

European citizens benefit from the scientific expertise and atmospheric data from Bremen.



CEON
„Made in Bremen“



Atmospheric monitoring

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> Air pollution due to anthropogenic activities has serious implications to human health.



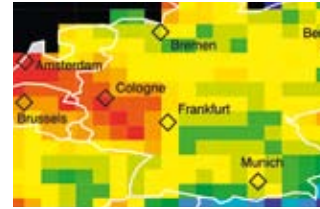
> Air pollution has negative economical impact and needs to be monitored on a global scale.

Health and quality of life

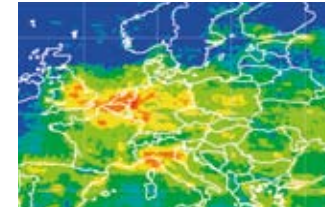
The ozone problem, air pollution and climate change are central themes of the GMES initiative because they have a direct effect on health and the quality of life for people on both a regional and global level. Bremen has international recognition in the field of atmospheric monitoring: national and European agencies such as the German and European Space Agencies (DLR, ESA) as well as the European Centre for Medium range Weather Forecast (ECMWF) use the scientific expertise and atmospheric data from Bremen, for example in the European GMES projects PROMOTE and GEMS.



> Global climate is sensitive to natural sources like dust that is changing chemical reactions in the atmosphere.



> Carbon dioxide is the most important climate gas contributing to the green house effect.



> Air quality is governed by traffic, industrial, urban emissions as well as meteorological conditions.



> Space based measurements using Envisat or forthcoming Sentinel satellites is crucial to meet the aims of GMES.

IUP/IFE: Leading in research

The Institute of Environmental Physics and Remote Sensing (IUP/IFE) is one of the world's leading research institutes for the monitoring of atmospheric parameters from space. The institute was for instance responsible for the scientific development of two important satellite missions initiated by the European Space Agency ESA and the German and Dutch Aerospace Centres, GOME on ERS-2 and SCIAMACHY on Envisat. The IUP/IFE is also a driving force at the development of novel experimental (GeoTrobe, CIWSR, etc.) and operational Earth observation systems, like METOP, METEOSAT Third Generation, GMES Sentinel satellite. The IUP develops the algorithms for Envisat data processing and also for many other satellite platforms. In own laboratories, spectroscopic parameters for their development are retrieved. The IUP provides atmospheric database archives and has large computational systems for the operational and near-real-time data processing.

Climate gas monitoring

One of the most important tasks in atmospheric issues is the monitoring of climate gases. With data from the SCIAMACHY instrument, the IUP is one of the rare providers of measurements of carbon dioxide, methane, and also water vapour which drive the climate change through the greenhouse gas effect.

The IUP delivers, e.g., ozone measurements for many years now. The monitoring of atmospheric ozone is vital for protection against the life threatening dangers of increasing UV radiation. Although there is evidence to suggest that the ozone layer has been regenerated, it will be necessary to make careful measurements in the future at IUP in Bremen.

Air quality

Air quality surveillance measurements from space will be more and more important due to the global and objective features of satellite measurements. Parameters like sulphate dioxide, nitrate monoxide and dioxide pollute air and hinder the development of the economy in particular in urban and environmental problem regions. In the future, satellite based systems will strengthen the European measurement network for air quality monitoring. Long standing research has enabled Bremen to play an internationally leading role in the derivation of information about particulate matter pollution from satellite data and will thus provide a significant contribution to future air quality measuring networks.

Further Information under
www.iup.physik.uni-bremen.de