Atlantic Ocean Transect     Completes       2009     RV Akademik     Black Sea     Completes       2009     RV Akademik     Black Sea     Completes       2009     RV Oceania     Battic Sea     Completes       2009     RV Oceania     Battic Sea     Completes       2009     RV Jan Mayen     Norwegian, Greenland Seas     Completes       2009     RV Jan Mayen     Norwegian, Greenland Seas     Completes       2009     RV Jan Mayen     Norwegian, Greenland Seas     Completes       2009     RV Jacania     Norwegian, Greenland Seas     Completes       2009     RV Oceania     Norwegian, Greenland Seas     Completes       2009     RV Oceania     Norw
2009       RV Hesperides       Pacific Ocean       Completer         2009       RV Hesperides       Pacific Ocean       Completer         2009       RV Alliance       Ligurian Sea       Completer         2009       RV Oceania       Battic Sea       Completer         2009       RV Baruna Jaya IV       Java Sea       Completer         2009       RV Marion Dufresne       South Indian Ocean       Completer         2009       RV Marion Dufresne       South Indian Ocean Transect       Completer         2009       RV Akademik       Black Sea       Completer         2009       RV Islandia       Cape Verde       Completer         2009       RV Islandia       Cape Verde       Completer         2009       RV Islandia       Batic Sea       Completer         2009       RV Academik       Batic Sea       Completer         2009       RV Academik       Batic Sea       Completer         2009       RV Academik       Norwegian, Greenland Seas       Completer         2009       RV Academik       Norwegian, Greenland Seas       Completer         2009       RV Academik       Beaufort Sea       Completer         2009       RV Acania       Norwegian, Green
2009     RV Hespendes     Patrine Ocean     Completed       2009     RV Alliance     Ligurian Sea     Completed       2009     RV Cceania     Baltic Sea     Completed       2009     RV Baruna Jaya IV     Java Sea     Completed       2009     RV Marion Dufresne     South Indian Ocean     Completed       2009     RV Marion Dufresne     South Indian Ocean     Completed       2009     RV Akademik     Black Sea     Completed       2009     RV Akademik     Black Sea     Completed       2009     RV Islandia     Cape Verde     Completed       2009     RV Islandia     Baltic Sea     Completed       2009     RV Jan Mayen     Norwegian, Greenland Seas     Completed       2009     RV Kilo Moana     North Pacific Ocean     Completed       2009     RV Kilo Moana     North Pacific Ocean     Completed       2009     RV Academia     Baltic Sea     Completed       2009     RV Cceania     Norwegian, Greenland Seas     Completed       2009     RV Academia     Northerafic Ocean     Completed       2009     RV Cceania     Norwegian, Greenland Seas     Completed       2009     RV Academia     Northerafic Ocean     Completed       2009     RV M
2009     RV Allance     Ligurian Sea     Completed       2009     RV Oceania     Baltic Sea     Completed       2009     RV Baruna Jaya IV     Java Sea     Completed       2009     RV Palarstern     Atlantic Ocean Transect     Completed       2009     RV Polarstern     Atlantic Ocean Transect     Completed       2009     RV Polarstern     Atlantic Ocean Transect     Completed       2009     RV Islandia     Cape Verde     Completed       2009     RV Islandia     Cape Verde     Completed       2009     RV Oceania     Baltic Sea     Completed       2009     RV Alan Mayen     Norwegian, Greenland Seas     Completed       2009     RV Kilo Moana     North Pacific Ocean     Completed       2009     RV Oceania     Norwegian, Greenland Seas     Completed       2009     RV Oceania     Norwegian, Greenland Seas     Completed       2009     RV Marion Dufresne     South Indian Ocean     Completed       2009     RV Marion Dufresne     South Indian Ocean     Completed       2009
2009         RV Uceania         Baitic Sea         Complete           2009         RV Baruna Jaya IV         Java Sea         Complete           2009         RV Marion Dufresne         South Indian Ocean         Complete           2009         RV Polarstern         Atlantic Ocean Transect         Complete           2009         RV Islandia         Cape Verde         Complete           2009         RV Islandia         Cape Verde         Complete           2009         RV Oceania         Baitic Sea         Complete           2009         RV Oceania         Baitic Sea         Complete           2009         RV Oceania         Baitic Sea         Complete           2009         RV Jan Mayen         Norwegian, Greenland Seas         Complete           2009         RV Kilo Moana         North Pacific Ocean         Complete           2009         RV Kilo Moana         Norwegian, Greenland Seas         Complete           2009         RV Koeania         Norwegian, Greenland Seas         Complete           2009         RV Coeania         Beaufort Sea         Complete           2009         RV FLIP         Tropical Pacific         Complete           2009         RV Marion Dufresne         South Indian O
2009     RV Baruna Jaya IV     Java Sea     Completer       2009     RV Marion Dufresne     South Indian Ocean     Completer       2009     RV Polarstern     Atlantic Ocean Transect     Completer       2009     RV Akademik     Black Sea     Completer       2009     RV Islandia     Cape Verde     Completer       2009     RV Islandia     Cape Verde     Completer       2009     RV Oceania     Baltic Sea     Completer       2009     RV Oceania     Baltic Sea     Completer       2009     RV Academik     Black Sea     Completer       2009     RV Oceania     Baltic Sea     Completer       2009     RV Academik     Baltic Sea     Completer       2009     RV Aceania     Norwegian, Greenland Seas     Completer       2009     RV Aceania     Norwegian, Greenland Seas     Completer       2009     RV Oceania     Norwegian, Greenland Seas     Completer       2009     RV Oceania     Norwegian, Greenland Seas     Completer       2009     RV Marion Dufresne     South Indian Ocean     Completer       2009     RV Polarstern     Northern Greenland Sea     Completer       2009     RV Oceania     Baltic Sea     Completer       2009     RV Ocean
2009         RV Marion Dufresne         South Indian Ocean         Completer           2009         RV Polarstern         Atlantic Ocean Transect         Completer           2009         RV Polarstern         Atlantic Ocean Transect         Completer           2009         RV Islandia         Cape Verde         Completer           2009         RV Islandia         Cape Verde         Completer           2009         RV Oceania         Baltic Sea         Completer           2009         RV Oceania         Baltic Sea         Completer           2009         RV Klio Moana         Norwegian, Greenland Seas         Completer           2009         RV Klio Moana         North Pacific Ocean         Completer           2009         RV Aceania         Baltic Sea         Completer           2009         RV Coeania         Norwegian, Greenland Seas         Completer           2009         RV Coeania         Norwegian, Greenland Seas         Completer           2009         RV Marion Dufresne         South Indian Ocean         Completer           2009         RV Marion Dufresne         South Indian Ocean         Completer           2009         RV Polarstern         Northern Greenland Sea         Completer           2009 </td
2009         RV Polarstern         Atlantic Ocean Transect         Completed           2009         RV Akademik         Black Sea         Completed           2009         RV Akademik         Black Sea         Completed           2009         RV Standia         Cape Verde         Completed           2009         RV Doceania         Batic Sea         Completed           2009         RV Jan Mayen         Norwegian, Greenland Seas         Completed           2009         RV Joceania         Norwegian, Greenland Seas         Completed           2009         RV Oceania         Norwegian, Greenland Seas         Completed           2009         RV Oceania         Beaufort Sea         Completed           2009         RV Marion Dufresne         South Indian Ocean         Completed           2009         RV Polarstern         Northern Greenland Sea         Completed           2009         RV Oceania         Baltic Sea         Completed           2009
2009         RV Akademik         Black Sea         Completed           2009         RV Islandia         Cape Verde         Completed           2009         RRS Discovery         Canary-Tropical Atlantic         Completed           2009         RV Oceania         Baltic Sea         Completed           2009         RV Jan Mayen         Norwegian, Greenland Seas         Completed           2009         RV Kilo Moana         North Pacific Ocean         Completed           2009         RV Kilo Moana         Norwegian, Greenland Seas         Completed           2009         RV AR Ronald H. Brown         Tropical Atlantic         Completed           2009         RV AR Ronald H. Brown         Tropical Atlantic         Completed           2009         RV AR Ronald H. Brown         Tropical Pacific         Completed           2009         RV Amudsen         Beaufort Sea         Completed           2009         RP FLIP         Tropical Pacific         Completed           2009         RV Marion Dufresne         South Indian Ocean         Completed           2009         RV Polarstern         Northern Greenland Sea         Completed           2009         RV Oceania         Baltic Sea         Completed
2009         RV Islandia         Cape Verde         Completed           2009         RRS Discovery         Canary-Tropical Atlantic         Completed           2009         RV Oceania         Baltic Sea         Completed           2009         RV Aceania         Baltic Sea         Completed           2009         RV Aceania         Norwegian, Greenland Seas         Completed           2009         RV Kilo Moana         North Pacific Ocean         Completed           2009         RV Aceania         Norwegian, Greenland Seas         Completed           2009         RV Aceania         Norwegian, Greenland Seas         Completed           2009         RV Aceania         Norwegian, Greenland Seas         Completed           2009         RV Oceania         Beaufort Sea         Completed           2009         RV Marion Dufresne         South Indian Ocean         Completed           2009         RV Polarstern         Northern Greenland Sea         Completed           2009         RV Oceania         Baltic Sea         Completed
2009         RRS Discovery         Canary-Tropical Atlantic         Completed           2009         RV Oceania         Baltic Sea         Completed           2009         RV Voceania         Baltic Sea         Completed           2009         RV An Mayen         Norwegian, Greenland Seas         Completed           2009         RV Kilo Moana         North Pacific Ocean         Completed           2009         RV Acanald H. Brown         Tropical Atlantic         Completed           2009         RV Oceania         Norwegian, Greenland Seas         Completed           2009         RV Oceania         Norwegian, Greenland Seas         Completed           2009         RV Oceania         Beaufort Sea         Completed           2009         RV Marion Dufresne         South Indian Ocean         Completed           2009         RV Polarstern         Northern Greenland Sea         Completed           2009         RV Oceania         Baltic Sea         Completed
2009         RV Oceania         Baltic Sea         Completed           2009         RV Jan Mayen         Norwegian, Greenland Seas         Completed           2009         RV Kilo Moana         North Pacific Ocean         Completed           2009         NV Kilo Moana         North Pacific Ocean         Completed           2009         NOAA Ronald H. Brown         Tropical Atlantic         Completed           2009         RV Oceania         Norwegian, Greenland Seas         Completed           2009         RV Oceania         Beaufort Sea         Completed           2009         RP FLIP         Tropical Pacific         Completed           2009         RV Marion Dufresne         South Indian Ocean         Completed           2009         RV Polarstern         Northern Greenland Sea         Completed           2009         RV Oceania         Baltic Sea         Completed
2009         RV Jan Mayen         Norwegian, Greenland Seas         Completed           2009         RV Kilo Moana         North Pacific Ocean         Completed           2009         NV AA Ronald H. Brown         Tropical Atlantic         Completed           2009         RV Oceania         Norwegian, Greenland Seas         Completed           2009         RV Oceania         Norwegian, Greenland Seas         Completed           2009         RV Cocania         Beaufort Sea         Completed           2009         RP FLIP         Tropical Pacific         Completed           2009         RV Marion Dufresne         South Indian Ocean         Completed           2009         RV Polarstern         Northern Greenland Sea         Completed           2009         RV Oceania         Baltic Sea         Completed
2009         RV Kilo Moana         North Pacific Ocean         Completer           2009         NOAA Ronald H. Brown         Tropical Atlantic         Completer           2009         RV Oceania         Norwegian, Greenland Seas         Completer           2009         CCGS Amundsen         Beaufort Sea         Completer           2009         RP FLIP         Tropical Pacific         Completer           2009         RV Marion Dufresne         South Indian Ocean         Completer           2009         RV Polarstern         Northern Greenland Sea         Completer           2009         RV Oceania         Baltic Sea         Completer
2009         NOAA Ronald H. Brown         Tropical Atlantic         Completer           2009         RV Oceania         Norwegian, Greenland Seas         Completer           2009         CCGS Amundsen         Beaufort Sea         Completer           2009         RC FLIP         Tropical Pacific         Completer           2009         RV Marion Dufresne         South Indian Ocean         Completer           2009         RV Polarstern         Northern Greenland Sea         Completer           2009         RV Oceania         Baltic Sea         Completer
2009         RV Oceania         Norwegian, Greenland Seas         Complete           2009         CCGS Amundsen         Beaufort Sea         Complete           2009         RP FLIP         Tropical Pacific         Complete           2009         RV Marion Dufresne         South Indian Ocean         Complete           2009         RV Polarstern         Northern Greenland Sea         Complete           2009         RV Ceania         Baltic Sea         Complete
2009         CCGS Amundsen         Beaufort Sea         Complete           2009         RP FLIP         Tropical Pacific         Complete           2009         RV Marion Dufresne         South Indian Ocean         Complete           2009         RV Marion Dufresne         South Indian Ocean         Complete           2009         RV Polarstern         Northern Greenland Sea         Complete           2009         RV Cocania         Baltic Sea         Complete
2009         RV PLIP         Tropical Pacific         Complete           2009         RV Marion Dufresne         South Indian Ocean         Complete           2009         RV Polarstern         Northern Greenland Sea         Complete           2009         RV Oceania         Baltic Sea         Complete
2009         RV Marion Dufresne         South Indian Ocean         Complete           2009         RV Polarstern         Northern Greenland Sea         Complete           2009         RV Oceania         Baltic Sea         Complete
2009         RV matrion Durresne         South Indian Ocean         Completer           2009         RV Polarstern         Northern Greenland Sea         Completer           2009         RV Oceania         Baltic Sea         Completer
2009 RV Oceania Baltic Sea Completer
2009 KV Oceania Baitic Sea Completed
0000 011
2009 RV Sonne Pacific Ocean Completed
2009 Trans Future 5 Pacific Ocean Completed
2009 RV Polarstern Atlantic Ocean transect Completed
2009 RV Antea South Indian Ocean Completed
2009 RRS James Cook Atlantic Ocean transect Completed
2009 RV Akademik loffe Atlantic Ocean transect Completed
2009 RV Marion Dufresne South Indian Ocean Completed

2009-2010	RV Marion Dufresne	South Indian Ocean	Completed
2009-2010	RV Melville	South Pacific Ocean	Completed
2009-2010	RV Astrolabe	South Pacific and South Ocean	Completed
2009-2010	RV Akademik Fedorov	Atlantic Ocean transect, South Ocean	Completed
2009-2010	RV Ocean Watch	Around the Americas	Completed
2010	Prince Albert II	Southern Atlantic and South Ocean	Completed
2010	RV Astrolabe	South Ocean	Completed
2010	FORV Sagar Sampada	Arabian Sea	Completed
2010	RV 1	South China Sea	Completed
2010	CCGS Hudson	North Atlantic Ocean	Completed
2010	NOAA Ronald H. Brown	Tropical Atlantic	Completed
2010	RV Southern Surveyor	Indian Ocean	Completed
2010	RV Antea	Indian Ocean, Mozambique Channel	Completed
2010	RV Marion Dufresne	Indian Ocean	Completed
2010	RV Polarstern	Atlantic Ocean transect	Completed
2010	NOAA Ronald H. Brown	Tropical Atlantic	Completed
2010	MV Zim Iberia	Pacific Ocean, Indian Ocean, Arabian Sea	Completed
2010	RV Oceania	Baltic Sea	Completed
2010	RV Atlantis	West Coast US	Completed
2010	RV Knorr	Tropical Atlantic	Completed
2010	RV Marion Dufresne	South China Sea, Sea of Japan	Completed
2010	RV New Horizon	Gulf of California	Completed
2010	RV Melville	Tropical Pacific	Completed
2010	RV Marion Dufresne	Equatorial Pacific, Ceram Sea	Completed
2010	CCGS Amundsen	Labrador Sea, Hudson Bay	Completed
2010	RV Marion Dufresne	Indian Ocean	Completed
2010	RV Oceania	Norwegian, Greenland Seas	Completed
2010	MV Zim San Diego	South China Sea, Gulf of Siam	Completed
2010	NRV Alliance	Ligurian Sea	Completed
2010	RV Marion Dufresne	South Indian Ocean	Completed
2010	RV Akademik loffe	Northern Atlantic	Completed
2010	HC Maria	Atlantic Ocean	Completed
2010	RV Marion Dufresne	South Indian Ocean	Completed
2010	RV Roger Revelle	North Pacific Ocean	Completed
2010	RV Marion Dufresne	South Indian Ocean	Completed
2010	RV Meteor	Tropical Atlantic	Completed
2010	RRS Discovery	South Atlantic Ocean	Completed
2010	RRS James Cook	Atlantic Ocean transect	Completed
2010	RV Polarstern	Atlantic Ocean transect	Completed
2010	RV Marion Dufresne	South Indian Ocean	Completed
2010	RRS James Cook	South Atlantic Ocean	Completed
2010	RV Southern Surveyor	Tasman Sea	Completed
2010-2011	RRS James Clark Ross	South Atlantic Ocean	Completed
2010-2011	RV Hesperides	South Atlantic, South Indian Ocean	Ongoina
2010-2011	RV Akademik Fedorov	Atlantic Ocean transect. Southern Ocean	Ongoing
2010-2011	NP Almirante Maximiano	South Atlantic Ocean	Ongoing
2011	RV Kilo Moana	North Pacific Ocean	Completed
2011	RV Tangaroa	South Pacific Ocean	Completed
2011	RV Melville	South Atlantic Ocean	Completed
2011	RV Astrolabe	Southern Ocean, South Pacific	Completed
2011	RRS Discovery	Tropical Atlantic	Ongoing
2011	Trans Future 5	Pacific Ocean	Planned
2011	RV Laurence M. Gould	South Atlantic Ocean	Planned
2011	RV Maria S. Merian	Tropical Atlantic	Planned
2011	RV Polarstern	Atlantic Ocean transect	Planned
2011	RV Melville	South Atlantic Ocean	Planned
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## **MAN products:**

- Aerosol optical depth (Level 1; Level 1.5; Level 2)
- Water vapor content (Level 1; Level 1.5; Level 2)
- Aerosol optical depths: fine (sub-micron) and coarse (super-micron) at 500 nm (Level 1; Level



# Maritime Aerosol Network global coverage (March 2011)



Cruise tracks and daily averages of aerosol optical depth at 500 nm (squares are colored with respect to AOD values, i.e. <u>blue – AOD<0.10</u>, <u>green – blsAOD=0.2</u>, <u>yellow – 0.2≤AOD<0.3</u>, <u>orange – 0.3≤AOD<0.5</u>, <u>red – 0.5≤AOD<0.7</u>, <u>purple – AOD≥0.7</u>).

## **Coarse mode AOD**



Cruise tracks and daily averages of coarse mode aerosol optical depth at 500 nm<sup>3</sup> (squares are colored with respect to coarse AOD values, i.e. grey – AOD<0.05, blue – 0.05<AOD<0.10, \_\_\_\_\_\_\_\_\_\_, yellow – 0.2≤AOD<0.3, orange – 0.3≤AOD<0.5, red – 0.5≤AOD<0.7, purple – AOD≥0.7).

## Summary

Number of cruises completed – 121
Number of measurement days –>2300
Number of measurement series->13600
Number of ongoing cruises – 5
Number of planned cruises – 11



### **Overall statistics for oceanic areas**

## **Comparison with global aerosol models**



## Comparison with satellite retrievals











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