Aerosols, short irradiation neutron activation analysis from R/V Thomas G. Thompson cruises in the Arabian Sea in 1995 (U.S. JGOFS Arabian Sea project)

Website: https://www.bco-dmo.org/dataset/2592
Version: June 30, 1997
Version Date: 1997-06-30

Project
» U.S. JGOFS Arabian Sea (Arabian Sea)

Program
» U.S. Joint Global Ocean Flux Study (U.S. JGOFS)

Contributors	Affiliation	Role
Tindale, Neil	Texas A&M University (TAMU)	Principal Investigator
Chandler, Cynthia L.	Woods Hole Oceanographic Institution (WHOI BCO-DMO)	BCO-DMO Data Manager

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Dataset Description

PI: Neil Tindale
of: Texas A&M University
dataset: Aerosols, short irradiation neutron activation analysis
dates: January 08, 1995 to December 25, 1995
location: N: 23.7953 S: 09.9776 W: 57.2609 E: 68.7641
project: Arabian Sea
ship: Thomas Thompson

PI Notes and Methodology
A note from DMO on supplementary fields

HiVol pump sampler methods are described in: N. W. Tindale and P. P. Pease, Aerosols over the Arabian Sea: Atmospheric transport pathways and concentrations of dust and sea salt, Deep Sea Research Part II: Topical Studies in OceanographyVolume 46, Issues 8-9, August 1999, Pages 1577-1595. (view article at ScienceDirect)

Methods & Sampling

PI: Neil Tindale
of: Texas A&M University
dataset: Aerosols, short irradiation neutron activation analysis
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Dr. Neil Tindale, Texas A & M Univ.
JGOFS/Arabian Sea
Aerosols, short and long irradiation neutron activation analysis

JGOFS Arabian Sea Aerosol Data

This mineral aerosol concentration data set is from samples collected during several cruises on the R/V Thomas Thompson during the JGOFS Arabian Sea field program. The data set includes the sampling period for each sample; the "Day of Year", yrday, number for the start of the sampling period for each sample; and the concentration of different elements for each sample, in micrograms per cubic meter. For the sampling period, "nd" is used as a filler to indicate "no data" gaps in the data array. The dust values are estimated using aluminum concentrations determined by neutron activation analysis. While most samples cover a multi-day period, we only have data for about 150 days. We didn't participate in all of the cruises and, on the cruises where samples were collected, often sampling conditions were less than ideal (bad weather, ship maneuvering, relative wind from astern etc.). A few samples that were collected showed obvious contamination from local sources, presumably from material from the R/V Thompson or from nearby fishing boats, and these samples were discarded and are not included in the data set. While the sampling period represents the period during which sampling occurred, sampling was usually not continuous. Sampling was frequently stopped, whenever sampling conditions were no longer suitable. Thus the concentration value at any particular date represents a time integrated sample which is usually non-continuous.

Cautionary comments:
1. There may be a problem with the estimate for the mineral "dust" concentration. Most researchers use the average crustal ratio to estimate mineral dust concentrations using elemental concentration data (Al, Fe, etc.). Surface sand and silt samples that were collected in Oman in the Wahibah Sands region have distinct, non-crustal ratios. If individual aerosol samples are comprised of material from distinct sources, including Oman, then it is not unreasonable for their elemental ratios to differ from the published "average" crustal ratio that is used in most aerosol studies.

2. The amount of Ti in all the aerosol samples was small, despite there being a reasonable amount of dust material in most samples. The peaks for Cr and Ti overlap in the neutron activation short irradiation analysis and if significant quantities of Cr are present, this will interfere with the Ti analysis. With the exception of one sample, the Ti values are at or below the detection limit. The sole value above the detection limit was corrected for the Cr contribution using a correction based on the Cr values from the long irradiations. The correction changed the Ti value by less than 5%. The Ti data flagged as being at or below the detection limit was not corrected for possible Cr interference.

Data management office notes on supplementary fields - aerosols data

lat, lon

A nominal ship location is given in lat/lon. The location is the noon position most near the middle of the sampling period, e.g. for a sample which was pumped intermittently from Jan. 3 - 5, the location is given for noon, Jan. 4. Intended as an aid to understanding, not a discrete location.

date_begin, date_end

We have included the start and stop day for each sample which we believe constrains the sample time about as well as is useful for these

data. We also have pump volume and thus a mean concentration of dust per cubic meter of air for that time frame. The actual number of hours sampled during a time block (number of days) is complicated to present. Pumps were turned on and off repetitively depending upon ship maneuvers and relative wind direction (to prevent ship exhaust contamination). Also, the total number of hours the pumps were on is a less useful measure than pump volume, because of the variability in pump efficiency due to changing barometric pressures. An hours worth of pumping does not always yield the same volume of air.

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Data Files

File
aerosols_short.csv (Comma Separated Values (.csv), 11.16 KB) MD5:d9185f8e91066d9cd6e06eedd9669bb5 Primary data file for dataset ID 2592

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Parameters

Parameter	Description	Units
cruise	Arabian Sea, Thomas Thompson cruise identifier	
date_begin	date sampling pump turned on for a given sample,	as YYYYMMDD
date_end	date sampling pump turned off for a given sample, as YYYYMMDD	
yrday	day of year, 1995	
lat_n	Nominal latitude (minus indicates South)	decimal degrees
lon_n	Nominal longitude (minus indicates West)	decimal degrees
vol_pump	volume of air pumped to accumulate sample	cubic meter
Al	concentration of Aluminum	ug/m^3
Ca	concentration of Calcium	ug/m^3
Mg	concentration of Magnesium	ug/m^3
Mn	concentration of Manganese	ug/m^3
Na	concentration of Sodium	ug/m^3
Si	concentration of Silicon	ug/m^3
Ti	concentration of Titanium	ug/m^3
V	concentration of Vanadium	ug/m^3
dust	total sample mass estimated by assuming the Al content represented 8 percent, based on a crustal average for Al of 8%	ug/m^3
Al_err	Aluminum combined sampling and analytical error	ug/m^3

Al_dl	Aluminum detection level: a '1' indicates that while a peak was detected, the isotope sample was below the level of detection relative to background "noise". The element concentration reported therefore represents the amount of the isotope which would have had to have been present for it to have been detected. a '0' indicates no flag - concentration is as measured.	
Ca_err	Calcium combined sampling and analytical error	ug/m^3
Ca_dl	Calcium detection level: a '1' indicates that while a peak was detected, the isotope sample was below the level of detection relative to background "noise". The element concentration reported therefore represents the amount of the isotope which would have had to have been present for it to have been detected. a '0' indicates no flag - concentration is as measured.	
Mg_err	Magnesium combined sampling and analytical error	ug/m^3
Mg_dl	Magnesium detection level: a '1' indicates that while a peak was detected, the isotope sample was below the level of detection relative to background "noise". The element concentration reported therefore represents the amount of the isotope which would have had to have been present for it to have been detected. a '0' indicates no flag - concentration is as measured.	
Mn_err	Manganese combined sampling and analytical error	ug/m^3
Mn_d	Manganese detection level: a '1' indicates that while a peak was detected, the isotope sample was below the level of detection relative to background "noise". The element concentration reported therefore represents the amount of the isotope which would have had to have been present for it to have been detected. a '0' indicates no flag - concentration is as measured.	
Na_err	Sodium combined sampling and analytical error	ug/m^3
Na_dl	Sodium detection level: a '1' indicates that while a peak was detected, the isotope sample was below the level of detection relative to background "noise". The element concentration reported therefore represents the amount of the isotope which would have had to have been present for it to have been detected. a '0' indicates no flag - concentration is as measured.	
Si_err	Silicon combined sampling and analytical error	ug/m^3
Si_dl	Silicon detection level: a '1' indicates that while a peak was detected, the isotope sample was below the level of detection relative to background "noise". The element concentration reported therefore represents the amount of the isotope which would have had to have been present for it to have been detected. a '0' indicates no flag - concentration is as measured.	
Ti_err	Titanium combined sampling and analytical error	ug/m^3
Ti_dl	Titanium detection level: a '1' indicates that while a peak was detected, the isotope sample was below the level of detection relative to background "noise". The element concentration reported therefore represents the amount of the isotope which would have had to have been present for it to have been detected. a '0' indicates no flag - concentration is as measured.	
V_err	Vanadium combined sampling and analytical error	ug/m^3
V_dl	Vanadium detection level: a '1' indicates that while a peak was detected, the isotope sample was below the level of detection relative to background "noise". The element concentration reported therefore represents the amount of the isotope which would have had to have been present for it to have been detected. a '0' indicates no flag - concentration is as measured.	
dust_err	total sample mass combined sampling and analytical error	ug/m^3
dust_dl	total sample mass detection level: a '1' indicates that while a peak was detected, the isotope sample was below the level of detection relative to background "noise". The element concentration reported therefore represents the amount of the isotope which would have had to have been present for it to have been detected. a '0' indicates no flag - concentration is as measured.	

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Instruments

Dataset-specific Instrument Name	Pump Air Sampler
Generic Instrument Name	Pump Air Sampler
Dataset-specific Description	Air sampling pumps, were mounted in a 6-m shipping container located on the foredeck's container storage rack. The air sampler was a HiVol system loaded with a single unwashed Whatman 41t "lter and with a #ow rate of&1.2}1.4 m3 min~1.
Generic Instrument Description	A Pump Air Sampler is an instrument that continuously supplies a flow of air either to an analytical instrument, over a sensor, through filters or from which discrete samples may be drawn for subsequent analysis. This instrument designation is used when specific make and model are not known.

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Deployments

TT043

Website	https://www.bco-dmo.org/deployment/57704
Platform	R/V Thomas G. Thompson
Report	http://osprey.bcodmo.org/datasetDeployment.cfm?ddid=2580&did=353&flag=view
Start Date	1995-01-08
End Date	1995-02-05

Description	Purpose: Process Cruise #1 (Late NE Monsoon) **Methods & Sampling** PI: Neil Tindale of: Texas A&M University dataset: Aerosols, short irradiation neutron activation analysis dates: January 08, 1995 to December 25, 1995 location: N: 23.7953 S: 09.9776 W: 57.2609 E: 68.7641 project: Arabian Sea ship: Thomas Thompson Dr. Neil Tindale, Texas A & M Univ. JGOFS/Arabian Sea Aerosols, short and long irradiation neutron activation analysis JGOFS Arabian Sea Aerosol Data This mineral aerosol concentration data set is from samples collected during several cruises on the R/V Thomas Thompson during the JGOFS Arabian Sea field program. The data set includes the sampling period for each sample; the "Day of Year", yrday, number for the start of the sampling period for each sample; and the concentration of different elements for each sample, in micrograms per cubic meter. For the sampling period, "nd" is used as a filler to indicate "no data" gaps in the data array. The dust values are estimated using aluminum concentrations determined by neutron activation analysis. While most samples cover a multi-day period, we only have data for about 150 days. We didn't participate in all of the cruises and, on the cruises where samples were collected, often sampling conditions were less than ideal (bad weather, ship maneuvering, relative wind from astern etc.). A few samples that were collected showed obvious contamination from local sources, presumably from material from the R/V Thompson or from nearby fishing boats, and these samples were discarded and are not included in the data set. While the sampling period represents the period during which sampling occurred, sampling was usually not continuous. Sampling was frequently stopped, whenever sampling conditions were no longer suitable. Thus the concentration value at any particular date represents a time integrated sample which is usually non-continuous. Cautionary comments: 1. There may be a problem with the estimate for the mineral "dust" concentration. Most researchers use the average crustal ratio to estimate mineral dust concentrations using elemental concentration data (Al, Fe, etc.). Surface sand and silt samples that were collected in Oman in the Wahibah Sands region have distinct, non-crustal ratios. If individual aerosol samples are comprised of material from distinct sources, including Oman, then it is not unreasonable for their elemental ratios to differ from the published "average" crustal ratio that is used in most aerosol studies. 2. The amount of Ti in all the aerosol samples was small, despite there being a reasonable amount of dust material in most samples. The peaks for Cr and Ti overlap in the neutron activation short irradiation analysis and if significant quantities of Cr are present, this will interfere with the Ti analysis. With the exception of one sample, the Ti values are at or below the detection limit. The sole value above the detection limit was corrected for the Cr contribution using a correction based on the Cr values from the long irradiations. The correction changed the Ti value by less than 5%. The Ti data flagged as being at or below the detection limit was not corrected for possible Cr interference. Data management office notes on supplementary fields - aerosols data lat, lon A nominal ship location is given in lat/lon. The location is the noon position most near the middle of the sampling period, e.g. for a sample which was pumped intermittently from Jan. 3 - 5, the location is given for noon, Jan. 4. Intended as an aid to understanding, not a discrete location. date_begin, date_end We have included the start and stop day for each sample which we believe constrains the sample time about as well as is useful for these data. We also have pump volume and thus a mean concentration of dust per cubic meter of air for that time frame. The actual number of hours sampled during a time block (number of days) is complicated to present. Pumps were turned on and off repetitively depending upon ship maneuvers and relative wind direction (to prevent ship exhaust contamination). Also, the total number of hours the pumps were on is a less useful measure than pump volume, because of the variability in pump efficiency due to changing barometric pressures. An hours worth of pumping does not always yield the same volume of air.

TT044

Website	https://www.bco-dmo.org/deployment/57705
Platform	R/V Thomas G. Thompson
Start Date	1995-02-09
End Date	1995-02-28
Description	**Methods & Sampling** PI: Neil Tindale of: Texas A&M University dataset: Aerosols, short irradiation neutron activation analysis dates: January 08, 1995 to December 25, 1995 location: N: 23.7953 S: 09.9776 W: 57.2609 E: 68.7641 project: Arabian Sea ship: Thomas Thompson Dr. Neil Tindale, Texas A & M Univ. JGOFS/Arabian Sea Aerosols, short and long irradiation neutron activation analysis JGOFS Arabian Sea Aerosol Data This mineral aerosol concentration data set is from samples collected during several cruises on the R/V Thomas Thompson during the JGOFS Arabian Sea field program. The data set includes the sampling period for each sample; the "Day of Year", yrday, number for the start of the sampling period for each sample; and the concentration of different elements for each sample, in micrograms per cubic meter. For the sampling period, "nd" is used as a filler to indicate "no data" gaps in the data array. The dust values are estimated using aluminum concentrations determined by neutron activation analysis. While most samples cover a multi-day period, we only have data for about 150 days. We didn't participate in all of the cruises and, on the cruises where samples were collected, often sampling conditions were less than ideal (bad weather, ship maneuvering, relative wind from astern etc.). A few samples that were collected showed obvious contamination from local sources, presumably from material from the R/V Thompson or from nearby fishing boats, and these samples were discarded and are not included in the data set. While the sampling period represents the period during which sampling occurred, sampling was usually not continuous. Sampling was frequently stopped, whenever sampling conditions were no longer suitable. Thus the concentration value at any particular date represents a time integrated sample which is usually non-continuous. Cautionary comments: 1. There may be a problem with the estimate for the mineral "dust" concentration. Most researchers use the average crustal ratio to estimate mineral dust concentrations using elemental concentration data (Al, Fe, etc.). Surface sand and silt samples that were collected in Oman in the Wahibah Sands region have distinct, non-crustal ratios. If individual aerosol samples are comprised of material from distinct sources, including Oman, then it is not unreasonable for their elemental ratios to differ from the published "average" crustal ratio that is used in most aerosol studies. 2. The amount of Ti in all the aerosol samples was small, despite there being a reasonable amount of dust material in most samples. The peaks for Cr and Ti overlap in the neutron activation short irradiation analysis and if significant quantities of Cr are present, this will interfere with the Ti analysis. With the exception of one sample, the Ti values are at or below the detection limit. The sole value above the detection limit was corrected for the Cr contribution using a correction based on the Cr values from the long irradiations. The correction changed the Ti value by less than 5%. The Ti data flagged as being at or below the detection limit was not corrected for possible Cr interference. Data management office notes on supplementary fields - aerosols data lat, lon A nominal ship location is given in lat/lon. The location is the noon position most near the middle of the sampling period, e.g. for a sample which was pumped intermittently from Jan. 3 - 5, the location is given for noon, Jan. 4. Intended as an aid to understanding, not a discrete location. date_begin, date_end We have included the start and stop day for each sample which we believe constrains the sample time about as well as is useful for these data. We also have pump volume and thus a mean concentration of dust per cubic meter of air for that time frame. The actual number of hours sampled during a time block (number of days) is complicated to present. Pumps were turned on and off repetitively depending upon ship maneuvers and relative wind direction (to prevent ship exhaust contamination). Also, the total number of hours the pumps were on is a less useful measure than pump volume, because of the variability in pump efficiency due to changing barometric pressures. An hours worth of pumping does not always yield the same volume of air.

TT045

Website	https://www.bco-dmo.org/deployment/57706
Platform	R/V Thomas G. Thompson
Start Date	1995-03-14
End Date	1995-04-10
Description	**Methods & Sampling** PI: Neil Tindale of: Texas A&M University dataset: Aerosols, short irradiation neutron activation analysis dates: January 08, 1995 to December 25, 1995 location: N: 23.7953 S: 09.9776 W: 57.2609 E: 68.7641 project: Arabian Sea ship: Thomas Thompson Dr. Neil Tindale, Texas A & M Univ. JGOFS/Arabian Sea Aerosols, short and long irradiation neutron activation analysis JGOFS Arabian Sea Aerosol Data This mineral aerosol concentration data set is from samples collected during several cruises on the R/V Thomas Thompson during the JGOFS Arabian Sea field program. The data set includes the sampling period for each sample; the "Day of Year", yrday, number for the start of the sampling period for each sample; and the concentration of different elements for each sample, in micrograms per cubic meter. For the sampling period, "nd" is used as a filler to indicate "no data" gaps in the data array. The dust values are estimated using aluminum concentrations determined by neutron activation analysis. While most samples cover a multi-day period, we only have data for about 150 days. We didn't participate in all of the cruises and, on the cruises where samples were collected, often sampling conditions were less than ideal (bad weather, ship maneuvering, relative wind from astern etc.). A few samples that were collected showed obvious contamination from local sources, presumably from material from the R/V Thompson or from nearby fishing boats, and these samples were discarded and are not included in the data set. While the sampling period represents the period during which sampling occurred, sampling was usually not continuous. Sampling was frequently stopped, whenever sampling conditions were no longer suitable. Thus the concentration value at any particular date represents a time integrated sample which is usually non-continuous. Cautionary comments: 1. There may be a problem with the estimate for the mineral "dust" concentration. Most researchers use the average crustal ratio to estimate mineral dust concentrations using elemental concentration data (Al, Fe, etc.). Surface sand and silt samples that were collected in Oman in the Wahibah Sands region have distinct, non-crustal ratios. If individual aerosol samples are comprised of material from distinct sources, including Oman, then it is not unreasonable for their elemental ratios to differ from the published "average" crustal ratio that is used in most aerosol studies. 2. The amount of Ti in all the aerosol samples was small, despite there being a reasonable amount of dust material in most samples. The peaks for Cr and Ti overlap in the neutron activation short irradiation analysis and if significant quantities of Cr are present, this will interfere with the Ti analysis. With the exception of one sample, the Ti values are at or below the detection limit. The sole value above the detection limit was corrected for the Cr contribution using a correction based on the Cr values from the long irradiations. The correction changed the Ti value by less than 5%. The Ti data flagged as being at or below the detection limit was not corrected for possible Cr interference. Data management office notes on supplementary fields - aerosols data lat, lon A nominal ship location is given in lat/lon. The location is the noon position most near the middle of the sampling period, e.g. for a sample which was pumped intermittently from Jan. 3 - 5, the location is given for noon, Jan. 4. Intended as an aid to understanding, not a discrete location. date_begin, date_end We have included the start and stop day for each sample which we believe constrains the sample time about as well as is useful for these data. We also have pump volume and thus a mean concentration of dust per cubic meter of air for that time frame. The actual number of hours sampled during a time block (number of days) is complicated to present. Pumps were turned on and off repetitively depending upon ship maneuvers and relative wind direction (to prevent ship exhaust contamination). Also, the total number of hours the pumps were on is a less useful measure than pump volume, because of the variability in pump efficiency due to changing barometric pressures. An hours worth of pumping does not always yield the same volume of air.

TT048

Website	https://www.bco-dmo.org/deployment/57709
Platform	R/V Thomas G. Thompson
Start Date	1995-06-21
End Date	1995-07-13
Description	**Methods & Sampling** PI: Neil Tindale of: Texas A&M University dataset: Aerosols, short irradiation neutron activation analysis dates: January 08, 1995 to December 25, 1995 location: N: 23.7953 S: 09.9776 W: 57.2609 E: 68.7641 project: Arabian Sea ship: Thomas Thompson Dr. Neil Tindale, Texas A & M Univ. JGOFS/Arabian Sea Aerosols, short and long irradiation neutron activation analysis JGOFS Arabian Sea Aerosol Data This mineral aerosol concentration data set is from samples collected during several cruises on the R/V Thomas Thompson during the JGOFS Arabian Sea field program. The data set includes the sampling period for each sample; the "Day of Year", yrday, number for the start of the sampling period for each sample; and the concentration of different elements for each sample, in micrograms per cubic meter. For the sampling period, "nd" is used as a filler to indicate "no data" gaps in the data array. The dust values are estimated using aluminum concentrations determined by neutron activation analysis. While most samples cover a multi-day period, we only have data for about 150 days. We didn't participate in all of the cruises and, on the cruises where samples were collected, often sampling conditions were less than ideal (bad weather, ship maneuvering, relative wind from astern etc.). A few samples that were collected showed obvious contamination from local sources, presumably from material from the R/V Thompson or from nearby fishing boats, and these samples were discarded and are not included in the data set. While the sampling period represents the period during which sampling occurred, sampling was usually not continuous. Sampling was frequently stopped, whenever sampling conditions were no longer suitable. Thus the concentration value at any particular date represents a time integrated sample which is usually non-continuous. Cautionary comments: 1. There may be a problem with the estimate for the mineral "dust" concentration. Most researchers use the average crustal ratio to estimate mineral dust concentrations using elemental concentration data (Al, Fe, etc.). Surface sand and silt samples that were collected in Oman in the Wahibah Sands region have distinct, non-crustal ratios. If individual aerosol samples are comprised of material from distinct sources, including Oman, then it is not unreasonable for their elemental ratios to differ from the published "average" crustal ratio that is used in most aerosol studies. 2. The amount of Ti in all the aerosol samples was small, despite there being a reasonable amount of dust material in most samples. The peaks for Cr and Ti overlap in the neutron activation short irradiation analysis and if significant quantities of Cr are present, this will interfere with the Ti analysis. With the exception of one sample, the Ti values are at or below the detection limit. The sole value above the detection limit was corrected for the Cr contribution using a correction based on the Cr values from the long irradiations. The correction changed the Ti value by less than 5%. The Ti data flagged as being at or below the detection limit was not corrected for possible Cr interference. Data management office notes on supplementary fields - aerosols data lat, lon A nominal ship location is given in lat/lon. The location is the noon position most near the middle of the sampling period, e.g. for a sample which was pumped intermittently from Jan. 3 - 5, the location is given for noon, Jan. 4. Intended as an aid to understanding, not a discrete location. date_begin, date_end We have included the start and stop day for each sample which we believe constrains the sample time about as well as is useful for these data. We also have pump volume and thus a mean concentration of dust per cubic meter of air for that time frame. The actual number of hours sampled during a time block (number of days) is complicated to present. Pumps were turned on and off repetitively depending upon ship maneuvers and relative wind direction (to prevent ship exhaust contamination). Also, the total number of hours the pumps were on is a less useful measure than pump volume, because of the variability in pump efficiency due to changing barometric pressures. An hours worth of pumping does not always yield the same volume of air.

TT049

Website	https://www.bco-dmo.org/deployment/57710
Platform	R/V Thomas G. Thompson
Start Date	1995-07-17
End Date	1995-08-15
Description	**Methods & Sampling** PI: Neil Tindale of: Texas A&M University dataset: Aerosols, short irradiation neutron activation analysis dates: January 08, 1995 to December 25, 1995 location: N: 23.7953 S: 09.9776 W: 57.2609 E: 68.7641 project: Arabian Sea ship: Thomas Thompson Dr. Neil Tindale, Texas A & M Univ. JGOFS/Arabian Sea Aerosols, short and long irradiation neutron activation analysis JGOFS Arabian Sea Aerosol Data This mineral aerosol concentration data set is from samples collected during several cruises on the R/V Thomas Thompson during the JGOFS Arabian Sea field program. The data set includes the sampling period for each sample; the "Day of Year", yrday, number for the start of the sampling period for each sample; and the concentration of different elements for each sample, in micrograms per cubic meter. For the sampling period, "nd" is used as a filler to indicate "no data" gaps in the data array. The dust values are estimated using aluminum concentrations determined by neutron activation analysis. While most samples cover a multi-day period, we only have data for about 150 days. We didn't participate in all of the cruises and, on the cruises where samples were collected, often sampling conditions were less than ideal (bad weather, ship maneuvering, relative wind from astern etc.). A few samples that were collected showed obvious contamination from local sources, presumably from material from the R/V Thompson or from nearby fishing boats, and these samples were discarded and are not included in the data set. While the sampling period represents the period during which sampling occurred, sampling was usually not continuous. Sampling was frequently stopped, whenever sampling conditions were no longer suitable. Thus the concentration value at any particular date represents a time integrated sample which is usually non-continuous. Cautionary comments: 1. There may be a problem with the estimate for the mineral "dust" concentration. Most researchers use the average crustal ratio to estimate mineral dust concentrations using elemental concentration data (Al, Fe, etc.). Surface sand and silt samples that were collected in Oman in the Wahibah Sands region have distinct, non-crustal ratios. If individual aerosol samples are comprised of material from distinct sources, including Oman, then it is not unreasonable for their elemental ratios to differ from the published "average" crustal ratio that is used in most aerosol studies. 2. The amount of Ti in all the aerosol samples was small, despite there being a reasonable amount of dust material in most samples. The peaks for Cr and Ti overlap in the neutron activation short irradiation analysis and if significant quantities of Cr are present, this will interfere with the Ti analysis. With the exception of one sample, the Ti values are at or below the detection limit. The sole value above the detection limit was corrected for the Cr contribution using a correction based on the Cr values from the long irradiations. The correction changed the Ti value by less than 5%. The Ti data flagged as being at or below the detection limit was not corrected for possible Cr interference. Data management office notes on supplementary fields - aerosols data lat, lon A nominal ship location is given in lat/lon. The location is the noon position most near the middle of the sampling period, e.g. for a sample which was pumped intermittently from Jan. 3 - 5, the location is given for noon, Jan. 4. Intended as an aid to understanding, not a discrete location. date_begin, date_end We have included the start and stop day for each sample which we believe constrains the sample time about as well as is useful for these data. We also have pump volume and thus a mean concentration of dust per cubic meter of air for that time frame. The actual number of hours sampled during a time block (number of days) is complicated to present. Pumps were turned on and off repetitively depending upon ship maneuvers and relative wind direction (to prevent ship exhaust contamination). Also, the total number of hours the pumps were on is a less useful measure than pump volume, because of the variability in pump efficiency due to changing barometric pressures. An hours worth of pumping does not always yield the same volume of air.

TT050

Website	https://www.bco-dmo.org/deployment/57711
Platform	R/V Thomas G. Thompson
Start Date	1995-08-18
End Date	1995-09-15
Description	**Methods & Sampling** PI: Neil Tindale of: Texas A&M University dataset: Aerosols, short irradiation neutron activation analysis dates: January 08, 1995 to December 25, 1995 location: N: 23.7953 S: 09.9776 W: 57.2609 E: 68.7641 project: Arabian Sea ship: Thomas Thompson Dr. Neil Tindale, Texas A & M Univ. JGOFS/Arabian Sea Aerosols, short and long irradiation neutron activation analysis JGOFS Arabian Sea Aerosol Data This mineral aerosol concentration data set is from samples collected during several cruises on the R/V Thomas Thompson during the JGOFS Arabian Sea field program. The data set includes the sampling period for each sample; the "Day of Year", yrday, number for the start of the sampling period for each sample; and the concentration of different elements for each sample, in micrograms per cubic meter. For the sampling period, "nd" is used as a filler to indicate "no data" gaps in the data array. The dust values are estimated using aluminum concentrations determined by neutron activation analysis. While most samples cover a multi-day period, we only have data for about 150 days. We didn't participate in all of the cruises and, on the cruises where samples were collected, often sampling conditions were less than ideal (bad weather, ship maneuvering, relative wind from astern etc.). A few samples that were collected showed obvious contamination from local sources, presumably from material from the R/V Thompson or from nearby fishing boats, and these samples were discarded and are not included in the data set. While the sampling period represents the period during which sampling occurred, sampling was usually not continuous. Sampling was frequently stopped, whenever sampling conditions were no longer suitable. Thus the concentration value at any particular date represents a time integrated sample which is usually non-continuous. Cautionary comments: 1. There may be a problem with the estimate for the mineral "dust" concentration. Most researchers use the average crustal ratio to estimate mineral dust concentrations using elemental concentration data (Al, Fe, etc.). Surface sand and silt samples that were collected in Oman in the Wahibah Sands region have distinct, non-crustal ratios. If individual aerosol samples are comprised of material from distinct sources, including Oman, then it is not unreasonable for their elemental ratios to differ from the published "average" crustal ratio that is used in most aerosol studies. 2. The amount of Ti in all the aerosol samples was small, despite there being a reasonable amount of dust material in most samples. The peaks for Cr and Ti overlap in the neutron activation short irradiation analysis and if significant quantities of Cr are present, this will interfere with the Ti analysis. With the exception of one sample, the Ti values are at or below the detection limit. The sole value above the detection limit was corrected for the Cr contribution using a correction based on the Cr values from the long irradiations. The correction changed the Ti value by less than 5%. The Ti data flagged as being at or below the detection limit was not corrected for possible Cr interference. Data management office notes on supplementary fields - aerosols data lat, lon A nominal ship location is given in lat/lon. The location is the noon position most near the middle of the sampling period, e.g. for a sample which was pumped intermittently from Jan. 3 - 5, the location is given for noon, Jan. 4. Intended as an aid to understanding, not a discrete location. date_begin, date_end We have included the start and stop day for each sample which we believe constrains the sample time about as well as is useful for these data. We also have pump volume and thus a mean concentration of dust per cubic meter of air for that time frame. The actual number of hours sampled during a time block (number of days) is complicated to present. Pumps were turned on and off repetitively depending upon ship maneuvers and relative wind direction (to prevent ship exhaust contamination). Also, the total number of hours the pumps were on is a less useful measure than pump volume, because of the variability in pump efficiency due to changing barometric pressures. An hours worth of pumping does not always yield the same volume of air.

TT051

Website	https://www.bco-dmo.org/deployment/57712
Platform	R/V Thomas G. Thompson
Start Date	1995-09-19
End Date	1995-10-11
Description	**Methods & Sampling** PI: Neil Tindale of: Texas A&M University dataset: Aerosols, short irradiation neutron activation analysis dates: January 08, 1995 to December 25, 1995 location: N: 23.7953 S: 09.9776 W: 57.2609 E: 68.7641 project: Arabian Sea ship: Thomas Thompson Dr. Neil Tindale, Texas A & M Univ. JGOFS/Arabian Sea Aerosols, short and long irradiation neutron activation analysis JGOFS Arabian Sea Aerosol Data This mineral aerosol concentration data set is from samples collected during several cruises on the R/V Thomas Thompson during the JGOFS Arabian Sea field program. The data set includes the sampling period for each sample; the "Day of Year", yrday, number for the start of the sampling period for each sample; and the concentration of different elements for each sample, in micrograms per cubic meter. For the sampling period, "nd" is used as a filler to indicate "no data" gaps in the data array. The dust values are estimated using aluminum concentrations determined by neutron activation analysis. While most samples cover a multi-day period, we only have data for about 150 days. We didn't participate in all of the cruises and, on the cruises where samples were collected, often sampling conditions were less than ideal (bad weather, ship maneuvering, relative wind from astern etc.). A few samples that were collected showed obvious contamination from local sources, presumably from material from the R/V Thompson or from nearby fishing boats, and these samples were discarded and are not included in the data set. While the sampling period represents the period during which sampling occurred, sampling was usually not continuous. Sampling was frequently stopped, whenever sampling conditions were no longer suitable. Thus the concentration value at any particular date represents a time integrated sample which is usually non-continuous. Cautionary comments: 1. There may be a problem with the estimate for the mineral "dust" concentration. Most researchers use the average crustal ratio to estimate mineral dust concentrations using elemental concentration data (Al, Fe, etc.). Surface sand and silt samples that were collected in Oman in the Wahibah Sands region have distinct, non-crustal ratios. If individual aerosol samples are comprised of material from distinct sources, including Oman, then it is not unreasonable for their elemental ratios to differ from the published "average" crustal ratio that is used in most aerosol studies. 2. The amount of Ti in all the aerosol samples was small, despite there being a reasonable amount of dust material in most samples. The peaks for Cr and Ti overlap in the neutron activation short irradiation analysis and if significant quantities of Cr are present, this will interfere with the Ti analysis. With the exception of one sample, the Ti values are at or below the detection limit. The sole value above the detection limit was corrected for the Cr contribution using a correction based on the Cr values from the long irradiations. The correction changed the Ti value by less than 5%. The Ti data flagged as being at or below the detection limit was not corrected for possible Cr interference. Data management office notes on supplementary fields - aerosols data lat, lon A nominal ship location is given in lat/lon. The location is the noon position most near the middle of the sampling period, e.g. for a sample which was pumped intermittently from Jan. 3 - 5, the location is given for noon, Jan. 4. Intended as an aid to understanding, not a discrete location. date_begin, date_end We have included the start and stop day for each sample which we believe constrains the sample time about as well as is useful for these data. We also have pump volume and thus a mean concentration of dust per cubic meter of air for that time frame. The actual number of hours sampled during a time block (number of days) is complicated to present. Pumps were turned on and off repetitively depending upon ship maneuvers and relative wind direction (to prevent ship exhaust contamination). Also, the total number of hours the pumps were on is a less useful measure than pump volume, because of the variability in pump efficiency due to changing barometric pressures. An hours worth of pumping does not always yield the same volume of air.

TT053

Website	https://www.bco-dmo.org/deployment/57714
Platform	R/V Thomas G. Thompson
Start Date	1995-10-29
End Date	1995-11-26
Description	**Methods & Sampling** PI: Neil Tindale of: Texas A&M University dataset: Aerosols, short irradiation neutron activation analysis dates: January 08, 1995 to December 25, 1995 location: N: 23.7953 S: 09.9776 W: 57.2609 E: 68.7641 project: Arabian Sea ship: Thomas Thompson Dr. Neil Tindale, Texas A & M Univ. JGOFS/Arabian Sea Aerosols, short and long irradiation neutron activation analysis JGOFS Arabian Sea Aerosol Data This mineral aerosol concentration data set is from samples collected during several cruises on the R/V Thomas Thompson during the JGOFS Arabian Sea field program. The data set includes the sampling period for each sample; the "Day of Year", yrday, number for the start of the sampling period for each sample; and the concentration of different elements for each sample, in micrograms per cubic meter. For the sampling period, "nd" is used as a filler to indicate "no data" gaps in the data array. The dust values are estimated using aluminum concentrations determined by neutron activation analysis. While most samples cover a multi-day period, we only have data for about 150 days. We didn't participate in all of the cruises and, on the cruises where samples were collected, often sampling conditions were less than ideal (bad weather, ship maneuvering, relative wind from astern etc.). A few samples that were collected showed obvious contamination from local sources, presumably from material from the R/V Thompson or from nearby fishing boats, and these samples were discarded and are not included in the data set. While the sampling period represents the period during which sampling occurred, sampling was usually not continuous. Sampling was frequently stopped, whenever sampling conditions were no longer suitable. Thus the concentration value at any particular date represents a time integrated sample which is usually non-continuous. Cautionary comments: 1. There may be a problem with the estimate for the mineral "dust" concentration. Most researchers use the average crustal ratio to estimate mineral dust concentrations using elemental concentration data (Al, Fe, etc.). Surface sand and silt samples that were collected in Oman in the Wahibah Sands region have distinct, non-crustal ratios. If individual aerosol samples are comprised of material from distinct sources, including Oman, then it is not unreasonable for their elemental ratios to differ from the published "average" crustal ratio that is used in most aerosol studies. 2. The amount of Ti in all the aerosol samples was small, despite there being a reasonable amount of dust material in most samples. The peaks for Cr and Ti overlap in the neutron activation short irradiation analysis and if significant quantities of Cr are present, this will interfere with the Ti analysis. With the exception of one sample, the Ti values are at or below the detection limit. The sole value above the detection limit was corrected for the Cr contribution using a correction based on the Cr values from the long irradiations. The correction changed the Ti value by less than 5%. The Ti data flagged as being at or below the detection limit was not corrected for possible Cr interference. Data management office notes on supplementary fields - aerosols data lat, lon A nominal ship location is given in lat/lon. The location is the noon position most near the middle of the sampling period, e.g. for a sample which was pumped intermittently from Jan. 3 - 5, the location is given for noon, Jan. 4. Intended as an aid to understanding, not a discrete location. date_begin, date_end We have included the start and stop day for each sample which we believe constrains the sample time about as well as is useful for these data. We also have pump volume and thus a mean concentration of dust per cubic meter of air for that time frame. The actual number of hours sampled during a time block (number of days) is complicated to present. Pumps were turned on and off repetitively depending upon ship maneuvers and relative wind direction (to prevent ship exhaust contamination). Also, the total number of hours the pumps were on is a less useful measure than pump volume, because of the variability in pump efficiency due to changing barometric pressures. An hours worth of pumping does not always yield the same volume of air.

TT054

Website	https://www.bco-dmo.org/deployment/57715
Platform	R/V Thomas G. Thompson
Start Date	1995-11-30
End Date	1995-12-28
Description	**Methods & Sampling** PI: Neil Tindale of: Texas A&M University dataset: Aerosols, short irradiation neutron activation analysis dates: January 08, 1995 to December 25, 1995 location: N: 23.7953 S: 09.9776 W: 57.2609 E: 68.7641 project: Arabian Sea ship: Thomas Thompson Dr. Neil Tindale, Texas A & M Univ. JGOFS/Arabian Sea Aerosols, short and long irradiation neutron activation analysis JGOFS Arabian Sea Aerosol Data This mineral aerosol concentration data set is from samples collected during several cruises on the R/V Thomas Thompson during the JGOFS Arabian Sea field program. The data set includes the sampling period for each sample; the "Day of Year", yrday, number for the start of the sampling period for each sample; and the concentration of different elements for each sample, in micrograms per cubic meter. For the sampling period, "nd" is used as a filler to indicate "no data" gaps in the data array. The dust values are estimated using aluminum concentrations determined by neutron activation analysis. While most samples cover a multi-day period, we only have data for about 150 days. We didn't participate in all of the cruises and, on the cruises where samples were collected, often sampling conditions were less than ideal (bad weather, ship maneuvering, relative wind from astern etc.). A few samples that were collected showed obvious contamination from local sources, presumably from material from the R/V Thompson or from nearby fishing boats, and these samples were discarded and are not included in the data set. While the sampling period represents the period during which sampling occurred, sampling was usually not continuous. Sampling was frequently stopped, whenever sampling conditions were no longer suitable. Thus the concentration value at any particular date represents a time integrated sample which is usually non-continuous. Cautionary comments: 1. There may be a problem with the estimate for the mineral "dust" concentration. Most researchers use the average crustal ratio to estimate mineral dust concentrations using elemental concentration data (Al, Fe, etc.). Surface sand and silt samples that were collected in Oman in the Wahibah Sands region have distinct, non-crustal ratios. If individual aerosol samples are comprised of material from distinct sources, including Oman, then it is not unreasonable for their elemental ratios to differ from the published "average" crustal ratio that is used in most aerosol studies. 2. The amount of Ti in all the aerosol samples was small, despite there being a reasonable amount of dust material in most samples. The peaks for Cr and Ti overlap in the neutron activation short irradiation analysis and if significant quantities of Cr are present, this will interfere with the Ti analysis. With the exception of one sample, the Ti values are at or below the detection limit. The sole value above the detection limit was corrected for the Cr contribution using a correction based on the Cr values from the long irradiations. The correction changed the Ti value by less than 5%. The Ti data flagged as being at or below the detection limit was not corrected for possible Cr interference. Data management office notes on supplementary fields - aerosols data lat, lon A nominal ship location is given in lat/lon. The location is the noon position most near the middle of the sampling period, e.g. for a sample which was pumped intermittently from Jan. 3 - 5, the location is given for noon, Jan. 4. Intended as an aid to understanding, not a discrete location. date_begin, date_end We have included the start and stop day for each sample which we believe constrains the sample time about as well as is useful for these data. We also have pump volume and thus a mean concentration of dust per cubic meter of air for that time frame. The actual number of hours sampled during a time block (number of days) is complicated to present. Pumps were turned on and off repetitively depending upon ship maneuvers and relative wind direction (to prevent ship exhaust contamination). Also, the total number of hours the pumps were on is a less useful measure than pump volume, because of the variability in pump efficiency due to changing barometric pressures. An hours worth of pumping does not always yield the same volume of air.

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Project Information

U.S. JGOFS Arabian Sea (Arabian Sea)

Website: http://usjgofs.whoi.edu/research/arabian.html

Coverage: Arabian Sea

The U.S. Arabian Sea Expedition which began in September 1994 and ended in January 1996, had three major components: a U.S. JGOFS Process Study, supported by the National Science Foundation (NSF); Forced Upper Ocean Dynamics, an Office of Naval Research (ONR) initiative; and shipboard and aircraft measurements supported by the National Aeronautics and Space Administration (NASA). The Expedition consisted of 17 cruises aboard the R/V Thomas Thompson, year-long moored deployments of five instrumented surface buoys and five sediment-trap arrays, aircraft overflights and satellite observations. Of the seventeen ship cruises, six were allocated to repeat process survey cruises, four to SeaSoar mapping cruises, six to mooring and benthic work, and a single calibration cruise which was essentially conducted in transit to the Arabian Sea.

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Program Information

U.S. Joint Global Ocean Flux Study (U.S. JGOFS)

Website: http://usjgofs.whoi.edu/

Coverage: Global

The United States Joint Global Ocean Flux Study was a national component of international JGOFS and an integral part of global climate change research.

The U.S. launched the Joint Global Ocean Flux Study (JGOFS) in the late 1980s to study the ocean carbon cycle. An ambitious goal was set to understand the controls on the concentrations and fluxes of carbon and associated nutrients in the ocean. A new field of ocean biogeochemistry emerged with an emphasis on quality measurements of carbon system parameters and interdisciplinary field studies of the biological, chemical and physical process which control the ocean carbon cycle. As we studied ocean biogeochemistry, we learned that our simple views of carbon uptake and transport were severely limited, and a new "wave" of ocean science was born. U.S. JGOFS has been supported primarily by the U.S. National Science Foundation in collaboration with the National Oceanic and Atmospheric Administration, the National Aeronautics and Space Administration, the Department of Energy and the Office of Naval Research. U.S. JGOFS, ended in 2005 with the conclusion of the Synthesis and Modeling Project (SMP).

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Funding

Funding Source	Award
National Aeronautics & Space Administration (NASA)	unknown Arabian Sea NASA

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