

CRUISE SUMMARY REPORT

FOR COLLATING CENTRE USE

Centre: DOD Ref. No.:

Is data exchange Yes In part No
restricted

SHIP enter the full name and international radio call sign of the ship from which the data were collected, and indicate the type of ship, for example, research ship; ship of opportunity, naval survey vessel; etc.

Name: POLARSTERNCall Sign: DBLKType of ship: Research vesselCRUISE NO. / NAME ARK XIX / 3

enter the unique number, name
or acronym assigned to the cruise
(or cruise leg, if appropriate).

CRUISE PERIOD start 26/06/2003 to 19/07/2003 end
(set sail) day/ month/ year day/ month/ year (return to port)

PORT OF DEPARTURE (enter name and country) Tromsø / NorwayPORT OF RETURN (enter name and country) Longyearbyen / Svalbard (Norway)

RESPONSIBLE LABORATORY enter name and address of the laboratory responsible for coordinating the scientific planning of the cruise

Name: Alfred Wegener Institute for Polar and Marine Research (AWI)Address: Columbusstr., 27568 BremerhavenCountry: Germany

CHIEF SCIENTIST(S) enter name and laboratory of the person(s) in charge of the scientific work (chief of mission) during the cruise.

Dr. Michael Klages (AWI)

OBJECTIVES AND BRIEF NARRATIVE OF CRUISE enter sufficient information about the purpose and nature of the cruise so as to provide the context in which the report data were collected.

The expedition was focussed on the Håkon Mosby Mud Volcano (HMMV) at about 72° N 14° E with the German RV "Polarstern" and the French ROV "VICTOR 6000". The HMMV is the only mud volcano in a polar region that has been studied in greater detail by photo and video camera observation. The site is situated on the continental slope northwest of Norway at a water depth of 1250 m. It has a diameter of about 2 km, with an outer rim populated by methane-depending, chemosynthetic communities and an inner centre of about 500 m diameter where fresh muds are expelled. Between the central plain and the outer rim, a complex topography of hills and depressions can be observed, derived from the transport of young sediments. Methane is rapidly oxidized with sulfate in the anaerobic sediments at temperatures close to the freezing point (-1°C), producing a source of sulfide to the extensive mats of giant, sulfide-oxidizing bacteria surrounding the central area. Despite its rapid turnover in the sediments, large amounts of methane dissolved in the rising mud-volcano fluids are seeping to the hydrosphere. Within a multidisciplinary approach consisting out of oceanography, marine geology, geophysics, geochemistry, microbiology and benthos studies a comprehensive data set has been achieved.

PROJECT (IF APPLICABLE) if the cruise is designated as part of a larger scale cooperative project (or expedition), then enter the name of the project, and of organisation responsible for co-ordinating the project.

Project name: ARK XIX / 3b - "Victor in the North"Coordinating body: AWI

SUMMARY OF MEASUREMENTS AND SAMPLES TAKEN

Except for the data already described on page 2 under 'Mooring, Bottom Mounted Gear and Drifting Systems', this section should include a summary of all data collected on the cruise, whether they be measurements (e.g. temperature, salinity values) or samples (e.g. cores, net hauls).

Separate entries should be made for each distinct and coherent set of measurements or samples. Different modes of data collection (e.g. vertical profiles as opposed to underway measurements) should be clearly distinguished, as should measurements/sampling techniques that imply distinctly different accuracy's or spatial/temporal resolutions. Thus, for example, separate entries would be created for i) BT drops, ii) water bottle stations, iii) CTD casts, iv) towed CTD, v) towed undulating CTD profiler, vi) surface water intake measurements, etc.

Each data set entry should start on a new line – it's description may extend over several lines if necessary.

NO, UNITS : for each data set, enter the estimated amount of data collected expressed in terms of the number of 'stations'; miles' of track; 'days' of recording; 'cores' taken; net 'hauls'; balloon 'ascents'; or whatever unit is most appropriate to the data. The amount should be entered under 'NO' and the counting unit should be identified in plain text under 'UNITS'.

PI	NO	UNITS	DATA TYPE	DESCRIPTION
see page 2	see above	see above	Enter code(s) from list on cover page	Identify, as appropriate, the nature of the data and of the instrumentation/sampling gear and list the parameters measured. Include any supplementary information that may be appropriate, e. g. vertical or horizontal profiles, depth horizons, continuous recording or discrete samples, etc. For samples taken for later analysis on shore, an indication should be given of the type of analysis planned, i.e. the purpose for which the samples were taken.
I	230	nm	G 74	Profiles and grids
H, C	24	nm	G 72	Heat flow measurements at stations along profiles
I	60	nm	G 27	profiles
I	60	nm	G 28	profiles
B	9	stations	G 04	Gravity corer
D,G	19	stations	G 04	Multi corer (100 mm tube diameter)
D	2	stations	G 02	Giant box corer (50 x 50 cm)
F	9	stations	H 09	Bottom water sampler
B, F	14	stations	H 10	CTD with water sampler
F	1	station	P 01	In situ pumps
F	3	stations	B 28	Short tracks with Fishery echosounder (38 KHz)
A	60	nm	G 71	Remotely Operated Vehicle operations
				Please continue on separate sheet if necessary

TRACK CHART: You are strongly encouraged to submit, with the completed report, an annotated track chart illustrating the route followed and the points where measurements were taken.

Insert a tick(✓) in this box if a track chart is supplied

X

GENERAL OCEAN AREA(S): Enter the names of the oceans and/or seas in which data were collected during the cruise – please use commonly recognised names (see, for example, International Hydrographic Bureau Special Publication No. 23, 'Limits of Oceans and Seas').

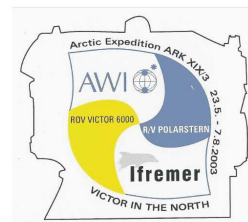
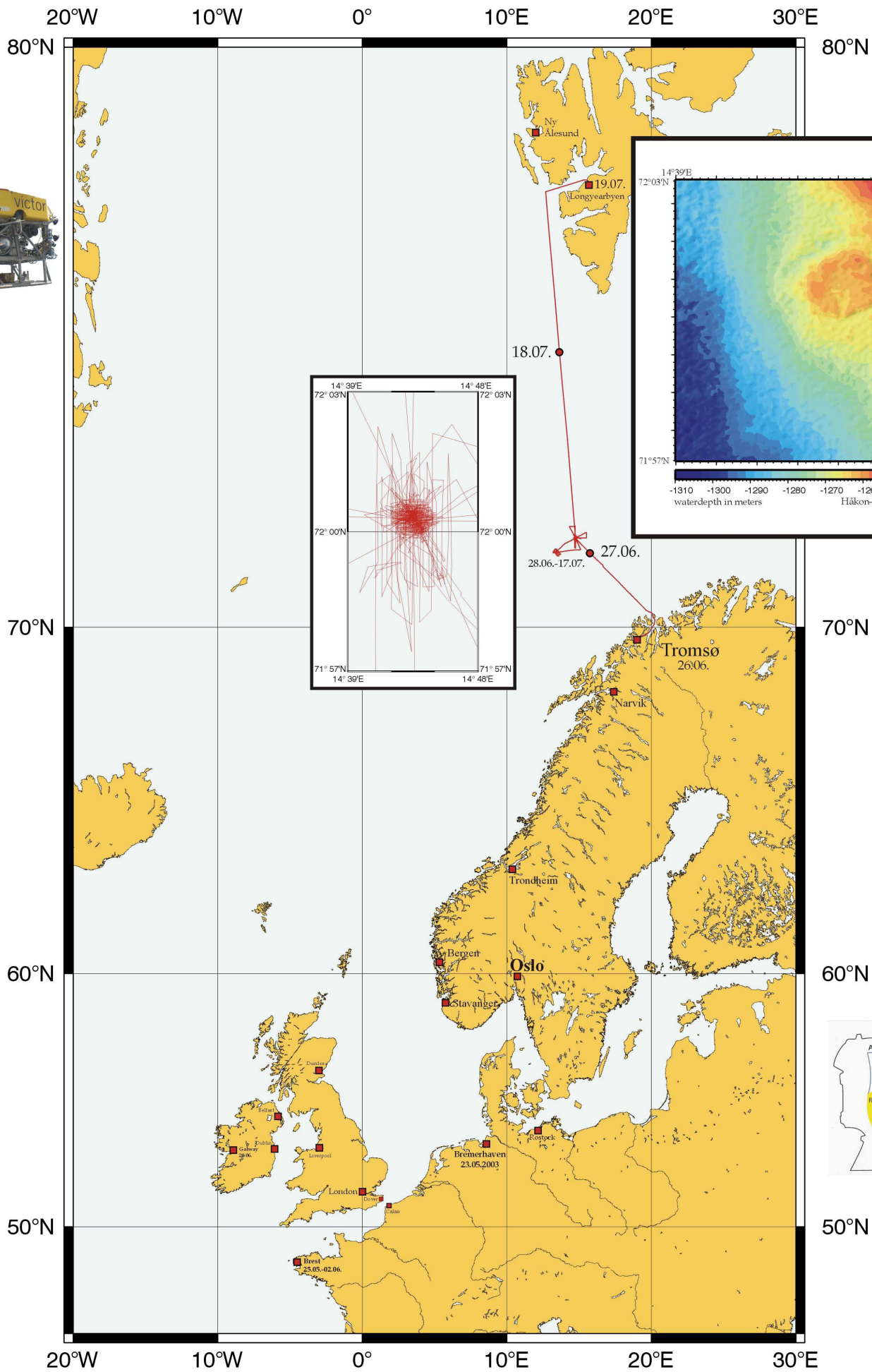
Northern North Atlantic, Norwegian Sea

SPECIFIC AREAS: If the cruise activities were concentrated in a specific area(s) of an ocean or sea, then enter a description of the area(s). Such descriptions may include references to local geographic areas, to sea floor features, or to geographic coordinates.

Please insert here the number of each square in which data were collected from the below given chart

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see above



FS Polarstern
Cruise ARK - XIX - 3b
Tromsø - Longyearbyen
June 26th, til July 19th, 2003



Institut français de recherche
pour l'exploitation de la mer
Bp70
F-29280 Plouzané



Alfred Wegener Institute
Polar and Marine Research
D-27515 Bremerhaven

CRUISE SUMMARY REPORT

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SHIP enter the full name and international radio call sign of the ship from which the data were collected, and indicate the type of ship, for example, research ship; ship of opportunity, naval survey vessel; etc.

Name: POLARSTERNCall Sign: DBLKType of ship: Research vesselCRUISE NO. / NAME ARK XIX / 3

enter the unique number, name
or acronym assigned to the cruise
(or cruise leg, if appropriate).

CRUISE PERIOD start 19/07/2003 to 07/08/2003 end
(set sail) day/ month/ year day/ month/ year (return to port)

PORT OF DEPARTURE (enter name and country) Longyearbyen / Svalbard (Norway)PORT OF RETURN (enter name and country) Tromsø (Norway)

RESPONSIBLE LABORATORY enter name and address of the laboratory responsible for coordinating the scientific planning of the cruise

Name: Alfred Wegener Institute for Polar and Marine Research (AWI)Address: Columbusstr., 27568 BremerhavenCountry: Germany

CHIEF SCIENTIST(S) enter name and laboratory of the person(s) in charge of the scientific work (chief of mission) during the cruise.

Dr. Michael Klages (AWI)

OBJECTIVES AND BRIEF NARRATIVE OF CRUISE enter sufficient information about the purpose and nature of the cruise so as to provide the context in which the report data were collected.

The expedition was focussed on a long-term deep-sea observatory in the Arctic Ocean at about 79° N 004° E with the German RV "Polarstern" and the French Remotely Operated Vehicle (ROV) "VICTOR 6000". Following a pre-site study using the ROV in summer 1999, followed by another expedition with the French R/V "L'Atalante" in 2001, the first long-term station in polar deep-sea observatory was established in the eastern Fram Strait west off Spitsbergen. Beside a central experimental area at 2500 m water depth (AWI-"Hausgarten"), we defined 9 stations along a depth transect between 1000 - 5500 m, revisited yearly to analyse seasonal and interannual variations in biological, geochemical and sedimentological parameters. During ARK XIX/3c we increased the number of permanent stations to a total of 15 stations by introducing additional sampling sites along a latitudinal transect following the 2500 m water depth isobath. During ARK XIX/3c controlling and, at least partly, termination the experiments installed in 1999 and 2001 was one aim among the installation of further experiments. An *in situ* flume was installed at the seafloor to investigate benthic respiration and interfacial solute exchange under changing bottom current regimes over time. On the short time scale, we obtained data on the speed of adaptation in respect to geochemical gradients as well as respiration rates. Beside short time experiments during this year's expedition, we plan for a long-term engagement to study changes in the sediment-inhabiting community under enhanced current stress. For this purpose it was planned to keep the flume at the end of the cruise at a selected site, and to re-visit it in 2005 at latest and from then further on. Among ROV operations other instruments such as a giant box corer, a multi corer and a horizontal bottom water sampler were used.

PROJECT (IF APPLICABLE) if the cruise is designated as part of a larger scale cooperative project (or expedition), then enter the name of the project, and of organisation responsible for co-ordinating the project.

Project name: ARK XIX / 3c - „Victor in the North“

Coordinating body: AWI

PRINCIPAL INVESTIGATORS: Enter the name and address of the Principal Investigators responsible for the data collected on the cruise and who may be contacted for further information about the data. (The letter assigned below against each Principal Investigator is used on pages 2 and 3, under the column heading 'PI', to identify the data sets for which he/she is responsible)

A. Dr. Michael Klages

B. Dr. Thomas Soltwedel

C. Dr. Eberhard Sauter

D. Dr. Jens Matthiessen

MOORINGS, BOTTOM MOUNTED GEAR AND DRIFTING SYSTEMS

This section should be used for reporting moorings, bottom mounted gear and drifting systems (both surface and deep) deployed and/or recovered during the cruise. Separate entries should be made for each location (only deployment positions need be given for drifting systems). This section may also be used to report data collected at fixed locations which are returned to routinely in order to construct 'long time series'.

PI See top of page.	APPROXIMATE POSITION						DATA TYPE enter code(s) from list on cover page.	DESCRIPTION Identify, as appropriate, the nature of the instrumentation the parameters (to be) measured, the number of instruments and their depths, whether deployed and/or recovered, dates of deployments and/or recovery, and any identifiers given to the site.
	LATITUDE			LONGITUDE				
	deg	min	N/S	deg	min	E/W		
A	79	01,04	N	04	19,77	E	B 71, D 01	Recovery of mooring (sediment traps, ADCP)
A	79	03,39	N	04	19,02	E	B 16, B 18	Recovery of lander (colonization tray)
A	79	04,28	N	04	19,47	E	B 16, B 18	Recovery of lander (colonization tray)
A	79	02,83	N	04	14,14	E	B 90	Recovery of Lander
A	78	59,95	N	04	27,44	E	B 71, D 01	Recovery of mooring (sediment traps, ADCP)
A	79	01,00	N	04	19,99	E	B 71, D 01	Deployment of mooring (sediment traps, ADCP)
A	79	04,28	N	04	19,23	E	B 90	Deployment of Lander
A	79	03,36	N	04	18,72	E	B 90	Deployment of Lander
A	78	36,44	N	05	04,80	E	B 90	Deployment of Lander
A	79	03,87	N	04	10,94	E	B 90	Deployment of Lander
								Pleas e contin ue on separ ate sheet if neces sary
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B	17	stations	G 04	Multi corer (100 mm tube diameter)
D	25	stations	G 02	Giant box corer (50 x 50 cm)
C	13	stations	H 09	Bottom water sampler
C	3	stations	H 10	CTD with water sampler
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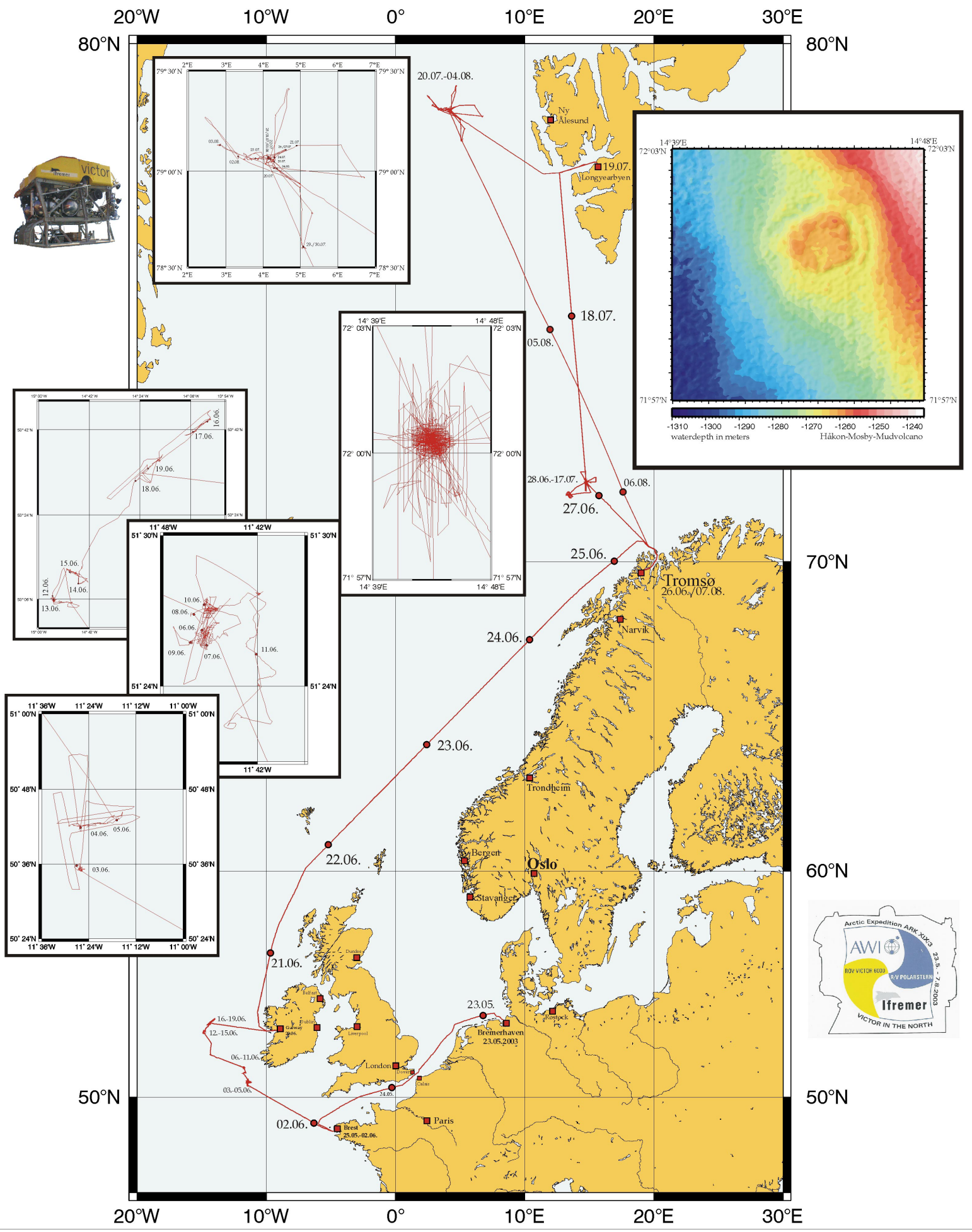
Arctic, Fram Strait

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Please insert here the number of each square in which data were collected from the below given chart

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see above



FS Polarstern
Cruise ARK - XIX - 3abc
 Bremerhaven - Brest - Galway - Tromsø - Longyearbyen - Tromsø
 May 23rd, til August 07th, 2003



Distance Total: 5804 sm



Institut français de recherche
 pour l'exploitation de la mer
 Bp70
 F-29280 Plouzané



Alfred Wegener Institute
 Polar and Marine Research
 D-27515 Bremerhaven

