



Clean North Sea Shipping

An Interreg IVB, North Sea Region Programme project

E-Harbour conference 21/11-2012

Overview of CNSS activities

Competitive Marine Transport Services and reduction of Emissions
- A North Sea model



the guardian

News | Sport | Comment | Culture | Business | Money | Life & style

Environment > Carbon emissions

Cleaner air from reduced emissions could save millions of lives, says report

Researchers predict that 100 million early deaths could be prevented by cutting global emissions by 50% by 2050

Adam Vaughan

guardian.co.uk, Tuesday 12 May 2009 12.33 BST

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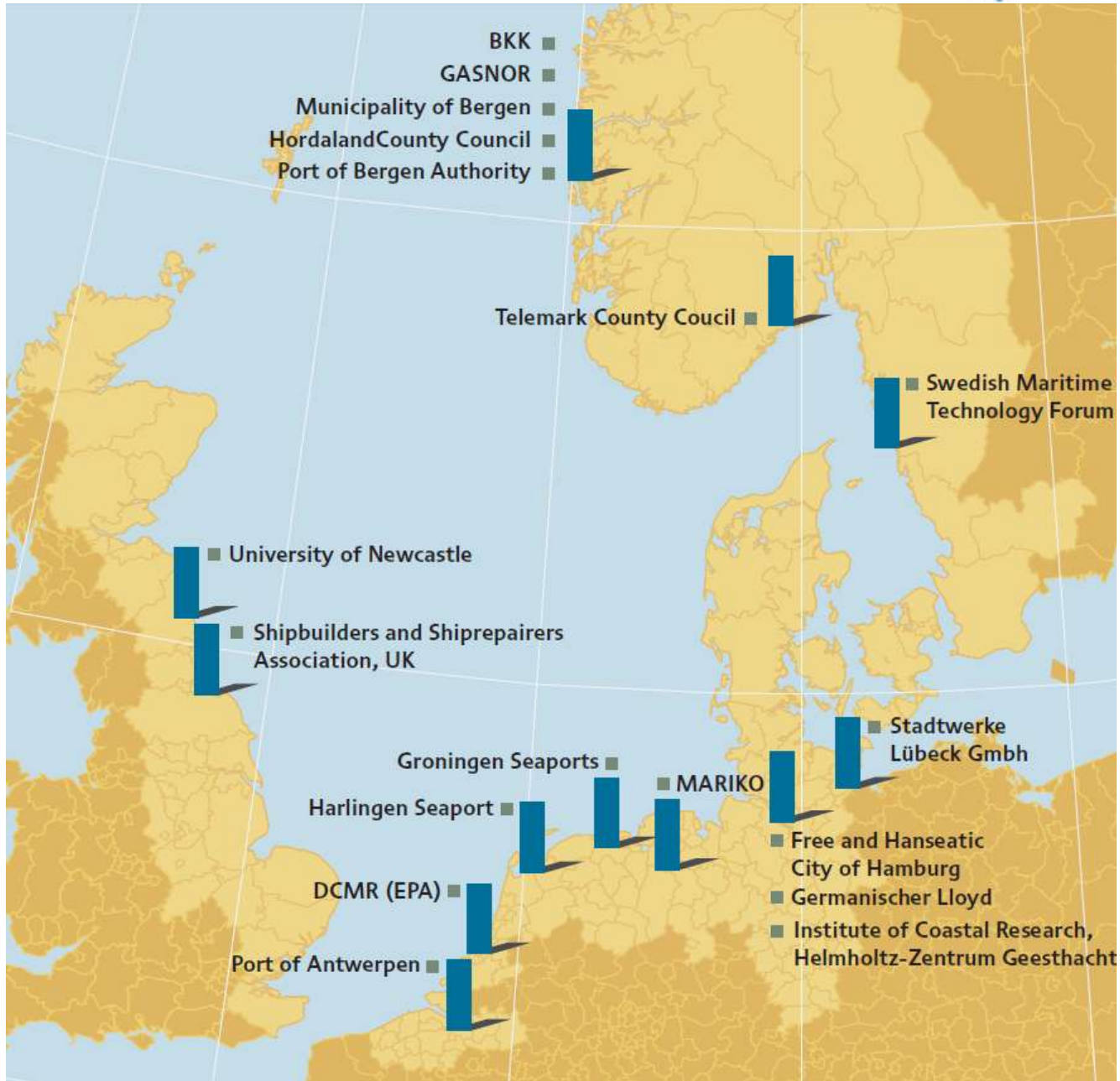
Air pollution hangs over London in this view of the BT Tower looking towards the city.



Bergen: © BT



Geiranger: © Aftenposten / Vogt-Lorentzen



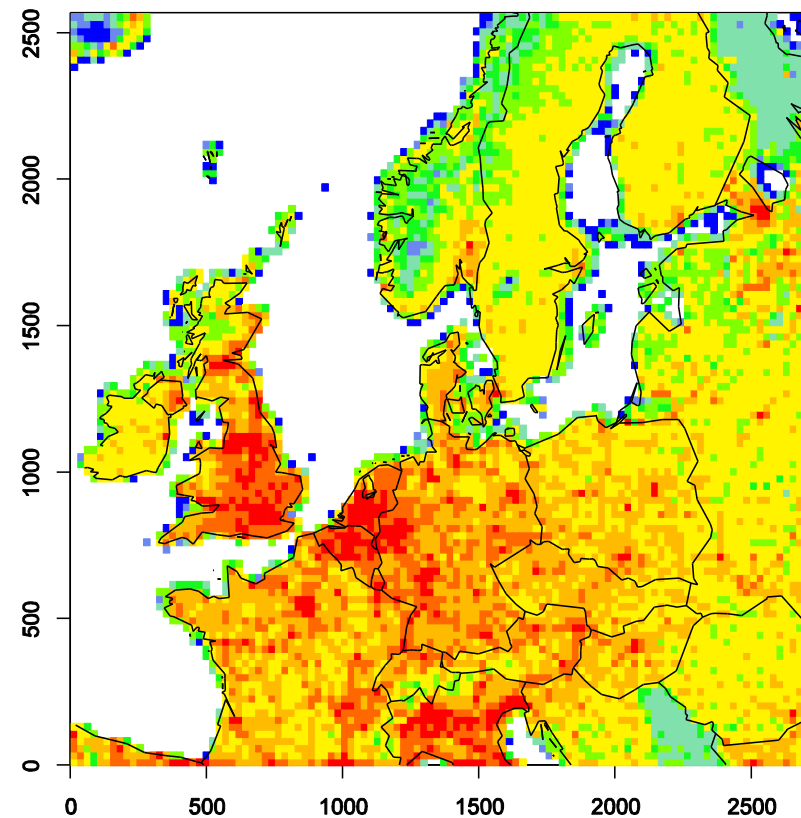
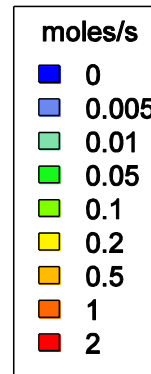
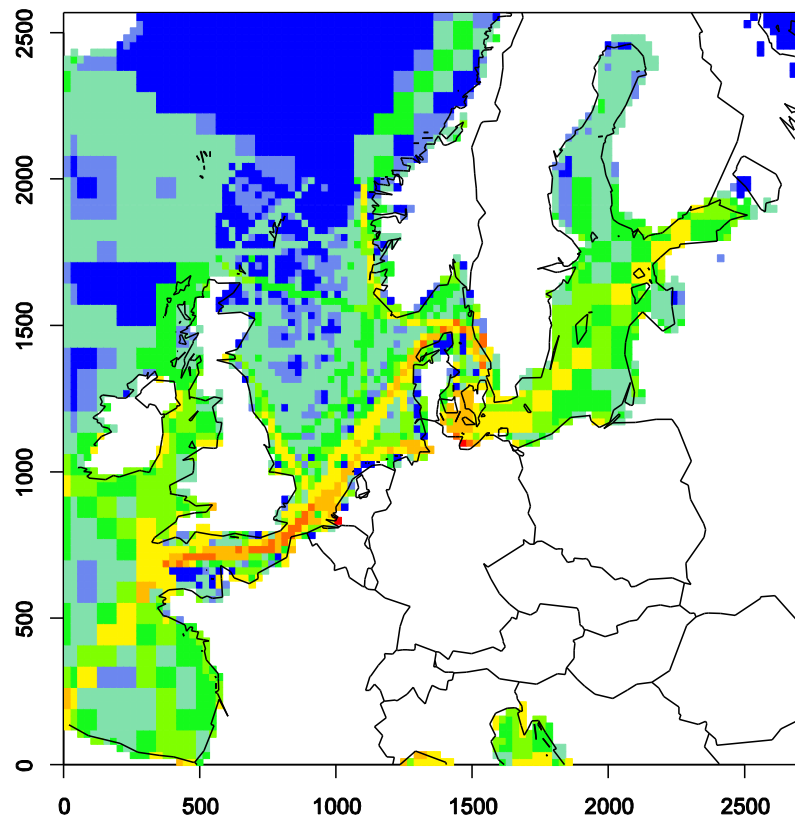
Contribution of ships to NO₂

From ships

From all land sources

NO_x emissions from ships, summer (JJA) 2008

NO_x emissions at land, summer (JJA) 2008



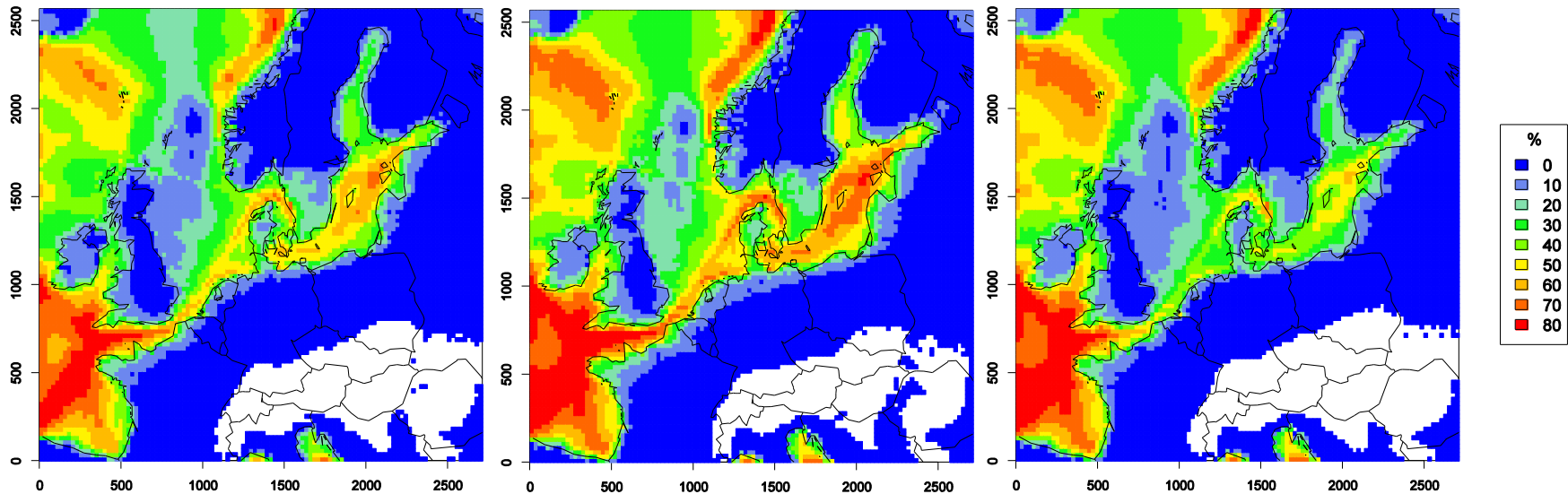


Relative contribution of ships to the total concentration

2008 (reference)

2030 (no NECA)

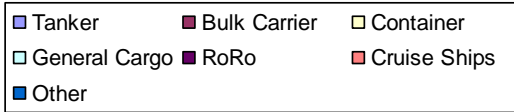
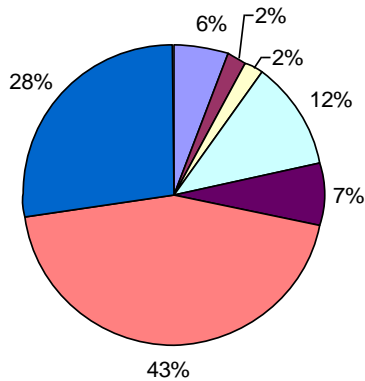
2030 (with NECA)



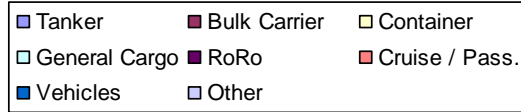
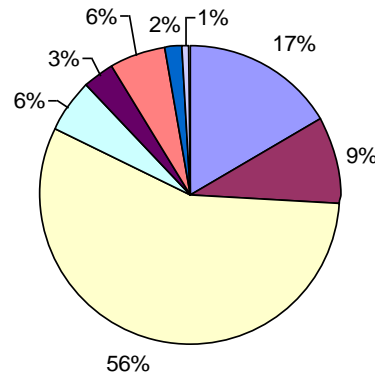
Based on mean summer (JJA) values

NOx Emissions share between ship types

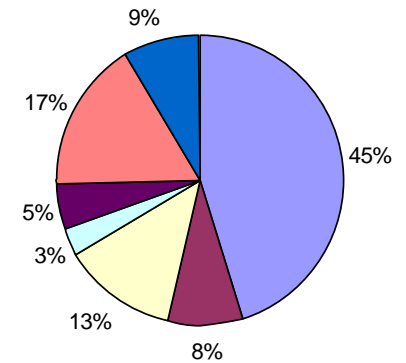
Bergen NOx



Hamburg NOx



Rotterdam NOx



Emissions in different harbours are dominated by different ship types

Underway: Emission concentration modelling for Hamburg, Antwerp, Rotterdam and Bergen

How to reduce



- Fuel requirements and type
 - Scrubbers and filters
 - Engine upgrade
 - LNG bunkering facilities
 - Slow steaming
 - Coordinated arrival
 - E.g. The SynchroPort project
 - Onshore power
 - Handling equipment improvement
 - Other fuels
 - Less idle time
- Attitude / Good practices
 - Laws and regulation
 - ECA
 - Incentives
 - WPCI – Graduated fees according to performance
-
- CLEAN SHIPPING TECHNOLOGY:
- <http://cleantech.cnss.no>



- **A typical cruise ship**

- Emission

- CO₂ 5000 kg/h
 - 2500 cars (ABB estimat)
 - NO_x 100 kg/h
 - SO₂ 3 kg/h

- Energy needs at berth

- 11 Mwh

- **General trend: More calls; Bigger ship; Extended season**

Cruise ship – Typical emissions



CNSS' way forward

- **Creation of transparency and perspectives**
 - <http://cleantech.cnss.no>
- **Technology showcases (2012)**
 - **LNG**
 - General discussion of issues
 - Risk analysis (Hazmat) for Hamburg
 - Brünsbüttel terminal planning
 - **OPS**
 - Showcase – Port of Bergen (planning / template)
 - Exchange of experiences
- **Individual Ship – Port solutions for energy supply (2013)**
 - Guideline on implementation towards cleaner shipping
- **New technological solutions for Clean Sea Shipping (2013)**
 - Documentation of two or more business concepts
 - Increased cooperation between universities, research and business
- **Emission modelling and scenarios (2012-2013)**
 - **Examples**
 - Effect of OPS on local air quality
 - Impact of ECA
 - Exhaust gas cleaning, energy efficiency, increase in trade volume, ...
- **Policy and strategy (2012-2013)**
 - Recommendations
 - handling air emission
 - incentive systems
 - Technology
 - Follow-up projects and large scale investments
- **Promotion of implementation**



Improve the environmental and health situation caused by air pollution and greenhouse gases from shipping along the North Sea coast and within North Sea ports.



- *creating awareness,*
- *sharing knowledge and*
- *convincing influential stakeholders to take action*



The Interreg IVB
North Sea Region
Programme

