

RESEARCH CLINIC

General information

Supervisors:	Dr. Achim Häger Dr. Paul Hudson
Title of clinic:	Soil Carbon Dynamics in Managed Dune Landscapes
Number of students:	2
Major (<i>if applicable and approved by the Major Convener</i>):	EES
(Pre)requisites (<i>if applicable</i>):	Enthusiasm for both outdoor field research and work in the laboratory. GIS skills are an advantage, but not required.

Research context

Coastal dunes are dynamic landscapes, controlled by interactions between biological and physical processes. They provide essential ecosystem services, such as protection from sea level rise and storm surge flooding, drinking water supply, carbon storage, biodiversity conservation, and recreational opportunities. Near The Hague, 2400 ha of dunes are protected within the Natura 2000 network, and managed by the public company Dunea, which provides drinking water for over 1 million people. Water from external sources is infiltrated into natural dune areas to purify tens of millions of cubic meters of drinking water. Infiltration ponds artificially raise the water table in the area, which alters key soil properties and affects soil organic carbon (SOC) dynamics.

We are interested in examining the distribution of SOC as a first approximation to understanding the effects of management and environmental factors on the SOC-dynamics in the local dune landscape. This requires extensive soil sampling across different dune habitats in the protected Meijendel area, and the determination of fundamental soil properties in the lab.

Students' tasks and activities

We are looking for students who are enthusiastic about spending considerable time outdoors on field work. Working conditions are expected to be partially challenging and physically demanding (adverse weather conditions, navigating difficult terrain off trails in wetland areas and dense vegetation). In addition, students will work on laboratory tasks at AvB. Soil sampling will start in block 3 (early March) and lab work will continue until the end of block 4. Division between field work and lab hours are expected to be approximately 1/4 and 3/4, respectively.

Students will learn about research design and field sampling methods (including soil sampling, basic GPS applications and navigating in the field), and develop laboratory skills in the context of carbon cycling and dynamics. In addition, students will assist in data management, organization and (mostly descriptive) data analysis. Deliverables include data bases and the presentation of processed data in a summarized form (e.g., a poster presentation).