

In one hour, a single cargo ship can release emissions equivalent to 350,000 cars

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Global monitoring of ship emissions

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> Oil rigs are a potential emission source.

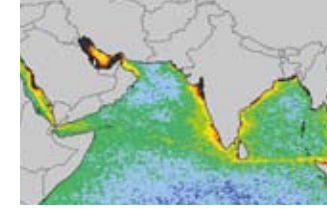


> Emissions from ships pollute the atmosphere

Emission monitoring

Emissions caused by combustion of fossil energy sources in ship engines have a large effect on global climate change and the environment in general. Contrary to the traffic sector ashore, excesses of emission threshold values cannot be identified and linked to offenders off-shore. Without reliable monitoring, legal controls cannot be effective because violations are not detected, scrutinised and penalised. As a result, ships at sea are predicted to be one of the main sources of NO_x emissions in 2020 (“Baseline Scenarios for the Clean Air for Europe (CAFE) Programme”, 2005, European Commission, DG Environment).

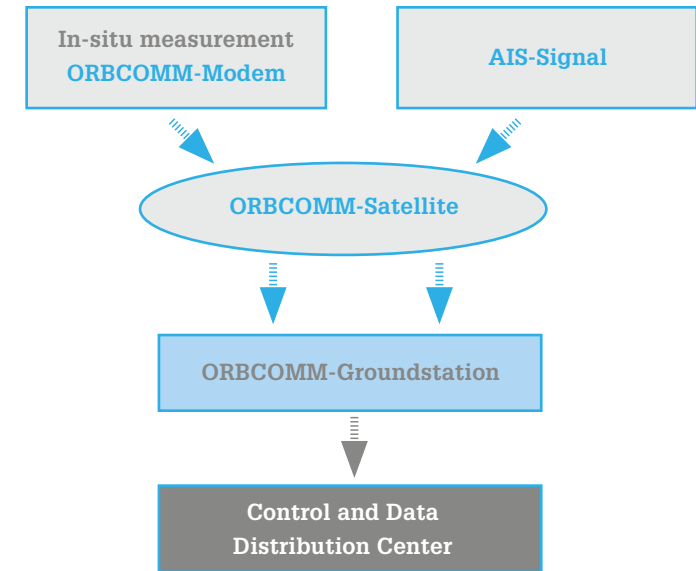
An OHB-lead R&D project defines an architectural concept for an infrastructure to process and integrate in-situ measurements (in particular ship emissions) taken on board a ship and co-located AIS data which is to be transmitted by satellite communication to the CEON Data Centre located in Bremen. The new ORBCOMM generation of communication satellites containing an AIS receiver enabling global coverage is proposed for demonstration. Due to ORBCOMM’s global coverage the complete global ocean shipping fleet, of about 98,000 ships, can be reached.



> NO₂ concentrations derived from satellite measurements.



> ORBCOMM Satellites



Outlook

The next step is to combine AIS and in-situ measurements with Earth observation data to feed and validate existing numerical models (e.g. atmospheric or climate models) with ground truth data from the open seas.