

## Ship Density Maps

Vessel Density maps serve two main purposes:

- Improving the understanding of global vessel traffic
- As input for satellite AIS mission planning and simulation

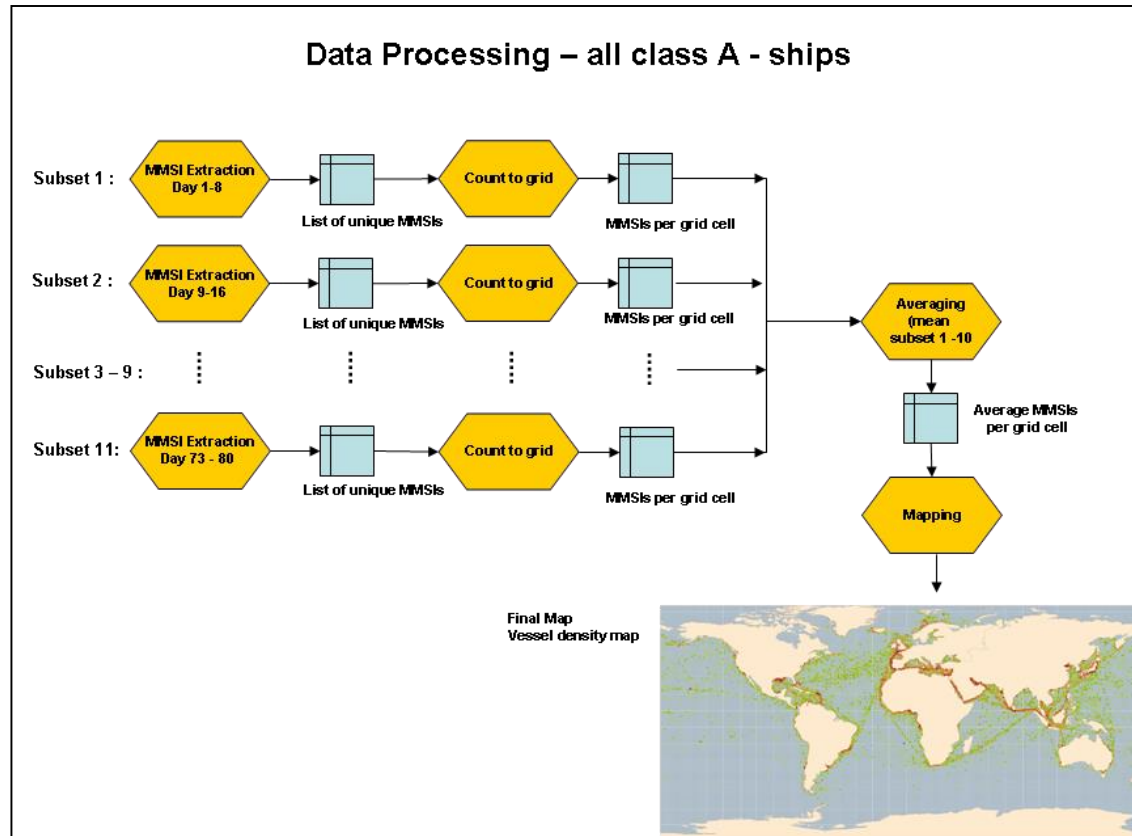
In 2010 no information about ship density was available, simply due to lack of data

**Definition:**

- “Ship density refers to the average abundance of vessels with a defined geographical area/spatial grid”

**Challenges:**

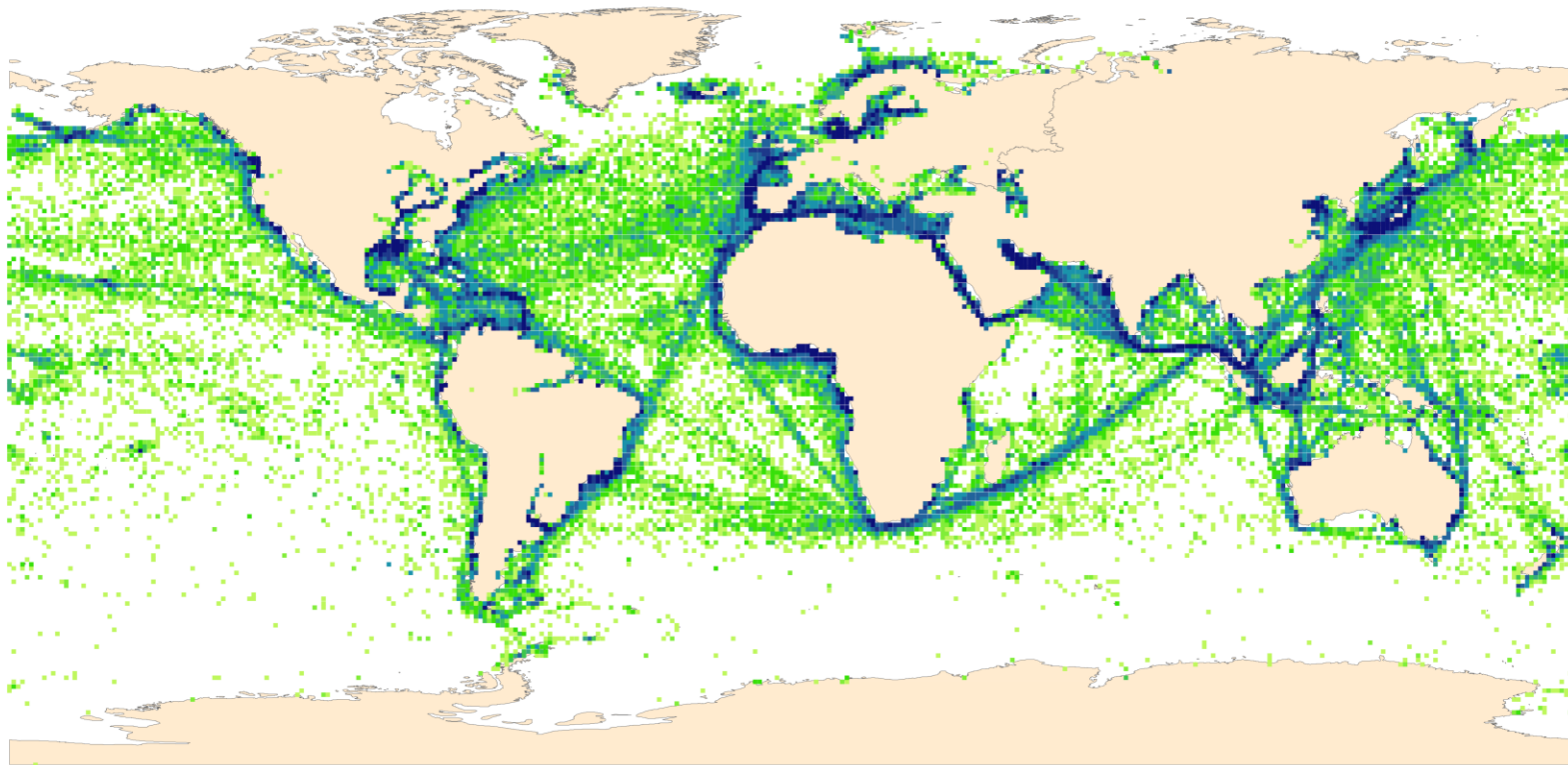
- **2010:** To compile a spatially representative sample: 8 days of SAT-AIS data sampling
- **Today:** in one day: 19 Mio position reports from 160.000 vessels!





## Global Ship Density (mean value)

Average N° of Ships per 1° x 1° grid



1:37,000,000

average ship density per grid cell

- 0.0
- 0.0 - 0.3
- 0.3 - 0.6
- 0.6 - 1.2
- 1.2 - 1.8
- 1.8 - 2.5
- 2.5 - 5.0
- 5.0 - 10.0
- 10.0 - 20.0
- > 20

Data Processing: LUXSPACE 9/2010  
Data Source: Orbcomm S-AIS data from Nov 2009 - Jan 2010  
Pathfinder2 S-AIS from Nov 2009 - Jan 2010  
DAMSA t-AIS data for the Baltic Sea  
Map Projection: WGS84

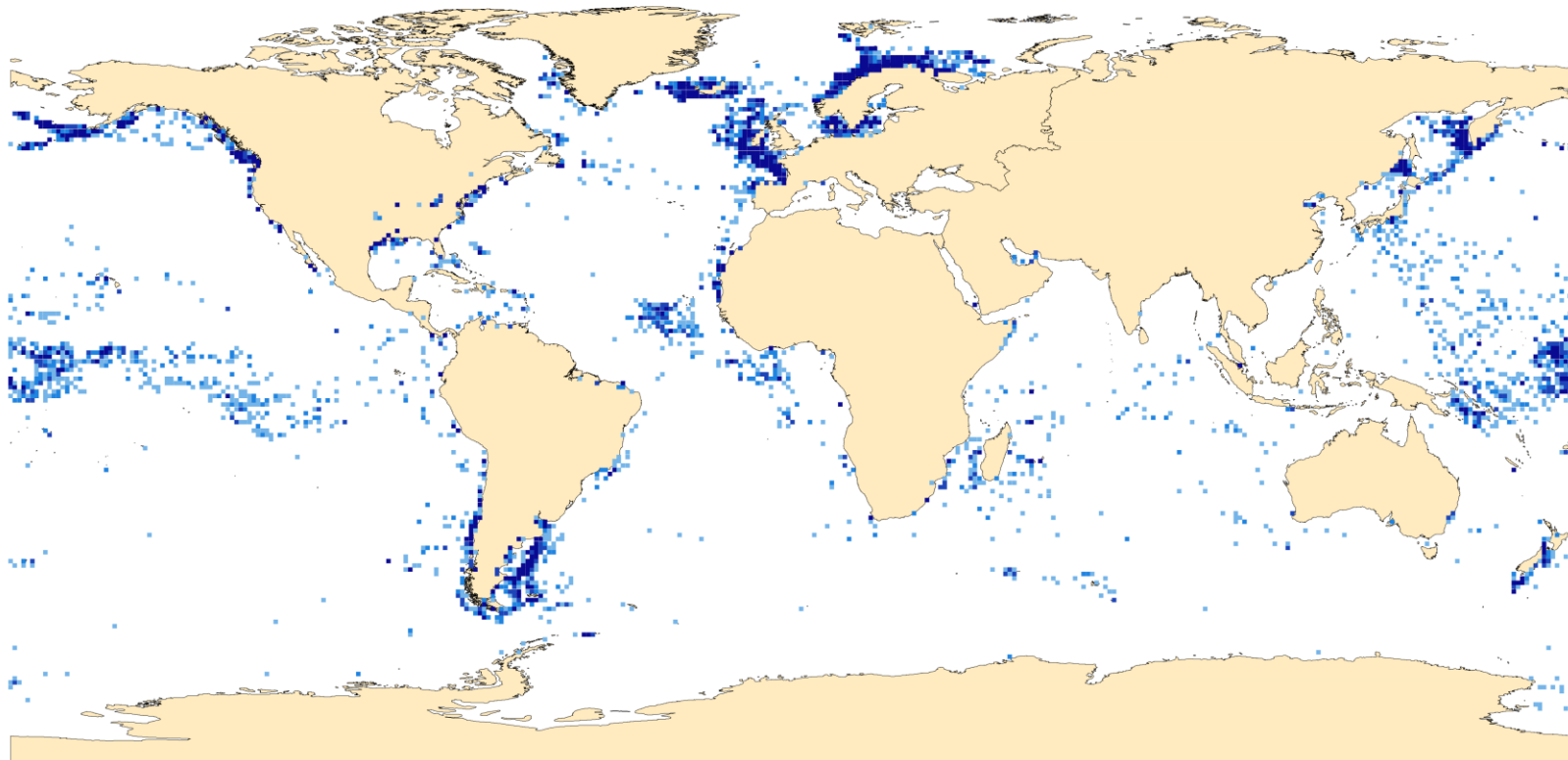
© LuxSpace Sarl 2010

Explanatory note:  
"Ship Density" is defined as the average number of vessels within a grid cell, based on 10 global S-AIS scenes. Each global S-AIS scene retains one position report per vessel within a time frame of 8 days.



## Global Ship Density - Fishing vessels

Average N° of Ships per 1° x 1° grid



1:37,000,000

**average ship density  
per grid cell**

0.0

0.0 - 0.3

0.3 - 0.6

0.6 - 1.2

> 1.2

Data Processing: LUXSPACE 9/2010  
 Data Source: Orbcomm S-AIS data from Nov 2009 - Jan 2010  
 Pathfinder2 S-AIS from Nov 2009 - Jan 2010  
 DAMSA t-AIS data for the Baltic Sea

Map Projection: WGS84

© LuxSpace Sarl 2010

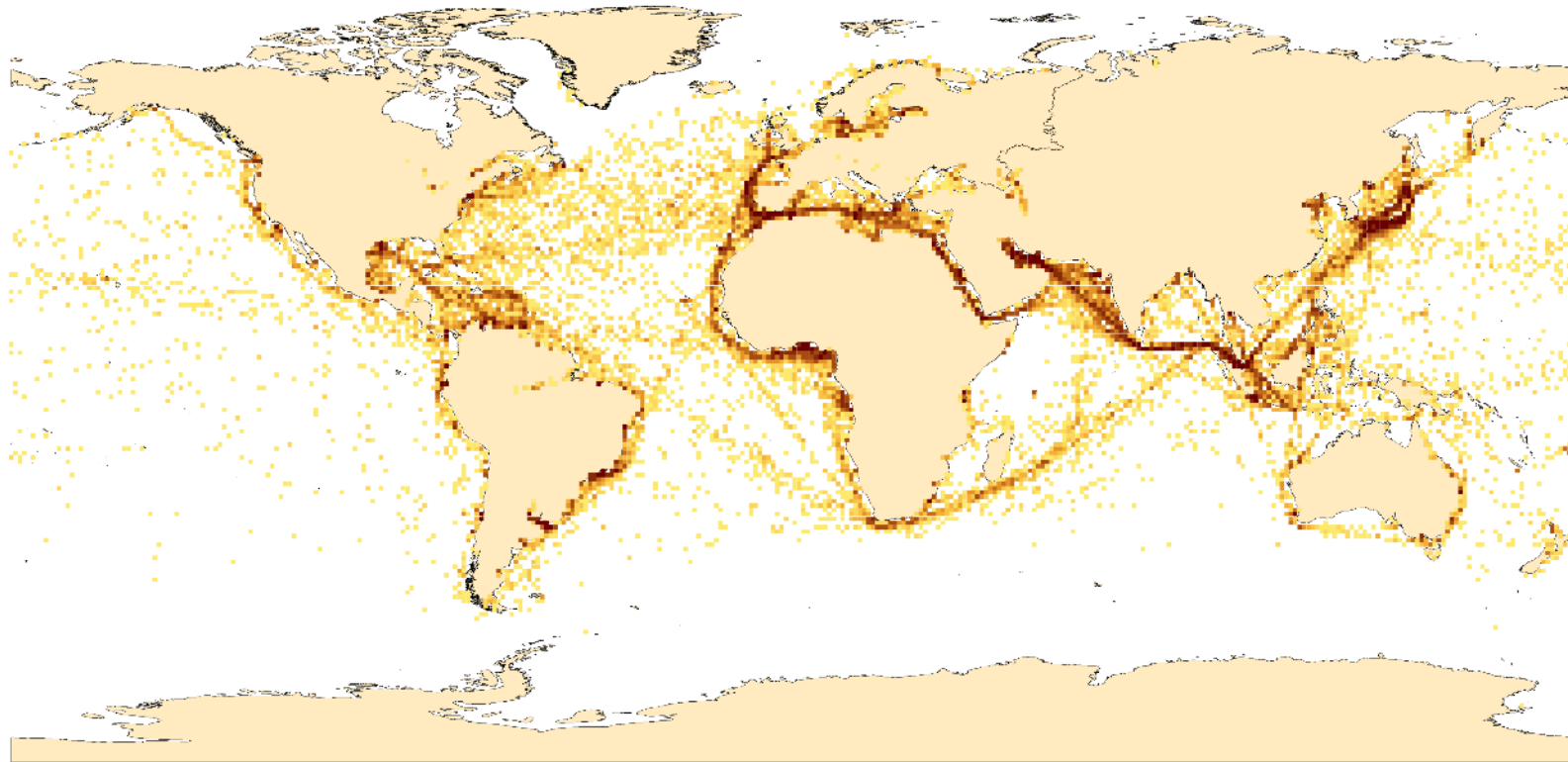
Explanatory note:

"Ship Density" is defined as the average number of vessels within a grid cell, based on 10 global S-AIS scenes. Each global S-AIS scene retains one position report per vessel within a time frame of 8 days.



## Global Ship Density - Tanker

Average N° of Ships per 1° x 1° grid



1:37,000,000

average ship density per grid cell

- 0.0
- 0.0 - 0.3
- 0.3 - 0.6
- 0.6 - 0.9
- 0.9 - 1.2
- 1.2 - 1.6
- 1.6 - 2.8
- 2.8 - 5.0
- 5.0 - 10.0
- > 10.0

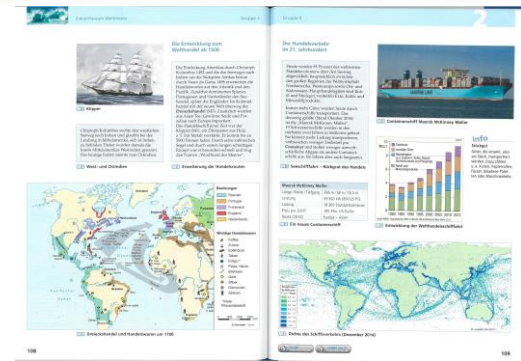
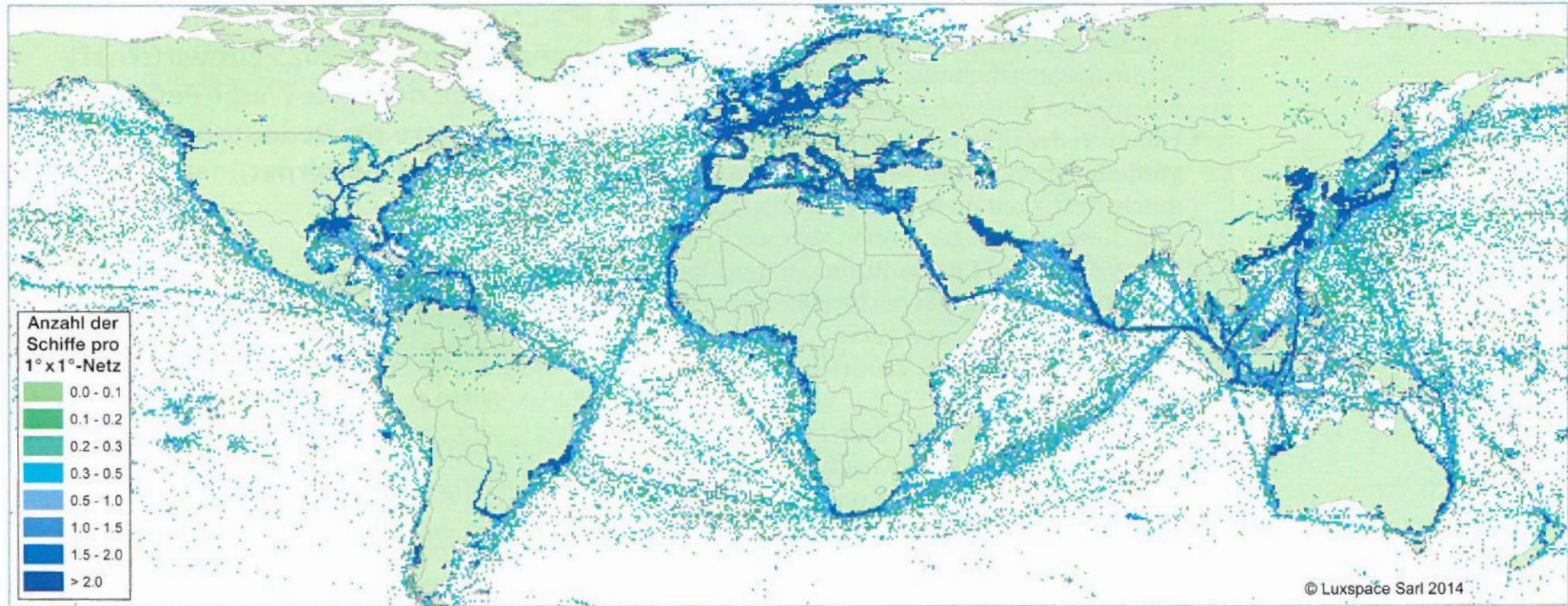
Data Processing: LUXSPACE 9/2010  
 Data Source: Orbcomm S-AIS data from Nov 2009 - Jan 2010  
 Pathfinder2 S-AIS from Nov 2009 - Jan 2010  
 DAMSA t-AIS data for the Baltic Sea  
 Map Projection: WGS84

Explanatory note:  
 "Ship Density" is defined as the average number of vessels within a grid cell, based on 10 global S-AIS scenes. Each global S-AIS scene retains one position report per vessel within a time frame of 8 days.

© LuxSpace Sarl 2010

# Ship Density Map in a German School Book

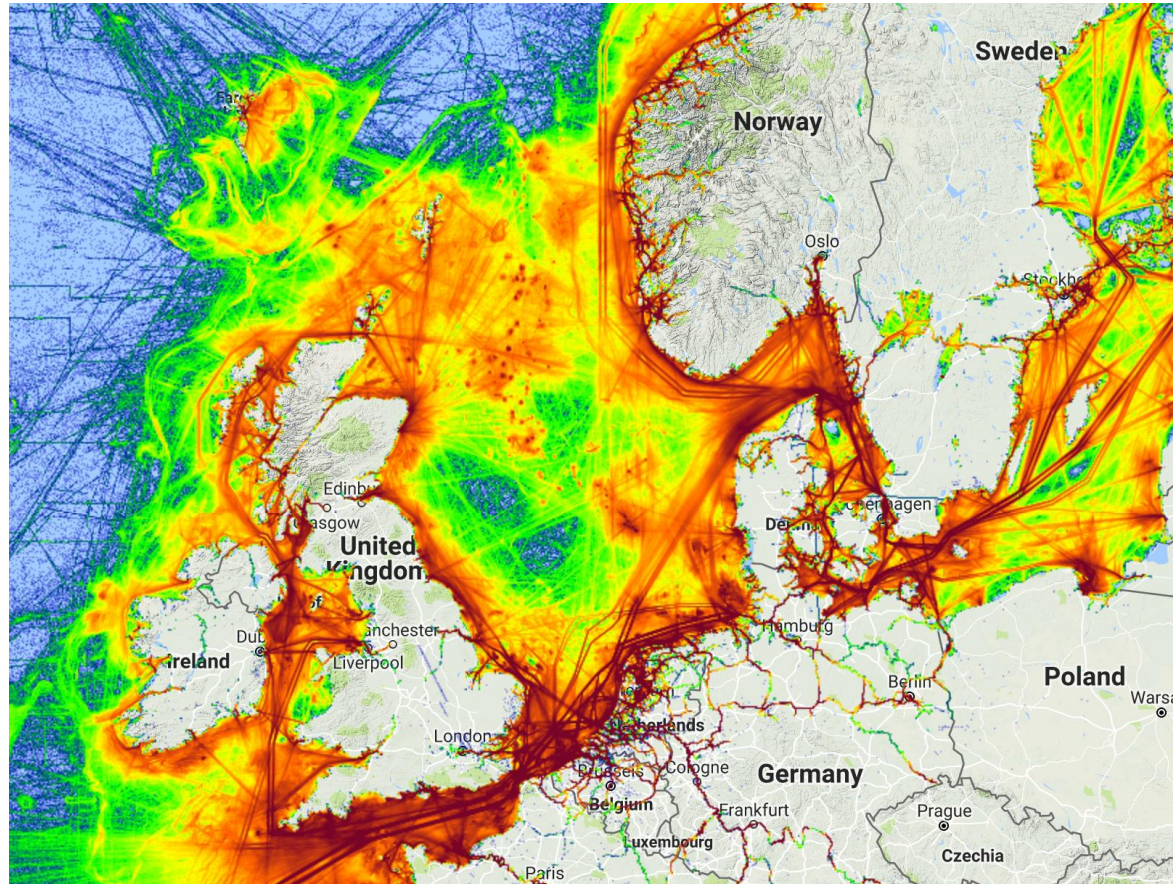
Die Zukunft der Weltmeer: Diercke Geographie 2015



Space.Solutions Professional+Smart+Affordable

# Other approaches:

## Gatehouse, MarineTraffic and others





- **Purpose:**
  - just illustrative or qualitative/quantitative
- **Area of Interest:**
  - European Waters or a global ship density map
- **Method:**
  - level of complexity
  - per ship type
- **Data sources:**
  - AIS only or including e.g. VMS
- **Integration into EMODnet:**
  - shape files