

Satellite Navigation and Earth Observation in Mecklenburg-Vorpommern

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Mecklenburg Vorpommern



The German federal state Mecklenburg-Vorpommern is directly located at the Baltic Sea. Traditional branches are tourism, health sector and agriculture. Companies, research institutions and universities in Mecklenburg-Vorpommern explore the potentials of satellite based technologies for navigation and logistics processes.



Photo: Entry Research Port of Rostock (Photo: Rostock Port/nordlicht)

The government of Mecklenburg-Vorpommern supports these partners to work efficiently together, e.g. by funding regional networks.

In the branch of aerospace are three networks established: the Network Aerospace MV, GMES MV and the Network for Maritime Applications. The objective is to develop and provide real time applications and services in the sectors Global Monitoring for Environment and Security (GMES) and Global Navigation Satellite Systems (GNSS).

For the development of satellite-based services and applications, there are three priorities based on regional strengths, conditions or necessities:

1. Maritime Applications

As a coastal country Mecklenburg-Vorpommern has a longterm maritime tradition and natural affinity to the sea.

The Research Port of Rostock

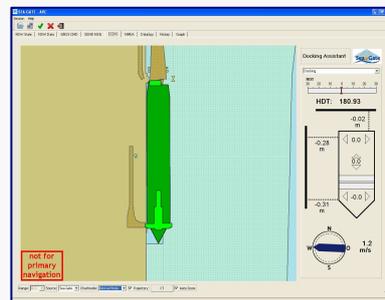


Photo: Docking Assistant SEA GATE (Photo: EADS RST)

In order to improve accuracy and integrity of maritime navigation and logistics processes the National Maritime Ground Based Augmentation System was installed in the Research Port of Rostock. SEA GATE is a pseudolite system, which emits GALILEO like signals in the port area and is provided by EADS RST.

1. Contracted by the aerospace agency of the German Aerospace Center (DLR e.V.) with means of the Federal Ministry of Economics and Technology (BMWi)

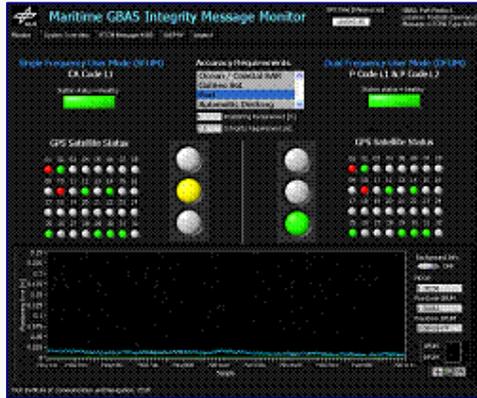


Photo: Integrity Monitor M-GBAS (Photo: DLR)

The German Aerospace Center (DLR) developed algorithms for the quality evaluation of navigation signals and provides differential phase based real time corrections for maritime safety critical applications.

German Remote Sensing Data Centre

An application for ship detection based on satellite image data of synthetic aperture radar (SAR) from ERS2, ENVI-SAT and TerraSAR-X has been developed and implemented. The applied algorithm was developed in cooperation with DLR's Institute of Remote Sensing Technology and it was implemented locally in the Realtime Space Application Centre

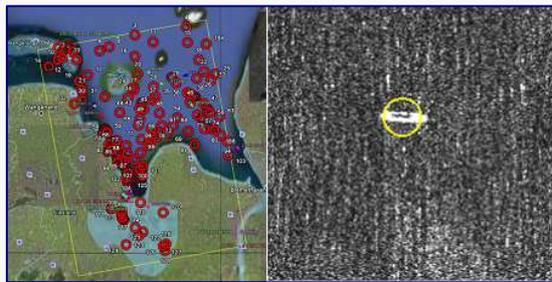


Photo: left: detected ships in the German Bight. Right: close up on TerraSAR-X image data sub scene; Image Mode StripMap, resolution 3 meter (Photo: DLR)

The Institute for Baltic Sea Research

The Institute is entrusted with the Baltic Sea- wide monitoring of physical-chemical and biological water parameters and the provision of information on international (HELCOM) and country level. Satellite remote sensing is a main source of information and basis for further applications.

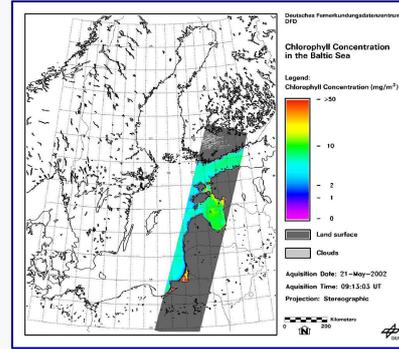


Photo:Chlorophyll concentration in the Baltic Sea in late spring (picture: IOW/ DLR)

2. Land applications

MV is predominantly known both as an agricultural land and for its natural resources. In both areas there are great potentials for GMES applications gain in knowledge and improvements in efficiency and effectiveness of their management.

The Calibration and Validation site DEMMIN

The observatory TERENO/DEMMIN is a durable Earth observation site for remote sensing to derive value added information products for forestry, agriculture and environment. Thematic processors such as algorithms for assessing evapotranspiration can be tested in the Durable Environmental Multidisciplinary Monitoring Information Network (DEMMIN) Calibration/Validation site under practical conditions.

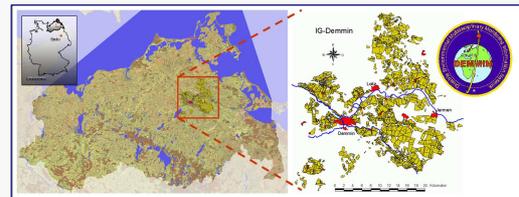


Photo: Geographical location of the CAL/VAL site DEMMIN (left) as well as the deviation of agricultural fields of the Interest Group Demmin (right) (Picture: DLR)

3. Overall priority climate change

This global process will lead to quite different regional changes. It is a part of foresighted planning to explore this process and adapt to its impacts proactively. Satellite based remote sensing provides valuable information and tools in this field.

www.geomv.de/gmes-mv

www.netmaritime.de

Author: Silvia Westland and Tobias Lerche

Editorial's note

Dear NEREUS-community,

We are pleased to up-date you on current NEREUS activities and wish you a pleasant read of our latest edition of the newsletter.

This year is an important year for the Union in many ways. A number of far reaching legislative proposals are expected in 2011, not only the Commission's proposal for the next Multi-annual Financial Framework which will be the base for all EU expenditure, but also proposals for several EU programs and policies with significant impact for the development of the space market such as in the context of the Europe 2020 objectives competitiveness and innovation policies or the support of space and security research. Not to forget the GMES-program post 2014 and the endeavors to put large-

scale space infrastructures such as Galileo into operation. Thus it is currently a crucial period to stimulate the political level and initiate awareness rising activities towards political decision maker. In this line NEREUS plans an exhibition in the European Parliament under the auspices of MEP Remek in November to showcase how our member regions use space technologies and solve challenges at regional level with space services. We are very much looking forward to designing this exhibition jointly with you. More information will soon follow.

Best regards,

Roya Ayazi

Draft mid-term review of European satellite navigation programmes

On 28th February 2011, the European Parliament's ITRE committee discussed the draft mid-term review of European satellite navigation programmes, focusing on the implementation stage and political and financial pressures on the Galileo programme.

In January 2011, the Commission revealed that an extra €1.9 billion would be needed in order to have a fully operational Galileo Programme of 27 satellites implemented on time.

The Rapporteur of the mid-term review, Vladimir Remek MEP, started out by suggesting that a fully funded Galileo programme delivered without further delay is important to the EU on two levels:

- That such a satellite infrastructure would guarantee the independence of the EU

That the EU needs to ensure that its share of the future market in high-technology is safeguarded.

Mr Remek was critical of the delays the report had seen due to the unavailability of necessary information from the Commission and other sources for him to complete his review.

On the question of the necessity of an extra €1.9 billion being required to realise the 27 satellite system (with an extra 3 sa-

tellites in reserve), Mr Remek commented that a less comprehensive Galileo programme with around 18 satellites would not be an optimal exploitation of the technology and might go on to represent an expensive missed opportunity.

MEPs had the opportunity to comment on Mr Remek's draft report, with questions of finance and whether the programme is worth the investment dominating proceedings.

Ms Ball, a UK MEP, questioned how the figure of €1.9 billion of further investment was arrived at, suggesting that it had been 'plucked from the air' and more financial detail was required in order for the programme to be transparent.

Ms Ball also had questions relating to the future operability of the Galileo system given recent warnings from scientists that the risk of damage from solar flares would increase significantly in the coming years.

Repeated reference was also made by MEP Brezina to the Chinese use of radio spectrums affecting the operation of the satellites, suggesting that along with the financial commitment requested and issues of future operability, international considerations may prove to be obstacles to the optimal exploitation of the programme.

The ITRE committee also heard from a representative from the European Commission who defended the investment in 30 satellites rather than 18 on the grounds that the extra imaging capabilities offered by more satellites was indispensable if the system is to be a serious long-term asset to the EU.

Questions about financial detail regarding the Commission's request for an extra investment of €1.9 billion were not answered by the EC representative, stressing that this informa-

tion has a market value to competitors of the EU, leaving public divulgence of this information impossible without MEPs guaranteeing secrecy.

Vladimir Remek MEP concluded the debate noting that further delays would not help the implementation process.

NEREUS Working Groups: current state of affairs

GNSS WG - EO/GMES WG

The GNSS and the EO/GMES WGs meeting will take place in parallel on 22 March 2011 from 14.00-16.00 in Venice on the occasion of the International Conference "Data Flow: from Space to Earth". More information on the conference: www.space.corila.it. Agenda of both meetings can be downloaded from the password protected area of the WG.

TELECOMMUNICATION WG

Currently, the position of chair of the Telecommunication WG is vacant.

We invited all our member regions to present their candidatures. We have currently a candidacy as co-chair by Mr. Nicolas CHUBERRE (Thales Alenia Space) which was presented at the last MB-meeting on 17 March 2011 in Brussels. In case you wish to submit your candidacies as co-chair or to have more information, please contact the [Secretariat](#).

TECHNOLOGIES FROM SPACE EXPLORATION WG

The new NEREUS WG on "Technologies from Space Exploration" met for the second time on 22 February 2011 at the University of Leicester, UK.

The rationale of the working group is to demonstrate how technologies developed for space exploration can serve as applications which directly bring benefits to EU citizens. Just to quote an example, they might help to make industrial processes more precise or efficient and as such help to strengthen Europe's industrial competitiveness. The WG is currently working on setting up a network of 'Exploratoria' throughout the regions of our network. "Exploratoria" are exhibition sites that aim at communicating and attracting the broad public to space exploration by an illustrative exhibition compiling interactive laboratory and hands-on experiments.

The idea is to create a main Exploratorium site per interested region and to design a mobile exhibition that travels around NEREUS regions. Existing structures will be linked with other Exploratoria in NEREUS regions and associated partners with the intent to create an "European network of Exploratoria".

Further this, the Working Group also plans organize a seminar on Space Exploration in autumn this year in Turin. The seminar will be conducted as two half-day sessions, one focusing on political aspects and the other on more technical issues.

The minutes of the last WG meetings and power point presentations from the participants can be downloaded from the password protected area of the working group.

Next meeting of the WG will be held on **26th-27th April in Toulouse/Midi-P.**

CET WG

The activities of the CET WG are currently dedicated on the realization of a promotional publication on best-practice examples from our member regions in the area of education and training. Many member regions gave their contribution to this NEREUS brochure. The publication has the dual purpose, to inform on our member regions' activities by presenting best practices examples in the field but also to announce and promote the an online database for education and training in the NEREUS regions. The online database wants to be a reference point for space-related study courses and programs in the universities across our network. It will become part of the NEREUS website by October 2011.

The next meeting of the CET WG will take place in **May 2011.**

DORIS_NET project

DORIS_NET (Downstream Observatory organised by Regions active In Space – Network) is the first EU-funded project that was mobilized on the NEREUS platform.

Bringing together 13 NEREUS partners the project was nominated as NEREUS flagship project and supported from its initial stage as it evolves around the core mission of NEREUS. Building on the fundamental NEREUS objective to spread the use of space technologies across Europe, the DORIS_net project wishes to see more regional actors involved in the implementation of space based services.

DORIS_Net is a bottom-up approach lead by European regions to facilitate the regional development of GMES downstream services by building a European network of „Regional Contact Offices“. Closely embedded in the regions,

“Regional Contact Offices” (RCOs) will be established in the partner regions as part of a European GMES Downstream Service Platform- to support regional users and service providers. The concept aims at engaging more regional actors in a structural dialogue and intra/inter-regional co-operations in order to maximize the benefits from innovative GMES-services which can have significant impact on the economy, environment and the quality of life of the citizens.

The project started on 1 February 2011 and had its first kick-off meeting on 8 February at the coordinator’s seat CEON in Bremen.

More information on the DORIS_NET project are available on http://www.nereus-regions.eu/DORIS_NET

Projects/Best Practices of NEREUS partners

PRE-EARTHQUAKES Project

PRE-EARTHQUAKES (Processing Russian and European EARTH observations for earthQUAKE precursor Studies), an EU co-financed FP7 project, focuses on improving reliability and precision of earthquake predictions and to give major improvements in order to reduce false alarm rates. The methodology used will be the exploitation of a combination of different observations/parameters together with the refinement of data analysis methods.

The Department of Environmental Engineering and Physics (DIFA) of the University of Basilicata together with IMAA-CNR coordinate the European project. The kick-off meeting will take place on 15-16 March 2011 in Potenza, Italy. The official presentation of the project to the scientific community will be on 7 April 2011, at the European Geophysical union Conference in Vienna.

Send us your space career success stories!

As part of NEREUS’ continued efforts to involve and inspire young people to enter the space sector, www.nereus-regions.eu/young-network-community and the NEREUS newsletter will feature regular ‘success stories’ depicting what can be achieved by students who have dedicated their studies to space. We will showcase a variety of examples of innovating and cutting-edge roles available throughout the space sector.

If there is an example of outstanding achievement or success from your region which would help to inform young aerospace, space and engineering graduates about prospects in the space sector, please send a short ‘success story’ to ne-reus.assistant@euroinbox.com in order for us to include it in forthcoming issues and website updates.

Young Network Community

Vito De Pasquale – Researcher, Planetek Italia srl

After first studying Physics at the University of Bari (Puglia region), Vito De Pasquale now works at the cutting edge of applied research activities into satellite sensing for water quality at an Italian SME, Planetek Italia s.r.l.

He took a PhD in physics with the department of Physics of the University of Bari after joining the Italian National Research Council's Institute of Intelligent Systems for Automation (CNR-ISSIA). His research focused on the use of visible and near-infrared satellite data on water quality indicators of oceans and seas.

During the course of his research, he and his collaborators demonstrated for the first time that it was possible to use different sensors to detect an oil slick, whilst previously only radar satellites had been used.

After six years at CNR-ISSIA, he moved to Planetek Italia s.r.l. (www.planetek.it), a leading multidisciplinary Geographical Information Services (GIS) and Earth Observation consultancy located in Bari. In Planetek his work is aimed at the development of new products based on remote sensing data.

The methodology Mr De Pasquale developed has been used successfully in the city of Apricena in Italy.

Events

NEREUS Space Exhibition in the European Parliament - November 2011

From 7-11 November 2011 NEREUS will organize a Space Exhibition in the European Parliament, under patronage of Czech Member of European Parliament Vladimir Remek and with support of Sky & Space Group.

Festive opening of exhibition on 8 November 2011, 18.00h.

NEREUS aisbl

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NEREUS a.i.s.b.l. is a not for profit international association incorporated under Belgian law (enterprise nr 898.367.280) in April 2008 to promote the use of space applications and emphasize the role of regions in space programmes and policies. It is financially independent and is funded by membership fees. Currently it counts 26 Member Regions and 27 Associate Members from all over Europe.