

CRUISE SUMMARY REPORT

FOR COLLATING CENTRE USE

Centre: DOD Ref. No.:

Is data exchange restricted Yes In part No

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 PS 78 / ARK XXVI/2

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

CRUISE PERIOD start 13/07/2011 to 03/08/2011 end
(set sail) day/ month/ year day/ month/ year (return to port)

PORT OF DEPARTURE (enter name and country) Longyearbyen (Svalbard), NorwayPORT 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: Am Handelshafen 12, 27570 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.

RV "Polarstern" cruise PS ARK XXVI/2

The work carried out during the RV "Polarstern" expedition into the Arctic in summer 2011 contributed to both, first another milestone for the EU projects HERMIONE, HYPOX, ESONET and his successor EMSO, and second a contribution to the PACES (Polar Regions and Coasts in the changing Earth System) research programme of the AWI which started in 2009. Here, we contribute within the topic "The changing Arctic and Antarctic" to workpackage 3 "Sea ice – atmosphere – ocean – ecosystem interactions in a bi-polar perspective" and workpackage 6 "Ocean warming and acidification: organisms and their changing role in marine ecosystems". Our work was embedded in WP 3 research activities through studies on changing Arctic sea ice conditions and their impact on ecosystems and food webs. These changes have been addressed through a dedicated combination of long-term observations and modelling. Our contribution to WP 6 originated from our studies on the functional specialization of selected polar marine species, from algae to mammals, on polar climate regimes and associated living conditions. These activities qualify and quantify the responses of model organisms to ongoing warming trends at key functional levels, from molecular to ecosystem. Building on recent progress, they also characterize the physiological and ecological background of species-specific sensitivities as well as the capacity of organisms and ecosystems to acclimate or adapt to change. Finally, the conducted research programme contributed to the time-series studies at the deep-sea long-term observatory HAUSGARTEN where we investigate the impacts of Climate Change on an Arctic marine deep-sea ecosystem through field studies, observations and models since 1999, which qualifies this station for ESONET, EMSO and the more recently ESFRI roadmap project SIOS (Svalbard Integrated Arctic Earth Observing System" coordinated by the Research Council of Norway..

The work plan was based on the use of the unmanned Remotely Operated Vehicle (ROV) "KIEL 6000" of the IFM-GEOMAR in Kiel. Among a standard sampling programme including exchange of moorings and free falling landers, the ROV was used for various in situ experiments. One short dive took place at a location at around 400 m water depth west of Prins Karlsvorland where many methane seeps have been recorded recently with fishery echosounders. Further dives were carried out at the Vestnesa ridge and finally at the central experimental site of "HAUSGARTEN". Among these activities an Autonomous Underwater Vehicle (AUV) was used for dives under the drifting sea ice and in open water. Water samples were collected, pCO₂-concentrations, PAR, turbidity, chl a, temperature and salinity were measured *en route*. The cruise PS ARK XXVI/2 did end at the 3rd of August 2011 in the port of Tromsø.

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



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').

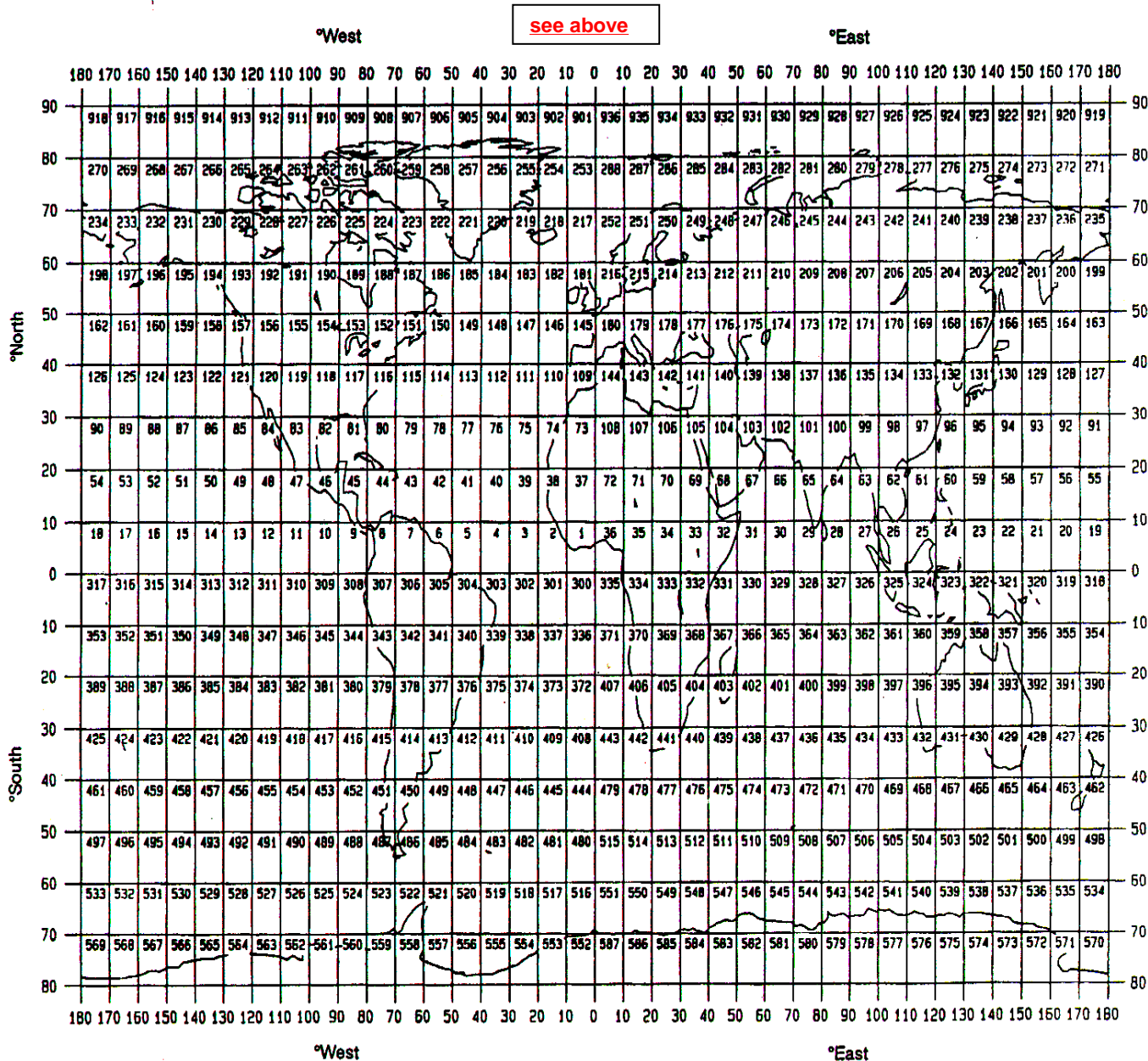
FRAM STRAIT

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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GEOGRAPHIC COVERAGE - INSERT 'X' IN EACH SQUARE IN WHICH DATA WERE COLLECTED



THANK YOU FOR YOUR COOPERATION

Please send your completed report without delay to the collating centre indicated on the cover page