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Australian Government
Department of the
Environment and Heritage
Australian Antarctic Division

Press Release

Muon Space Weather telescope MuSTAnG will be constructed at Greifswald!

The European Space Agency ESA has decided to build, to mount and to operate the European space weather telescope – called MuSTAnG (MUon Spaceweather Telescope for ANisotropies at Greifswald) in Germany at the Institute of Physics of the University of Greifswald.

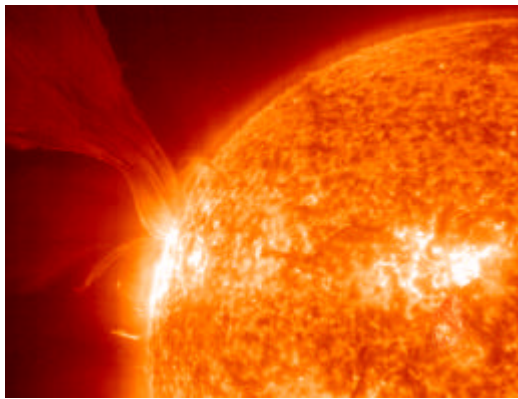
With this ESA decision for Greifswald as the location for MuSTAnG, ESA takes a further important step toward a European space weather programme. In 2001 ESA carried out a space weather feasibility study guided by Alcatel Space Industries (France) in co-operation with the University of Greifswald / Institute of Physics and other institutes in Europe.

Presently ESA is trialling - through more than 17 space weather pilot projects – the development of a European space weather service for users in industry and different other organisations.

The physics of MuSTAnG

The main activities in space weather come from the Sun and the clouds and particles ejected by the Sun. These clouds and particles can be stormy-like and propagate towards Earth and may endanger human life on Earth as well. MuSTAnG will use very modern technologies to detect particles from space, it will observe cosmic ray muons. Similar technologies are used by large research facilities like the European Nuclear Research Centre CERN nearby Geneva and at DESY (German Electron Synchrotron) Hamburg.

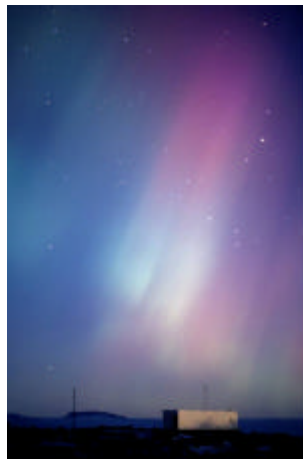
MuSTAnG will be able to monitor giant plasma clouds during their propagation between Sun and Earth in real time. Research related to our star – the Sun – will be carried out in Greifswald in two ways: first by means of the fusion reactor Wendelstein 7X at the Max Planck Institute for Plasma Physics and by MuSTAnG at Greifswald University.



The Sun is the primary space weather source (image: ESA)

MuSTAnG in the global network

The MuSTAnG telescope will be part of a global network of similar muon telescopes, located in Australia, Japan and Brazil. Therefore it will be possible to forecast for the first time precisely and with, until now unachievable, advance warning times of up to 24 hours the arrival time of the plasma clouds at Earth.



Aurora above the Australian Antarctic muon telescope building (image: AAD Hobart).

Tasks of MuSTAnG for daily life

These precise and early warnings of space weather storms allow the potential risks – like interruptions in power supply, positioning errors in satellite navigation, disturbances in telecommunication, radiation exposure of astronauts and other technical effects – to be minimized. For example aircrew members and aircraft electronics are also affected by cosmic rays. MuSTAnG will deliver important data to SWACI (Space Weather Application Center Ionosphere) at German Aerospace Centre DLR Institute for Communication and Navigation Neustrelitz (new federal state Mecklenburg-Vorpommern). MuSTAnG may also support the tourism in the northern regions, because the predictability of polar lights is improved.



Images from left to right: electric power lines were already affected by space weather storms and as a result transformers were destroyed by fire.



Images from left to right: space weather storms affect satellite navigation and telecommunication systems.

Who developed and built MuSTAnG?

MuSTAnG will be developed and built by the University of Greifswald. At the development and construction of MuSTAnG the following - world wide - institutions will participate: from the new federal states Mecklenburg-Vorpommern and Saxony the University of Applied

Sciences Stralsund, the companies 1A Greifswald and HTS Dresden, from Switzerland the University of Bern and from Slovakia the Institute of Experimental Physics Kosice, as well as the Shinshu University Japan and the Australian Antarctic Division Hobart.

MuSTAnG and the Hanse city Greifswald

In earlier times ships from the Hanse city Greifswald delivered goods safely to many countries in the Baltic sea area. The navigation of ships by means of stars played an important role in the past. Today cars, ships and aircraft are navigated safely and unerringly from space by means of satellites. The security and reliability of satellites and their sensitive instruments will be increased by MuSTAnG, because of possible mitigation actions during and prior to stormy space weather conditions. Therefore in future Greifswald will again contribute to the safe transport of people and goods.



Ships navigated by means of stars.

The “Space House” ... a further future vision for Greifswald?

During the preparation for MuSTAnG it became clear that a corresponding space like housing for the telescope was advisable, for example within a “Physics on Hands” science centre. As a result ESA has already presented to the city of Greifswald the space house concept. The space house was developed by means of the ESA technology transfer programme. It consists of carbon-fibre composites as primary structures and will be operated as an “Energy Plus” house.



MuSTAnG mounted in the space house may support the security of satellite navigation.

Press date

Press conference with live interview to Australia

on Thursday 10th February 2005 10:30 am
town hall Hanse city Greifswald, Am Markt, 17489 Greifswald

Further information about MuSTAnG and the space house:

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