Monitoring and communicating coastal change through crowd-sourced smartphone images

Advancing UU's coastal citizen science activities

Department: Physical Geography
Research group: Coastal Morphodynamics
Supervisor: Timothy Price
Email address: t.d.price@uu.nl

Project description

Coastal areas are recreational hotspots where people actively engage with their environment. Monitoring and assessment of coastal dynamics relies on high-frequency observations, which are time-consuming or costly. We recently started collecting crowd-sourced images of shoreline positions at several sites along the Dutch coast. Engaging the public in the collection of such observations provides a cost-effective method to acquire observational data, an approach also known as "citizen science". At these sites, people take a picture of the beach with their smartphone camera at fixed points and share the image with our research group (see https://www.coastsnap.nl and https://www.uu.nl/en/news/the-technology-behind-this-website-can-also-be-used-in-other-projects). This effort is part of the well-established international citizen science network CoastSnap (https://www.coastsnap.com/), initiated by the UNSW, Australia.

With this Bright Minds assistantship we aim to advance our citizen science activities through a number of possible activities, depending on your skills and interests :

1. Process the received images, build a database of crowd-sourced shoreline positions and use this to analyze the behaviour of the shorelines at the different sites. You will compare the results with annual measurements of those sites, collected by Rijkswaterstaat (Jarkus);
2. Expand the CoastSnap approach to include citizens' observations of dune vegetation cover, which is indicative of the biophysical interactions underlying dune development. A database of images of the dune is available through PWN, who manages the dune area of Noord-Holland and has a photo point in place (https://www.pwn.nl/citizen-science-bij-pwn). You will be guided in adapting the CoastSnap algorithm to make it suited for the detection of dune vegetation cover, using existing for the quantification of vegetation cover from satellite and UAV imagery.
3. Explore ways to better engage 'citizens' in our research, using the CoastSnap platform as a starting point. Translate key research results to understandable messages to communicate to the general public. Based on the received images, you will be guided in re-writing scientific texts, formatting figures, or designing a suitable outreach format;

Job requirements

You are interested in coastal morphodynamics and science communication, embrace collaboration and have a hands-on mentality. Experience with programming (in Python or Matlab) is required for this project (and image processing experience will come in handy).