

SNELLIUS NEWSLETTER

October 2015

Introduction

Snellius would like to welcome the 24 new student in the master track of GRS. To inform students and staff about what is happening in the department a monthly newsletter will be sent, containing some stories and updates about events. In the first edition of the Snellius Newsletter of the year 2015/2016, a Ph.D. is asked to write a short story about his research, Tim Vlemmix shortly introduces the new equipment he obtained for measuring trace gases and the upcoming events are listed. For more information: www.snelliusdispuut.nl.

Upcoming activities

Thursday 8 October: Bowling like the Big Lebowski in 't Karrewiel at the Paardenmarkt 74.
Subscribe: http://snelliusdispuut.nl/?page_id=140.

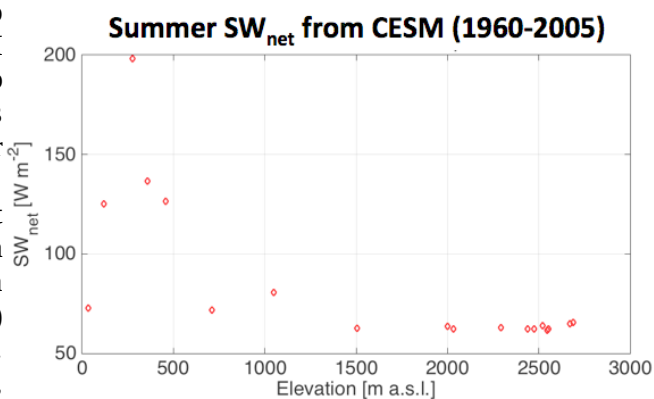
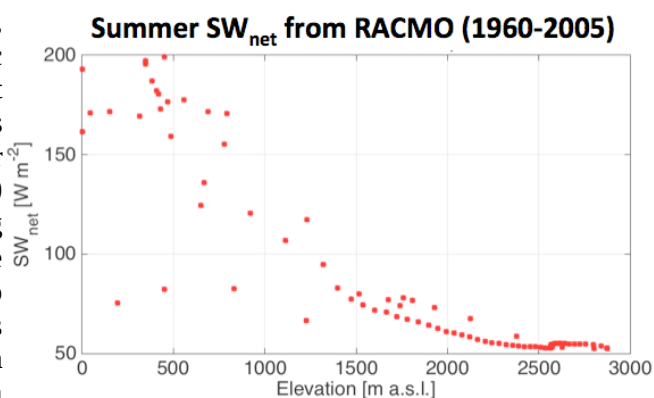
Thursday 22 October: Regular Snellius drink in the CITG cafe, PSOR.

Ph.D. of the month

The Ph.D. of this month is **Vincent Cabot**. He is originally from France and is currently doing his Ph.D. on *Modeling Greenland Ice Sheet climate with the Community Earth System Model*.

The Community Earth System Model (CESM), developed at the National Centre for Atmospheric Research (NCAR) in Boulder, Colorado, is the first global climate model that realistically simulates processes over the ice sheet such as surface melt or albedo. It has a quite coarse spatial resolution (~100 km) which can rapidly become an issue when running the model over specific regions of the Greenland Ice Sheet (GrIS), such as its margins. Indeed the steep topography close to the margins may give differences in atmospheric parameters: net shortwave radiation would not be the same at 500 and 1500 m above sea level. These local variations might not be taken into account within such a grid cell. However, CESM includes a downscaling method which consists into two separated stages: a so-called elevation classes module made of 10 elevations and a bilinear interpolation method.

The research idea for the first part of my PhD project is to assess how accurate is the CESM elevation classes module. I am also using the high resolution Regional Atmospheric Climate Model (RACMO) created by the Dutch Meteorological Institute KNMI. Given RACMO spatial resolution of around 11 km, CESM output are downscaled and compared to RACMO output within the corresponding grid cells. In CESM, some atmospheric variables are kept constant with elevation such as incoming radiations, and other input are changing with altitude such as near surface



temperature. The latter leads to indirect changes on albedo or on net radiations for example. We need to assess how realistically are simulated these indirect changes in CESM compared to RACMO and how much error is introduced in CESM output by keeping some variables constant with elevation. As its name indicates, the CESM is a community model so this means that anyone can work to make it even more advanced. My ongoing research work is part of the CESM improvement process.

Graduation ceremony

Friday 30 October: the second graduation ceremony of the GRS master track takes place. During the ceremony the graduation of four students will be celebrated. It will be very much appreciated if you could join the event.

Instrument

In the atmospheric composition group we received this month a new spectrometer for ground-based remote sensing of atmospheric trace gases (NO₂, O₃, SO₂ and other components). This instrument will be used for several projects: validation of satellite observations, comparison with in-situ observations (e.g. conventional roadside pollution monitors) and comparison with new instruments that are currently being developed at TNO in Delft. There are many possibilities to link internships or graduation projects to this new instrument. You can think of experiments, retrieval code development and interpretation.



Do not hesitate to contact us if you are interested! Tim Vlemmix (T.Vlemmix@tudelft.nl, room 2.21) and Julien Chimot (J.J.Chimot@tudelft.nl).

Picture: A MAX-DOAS instrument used for remote sensing of trace gases mounted on the Cabauw tower for atmospheric observations.

Partners

