EDUARD HEIJKOOP

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Technical Expert Using Satellite Remote Sensing to Answer Questions on Earth

EDUCATION

University of Colorado Boulder *Jan 2018 - Summer 2023 (Targeted)*
PhD Aerospace Engineering Sciences (Advisors: Dr. R. S. Nerem & Dr. M. J. Willis)

Delft University of Technology *Sep 2014 - Jun 2017*
MSc Aerospace Engineering (Advisor: Dr. W. van der Wal)

Delft University of Technology *Aug 2008 - Aug 2014*
BSc Aerospace Engineering (Advisor: Dr. E. Mooij)

TECHNICAL SKILLS

Programming Languages:	Python, MATLAB, JavaScript, C, Fortran, SQL
Software & Tools:	Linux/Unix, Git, GDAL, QGIS, Google Earth Engine, TensorFlow, AWS
Spacecraft Data Familiarity:	ICESat(-2), WorldView, Sentinel-1/-2, Landsat, GRACE(-FO)
Certifications:	Stanford Online - Machine Learning

PHD PROJECTS (ALL CODE AVAILABLE ON GITHUB)

Inundation Studies on High Resolution Digital Surface Models (DSMs)
· Created high resolution (2 m and better) digital surface models from commercial optical stereo-imagery.
· Improved vertical accuracy to better than 50 cm by using ICESat-2 to correct and co-register DSM segments.
· Reduced vertical error by developing a new mosaicing tool to stitch together segments of DSMs; applied it to over 300 global coastal cities.
· Created projections of future inundation due to sea level change, with IPCC AR6 scenarios as input.
· Presented (oral & written) results at international conferences and NASA science team meetings.

Coastal Mean Sea Level Determination with ICESat-2
· Developed software to automatically download, subset, process and correct high resolution ICESat-2 ATL03 geolocated photon data, and improving the standard land/water classification with a better coastline.
· Obtained closer measurements to the coast by substituting the ocean tide model.
· Validated results against globally distributed tide gauges.

Automated Building (Change) Detection with High Resolution Satellite Imagery
· Built & implemented a Residual UNet convolutional neural network to automatically detect buildings in high (sub-meter) resolution satellite images, for the IARPA Space-based Machine Automated Recognition Technique (SMART) contest.
· Created all training and label data, by orthorectifying and pan-sharpening WorldView images, and obtaining building outlines from OpenStreetMap, respectively.
· Developed a tool to difference successive DSMs and automatically find height changes associated with new construction.

WORK EXPERIENCE

NASA Goddard Space Flight Center *Oct 2015 - Jan 2016*
Research Assistant
· Created and optimized local lunar gravity fields from the Gravity Recovery and Interior Laboratory (GRAIL) data.
· Developed a density inversion tool to estimate 3D crustal density anomalies from Bouguer gravity anomalies, which was extended into my MSc thesis.