Geophysical Research Abstracts
Vol. 14, EGU2012-5276, 2012
EGU General Assembly 2012

ESPACE – a geodetic Master's program for the education of Satellite Application Engineers

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In the last decades there has been a rapid development of new geodetic and other Earth observation satellites. Applications of these satellites such as car navigation systems, weather predictions, and, digital maps (such as Google Earth or Google Maps) play a more and more important role in our daily life. For geosciences, satellite applications such as remote sensing and precise positioning/navigation have turned out to be extremely useful and are meanwhile indispensable. Today, researchers within geodesy, climatology, oceanography, meteorology as well as within Earth system science are all dependent on up-to-date satellite data. Design, development and handling of these missions require experts with knowledge not only in space engineering, but also in the specific applications. That gives rise to a new kind of engineers - satellite application engineers. The study program for these engineers combines parts of different classical disciplines such as geodesy, aerospace engineering or electronic engineering.

The satellite application engineering program Earth Oriented Space Science and Technology (ESPACE) was founded in 2005 at the Technische Universität München, mainly from institutions involved in geodesy and aerospace engineering. It is an international, interdisciplinary Master's program, and is open to students with a BSc in both Science (e.g. Geodesy, Mathematics, Informatics, Geophysics) and Engineering (e.g. Aerospace, Electronical and Mechanical Engineering). The program is completely conducted in English. ESPACE benefits from and utilizes its location in Munich with its unique concentration of expertise related to space science and technology. Teaching staff from 3 universities (Technische Universität München, Ludwig-Maximilian University, University of the Federal Armed Forces), research institutions (such as the German Aerospace Center, DLR and the German Geodetic Research Institute, DGFI) and space industry (such as EADS or Kayser-Threde) are involved in ESPACE.

This paper will first give the background and objectives of ESPACE with focus on its specific position in geodetic education programmes. Second, we will introduce the interdisciplinary study program and explain the involvement of external teaching staff. Further we will give an up-to-date description of current students and ESPACE alumni. The job market and international demand for satellite application engineers will be shown especially with focus to geodetic fields.