

Report on the Joint US-Germany Space Weather Summer Camp 2012

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The second Joint Space Weather Summer Camp of UA Huntsville, the German Aerospace Center and the University of Rostock started at the University of Alabama Huntsville, Center for Space Plasma and Aeronomic Research (CSPAR), on 8th July 2012. Over the course of four weeks until 5th August, ten UA Huntsville and ten German undergraduate and graduate students got an introduction to mostly all aspects of space weather at various Space Weather monitoring and research facilities in Mecklenburg-Vorpommern /Germany and US.

The lectures at the UAH focused on the physics background of space weather. The lessons and the project work covered in particular solar and magnetospheric physics.

A great event for the students was the visit of the NOAA Space Weather Prediction Center (SWPC) in Boulder. The SWPC is part of the US National Weather Service and has been the official source of US space weather alerts, watches, warnings, and forecasts of space weather storms for nearly 60 years. The students were impressed to see how space weather forecasters handle the huge and complex data sets from ground and space measurements to predict the behavior of the space environment permanently on 24 hours per day, 365 days per year basis.



Figure 1: Students and lecturers at the NOAA Space Weather Prediction Center, Boulder, CO Photo: NOAA-SWPC

Although automatic routines help to analyse the tremendous data sets, human forecasters are still needed in a space weather service as provided by SWPC.

Besides listening to lecturers and discussing hot topics the students could taste scientific work during their project work hours. As a result of project work they prepared posters which nicely demonstrate their improved understanding of space weather phenomena.

After arriving in Germany, the Space Weather Summer Camp started in Neustrelitz with talks and project work focused on monitoring and modeling of the ionosphere and on the radiation environment of the Earth.

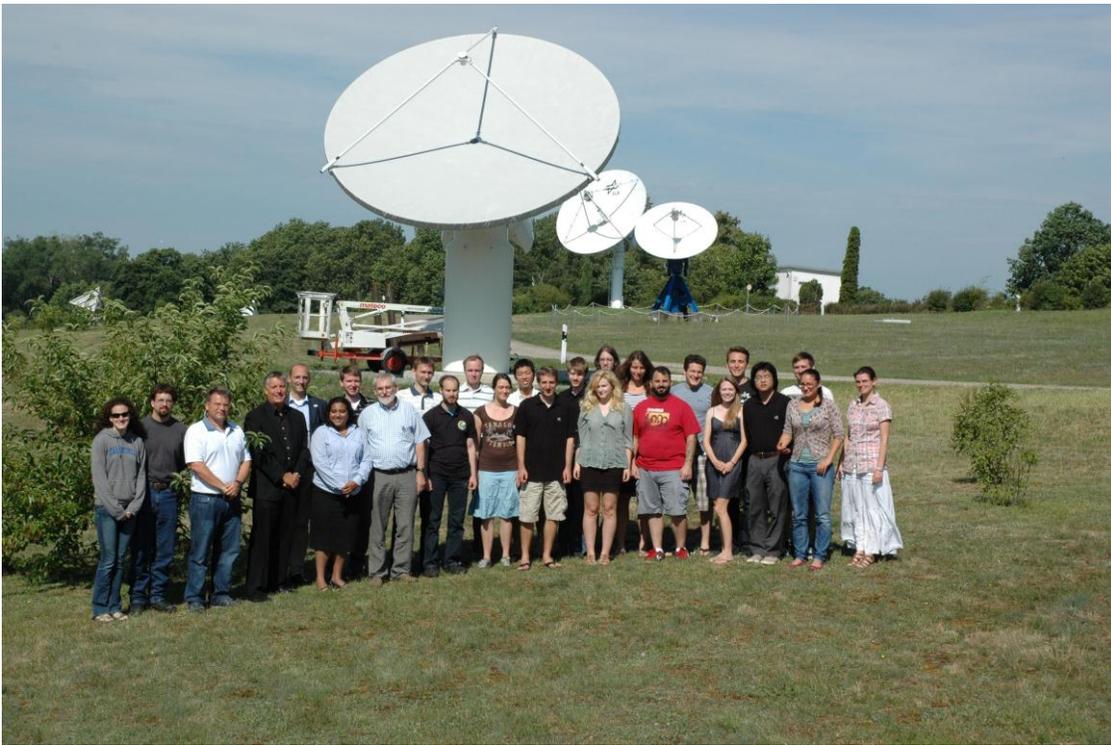


Figure 2: Students and lecturers at the antenna field of DLR site Neustrelitz just in front of the ACE antenna for receiving data from the Advanced Composition Explorer (ACE) satellite operated by NOAA for monitoring key parameters of the solar wind. Photo: DLR Neustrelitz

At the Institute of Atmospheric Physics (IAP) at the University of Rostock the students learned about the solar control and dynamics of the middle atmosphere and observation techniques and launched a balloon to measure atmospheric parameters. The working day finished by a Baltic sea beach party in a very relaxed atmosphere.

After visiting the University of Rostock the students returned to Neustrelitz to continue the projects and to hear more about ionosphere monitoring and modeling. They were introduced into the principles and techniques of the Space Weather Application Center – Ionosphere (SWACI). This data center provides ionospheric information and data to users to mitigate the ionospheric propagation delays and other refraction effects (<http://swaciweb.dlr.de>).



Figure 3: Students and lecturers at the Institute of Atmospheric Physics, Kühlungsborn. Students launch a balloon for sounding atmospheric key parameters. Photo: Andreas Schneider

With great enthusiasm the students built two VLF receivers developed in the DLR Project_Lab Neustrelitz for the students project SOFIE (Solar Flares detected by Ionospheric Effects - <http://swaciwebdevelop.dlr.de/menutop/home/>). During their final presentations at the end of the Summer Camp they were proud on being able to show first records of the self-made receivers. Both receivers will be sent to Huntsville where solar flares shall be detected at the UAH and at an interested school in Huntsville. This is a valuable

contribution to further enhance collaboration between UAH and DLR but also between schools in Huntsville and Mecklenburg-Vorpommern.

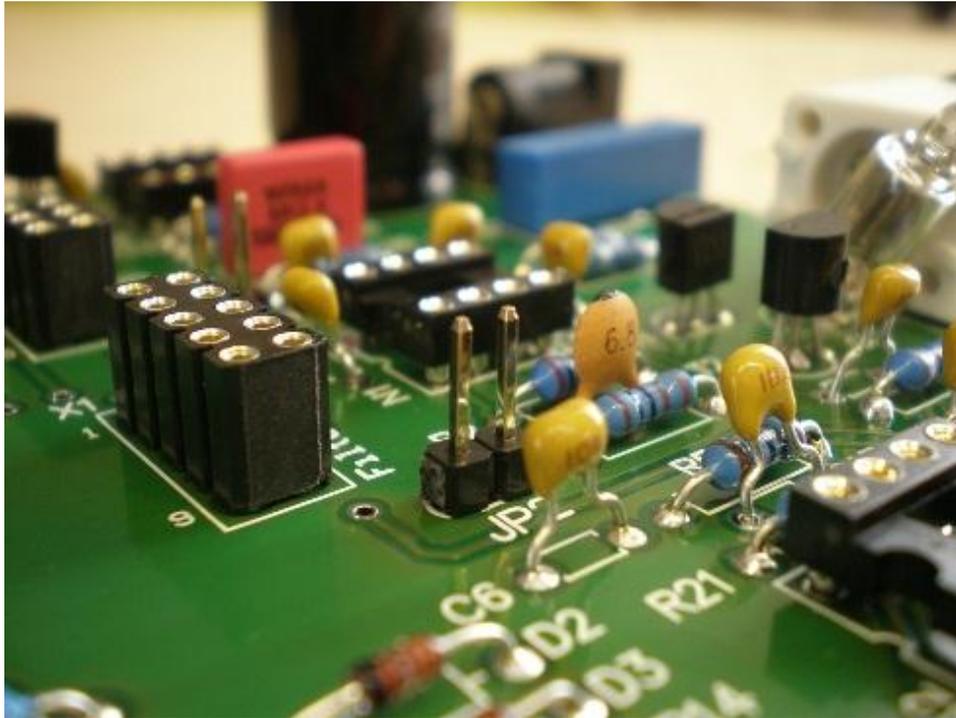
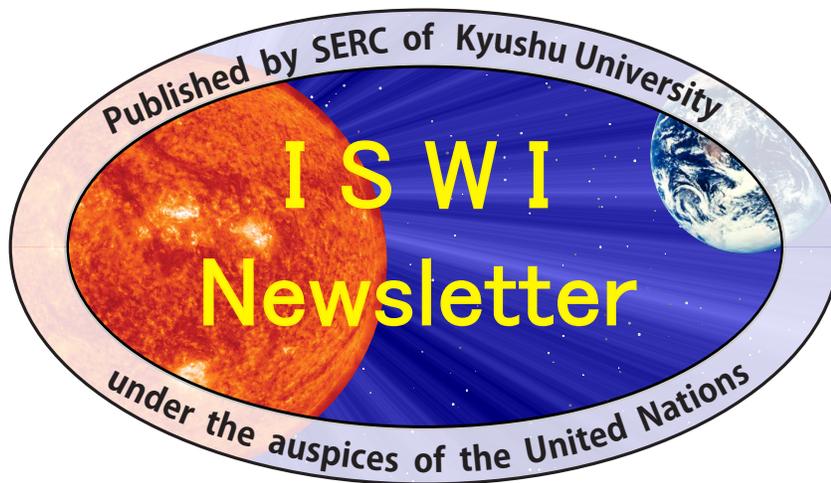


Figure 4: Project work: “Mounting a SOFIE receiver in the DLR Project_Lab Neustrelitz”. Conductor plate of the SOFIE receiver and the students technician team showing the receiver box. Photo: Henrike Wilms, Andreas Schneider

Besides the scientific program the students visited the old hanseatic city Rostock and Germany’s capital Berlin. A highlight was the visit of the Historical-Technical Museum in

Peenemuende where the first launch of a missile into space took place here in October 1942.

The feedback of the participants was overwhelmingly positive, confirming that the decision was right to organize a second Space Weather Summer Camp in 2012. Now we are looking forward to the third Space weather Summer Camp planned to be organized by UAH and DLR in 2013.



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