

## TRB transmissometer data series at the southern North Sea site

### Principal Investigator

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### Data Originator

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Two TRB transmissometers were deployed at two locations in March 1999 at the beginning of the southern North Sea (SNS) experiment and recovered in May 1999 at the end of the experiment. The locations were the main mooring site A on the "Surface Environmental mooring " (Rig G) and the secondary site T (Rig T) respectively.

This report contains the qualifying documentation and header information associated with the following data series extracted from the BODC database:

Series Reference	Data Type	Latitude deg min	Longitude deg min	Start Date yyyy/mm/dd	Sea Floor Depth m	Sensor Depth m
541809	PC	52 17.9 N	004 18.0 E	1999/03/29	19.0	1.0
541791	PC	52 19.2 N	004 11.7 E	1999/03/30	22.0	21.5

Parameter	Unit	Parameter code	Comments	
			541809	541791
Attenuance	per m	ATTNSR01	caution	caution
Conductivity	Mhos/m	CNDCPR01	caution	caution
Salinity	PSU	PSALPR01	caution	caution
Temperature	deg. C	TEMPPR01	caution	none

The following single character qualifying flags may be associated with one or more individual parameters within a data cycle:

Flag	Description
	Unqualified
<	Below detection limit
>	In excess of quoted value
B	Beginning of CTD Down/Up Cast
D	Thermometric depth
E	End of CTD Down/Up Cast
K	Uncertain/suspect value
L	Improbable value - originator's quality control
M	Improbable value - BODC quality control
N	Null value
O	Improbable value - user quality control
P	Trace/calm
Q	Indeterminate
R	Replacement value
S	Estimated value
T	Interpolated value
U	Uncalibrated
W	Control value
X	Excessive difference

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**INFORMATION FOR BODC SERIES REF. NO. 541809**

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Time Series Inventory Number : 10385

Start Time : 29 Mar 1999 1649 GMT  
End Time : 18 May 1999 1122 GMT

Latitude : 52deg 17.9min N  
Longitude : 004deg 18.0min E

Nominal Cycle Interval : 1.0 minutes

Sensor Depth : 1.00m  
Sea Floor Depth : 19.00m

Positional Uncertainty : 0.1 to 0.5 n.miles  
Sea Floor Datum : Instantaneous  
Sensor Depth Datum : Sea floor reference  
Disposition of Sensors : Sensor fixed, measurements made at fixed depths

Project : Proves

Data Category : Hydrography time series at depth  
Instrument Type : Transmissometer  
Instrument Mounting : Subsurface mooring - surface buoyancy  
Originator Laboratory : Proudman Oceanographic Lab., Bidston, UK  
Originator's Identifier : tr1761.823

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The following **cautions** apply to this series:

- 1) Temperature, salinity and attenuation records from this instrument show a high variability with very abrupt changes in all three parameters. This high variability made the task of identifying spurious data very difficult and only the most obvious spikes were flagged. Therefore, and in addition to the specific caution notices detailed below, users are generally advised to use data from all three channels carefully.
  - 2) The absolute attenuation values should be used with caution as it was not possible to use the calibration data obtained during the post-cruise calibration exercise carried out on Belgica BG9912 to convert raw counts into beam attenuation. Instead the raw count values were calibrated against attenuation measurements extracted from CTD casts made close to the mooring site at various times during the deployment. This is subject to potential error due to the high degree of patchiness in the vertical and horizontal distribution of suspended particulate matter within the study area.
  - 3) Comparison of temperature and salinity records from this instrument with measurements obtained from the moored Temperature-Conductivity chain SN1460 (series ref. 541730) and from concomitant ships's surface underway measurements from Belgica and Pelagia cruises suggests that the conductivity and temperature sensors on this instrument were not accurate. Surface temperature appears underestimated by ca. 0.5 degrees and the salinity record drifts during the deployment starting with an overestimation of true salinity by ca. 1 PSU to finish with an underestimation of true salinity by ca. 2.5 PSU.
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Additional information stored with the data:

Transmissometer calibration (University of Wales, Bangor, UK):

Transmission raw counts from the TRB-2 transmissometer SN1761 were converted to attenuation using the equation:

$$\text{beam atten} = (-1/PL) \ln((\text{count}/B)/(\text{Co}-B))$$

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**INFORMATION FOR BODC SERIES REF. NO. 541809 (continued)**

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where:

PL is the pathlength in metres (PL = 0.1)

B is the blocked path counts determined before deployment (B = 7)

Co is the maximum count value, corresponding to 5 V. This value was determined by calibration against an average beam attenuation from calibrated CTD transmissometers obtained during CTD casts close to the mooring site at various times during the deployment.

air correction reading = 2770 and blanked path reading = 7.

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The following additional documents apply to this series:

[63428](#); General Data Screening carried out by BODC

[74083](#); TRB-1 and TRB-2 Self-recording Transmissometers

Data Activity Document: [78072](#)

Project Document : [77554](#)

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**INFORMATION FOR BODC SERIES REF. NO. 541791**

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Time Series Inventory Number : 10389

Start Time : 30 Mar 1999 0815 GMT  
End Time : 18 May 1999 1522 GMT

Latitude : 52deg 19.2min N  
Longitude : 004deg 11.7min E

Nominal Cycle Interval : 1.0 minutes

Sensor Depth : 21.50m  
Sea Floor Depth : 22.00m

Positional Uncertainty : 0.1 to 0.5 n.miles  
Sea Floor Datum : Instantaneous  
Sensor Depth Datum : Sea floor reference  
Disposition of Sensors : Sensor fixed, measurements made at fixed depths

Project : Proccess

Data Category : Hydrography time series at depth  
Instrument Type : Transmissometer  
Instrument Mounting : Sea floor - fixed  
Originator Laboratory : Proudman Oceanographic Lab., Bidston, UK  
Originator's Identifier : tr1686.825

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The following **cautions** apply to this series:

- 1) The conductivity and salinity data from this instrument are completely unreliable and the entire record for both parameters has been flagged as suspect.
  - 2) The absolute attenuation values from this instrument should be used with caution as it was not possible to use the calibration data obtained during the post-cruise calibration exercise carried out on Belgica BG9912 to convert raw counts into beam attenuation. Instead the raw count values were calibrated against attenuation measurements extracted from CTD casts made close to the mooring site at various times during the deployment. This is subject to potential error due to the high degree of patchiness in the vertical and horizontal distribution of suspended particulate matter within the study area.
  - 3) The attenuation record from this instrument is quite noisy and only the largest isolated spikes were flagged as suspect. Saturation of the signal was also observed to occur at 81.79 per metre. The record becomes particularly noisy and unstable at high particle concentration when instrument saturation is often reached and null records numerous. The record is particularly poor and discontinuous on the following days: 19, 20-21, 22 and 25/04/1999, and 02, 03, 04 to 08/05/1999 and from 13/05/1999 to the end of the record.
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Additional information stored with the data:

Transmissometer calibration (R. McCandliss, UNW, Bangor, UK):

Transmission readings from the TRB-2 transmissometer SN1686 were converted to attenuation using the following values (see 'Caution notes' for details on calibration procedures):

air correction reading = 2697 and blanked path reading = 7

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## **INFORMATION FOR BODC SERIES REF. NO. 541791 (continued)**

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The following additional documents apply to this series:

[63428](#); General Data Screening carried out by BODC  
[74083](#); TRB-1 and TRB-2 Self-recording Transmissometers  
Data Activity Document: [78072](#)  
Project Document : [77554](#)

## PARAMETERS

Parameter : AADYAA01 (TIME)  
Description : Day number  
Method : Computation  
Units : Days (1760/01/01 = day 0)

Parameter : AAFDZZ01 (TIME)  
Description : Day fraction (GMT)  
Method : Computation  
Units : Days

Parameters AADY/AAFD are usually supplied as date and time (GMT) or as parameters ADATAA01 and AHMSAA01.

Parameter : ADATAA01 (TIME)  
Description : Date in format yyyyymmdd  
Method : Computation  
Units : Years Months Days (yyyyymmdd)

Parameter : AHMSAA01 (TIME)  
Description : Time in format hh24miss  
Method : Computation  
Units : Hours Minutes Seconds

Parameter : ATTNMR01 (HYDR)  
Description : Red light attenuation (medium 20/25cm beam)  
Method : Red light 20/25cm transmissometer  
Units : per metre

Parameter : CND CPR01 (HYDR)  
Description : Probe measured conductivity  
Method : Conductivity probe  
Units : Mhos/metre

Parameter : PSALPR01 (HYDR)  
Description : Practical salinity (unspecified probe type)  
Method : Unspecified conductivity probe  
Units : Practical Salinity Units

Parameter : TEMPPR01 (HYDR)  
Description : Sea temperature (unspecified)  
Method : Unspecified temperature probe  
Units : Degrees Centigrade