

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

**Principal Investigator**

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**Data Originator**

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One TRB transmissometer was deployed during the cruise Valdivia VA174 at the beginning of the northern North Sea (NNS) experiment and recovered during the last NNS cruise Challenger CH140. The TRB was deployed at the main mooring site A on the ‘Surface Environmental mooring’ (Rig I) alongside a nutrient analyser and two fluorometers.

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
524204	PC	59 19.4 N	001 00.6 E	1998/09/09	111.0	1.0

Parameter	Unit	Parameter code	Comments
			<b>524204</b>
Attenuance	per m	ATTNMR01	caution
Conductivity	Mhos/m	CNDCPR01	caution
Salinity	PSU	PSALPR01	caution
Temperature	deg. C	TEMPPR01	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. 524204

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Time Series Inventory Number : 10182

Start Time : 09 Sep 1998 0734 GMT  
End Time : 26 Oct 1998 1433 GMT

Latitude : 59deg 19.4min N  
Longitude : 001deg 00.6min E

Nominal Cycle Interval : 1.0 minutes

Sensor Depth : 1.00m  
Sea Floor Depth : 111.00m

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 : Provess

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 : tr1761.798

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

- 1) The salinity data do not appear credible and have all been flagged suspect.
  - 2) The absolute attenuation values from this instrument should be used with extreme caution as the record started with unrealistically low attenuation values. Although the values became more realistic with time, the long-term trend in the record should be treated as suspect. The short-term signal on the other hand seems real.
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Additional information stored with the data:

The calibration details for the TRB2 transmissometer serial number 1761 were as follows:

Transmissometer:

Calibration from raw counts to attenuation was made using the equation:

$$\text{attenuance} = -1/p * \ln\{(\text{counts}-\text{BPR})/(\text{ACR}-\text{BPR})\}$$

where p = path length (m) = 0.25 m  
BPR = blocked path reading (counts) = 31 counts  
ACR = air correction reading (counts) = 3237.24 counts

BPR was determined prior to deployment. The instrument was calibrated against fully corrected CTD attenuation data in parallel with the Sea-Tech transmissometers (SN557, SN631 and SN637). Each instrument was strapped to the CTD frame on cast 52 of the cruise Challenger CH140. The CTD was lowered to the sea bed and brought back to 10 metres where it stayed for 30 minutes. ACR was calculated from the inversion of the above formula using the CTD attenuation data and the corresponding transmissometer counts from the intercalibration cast.

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**INFORMATION FOR BODC SERIES REF. NO. 524204 (continued)**

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Temperature sensor:

The temperature calibration applied was that supplied by the manufacturer:

$$\text{Temp (Degrees C)} = 18.506785 + 15.381837 * X + 1.692264 * X^2 + 0.527669 * X^3$$

where  $X = (2 * \text{count} - 4000) / 2000$

Conductivity sensor:

The conductivity calibration applied was that supplied by the manufacturer:

$$\text{Cond (mmho/cm)} = 1999.297016 + 878.983174 * Y - 79.633062 * Y^2 - 9.953709 * Y^3$$

where  $Y = \text{conductivity channel count}$

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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: [77568](#)  
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 : CNDCPR01 (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