



Koninklijke Marine



From Point Cloud to Digital Elevation Model

Netherlands Navy –
Hydrographic Service
(Rogier Broekman)

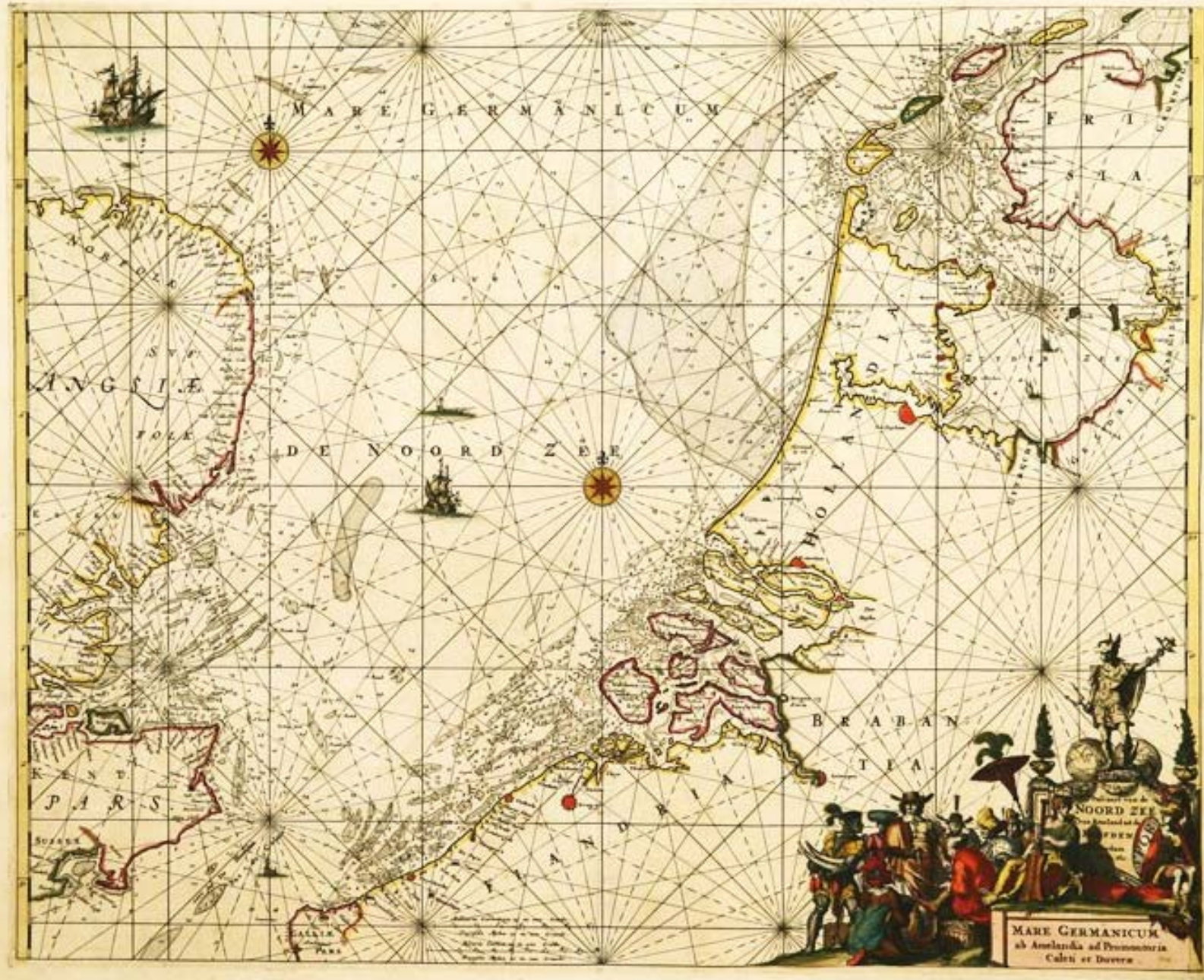
Caris
(Niels Nijhuis)

SAFE NAVIGATION

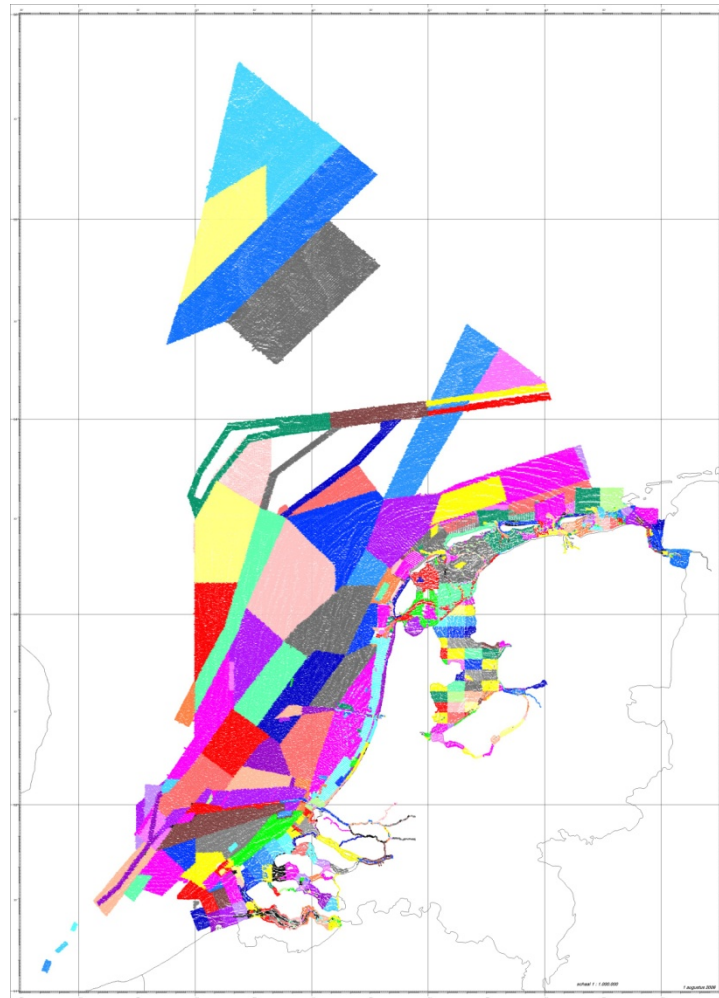


SAFE NAVIGATION

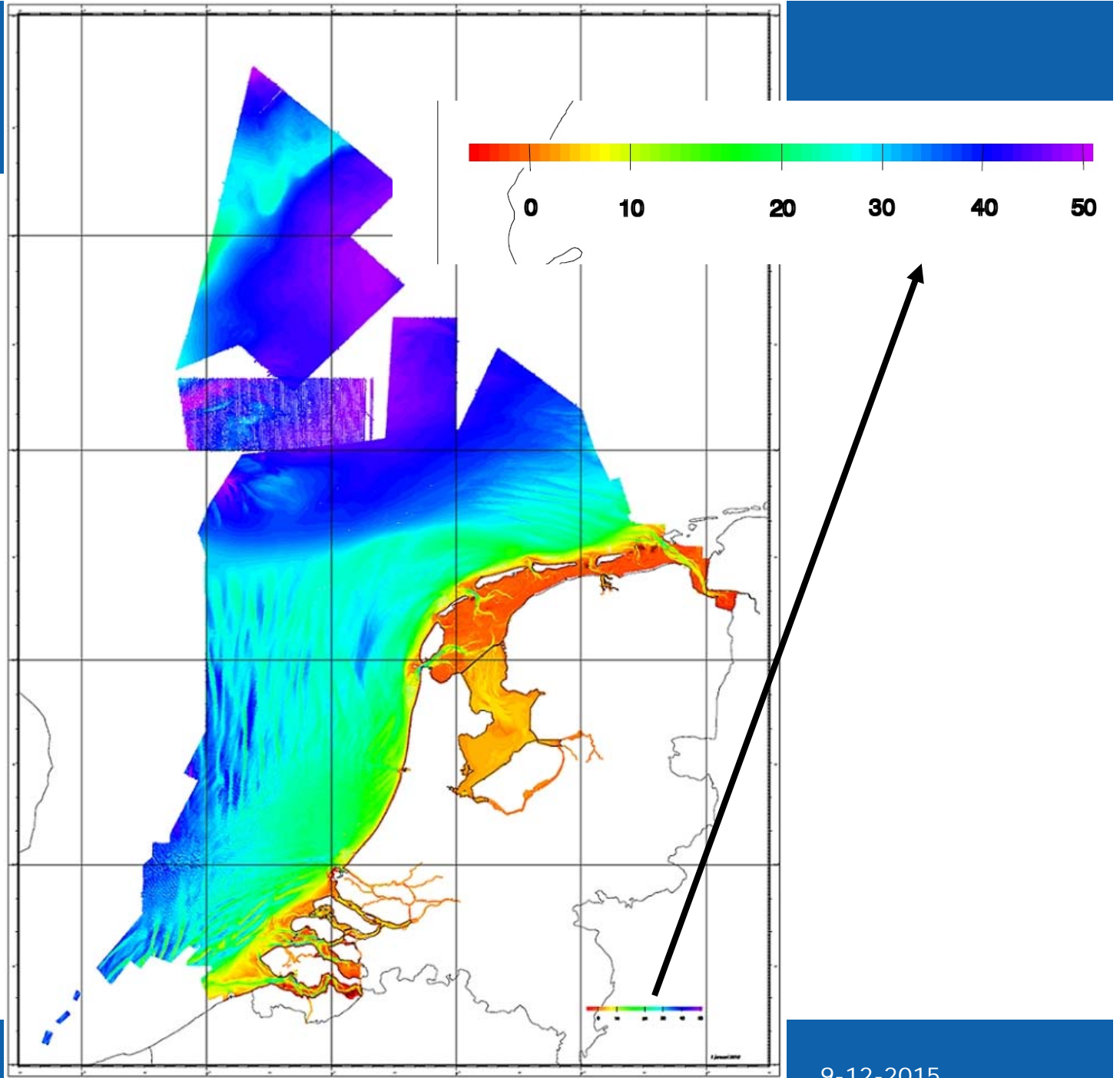




Bathymetric recordings



Bathymetric result





1990's

- World divided into cells of 0,000045 degrees
- Base cell size of 5x5 metres at the equator
- Base cell size of 3x5 metres at 52 latitude North
- Each cell has true geodetic single point on Earth
- Conversion from metric to geodetic (on board)
- Conversion from geodetic to metric (in office)
- Lack of metadata information
- Export of 5 items per area (mean/min/max/hits/sd)

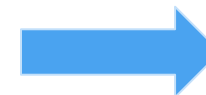
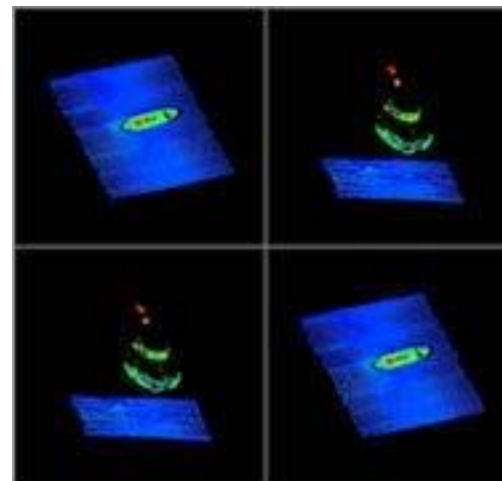
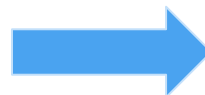


Usage of massive point clouds

LOV	Size	Area	No.cells	Total cells
LOV = 0	3x5	15	1	$3,7 * 10^9$
LOV = 1	6x10	60	4	$9,2 * 10^8$
LOV = 2	12x20	240	16	$2,3 * 10^8$
LOV = 3	24x40	960	64	$5,7 * 10^7$
LOV = 4	48x80	3840	256	$1,4 * 10^7$
LOV = 5	96*160	15360	1024	$3,6 * 10^6$
LOV = 6	192*320	61440	4096	$9,0 * 10^5$
LOV = 7	384*640	0,25 km	16384	$2,2 * 10^5$
LOV = 8	768*1280	0,98 km	65536	$5,6 * 10^4$
LOV = 9	1536*2560	3,93 km	262144	$1,4 * 10^4$



Intended production line



CSAR File Format

MBES data acquisition
(QINSy)

Generic Sensor File
(US DoDBL)

New base cell size = 2x2 metres