

Cruise report Balgzand (Waddenzee)

October 10, 2006

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Objectives of survey

A sidescan sonar survey was conducted on October 10, 2006 over several sites on the Balgzand plate in the Dutch Wadden Sea off the coast of Texel. The survey had two objectives. Firstly, it aimed at a detailed acoustic mapping of some well-delineated (sub-) littoral mussel- and oyster banks, which shortly before had been mapped by GPS measurements during low tide. The second objective was to compare two sidescan sonar systems, one system used by TNO and the other by IMARES. The processing and interpretation of the measurements were carried out within the scope of the European MESH (*Mapping European Seabed Habitats*) project.

Area and acoustic tracks

The survey area is located in the western part of the Wadden Sea, a tidal flat area in the North of the Netherlands (figure 1).



Figure 1 The Balgzand bank in the western Waddenzee (in red box), the area where the sidescan-sonar survey was conducted

Sidescan-sonar measurements were carried out in 5 survey areas. The locations are shown in Figure 2 and further details are given in table 1. The planned and measured tracks are portrayed in more detail in Figure 3 and Figure 4. All sidescan sonar tracks are spaced at 90 m and the range of the sidescan sonar measurements was 50 m, producing ideally a full coverage of the areas. TNO made sidescan-sonar recordings with a C-Max CM2 system. Navigation speed during the sonar measurements varied between 3.6 and 5.2 kts.

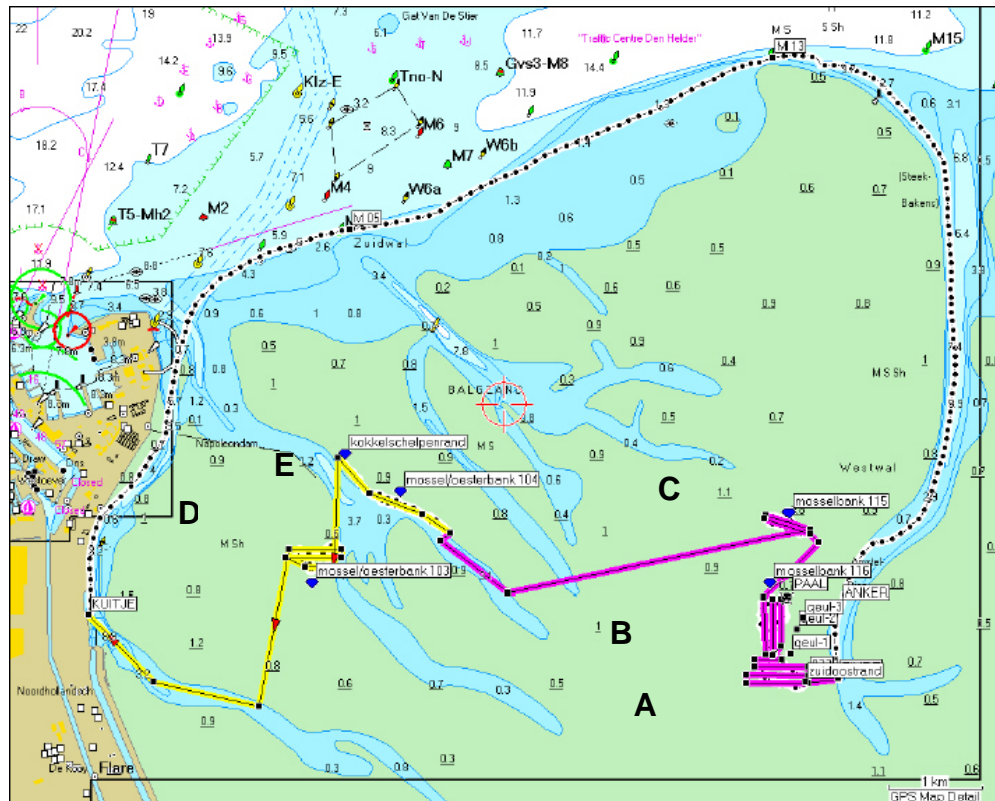


Figure 2 The Balgzand bank in the western Wadden Sea with the location of the survey areas. Codes A to E refer to table 1.

Table 1 The survey areas with the coordinates (WGS84) of the corner boundaries

Survey area	Corner boundaries		Number of tracks	Length of tracks	Track interval (m)	Range (m)
	Latitude (N)	Longitude (E)				
Balgzand-A	52 55.762	04 53.779	4	250-650 m	90	50
	52 55.758	04 54.346				
	52 55.899	04 54.114				
	52 55.839	04 53.886				
Balgzand-B	52 55.930	04 53.958	3	450-550 m	90	50
	52 55.986	04 54.113				
	52 56.235	04 54.105				
	52 56.233	04 53.949				
Balgzand-C	52 56.633	04 54.311	2	500 m	90	50
	52 56.632	04 54.381				
	52 56.720	04 53.957				
	52 56.632	04 53.944				
Balgzand-D	52 56.414	04 49.541	3	200-300 m	90	50
	52 56.423	04 49.868				
	52 56.536	04 49.912				
	52 56.516	04 49.454				
Balgzand-E	52 57.046	04 49.896	1	1200 m	-	50
	52 56.610	04 50.954				

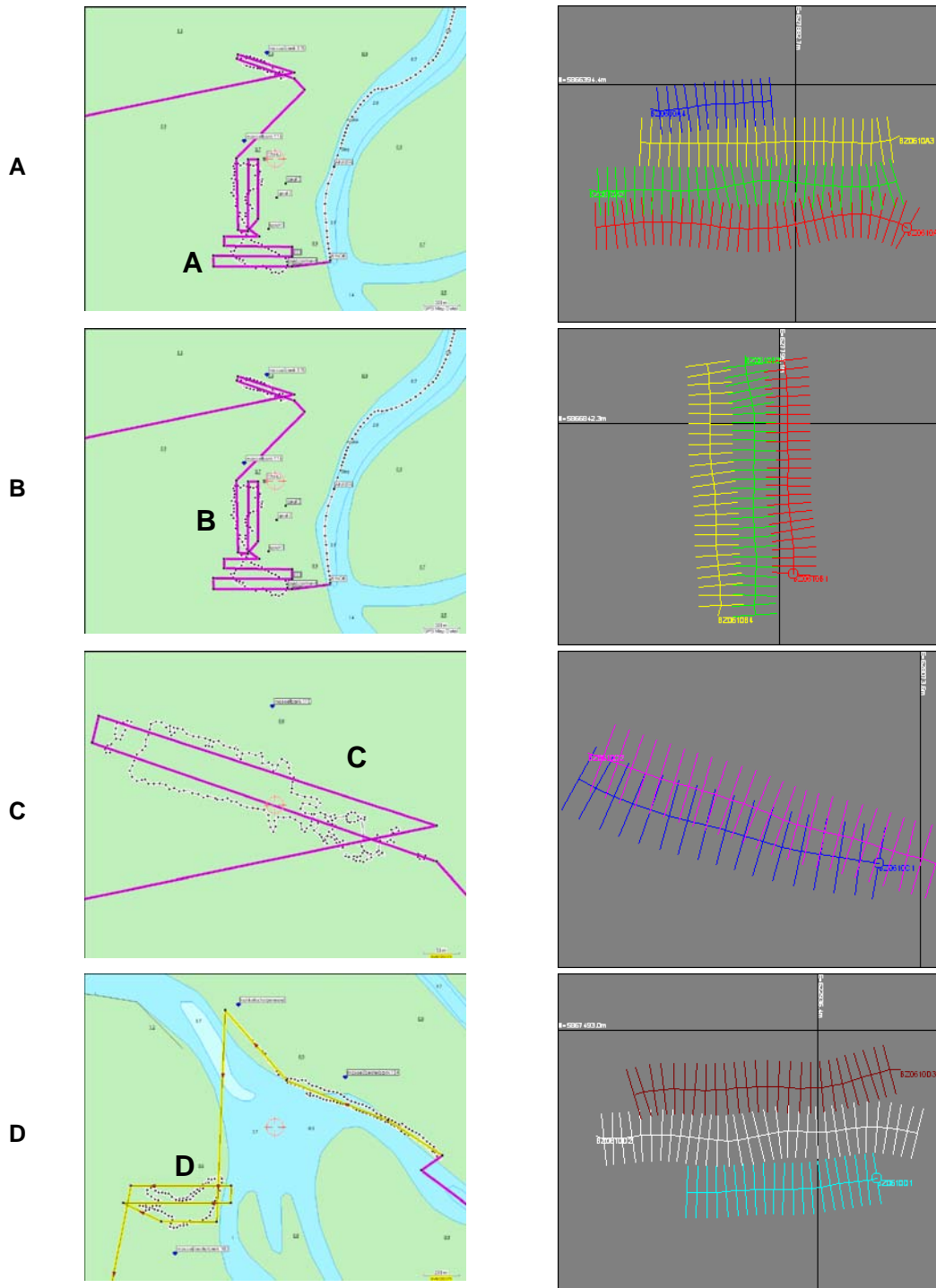


Figure 3 The navigation tracks across survey areas A to D. Left: planned navigation tracks; right: coverage of sidescan sonar tracks.

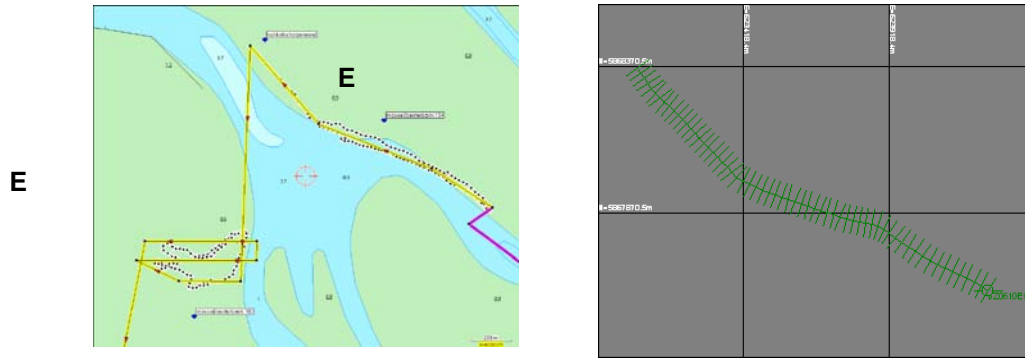


Figure 4 The navigation track across survey areas E. Left: planned navigation track; right: coverage of sidescan sonar track.

Equipment specifications

- Sidescan sonar:
 - TNO: C-Max CM2, 325 kHz, fixed to the starboard side of the survey vessel
 - IMARES: Sportskan (Imagenex), 330 and 880 kHz, fixed to the port side of the survey vessel
- GPS
 - Del Norte 5012 GPS (positions in UTM zone 31, WGS84)

Data format and storage

Sidescan sonar data

C-Max sidescan sonars employ their own system format, in which the data are stored on magneto optical disks. C-Max software (MaxRead) is used to convert the data in C-Max format to the more conventionally used QMIPS format. All sidescan sonar data collected during this survey was converted to QMIPS and stored on CD-ROM.

Logbook (time in UTC; local time is UTC+2)

Tuesday 10 October 2006

S 2 Bft; height of waves <0.25 m. Flood tide 09:00 hrs.

- | | |
|---------------|--|
| 05:50 | Arrival harbour Den Helder; installation of equipment |
| 07:00 | Departure Den Helder harbour |
| 08:15 - 08:21 | Sidescan sonar CM2 survey of area Balgzand-A, tracks BZ0610A1-BZ0610A4. |
| 08:52 - 09:11 | Sidescan sonar CM2 survey of area Balgzand-B, tracks BZ0610B1-BZ0610B3. |
| 09:11 - 10:16 | Sidescan sonar Sportskan surveys of areas Balgzand-A, Balgzand-B and Balgzand-C. |
| 10:16 - 10:25 | Sidescan sonar CM2 survey of area Balgzand-C, tracks BZ0610C1-BZ0610C2. |
| 10:25 - 10:55 | Return across the sand plate to survey area Balgzand-D. |
| 10:55 - 11:11 | Sidescan sonar CM2 survey of area Balgzand-D, tracks BZ0610D1-BZ0610D3. |
| 11:11 - 11:53 | Sidescan sonar Sportskan surveys of areas Balgzand-D and Balgzand-E. |
| 11:53 - 12:03 | Sidescan sonar CM2 survey of area Balgzand-E, track BZ0610E1. |
| 12:03 | End of sidescan sonar measurements. Return to Den Helder Harbour. |
| 12:30 | Arrival harbour Den Helder. |