

VACANCY ID: 2018-074

PhD “Bio-physical interactions in intertidal environments under transition”

The Department Estuarine and Delta Systems (EDS) is looking for a highly motivated PhD to investigate bio-physical interactions in intertidal environments in the Netherlands and China by means of comparative field studies and experiments. The selected candidate will collaborate in a multidisciplinary project to develop exciting scientific insights, and thereby contribute to management solutions for deltas in transition.

LOCATION: ROYAL NIOZ YERSEKE (ZEELAND, THE NETHERLANDS)

VACANCY ID: 2018-074

CLOSING DATE: October 20th, 2018

The department

The department of EDS aims to understand how the interplay between organisms, hydrodynamics, sediment dynamics and biochemistry shapes the estuarine and delta environment, and how it affects the functioning and resilience of the diverse natural communities living there. Central to our department is a multidisciplinary approach that combines state-of-art biophysical and biochemical measurements, remote sensing, and manipulative experiments with mathematical and numerical modelling to create in-depth understanding of the processes that control estuarine and delta systems. An important additional focus of our research is how abiotic-biotic interactions can create value for society, following the “Building with Nature” paradigm.

Joint Research Project between China and The Netherlands “Coping with Deltas in Transition”

Deltas, under pressure from climate change and increasing human activities, are undergoing transitions in their abiotic and biotic systems. Especially when the pressures exceed certain thresholds substantial or even irreversible changes (i.e. regime shifts) can take place. The objectives of our project are to identify and determine the relevant thresholds, regimes and time scales, and to explore measures for coping with the transitions. The study is multi-disciplinary, covering hydrodynamics, sediment dynamics, geomorphology, biogeochemistry and ecology. In this project NIOZ collaborates with Delft University of Technology, SKLEC East China Normal University and Tsinghua University. The project is financed by The Royal Netherlands Academy of Arts and Sciences (KNAW) and the Chinese Ministry of Science and Technology (MOST). Within the project NIOZ focuses on changes in bio-physical interactions in the intertidal environment for which NIOZ offers a PhD position, which will be part of a larger multidisciplinary team.

The vacancy

Intertidal environments, such as tidal flats, salt marshes and seagrass meadows, have high ecological and societal values, sustaining important coastal food webs. These habitats offer many ecosystem services, such as nutrient cycling, carbon sequestration and coastal protection. The delivery of these services is to a large extent regulated by the species that inhabit these environments. For example, bioturbation intensity by benthic macroinvertebrates or wave dampening by vegetation depends on species specific traits. Human interferences and climate change might lead to changes in biodiversity of the intertidal environment, especially to changes in species functional traits, which might result in a change in ecosystem services delivered.

In this PhD project the candidate will study intertidal environments in The Netherlands (Westerschelde, Oosterschelde, Ems) and China (Yangtze), focusing on the transition zone between bare tidal flats and vegetated salt marshes. The effect of (changes in) sediment supply, sediment composition, wave exposure, inundation time, erosion/deposition on benthic macroinvertebrates and pioneer salt marsh species will be investigated using a combination of field observations and manipulative field and mesocosm experiments using an array of different instruments and

techniques. Overall, you will provide fundamental insights in how species (traits) interact with changing environmental conditions (i.e., wave climate, sea level rise, etc.), and how this affects feedback mechanisms. The PhD will try to gain knowledge about the level of responses in conjunction with context dependence (i.e., vary with sediment type, turbidity, etc.). Results will be integrated in concepts on Windows of Opportunity for establishment, collapse thresholds and habitat interconnectivity. Finally, the results will be used for upscaling to predict the development of intertidal landscapes in deltas under transition and the effects on ecosystem services. The latter will be done in close collaboration with the postdoc within the project, who will focus on modelling and remote sensing. Also you will collaborate with other PhD's in the project.

The candidate

Are you a highly-motivated and proactive researcher with an MSc degree in ecology, biology, physical geography or engineering? Interested in doing new fundamental research in intertidal environments that may support future management of deltas under transition? Like to work in muddy environments in the Netherlands and China? Then we gladly invite you to apply.

We are looking for a highly motivated PhD that has a good knowledge of marine (benthic) ecology and a feeling for basic physics. Good statistical knowledge is a prerequisite. The candidate should have a keen interest in doing cutting-edge fundamental research, which can be translated in applicable knowledge. Candidates should be capable to plan and organize their own work, organize and carry out fieldwork in The Netherlands and China and meet deadlines imposed by the project. We expect a high-level of independence in arranging the practical work. We offer a large degree of scientific freedom. Excellent communication skills and an open collaborative attitude are essential for the success of this project.

The perfect candidate is frank, collaborative and communicative, and easily interacts with interdisciplinary project partners. Good English oral and writing skills are essential, as the candidate must publish the findings in scientific journals and effectively communicate results to partners and end-users.

Conditions

Employment of this position at Royal NIOZ is by NWO (The Netherlands Organization of Scientific Research). We offer a position for 4 (fulltime) years with an excellent salary, a pension scheme, a holiday allowance of 8% of the gross annual salary, a year-end bonus, and flexible work arrangements. You may expect attractive secondary employment conditions. We offer generous relocation expenses for employees coming from abroad and support with finding accommodation. Our labour policies are based on the Dutch Collective Labour Agreement of Research Centers

For additional information about this vacancy, please contact [prof. dr. Tom Ysebaert](#) or [prof. dr. Tjeerd Bouma \(tjeerd.bouma@nioz.nl\)](#), senior scientists. For additional information about the procedure, please contact [Sigrid Moerbeek \(sigrid.moerbeek@nioz.nl\)](#), senior HR advisor.

If you are interested in this position please visit our website www.workingatnioz.com and apply for this job. You will also find more information about NIOZ.

We foresee to have job interviews for selected candidates on the October 31st and November 1st, 2018.

VACANCY ID: 2018-075

PhD-student: “Bio-geochemical processes in intertidal environments under transition”

The Department Estuarine and Delta Systems (EDS) is looking for a highly motivated PhD to investigate bio-geochemical processes in intertidal environments in the Netherlands and China by means of comparative field studies and experiments. The selected candidate will collaborate in a multidisciplinary project to develop exciting scientific insights, and thereby contribute to management solutions for deltas in transition.

LOCATION: ROYAL NIOZ YERSEKE (ZEELAND, THE NETHERLANDS)

VACANCY ID: 2018-075

CLOSING DATE: October 20th, 2018

The Department

The department of EDS aims to understand how the interplay between organisms, hydrodynamics, sediment dynamics and biochemistry shapes the estuarine and delta environment, and how it affects the functioning and resilience of the diverse natural communities living there. Central to our department is a multidisciplinary approach that combines state-of-the-art biophysical and biochemical measurements, remote sensing, and manipulative experiments with mathematical and numerical modelling to create in-depth understanding of the processes that control estuarine and delta systems. An important additional focus of our research is how abiotic-biotic interactions can create value for society, following the “Building with Nature” paradigm.

Joint Research Project between China and The Netherlands “Coping with Deltas in Transition”

Deltas, under pressure from climate change and increasing human activities, are undergoing transitions in their abiotic and biotic systems. Especially when the pressures exceed certain thresholds, substantial or even irreversible changes (i.e. regime shifts) can take place. The objectives of the joint research project are to identify the relevant thresholds, regimes and time scales, and to explore measures for coping with the transitions. The research is multi-disciplinary, covering hydrodynamics, sediment dynamics, geomorphology, biogeochemistry and ecology. The project is financed by The Royal Netherlands Academy of Arts and Sciences (KNAW) and the Chinese Ministry of Science and Technology (MOST). In this project NIOZ collaborates with Delft University of Technology, SKLEC East China Normal University, and Tsinghua University. Within NIOZ, focus is on changes in biogeochemical and biophysical processes in the intertidal environment.

The vacancy

Intertidal environments, such as tidal flats, salt marshes and seagrass meadows, have high ecological and societal values, sustaining important coastal food webs. These habitats offer many ecosystem services, such as nutrient cycling, carbon sequestration and coastal protection. The delivery of these services is to a large extent regulated by the species that inhabit these environments. For example, bioturbation intensity by benthic macroinvertebrates affect nutrient cycles. Human interferences and climate change might lead to changes in biodiversity of the intertidal environment, especially to changes in species functional traits which might result in a change in ecosystem services delivered.

In the PhD project “Bio-geochemical processes in intertidal environments under transition”, the candidate will study nutrient and carbon cycling processes in a variety of intertidal estuarine environments in the Netherlands (Westerschelde, Oosterschelde, Ems) and China (Yangtze), focusing on bare tidal flats. The study will focus on (1) benthic primary production and sediment metabolism (2) the impact of animal activity on nutrient cycling. The PhD will work in a larger multidisciplinary team, and combine observations and modelling. More specifically, experimental and field observations on the effect of inundation/drying of tidal flats on sediment functioning, temperature,

as well as the impact of resuspension/deposition processes induced by currents and waves (including extreme events) will be combined. Different sediment types will be selected to study the effect of bioturbation and bio-irrigation by the macrobenthos on sediment metabolism. Impacts of sediment supply and suspended sediment concentrations on benthic processes will also be part of the study. The PhD will measure nutrient and oxygen fluxes, bio-irrigation and bioturbation rates, benthic primary production rates, and benthic composition in different types of intertidal habitats (sandy, muddy, exposed, sheltered, etc.) and in different seasons. From this, existing benthic biogeochemical models will be further developed and used to assess and quantify the transformations and fluxes of carbon and nutrients, in order to evaluate their response to future changes in deltas under transition. Ultimately the results will be used to predict possible future changes in the carrying capacity of these ecosystems and its effect on coastal food webs and nutrient cycles. Results may also be amenable to test if there is a risk for system collapse due to regime shifts in physical forcings.

The PhD will closely collaborate with other PhD's in the project, especially with another NIOZ PhD that will investigate bio-physical interactions in intertidal habitats.

The candidate

Are you a highly-motivated and proactive researcher with an MSc degree in oceanography, ecology, biology or physical geography, with affinity for biogeochemistry? Are you interested in doing innovative fundamental research in intertidal environments that may support future management of changing deltas? Do you like to work in muddy environments in the Netherlands and China? And are you not afraid of mathematical modelling? Then we gladly invite you to apply.

We are looking for a highly motivated PhD that has a good knowledge of marine (benthic) ecology. Good statistical knowledge and modelling affinity, as well as a feeling for basic physics, are a prerequisite. The candidate should have a keen interest in doing cutting-edge fundamental research, which can be translated in applicable knowledge. Candidates should be capable to plan and organize their own work, organize and carry out fieldwork in The Netherlands and China and meet deadlines imposed by the project. Excellent communication skills and an open collaborative attitude are essential for the success of this project.

The perfect candidate is open minded, collaborative and communicative, and easily interacts with interdisciplinary project partners. Good English oral and writing skills are essential, as the candidate must publish the findings in scientific journals and effectively communicate results to partners and end-users.

CONDITIONS

Employment of this position at Royal NIOZ is by NWO (The Netherlands Organization of Scientific Research). We offer a position for 4 (fulltime) years with an excellent salary, a pension scheme, a holiday allowance of 8% of the gross annual salary, a year-end bonus, and flexible work arrangements. You may expect attractive secondary employment conditions. We offer generous relocation expenses for employees coming from abroad and support with finding accommodation. Our labour policies are based on the Dutch Collective Labour Agreement of Research Centers.

For additional information about this vacancy, please contact [prof. dr. Tom Ysebaert](mailto:tom.ysebaert@nioz.nl) (tom.ysebaert@nioz.nl) or [prof. dr. Karline Soetaert](mailto:karline.soetaert@nioz.nl) (karline.soetaert@nioz.nl), senior scientists. The PhD student will be enrolled at Utrecht University. For additional information about the procedure, please contact [Sigrid Moerbeek](mailto:sigrid.moerbeek@nioz.nl) (sigrid.moerbeek@nioz.nl), senior HR advisor.

If you are interested in this position please visit our website www.workingatnioz.com and apply for this job. You will also find more information about NIOZ.

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