

The Future is Now

Under this motto, on Friday, November 5, 2021, the day of sustainability of the three Bernese Universities took place at the vonRoll building. There were talks, workshops, and interactive information desks, where different contributions were presented by the groups of the University of Bern, the University of Applied Sciences, and the College of Higher Education of Bern. The goal was the exchange of ideas and research works devoted to the topic “sustainability”.

The Astronomical Institute of the University of Bern (AIUB) was also present with an own information desk at which about the detection and characterization of space debris was reported. During the discussions with the participants it became clear that, on the one hand, space flight exerts still a big fascination on people. On the other hand, it is very well recognized, that space becomes more and more polluted by the use of mankind. But there are also methods of space flight by which the contamination is limited. Today, this responsibility is taken by most of the missions.

The impact of climate change can be measured by satellites as well. The research group “Satellite Geodesy” at AIUB provides a significant contribution in this field: Variations in the Earth’s gravity field resulting by systematic processing of observation data of GRACE and GRACE-FO missions allow inferences on the melting of ice in Antarctica and Greenland. Precise orbit determination of altimetry satellites is a prerequisite to calculate sea level rise.

For many of the visitors it was fascinating to hear with what precision these phenomena are measured today from space. The foundation of these measurements is a global coordinate system being stable over long periods of time, which is realized by a multitude of observing points spread all over the Earth’s surface. Thereby, the Global Satellite Navigation Systems (GPS, GLONASS, Galileo, BeiDou) provide an important contribution. The AIUB is processing these measurements on a regular basis, whereas the results are communicated to the International GNSS Service (IGS). It is always one of the goals of AIUB to steadily improve these contributions by specific research and thus to provide its contribution in order that also the measurements of smaller changes of the system Earth by satellites allow reliable conclusions.