

Press release

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Geodata using drone technology

The Kiel-based company Orthodrone GmbH, which is also presenting itself at the Hannover Messe, delivers accurate, high-resolution and three-dimensional geodata. Three geography students from Kiel founded the company, and they now supply their knowledge around the world.

Rushes and mosses: since the renaturalisation of Offenbütteler Moor (a peaty bog in the Dithmarschen district) in 2013, the original vegetation has taken back its habitat. Biologists who are documenting the effects of the measures are thrilled. Juri Klusak, Julian Teege and Johann Wenzel are helping determine the actual success of each and every measure – using drones. The geography students from Kiel utilise innovative sensor technology, scientific methodology and analytics to provide high-resolution, three-dimensional geodata that records even the smallest patches of moss. The demand for their technology and knowledge is so great that the students founded their own company in November 2018 and are active around the world.

The equipment check is the most important step before every job. The three young entrepreneurs have packed a thermal imaging camera, position measuring devices and a normal camera for their work at the peaty bog. They also take a host of batteries along – all of them completely charged. “Nothing is worse than having to look for a plug socket in a bog, on a tropical glacier in the middle of the Bolivian Andes or on a lake in Ireland because the drone’s battery is dead,” said Juri Klusak. The 31-year-old, who specialises in coastal geography and UAV technology (UAV = unmanned aerial vehicle), got the ball rolling with his Bachelor’s thesis in 2017. He used automated drone flights and a camera to document and evaluate erosion in Bottsand nature reserve (near Wendtorf in the Probstei region) for half a year. His fellow students, friends and now co-entrepreneurs Julian Teege and Johann Wenzel also joined in. In April 2018, Klusak presented his work at a specialist conference in Vienna and noticed that there is a great demand for exactly this type of knowledge. “We founded our company after that,” Julian Teege reported. Like Johann Wenzel, he is currently writing his Master’s thesis on the use of UAV technology in the agricultural sector.

The Centre for Entrepreneurship (ZfE) at Kiel University supported them when they founded their company and continues to do so. They have set up shop in the space at the ZfE’s incubator facilities, where they can benefit from being able to use a professional environment right from the start. Schleswig-Holstein’s start-up funding is also giving them support. It ensures financial security for the first twelve months. “The amount of work that the three of them do here is quite remarkable. It is good that the start-up funding gives them time to breathe now and again, as well as develop and try out new ideas,” summarised Dr Anke Rasmus, head of the ZfE.

Once they arrive at the bog, the geographers start their drone. A deep humming sounds as the flying object with four rotors and a camera lifts off. Throughout the day, the geographers take thousands of photos of the area to be inspected. Appropriate software processes the images and calculates distances and differences in height until a three-dimensional map is generated on the

computer screen. "This model is really quite special," Klusak explained. Not only do viewers get a precise overview of the area which is true to scale; the high spatial resolution also makes it possible to zoom in on every plant to a centimetre range. "You can use this programme to count the number of daisies in a field."

Another advantage of the software is that every point on the three-dimensional model can be calculated. "Simply put, we write a programme in which we tell the computer what bog moss is and what it looks like. This software then searches for this very moss in the entire area and calculates the overall surface covered by the moss, if needed." For the biologists who are researching the bog, this information is more than helpful because they can search for the moss in a targeted manner.

The programme can be used to calculate both square metres and cubic metres, which is relevant in coastal protection and in the agricultural sector ("How much sand is blown away or carried off by waves every day?").

Using automated drones offers a range of additional advantages: they are less expensive than helicopters, supply images and data on a daily basis, and are quieter and thus less disruptive for birds in nature reserves. They can also be used in a variety of manners, as the entrepreneurs demonstrate. They have used them on the coast and in bog ecosystems, to measure tropical glaciers in the Andes and are processing a request from Unicef for deployment in Malawi (Africa). "As service providers, we do not simply supply prepared data sets. We also help find answers as cooperation partners in numerous projects," said Klusak. "In addition to working with drones, that is what we really enjoy." W

Text: Jennifer Ruske

Pictures are available for download:

www.uni-kiel.de/de/pressemitteilungen/unizeit/10b-orthodrone-team-z.jpg

The Orthodrone Team: Julian Teege, Juri Klusak and Johann Wenzel © Orthodrone GmbH

www.uni-kiel.de/de/pressemitteilungen/exponate/cau15hm-orthodrone-3.jpg

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