



ARK-XXIV/2 processing log Fishery echosounder data (Kongsberg / Simrad EK60)

a) Gas flare survey

During this cruise the fishery echosounder was primarily used for detecting gas flares in the Håkon Mosby mud volcano area. The map in figure 1 shows the ship's track of the surveyed profiles. Table 1 shows the corresponding start and end dates of the profiles.

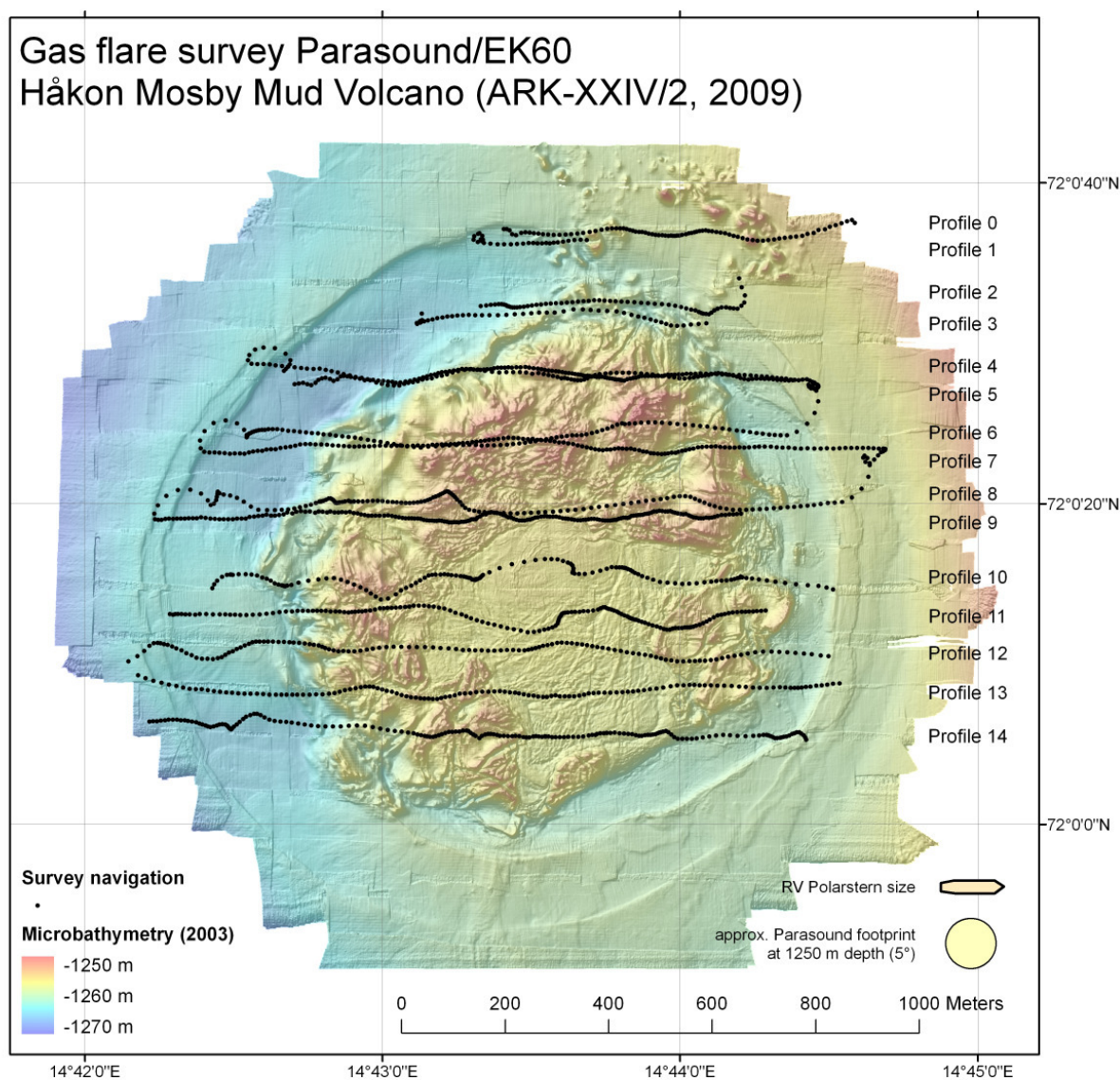


Figure 1: Gas flare survey profiles



Table 1: Survey profile dates

ProfNo	StartDate	StartTime	EndTime	HeadingTo
00	25.07.2009	12:50	13:35	E
01	25.07.2009	12:35	12:47	W
02	25.07.2009	11:55	12:25	E
03	25.07.2009	11:23	11:46	W
04	25.07.2009	10:24	11:16	E
05	22.07.2009	02:31	03:36	W
06	22.07.2009	01:30	02:19	E
07	22.07.2009	00:20	01:26	W
08	21.07.2009	23:03	00:08	E
09	21.07.2009	21:27	22:58	W
10	27.07.2009	00:03	01:07	E
11	27.07.2009	01:30	02:57	E
12	27.07.2009	03:31	04:23	E
13	27.07.2009	04:49	05:52	E
14	27.07.2009	06:26	07:53	E

b) Original data

During the gas flare surveys only the 38 KHz transducer's data was recorded as RAW-files.

c) Navigation

The file headers of the RAW-files contain the original navigation recorded at expedition time. The data source of the navigation data is the TRIMBLE MS750 GPS system (position) and the MINS ring laser gyro (speed, heading).

d) Processing

The RAW-files are published as TAR archives each containing the data for one survey profile.



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Navigation data

a) Original data

The original navigation data was extracted from the DSHIP data base on board of R/V "Polarstern" in 1 second interval.

These data sets contain:

- GPS position from TRIMBLE MS750 GPS
- Speed from MINS ringlaser gyro
- Heading from MINS ringlaser gyro
- Depth from deep water sounder (DWS) (constant water sound velocity: 1500 m/s)

b) Processing

I. Processing steps:

1. Extraction of source data from DSHIP data base
2. Manual validation of erroneous positions by reviewing speed, time and distance jumps
3. Removing of invalid positions
4. Conversion of data to daily files of 1 and 10 second resolution

II. Processed data:

Result of the processing is the verified navigation in 1 second and in 10 second interval, held in ASCII table files (tab delimited) with the following format:

- Column 1: Latitude [decimal degree]
- Column 2: Longitude [decimal degree]
- Column 3: Date [Format: DD.MM.YYYY HH:MM:SS]
- Column 4: Flag
- Column 5: Speed [knots]
- Column 6: Heading [degree]
- Column 7: Depth [metres]

The flag string consists of four digits with the following meaning:

Digit 1:

- [0]: No position available
- [1]: Position based on sensor TRIMBLE 1
- [2]: Position based on sensor TRIMBLE 2

Digit 2:

- [0]: Position is not pitch corrected
- [1]: Position is pitch corrected

Digit 3:

- [0]: Position is not roll corrected
- [1]: Position is roll corrected

Digit 4:

- [0]: Centering is based on heading from GPS data (less accurate)
- [1]: Centering is based on heading from Motion-Reference-Unit

III. Statistic

Data volume 1-second-interval data:	123 MB
Data volume 10-second-interval data:	12 MB
First data set:	10.07.2009 20:00:00
Last data set:	03.08.2009 08:00:00
Total number of 1s positions after processing:	2027564
Number of positions missing (DSHIP error values)	2837 (0.14%)



ARK-XXIV/2 processing log Sediment echosounder data (Atlas Parasound)

a) Gas flare survey

During this cruise the Parasound echosounder was primarily used for detecting gas flares in the Håkon Mosby mud volcano area. The map in figure 1 shows the ship's track of the surveyed profiles. Table 1 shows the corresponding start and end dates of the profiles.

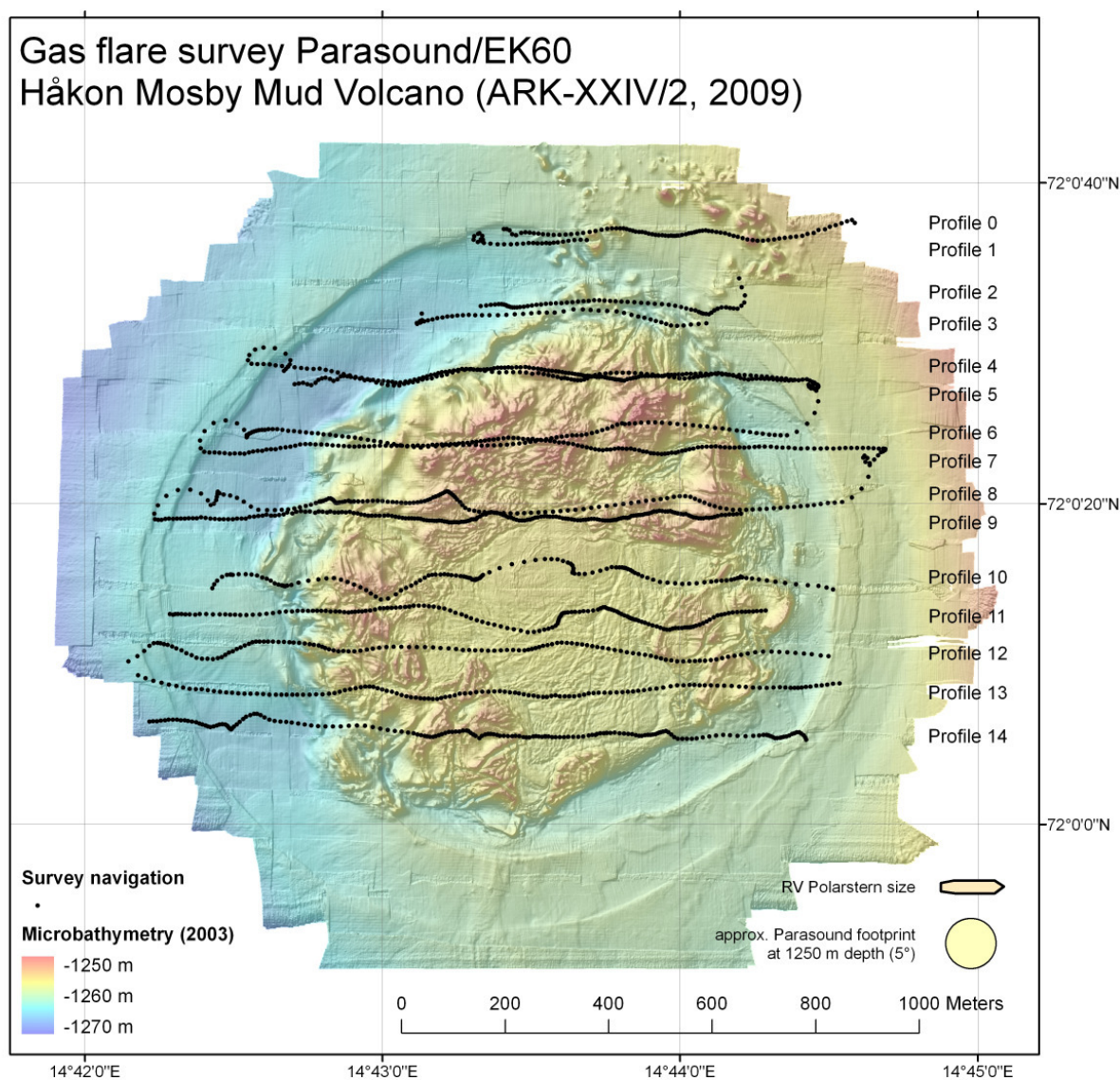


Figure 1: Gas flare survey profiles



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11	27.07.2009	01:30	02:57	E
12	27.07.2009	03:31	04:23	E
13	27.07.2009	04:49	05:52	E
14	27.07.2009	06:26	07:53	E

b) Original data

During the gas flare surveys following Atlas Parasound data types were recorded:

- PHF (primary high frequency, ~20 KHz) for the whole water column as ASD and PS3
- SLF (secondary low frequency, ~4 KHz) for the sediment layer as ASD and PS3

c) Navigation

The file headers of Atlas Parasound ASD- and PS3-files contain the original navigation recorded at expedition time. No further processing was made. The data source of the navigation data is the TRIMBLE MS750 GPS system (position) and the MINS ring laser gyro (speed, heading).

d) Processing

The ASD- and PS3-files are published as TAR archives each containing the data for one survey profile.

e) Data visualization with SeNT

SeNT (Se suite for Windows NT, from Universität Bremen, Hanno Keil) was used to create plots of the Parasound PS3 data.

The data of each profile and each frequency (PHF, SLF) was plotted by distance (50m per cm) and saved as PNG image file.



ARK-XXIV/2 processing log ROV MARUM QUEST Navigation data

a) Original data

The navigation data was extracted from the DSHIP data base of the ROV MARUM QUEST system. The data set contains 9 data files each in 1-second-interval data with the navigation of one ROV dive.

The raw data files contain:

- USBL position from IXSEA Posidonia 6000 USBL system (mounted on RV Polarstern)
- Immersion from ROV mounted pressure sensor

b) Processing

I. Processing steps:

1. Extraction of source data from DSHIP data base
2. Importing navigation data to Adelie GIS
3. Manual editing and smoothing of erroneous positions with Adelie GIS tools
4. Automatic filtering of navigation by speed and immersion with Adelie GIS tools
5. Export of edited navigation to ascii tables
6. Interpolation of navigation gaps

II. Processed data:

Result of the processing is the verified navigation in 1 second and 10 second interval, held in ASCII table files (tab delimited) with the following format:

- Column 1: Latitude [decimal degree]
- Column 2: Longitude [decimal degree]
- Column 3: Date [Format: DD.MM.YYYY HH:MM:SS]
- Column 4: Flag
- Column 5: Immersion [metres]

The flag string consists of four digits with the following meaning:

Digit 1:

- [0]: No position available
- [1]: Position from IXSEA Posidonia USBL
- [2]: Position from JHU DVLNav navigation system

Digit 2:

- [0]: USBL Position is not pitch corrected
- [1]: USBL Position is pitch corrected

Digit 3:

- [0]: USBL Position is not roll corrected
- [1]: USBL Position is roll corrected

Digit 4:

- [0]: USBL Position is not heading corrected
- [1]: USBL Position is heading corrected

III. Statistic

Data volume 1-second-interval data:	21 MB
Data volume 10-second-interval data:	2 MB
Total number of 1s positions after processing:	405409