

Groupe hydrographique et océanographique de l'Atlantique

Followed by IETA Gabin Sogorb

Tél. +33 (0) 2 98 14 05 51/ Fax +33 (0) 2 98 14 05 49

Mail: gabin.sogorb@shom.fr

- Object** : « Narval Sedimentology 2017 » cruise onboard R/V *Pourquoi-Pas?*
- Reference** : a) Norwegian petroleum directorate NPD 17/413/HeHa of the 07/07/2017;
b) Directorate of fisheries 17/5943 of the 09/08/2017
c) Norwegian armed forces 2017/000199-040/DEFNON/414 of the 21/07/2017.
- Attachment** : 1 appendix.

1 TASK.

This report presents the oceanographic and bathymetric activities conducted from 6th September up to 16th October by « Groupe hydrographique et océanographique de l'Atlantique », part of SHOM (French Hydrographic Office) onboard R/V *Pourquoi Pas?* in the Norwegian EEZ during "Narval sedimentology 2017" cruise.

2 REFERENCES.

All data are referenced to WGS84 datum, in geographical coordinates.

Vertical reference is the lowest astronomical tide level or the mean sea level, depending on the depth.

3 OCEANOGRAPHIC DATA.

The configuration for each recorded data is available in log files or in the header of each data file.

3.1 ALONG TRACK.

Along track data was acquired using:

- an hull mounted thermosalinometer at 6 metre depth;
- a sub-bottom profiler Ixsea ECHOES 3500;
- 2 Vessel-Mounted ADCP at 38 and 150 kHz.

3.2 WATER SAMPLER

Stations have been performed with a CTD carousel water sampler using a SBE 911+ probe. A lowered ADCP was associated to the carousel water sampler.

4 HYDROGRAPHIC DATA.

4.1 DATA ACQUISITION.

The survey was conducted with 7111 & 7150 Reson multibeam echosounders. Survey localization is given in appendix 1.

4.2 DATA PROCESSING.

Processing was done using CARIS HIPS&SIPS 9.1.

4.2.1 Sound velocity correction.

Sound velocity profiles were regularly done (at least every 6 hours) using XBT probes. Data was corrected from sound velocity profile effects.

4.2.2 Localization and attitude.

Positioning and attitude was supplied by an inertial navigation system PHINS combined with GNSS system receiving correction from C-nav system. Due to high latitudes, the C-nav corrections were not always available.

Precision of the ship localization is estimated at 20 m at 95%.

4.2.3 Tide correction.

Part of the data was corrected, using predicted tides. The other part of the data (always deeper than 200 m) was not corrected.

4.2.4 Lever arms.

Data has been corrected from the lever arms of all the sensors.

4.3 ACCURACY

The sounding accuracy in meter at 95% (where D = depth in meter) is:

Horizontal: $20+2.31\%D$ Vertical: $2.01+1.66\%D$

5 DATA PROVIDED.

- The present report
- Oceanographic data :
 - XBT probes in EDF format
 - Hull mounted thermosalinometer in ASCII format
 - CTD (with carousel water sampler) data in ASCII.
 - Seismic data in SEG-Y format (readable by freeware Kogeo <http://www.kogeo.de/>)
 - Vessel-Mounted & lowered ADCP in ASCII Format
- Bathymetric data :
 - Soundings in ASCII files (latitude, longitude, depth)

On behalf of chief scientist Pierre-Yves Dupuy,
Gaël Morvan
Technical assistant director of groupe hydrographique et océanographique
de l'Atlantique

A handwritten signature in blue ink, appearing to be the name 'G. Morvan', positioned to the right of the text.

APPENDIX: SURVEYED AREA

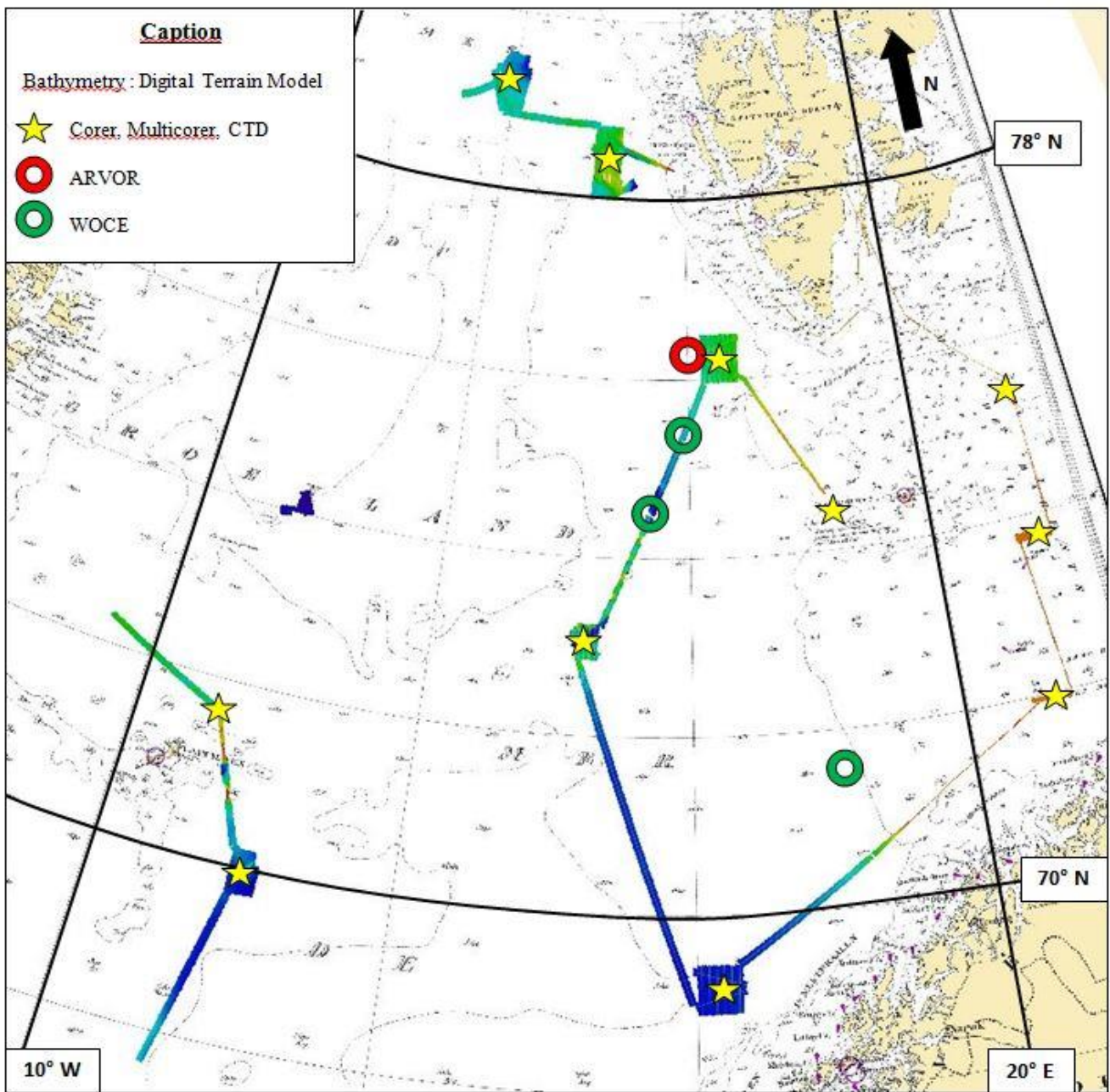


Figure 1 : Bathymetric data acquired during Narval Sedimentology 2017

Groupe hydrographique et océanographique
de l'Atlantique

Dossier suivi par l'IETA Gabin SOGORB

Tél. +33 (0) 2 98 14 05 51
Mail : gabin.sogorb@shom.fr
gabin.sogorb@intradef.gouv.fr

BREST, le 14 février 2018
N° 12 Shom/GHOA/NP

Expéditeur : Shom/GHOA.

Destinataire : NORWEGIAN DEFENCE RESEARCH ESTABLISHMENT, Peter Ostenstad P.O. Box 115 N-3191 Horten, Norway.

Objet : Report and data of Narval Geophysics 2017 scientific cruise.

Désignation des pièces	Nombre de pièces	Observations
1 DVD containing following data : <ul style="list-style-type: none">- A report ;- Bathymetric data ;- Hydrologic data ;- Sismic data ;- VM-ADCP Data ;- XBT data.	1	/

L'ingénieur en chef des études et techniques de l'armement
Gaël Morvan
Directeur technique délégué
Signé : ICETA Gaël Morvan

Destinataire : NORWEGIAN DEFENCE RESEARCH ESTABLISHMENT (FFI)

Copies extérieures : MARINE/EMM-BALARD/MGM/EMO-MARINE/OAN/N5 (*Monsieur l'amiral - Chef d'état-major de la marine - EMM/EMO/ATES – 60 Bd Valin CS 21623 75009 Paris Cédex 15*)
AD Oslo

Copies intérieures : DMI/PL – DOPS/MIP - GHOA – Archives.

Groupe hydrographique et océanographique
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gabin.sogorb@intradef.gouv.fr

BREST, le 14 février 2018
N° 13 Shom/GHOA/NP

Expéditeur : Shom/GHOA.

Destinataire : NORWEGIAN HYDROGRAPHIC SERVICE, Prof Olav Hanssens vei 10, 4021 Stavanger, P.O. Box 60, STAVANGER, 4001, Norway

Objet : Report and data of Narval Geophysics 2017 scientific cruise

Désignation des pièces	Nombre de pièces	Observations
1 DVD containing following data : <ul style="list-style-type: none">- A report ;- Bathymetric data ;- Hydrologic data ;- Sismic data ;- VM-ADCP Data ;- XBT data.	1	/

L'ingénieur en chef des études et techniques de l'armement
Gaël Morvan
Directeur technique délégué
Signé : ICETA Gaël MORVAN

Destinataire : NHS.
Copie extérieure : /
Copies intérieures : DMI/PL – DOPS/MIP - GHOA – Archives.

Groupe hydrographique et océanographique
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Tél. +33 (0) 2 98 14 05 51
Mail : gabin.sogorb@shom.fr
gabin.sogorb@intradef.gouv.fr

BREST, le 14 février 2018
N° 15 Shom/GHOA/NP

Expéditeur : Shom/GHOA.

Destinataire : Monsieur l'attaché de défense à Oslo, 16 bis avenue Prieur de la Côte d'Or, CS 40300, 94114
Arcueil Cedex

Objet : Rapport et données de la campagne scientifique Narval géophysique 2017

Désignation des pièces	Nombre de pièces	Observations
1 DVD contenant les données de la mission : <ul style="list-style-type: none">- un rapport de levé ;- données bathymétriques ;- données hydrologiques ;- données sismiques ;- données issues des courantomètres de coque- données SVP.	3	Pour retransmission aux autorités nationales norvégiennes : <ul style="list-style-type: none">- Directorate of Fisheries- Norwegian Petroleum Directorate- Norwegian Armed Forces

L'ingénieur en chef des études et techniques de l'armement
Gaël Morvan
Directeur technique délégué
Signé : ICETA Gaël MORVAN

Destinataire : AD Oslo.

Copies extérieures : MARINE/EMM-BALARD/MGM/EMO-MARINE/OAN/N5 (*Monsieur l'amiral - Chef d'état-major de la marine - EMM/EMO/ATES – 60 Bd Valin CS 21623 75009 Paris Cedex 15*)
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Copies intérieures : DMI/PL – DOPS/MIP - GHOA – Archives.

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Tél. +33 (0) 2 98 14 05 51
Mail : gabin.sogorb@shom.fr
gabin.sogorb@intradef.gouv.fr

BREST, le 20 février 2018
N° 18 Shom/GHOA/NP

Expéditeur : Shom/GHOA.

Destinataire : NORWEGIAN HYDROGRAPHIC SERVICE, Prof Olav Hanssens vei 10, 4021 Stavanger, P.O. Box 60, STAVANGER, 4001, Norway

Objet : Report and data of Narval Hydrology 2017 cruise

Désignation des pièces	Nombre de pièces	Observations
1 DVD containing following data : <ul style="list-style-type: none">- A report ;- Bathymetric data ;- Hydrologic data ;- Sismic data ;- VM-ADCP Data ;- SVP hull-mounted data.	1	/

L'ingénieur en chef des études et techniques de l'armement
Gaël Morvan
Directeur technique délégué,
Signé : ICETA Gaël Morvan

Destinataire : NHS.
Copie extérieure : Néant.
Copies intérieures : DMI/PL – DOPS/MIP - GHOA – Archives.

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Tél. +33 (0) 2 98 14 05 51
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gabin.sogorb@intradef.gouv.fr

BREST, le 20 février 2018
N° 19 Shom/GHOA/NP

Expéditeur : Shom/GHOA.

Destinataire : Monsieur l'attaché de défense à Oslo, 16 bis avenue Prieur de la Côte d'Or, CS 40300, 94114 Arcueil Cedex

Objet : Rapport et données de la campagne scientifique Narval hydrologie 2017

Désignation des pièces	Nombre de pièces	Observations
1 DVD contenant les données de la mission : <ul style="list-style-type: none">- un rapport de sondage ;- données Bathymétriques ;- données hydrologiques ;- données sismiques ;- données issues des courantomètres de coque ;- données SVP.	3	Pour retransmission aux autorités nationales norvégiennes : <ul style="list-style-type: none">- Directorate of Fisheries- Norwegian Petroleum Directorate- Norwegian Armed Forces

L'ingénieur en chef des études et techniques de l'armement
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S.p.j - Chancellerie diplomatique de l'ambassade de France à Oslo (*Ambassade de France, secrétariat politique, Drammensveien 69, 0244 Oslo, Norvège*)

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Tél. +33 (0) 2 98 14 05 51
Mail : gabin.sogorb@shom.fr
gabin.sogorb@intradef.gouv.fr

BREST, le 20 février 2018
N° 20 Shom/GHOA/NP

Expéditeur : Shom/GHOA.

Destinataire : NORWEGIAN DEFENCE RESEARCH ESTABLISHMENT, Peter Ostenstad P.O. Box 115 N-3191 Horten, Norway

Objet : Report and data of Narval Hydrology 2017 cruise

Désignation des pièces	Nombre de pièces	Observations
1 DVD containing following data : <ul style="list-style-type: none">- A report ;- Bathymetric data ;- Hydrologic data ;- Sismic data ;- VM-ADCP Data ;- SVP hull-mounted data.	1	/

L'ingénieur en chef des études et techniques de l'armement
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Directeur technique délégué,
Signé : ICETA Gaël MORVAN

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S.p.j *AD Oslo*

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Groupe hydrographique et océanographique
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Dossier suivi par l'IETA Gabin SOGORB

Tél. +33 (0) 2 98 14 05 51

Mail : gabin.sogorb@shom.fr

gabin.sogorb@intradef.gouv.fr

BREST, le 22 février 2018

N° 31 Shom/GHOA/NP

Expéditeur : Shom/GHOA.

Destinataire : Monsieur l'attaché de défense à Oslo, 16 bis avenue Prieur de la Côte d'Or, CS 40300, 94114 Arcueil Cedex

Objet : Rapport et données de la campagne scientifique Narval sédimentologie 2017

Désignation des pièces	Nombre de pièces	Observations
1 DVD contenant les données de la mission : <ul style="list-style-type: none">- un rapport de sondage ;- données Bathymétriques ;- données hydrologiques ;- données sismiques ;- données issues des courantomètres de coque ;- données SVP.	3	Pour retransmission aux autorités nationales norvégiennes : <ul style="list-style-type: none">- Directorate of Fisheries- Norwegian Petroleum Directorate- Norwegian Armed Forces

L'ingénieur en chef des études et techniques de l'armement

Gaël Morvan

Directeur technique délégué

Destinataire : AD Oslo

Copies extérieures : - MARINE/EMM-BALARD/MGM/EMO-MARINE/OAN/N5 (*Monsieur l'amiral - Chef d'état-major de la marine - EMM/EMO/ATES - 60 Bd Valin CS 21623 75009 Paris Cedex 15*)

S.p.j - Chancellerie diplomatique de l'ambassade de France à Oslo (*Ambassade de France, secrétariat politique, Drammensveien 69, 0244 Oslo, Norvège*)

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Groupe hydrographique et océanographique
de l'Atlantique

RESUME

Dossier suivi par l'IETA Gabin SOGORB

Tél. +33 (0) 2 98 14 05 51

Mail : gabin.sogorb@shom.fr

gabin.sogorb@intradef.gouv.fr

DATE

BREST, le 22 février 2018

N° 32 Shom/GHOA/NP

Expéditeur : Shom/GHOA.

Destinataire : NORWEGIAN DEFENCE RESEARCH ESTABLISHMENT, Peter Ostenstad P.O. Box 115 N-3191 Horten, Norway

Objet : Report and data of Narval Sedimentology 2017 cruise

Désignation des pièces	Nombre de pièces	Observations
1 DVD containing following data : - A report ; - Bathymetric data ; - Hydrologic data ; - Sismic data ; - VM-ADCP Data ; - SVP hull-mounted data.	1	/

L'ingénieur en chef des études et techniques de l'armement
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Directeur technique délégué



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Tél. +33 (0) 2 98 14 05 51

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BREST, le 22 février 2018

N° 33 Shom/GHOA/NP

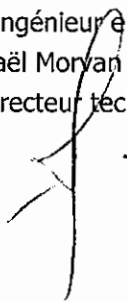
Expéditeur : Shom/GHOA.

Destinataire : NORWEGIAN HYDROGRAPHIC SERVICE, Prof Olav Hanssens vei 10, 4021 Stavanger, P.O. Box 60, STAVANGER, 4001, Norway

Objet : Report and data of Narval Sedimentology 2017 cruise

Désignation des pièces	Nombre de pièces	Observations
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- Reference** : a) Norwegian petroleum directorate NPD 17/413/HeHa of the 07/07/2017;
b) Directorate of fisheries 17/5943 of the 09/08/2017;
c) Norwegian armed forces 2017/000199-040/DEFNON/414 of the 21/07/2017.
- Attachment** : 1 appendix.

1 TASK.

This report presents the oceanographic and bathymetric activities conducted from 19th October up to 3rd November 2017 by « Groupe hydrographique et océanographique de l'Atlantique », part of SHOM (French Hydrographic Office) onboard R/V *Pourquoi Pas?* in the Norwegian EEZ during « Narval Geophysics 2017 » cruise.

2 REFERENCES.

All data are referenced to WGS84 datum, in geographical coordinates.
Vertical reference is the mean sea level.

3 OCEANOGRAPHIC DATA.

The configuration for each recorded data is available in log files or in the header of each data file.
Along track data was acquired using:
- an hull mounted thermosalinometer at 6 metre depth ;
- a sub-bottom profiler Ixsea ECHOES 3500 ;
- 2 Vessel-Mounted ADCP at 38 and 150 kHz.

4 HYDROGRAPHIC DATA.

4.1 DATA ACQUISITION.

The survey was conducted with a 7150 Reson multibeam echosounder. Survey localization is given in appendix 1.

4.2 DATA PROCESSING.

Data processing was done using CARIS HIPS&SIPS 9.1.

4.2.1 Sound velocity correction.

Sound velocity profiles were regularly done (at least every 6 hours) using XBT probes. Data was corrected from sound velocity profile effects.

4.2.2 Localization and attitude.

Positioning and attitude was supplied by an inertial navigation system PHINS combined with GNSS system receiving correction from C-nav system.

Precision of the ship localization is estimated at 1.00 m at 95%.

4.2.3 Tide correction.

No data was corrected (always deeper than 200 m).

4.2.4 Lever arms.

Data has been corrected from the lever arms of all the sensors.

4.3 ACCURACY

The sounding accuracy in meter at 95% (where D = depth in meter) is:

Horizontal: $1+1.29\%D$ Vertical: $2.01+1.06\%D$

5 DATA PROVIDED.

- The present report
- Oceanographic data :
 - XBT probes in EDF format
 - Hull mounted thermosalinometer in ASCII format
 - Seismic data in SEG-Y format (readable by freeware Kogeo <http://www.kogeo.de/>)
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- Bathymetric data :
 - Soundings in ASCII files (latitude, longitude, depth)

On behalf of chief scientist Pierre-Yves Dupuy,
Gaël Morvan
Technical assistant director of groupe hydrographique et océanographique
de l'Atlantique



APPENDIX: SURVEYED AREA

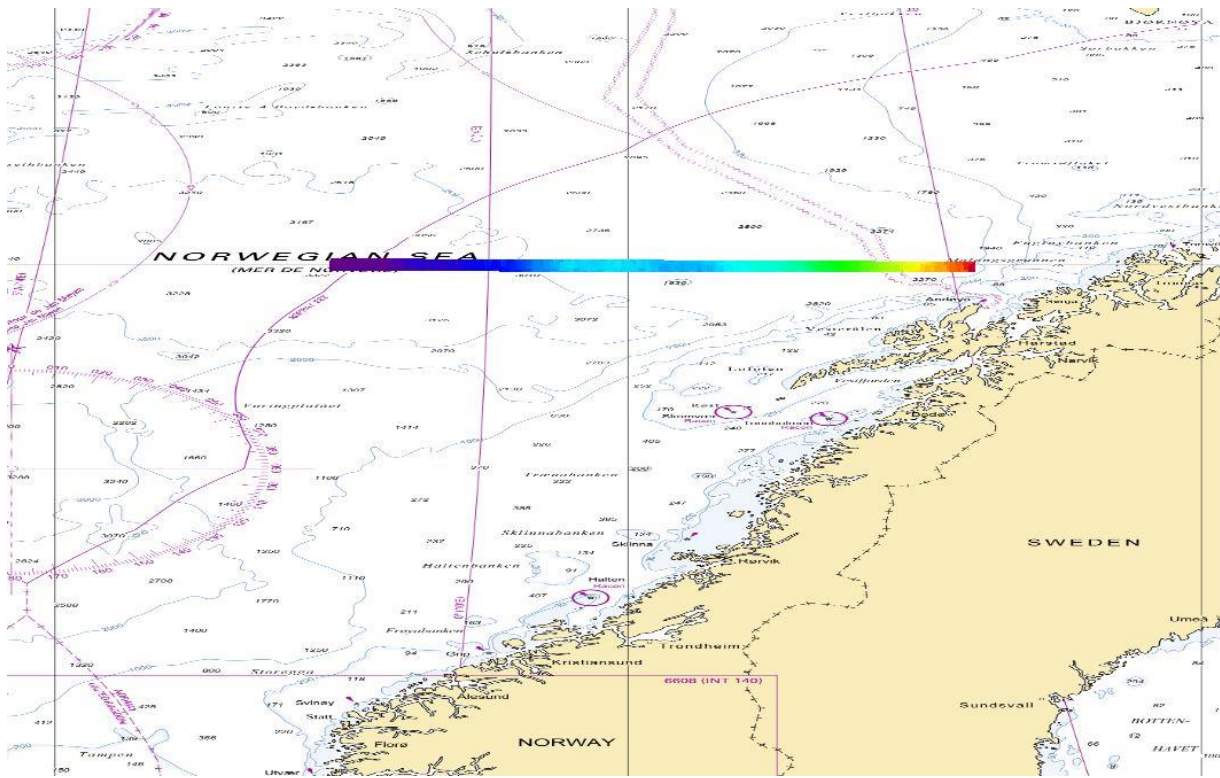


Figure 1 : Bathymetric data acquired during Narval Geophysics 2017.

Groupe hydrographique et océanographique de
l'Atlantique

Followed by IETA Gabin Sogorb

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- Object** : « Narval Hydrology 2017 » cruise onboard R/V *Pourquoi-Pas?*
- Reference** : a) Norwegian petroleum directorate NPD 17/413/HeHa of the 07/07/2017;
b) Directorate of fisheries 17/5943 of the 09/08/2017
c) Norwegian armed forces 2017/000199-040/DEFNON/414 of the 21/07/2017.
- Attachment** : 1 appendix.

1 TASK.

This report presents the oceanographic and bathymetric activities conducted from 19th August up to 3rd September by « Groupe hydrographique et océanographique de l'Atlantique », part of SHOM (French Hydrographic Office) onboard R/V *Pourquoi Pas?* in the Norwegian EEZ during "Narval hydrology 2017" cruise.

2 REFERENCES.

All data are referenced to WGS84 datum, in geographical coordinates.
Vertical reference is the lowest astronomical tide level or the mean sea level, depending on the depth.

3 OCEANOGRAPHIC DATA.

The configuration for each recorded data is available in log files or in the header of each data file.

3.1 ALONG TRACK.

Along track data was acquired using:
- an hull mounted thermosalinometer at 6 metre depth;
- a sub-bottom profiler Ixsea ECHOES 3500;
- 2 Vessel-Mounted ADCP at 38 and 150 kHz.

3.2 WATER SAMPLER

Stations have been performed with a CTD carousel water sampler using a SBE 911+ probe. A lowered ADCP was associated to the carousel water sampler.

4 HYDROGRAPHIC DATA.

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Sound velocity profiles were regularly done (at least every 6 hours) using XBT probes. Data was corrected from sound velocity profile effects.

4.2.2 Localization and attitude.

Positioning and attitude was supplied by an inertial navigation system PHINS combined with GNSS system receiving correction from C-nav system.

Precision of the ship localization is estimated at 1.00 m at 95%.

4.2.3 Tide correction.

Part of the data was corrected, using a predicted tide at position 66°45'N / 024°02'W. The other part of the data (always deeper than 200 m) was not corrected.

4.2.4 Lever arms.

Data has been corrected from the lever arms of all the sensors.

4.3 ACCURACY

The sounding accuracy in meter at 95% (where D = depth in meter) is:

Horizontal: $1+2.03\%D$
Vertical: $2.01+1.06\%D$

5 DATA PROVIDED.

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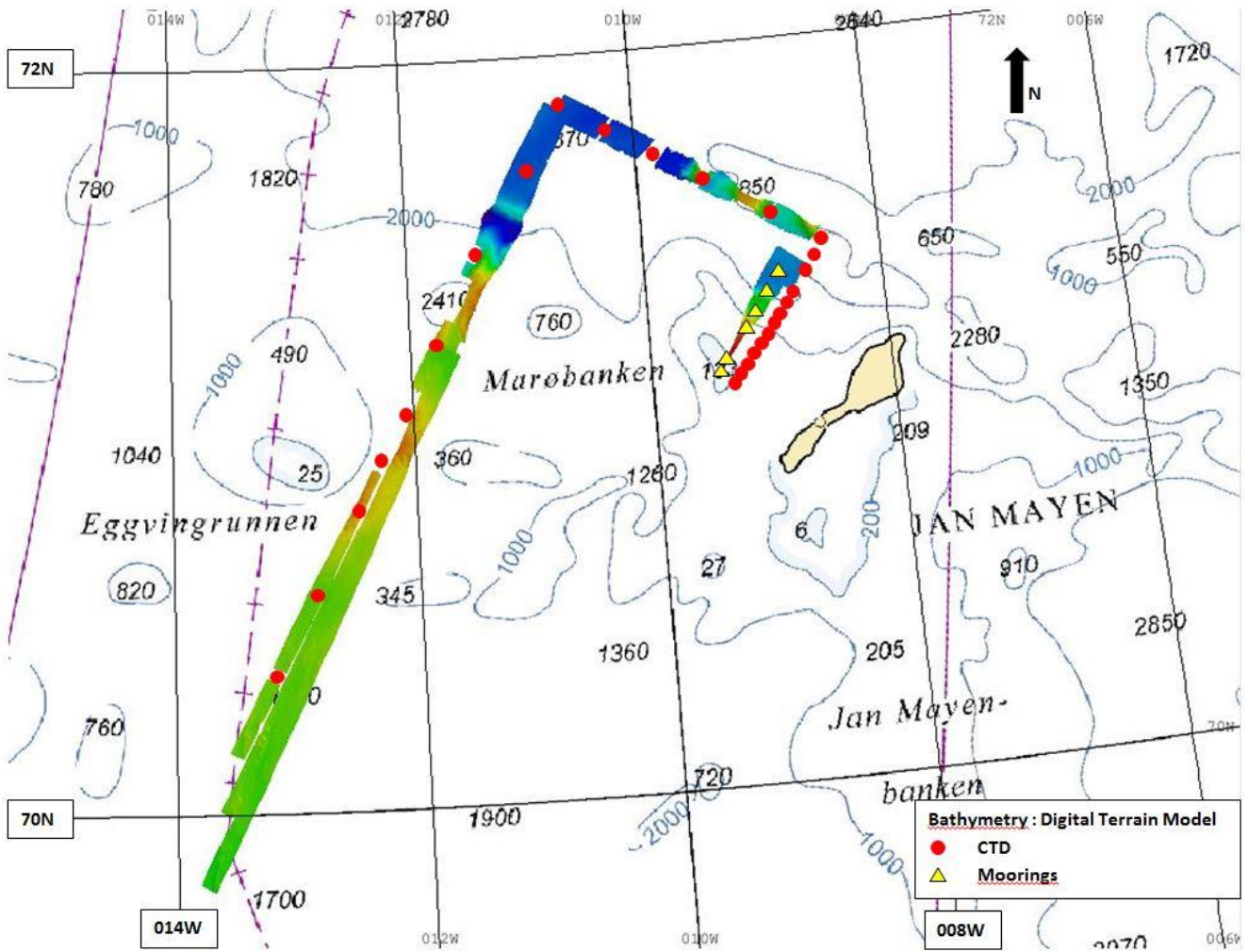


Figure 1 : Bathymetric data acquired during Narval Hydrology 2017

Groupe hydrographique et océanographique de l'Atlantique

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 - Vessel-Mounted & lowered ADCP in ASCII Format
- Bathymetric data :
 - Soundings in ASCII files (latitude, longitude, depth)

On behalf of chief scientist Pierre-Yves Dupuy,
Gaël Morvan
Technical assistant director of groupe hydrographique et océanographique
de l'Atlantique

A handwritten signature in blue ink, appearing to be the name 'Gaël Morvan', written in a cursive style.

APPENDIX: SURVEYED AREA

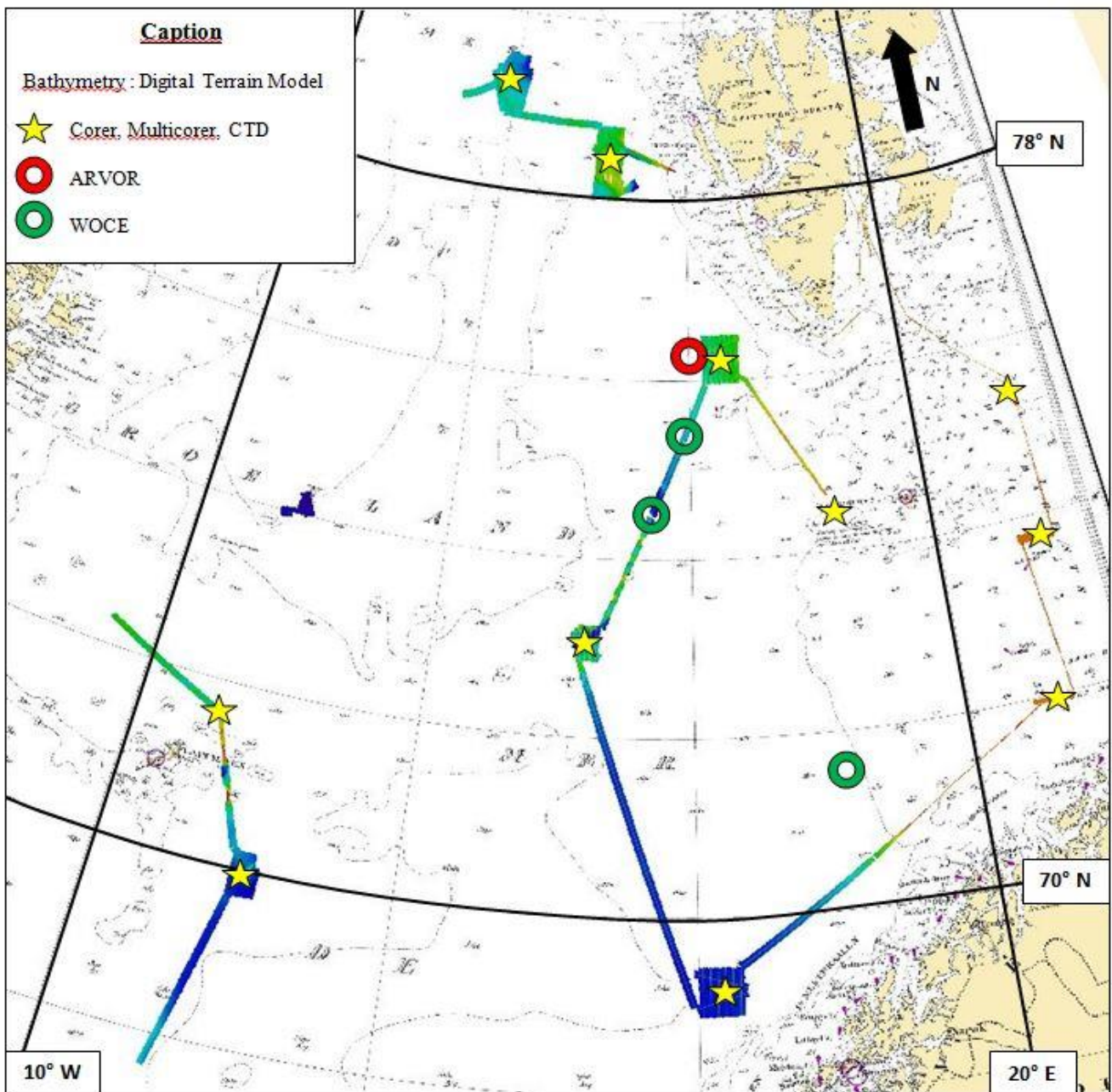


Figure 1 : Bathymetric data acquired during Narval Sedimentology 2017