

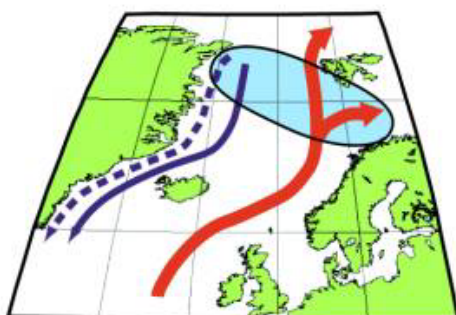


ASOF-N

Arctic-Subarctic Ocean Flux Array for European Climate: North

Contract No:
EVK2-CT-2002-00139

SECOND MANAGEMENT REPORT



Reporting Period:
1/01/2004-30/06/2004

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Project home page:
<http://www.awi-bremerhaven.de/ASOF-N>



Energy,
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Fifth
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Programm

1.1 Objectives of the reporting period

The overall ASOF-N objective is:

To establish the appropriate components of the global observing system in the choke points of the Nordic Seas necessary to obtain the long term consolidated data set required to determine the variability of dense water, freshwater, and heat fluxes between the Arctic Ocean and the North Atlantic, to understand and predict how the fluxes respond to climatic forcing, and to provide the tools needed to assess the risks of abrupt changes.

This objective stands for the full period of ASOF. However, it can only be reached by steps and must be broken up in components. Therefore sub-objectives were defined for the work packages. Most of those sub-objectives hold for the full period as well, but we selected in the following list the most prominent ones for the first 6 months of the project second year.

The detailed objectives addressed in the individual work packages during the first half of second year were:

WP 1 'Atlantic water pathways'

- Make measurements of track lines of Atlantic water flow by floats.
- Derive relation between variations of water mass properties and changes in the flow pattern

To achieve these objectives the following tasks were performed during the period to be reported:

- deploying floats,
- processing float data and computing track lines for the floats deployed in 2003,
- processing data and compute the water mass distribution from the cruises carried out in 2003,
- working on the comparison of the observed variations of track lines and water mass properties with model results.

WP 2 'Fluxes across the western Barents Sea'

- Determine transport time series, spatial structure and temporal variability on seasonal and interannual variability.
- Establish quantitative relations between the variations of fluxes in different sections and propagation of water characteristics.

To achieve these objectives the following tasks were performed during the period to be reported:

- recovery and redeployment of moorings,
- repeat sections with CTD and ADCP,
- calibrate data and analyze the time series from recent mooring recovery,
- estimate fluxes of volume, heat and salt from previous year data,
- compare measured and modeled variability.

WP 3 'Heat flux through Fram Strait'

- Make frequent measurements (1/2h) of currents and temperature at fixed locations (11 horizontal and 4 vertical) across Fram Strait.
- Calculate volume and heat transport from above.

To achieve these objectives following tasks were performed during the period to be reported:

- data acquisition by moored current meter array deployed in 2003,
- calibrating data, computing volume and heat fluxes and providing data reports on data from mooring recovery in 2003,
- continue work on the high resolution model development.

WP 4 'Freshwater flux through Fram Strait'

- Make frequent measurements (1/2h) of currents and temperature at fixed locations (4 horizontal and 4 vertical) across Fram Strait.
- Calculate volume and freshwater transport from above.

To achieve these objectives the following tasks were performed during the period to be reported:

- data acquisition by moored current meter array deployed in 2003,
- calibrate data, calculate freshwater fluxes, provide data reports on data from mooring recovery in 2003,
- process and merge historical data to new data to create and interpret time series of fluxes,
- comparison of flux variations in model and observations.

WP 5 'Data Management'

- To archive a consistent, quality-controlled set of direct observations and principle model outputs.
- To provide project data to the project scientists.
- To monitor and report to the Steering Committee on data flow.
- To achieve access for all project participants and – for the general parts – for the scientific community to electronic information on the project and its aims, on the actual status of field and modeling work and on the data inventory.

To achieve these objectives the following tasks were performed during the period to be reported:

- maintaining the ASOF-N homepage,
- providing the reference material on data matters to ASOF-N participants,
- receiving, cataloguing, quality-controlling and organizing the data base.

WP 6 'Integration and Synthesis'

- To determine water mass transformations in the Arctic Mediterranean that are the means by which the oceanic heat transported to the Arctic becomes available to the Arctic environment.
- To combine the measurements of property changes at choke points which give evidence of how and how strongly the ocean transports influence the Arctic and how this influence varies with time and atmospheric forcing.
- To evaluate the performance of deployed moorings.

To achieve these objectives the following tasks were performed during the period to be reported:

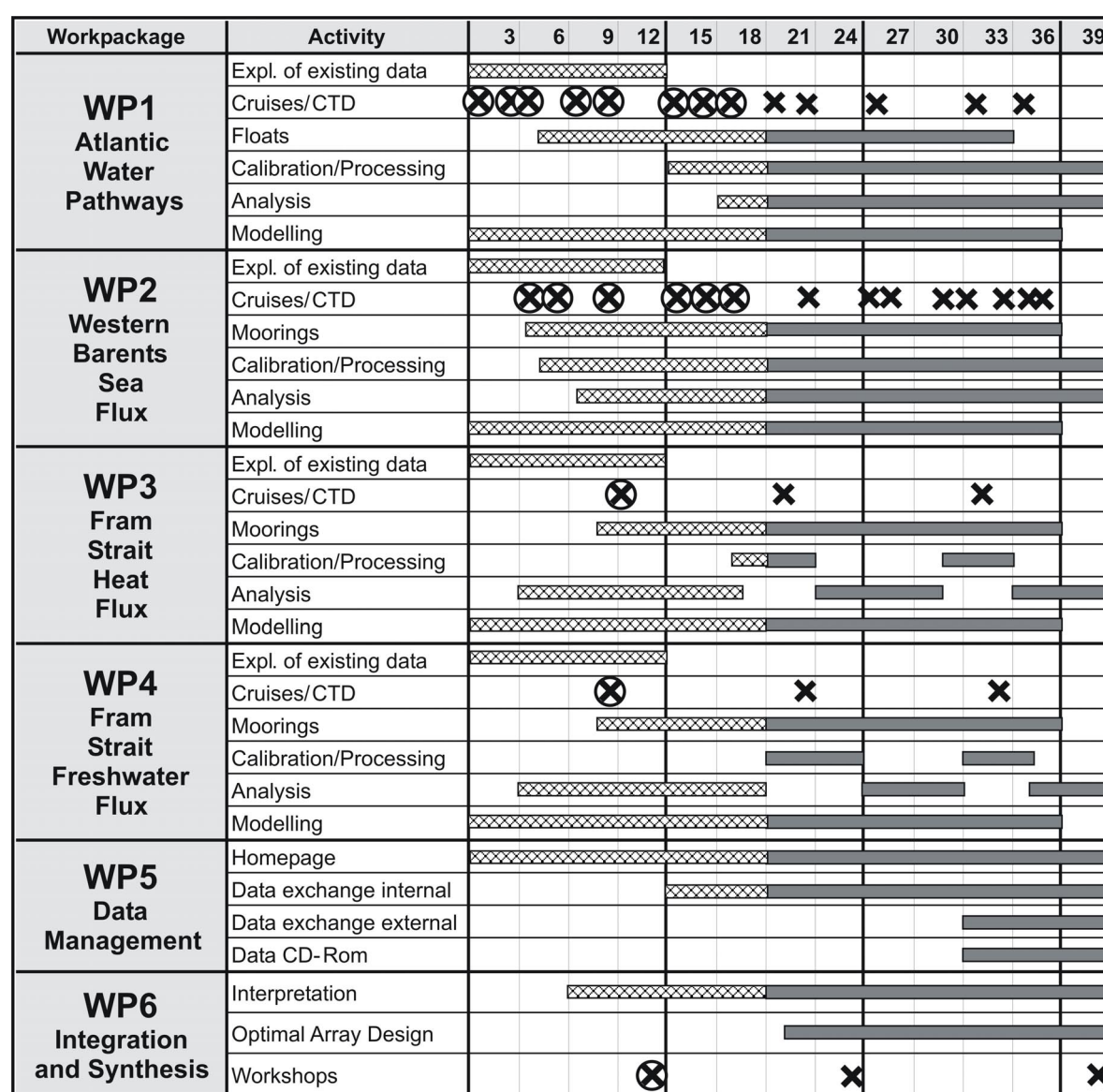
- continue work on relating the property changes to processes and determine their strength and impact from both transport observations and model results.

1.2 Scientific/technical progress in different work packages

The scientific/technical progress in the different work packages is summarized in the following.

The basis of progress during the project is the ongoing field work which provides the data needed to address the ASOF objectives. The first half of the year was dominated by working up the data from the last year's cruises and to prepare the material and organize the ship time for the coming field season. From the Gantt chart it can be seen that the planned cruises took place. The cruises planned for this summer are indicated. It can be seen further that floats and moorings were deployed and that data from earlier field work is worked up and submitted to analysis. The experiences in the field in this summer will confirm the technical progress made with further development of the applied material or show if further modifications are needed.

- Updated Gantt chart.



performed activity
 planned activity
 accomplished event
 planned event

1.3 Milestones and deliverables obtained

- **Deliverables**

The deliverables which were due during the first year were all delivered. They are summarized in Table 1.

Tab. 1: Deliverables requested in months 13 to 18 of ASOF-N.

| Work package | Deliverable No | Deliverable title | Delivery date | Status |
|---------------------|-----------------------|--|----------------------|---------------|
| WP1 | D 1.4 | Preliminary data from hydrographic surveys: CTD and ADCP | 15 | Delivered |
| WP1 | D 1.5 | Calibrated data, T/S and ADCP current fields | 18 | Delivered |
| WP2 | D 2.2 | Preliminary data from CM | 15 | Delivered |
| WP2 | D 2.3 | Preliminary data from repeated sections with CTD and ADCP | 15 | Delivered |
| WP2 | D 2.4 | Calibrated data, analysis of time series and historical data | 18 | Delivered |
| WP3 | D 3.2 | Preliminary data from moored array and repeated sections (CM, DCM, ADCP, CTD) | 16 | Delivered |
| WP3 | D 3.3 | Calibrated data, calculated fluxes and data reports | 18 | Delivered |
| WP4 | D 4.2 | Preliminary data from moored array and repeated sections (CM, ULS, DCM, ADCP, CTD) | 16 | Delivered |
| WP4 | D 4.3 | Calibrated data, calculated fluxes and data reports | 18 | Delivered |
| WP5 | D 5.1 | Reference material on data matters | 15 | Delivered |

- **Milestones**

The first milestone common for all work packages was reached in month 14 of the project which is February 2004. It is the annual oversight on workpackage progress. These annual reports were already included in the annual ASOF-N report for 2003, comprising a detailed description of each WP progress together with information about the completed tasks and deliverables. Additionally, the information on the project progress is periodically updated on the ASOF-N webpage in the form of the cruise reports, comprising the details of performed measurements and used instrumentation.

The first milestone in WP5 'Data management' is the ASOF-N webpage. It is set-up with an access to the reference material for the project participants and has been active since month 6 as planned. The ASOF-N webpage is maintained by AWI and updated according to the contributions from the project partners.

1.4 Deviation from the work plan and/or time schedule and their impact on the project

During the reporting period no significant deviations from the work plan and time schedule occurred, which could have seriously impacted the project progress. However, minor deviations are described in the following.

The experiences of the first year lead to the need of adjustment in the LODYC contribution to WP1 which were described in the last report. The modifications are in progress to be realized as described then.

In WP2 one of the key persons involved in the project is on the pregnancy leave until October 2004. This creates a small delay in some of the reporting.

In WP3 occurred technical problems with the pop-up data units. They did not return to the surface at the expected dates. The search for errors is ongoing.

In WP4 'Fresh water flow through Fram Strait' the researcher employed in the ASOF-N project left after a few months. However a new highly capable scientist was employed with a small time overlap and this way the impact on the project progress was minimized.

The other workpackages stayed in the plans.

1.5 Co-ordination of the information between partners and communication activities

Exchange of information by the e-mail.

The complete information relevant to the project is distributed among the project participants by the project coordinator via e-mails. This reduces the need of meetings and workshops.

ASOF-N webpage.

A full description of the project with detailed information on the work plan, deliverables and milestones for each work packages is available for the project participants from ASOF-N web site. A webpage presenting the cruise reports and preliminary reports on the collected data is frequently updated. Examples of the instrument sheets are also accessible. Information on the important events relevant to the project is presented there with special attention to the other ASOF activities (ASON-W, ASOF-E) and the conferences where the project results will be presented.

Co-operation with other projects.

The results achieved in the ASOF-N workpackages during the reporting period were presented at the forum of ICES Ocean Hydrography Working Group during its workshop in Southampton, England in March 2004. Also ASOF-N data collected during the field measurements in WP1, WP2, WP3 and WP4 will be transferred to the ICES data centre and the World Data Centre for Marine Environmental Sciences.

The coordinator participated at the ASOF-E (MOEN) meeting in Oban from 10 to 13 March 2004 to assure the exchange within the ASOF cluster.

Conference attendance.

During the first half of 2003 the ASOF-N project and its results were presented at the following scientific conferences:

- ICES Ocean Hydrography Working Group, Southampton, March 29-April 1, 2004,
- Arctic Science Summit Week (ASSW), Reykjavík, April 21-28, 2004,
- EGU Joint Assembly, Nice, France, April 25-30, 2004,
- EUROCEAN 2004, Galway, Ireland, May 10-13, 2004.

ASOF-N Workshop

The next ASOF-N annual workshop is scheduled for 6 to 7 December 2004 in Bremerhaven

1.6 Difficulties encountered at management and co-ordination level and proposed solutions

Difficulties which were encountered at the management and co-ordination level reflect the fact that the project is very ambitious. Therefore the involved scientists are highly committed to assure the supporting background for the project. The need of that becomes immediately obvious when unexpected resources are needed. Intensive commitments make it sometimes difficult to attend meetings, supply information or keep deadlines. Additionally the times at sea which are concentrated in the summer months intensify the problem to communicate. We therefore have to rely very much on email communication and keep the number of project meetings small. However, since high commitment is a general problem, no particular solution can be proposed here, except of the wish to keep the reporting etc. efforts as small as possible. We highly appreciate some tolerance if a deadline is not correctly met due to the above reasons as in the present case.