

Curriculum Vitae

Name: C. Nolet, PhD
 First Name: Corjan
 Date of Birth: 26 December 1980
 Nationality: Dutch
 Main Disciplines: Remote Sensing, GIS, Earth Observation and Geospatial Analysis, Unmanned Aerial Vehicles, Soil Physics and Hydrology, Climate Change Analysis
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Key Qualifications

Dr. C. (Corjan) Nolet is trained as a physical geographer with emphasis on hydrological and aeolian coastal processes. Through his PhD research at Wageningen University and work as a consultant, he has gained considerable experience in remote sensing techniques using optical imagery and passive/active microwave data, as well as geospatial analysis of Earth Observation (EO) datasets using APIs and cloud computing platforms. Corjan has proficiency in developing functional code (R, JavaScript, Python) in a team structure following standard code management practices. Further, Corjan is an experienced Unmanned Aerial Vehicle (UAV) pilot and is an expert in processing and interpreting UAV-derived data. His expertise include photogrammetric reconstruction software, radiometric and geometric calibration, and image classification using machine learning techniques.

Corjan has developed and conducted multiple training courses on the use of Google Earth Engine for geospatial analysis and has worked as a researcher-consultant in various international projects. Working in these projects, Corjan has attained valuable skills related to accessing, processing and (statistical) analysis of large spatial climate data sets and (extreme) climate indices for climate risk assessments, irrigation and river basin management, evapotranspiration modelling, and interpretation of climate change scenarios on future water resources. In addition, Corjan has been responsible for instigating and acquiring funding for several research & development and training projects, is experienced in project management and coordination, and has (co-)authored numerous publications, both peer-reviewed papers and technical reports.

Educational Background

03/2013 – 12/2020	PhD, Soil Physics and Land Management Group, Wageningen University, Wageningen, the Netherlands. Thesis subject: <i>Biogeomorphic feedback drives coastal dune development along nourished coastlines</i>
09/2008 – 11/2011	MSc. International Land and Water Management, Wageningen University, Wageningen, the Netherlands. Major: <i>Land Degradation and Development</i> ; Minor: <i>Geo-Information Science</i>
09/2004 – 07/2008	BSc. International Land and Water Management, Wageningen University, Wageningen, the Netherlands.

Professional Experience

09/2018 – to date	Remote Sensing, GIS, and Climate Change Expert, FutureWater, Wageningen, The Netherlands Main activities: Serve as a technical expert on Geospatial and Climate related projects. Involved in multi-sector and multi-stakeholder projects with emphasis on current and future water resources. Have assumed coordinating role and leading project proposals in the Netherlands, EU, Asia, and Africa. Conduct geospatial data and climate model extractions, manipulation, analysis, and interpretation for assigned projects. Develop and provide training focused on building capacity in geo-spatial analyses for water resources professionals. Authors and co-authors technical reports and project related progress reports.
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- 04/2013 – 08/2018 Research Associate at Soil Physics and Land Management Group, Wageningen University, the Netherlands.
Main activities: Research into and modelling of the response of the Dutch coastal foredune system to current and future sea level rise and increase of storm frequency. Investigating how bio-physical interactions that drive coastal dune development can be utilized for climate adaptive flood defense strategies. I was responsible for: performing flights using drones equipped with hyperspectral and Lidar sensors, UAV-derived data processing, analysis, and interpretation, measuring bio-physical drivers behind coastal dune development using climate data, ecological and physical observations, remote sensing, physical modelling using fluid dynamics, and climate model analysis for sea level projections.
- 02/2009 – 06/2010 Teaching assistant & student recruitment, Wageningen University & Research, the Netherlands.
Main activities: Testing & analyse customer feedback for location-based audio-video app 'De digitale Wichelroede', providing logistical support during open days Wageningen University
- 09/2008 – 12/2009 Chemical analyst soil and water contaminants. Eurofins Analytico B.V, Barneveld, the Netherlands
Main activities: Preparation of soil and water samples for chemical analysis of contaminants

Overseas Professional Experience

Resident (internship):

- Bonaire, Dutch Antilles (3 months)

Non-resident assignments:

- Australia, Cambodia, Georgia, Ghana, Iran, Kenya, Mozambique, Myanmar, Nepal, Rwanda, Uzbekistan, Zambia

Selection of Assignments and Projects

<p>Duration: 10/2022 – 12/2026 Position: GIS and Remote Sensing expert Location: Italy, France, Romania Client: European Commission</p>	<p>MAGDA: Meteorological Assimilation from Galileo and Drones for Agriculture Background: The MAGDA project aims at providing an integrated – but modular – system to provide severe weather forecasts and irrigation advisories enhanced by means of various satellite-borne, drone-borne, and ground-based weather-observing technologies. The main applications will be in providing both warnings about severe weather that could affect crops and irrigation advisories based on enhanced rain forecasts. These warnings and advisories will be channeled through a Farm Management System to ensure the capability to effectively reach farmers and agricultural operators. Main Activities: Project proposal writing & acquisition, developing methodological design of irrigation advisory based on water balance modelling, technical lead of integration of RS soil moisture products (e.g., Sentinel-1 SAR) into irrigation service, output validation using performance indicators derived from ground-truth data.</p>
<p>Duration: 10/2022 – 09/2026 Position: GIS and Remote Sensing expert Location: Global Client: European Commission</p>	<p>SOS-Water: Water Resources System Safe Operating Space in a Changing Climate and Society Background: The EU-funded SOS-WATER project will develop a novel integrated water modelling system that links advanced water system models with models of the potential impact on ecosystem services and biodiversity. Together with Earth observation data, it will lead to improved multi-level water planning and management ensuring efficient, resilient, and just water allocation. Main Activities: Lead in methodological development for automizing the retrieval of inland water levels with the Sentinel-3 SRAL altimeter. Accessing Copernicus Open Access Hub & Climate Data Store using their APIs, ingesting the data into local processing pipeline. Testing and validating several re-tracker algorithms to reliably link Sentinel-3 SRAL altimetry waveforms to physical characteristics such as water levels for river basins around the globe.</p>
<p>Duration: 08/2022 – 03/2023 Position: GIS and Data Science expert Location: Uzbekistan Client: Asian Development Bank (ADB)</p>	<p>Strategic Climate Adaptation Planning for the Amu Darya Basin in Uzbekistan Background: This project will support ADB and the Ministry of Water Resources (MWR) of Uzbekistan in identifying key priorities for climate adaptation in the Amu Darya River basin and support the identification of investment areas to benefit water resources for agriculture, as well as domestic and industrial use. Main Activities: Lead developer of a spatially explicit climate risk mapping framework, where climate hazards and vulnerabilities for exposed project features are extrapolated to future time horizons using associated Climate Indices derived from CMIP-6 climate projections, conducting a basin-wide climate change risk assessment with an explicit focus</p>

	on reducing systemic vulnerability to climate change, reporting, and generating attractive maps
<p>Duration: 03/2022 – 06/2022 Position: Remote Sensing, Google Earth Engine expert Location: Rwanda Client: The Netherlands Space Office (NSO)</p>	<p>SOSIA: Using Open-Source Software for Improved Food Security Background: SOSIA stands for Small-scale Open-Source based Irrigation Advice and fully relies on open-source satellite data which is used to establish virtual weather stations which are translated into an irrigation duration advice based on specific irrigation design characteristics. Main Activities: Implementation of evapotranspiration algorithms and aiding in setup of operational services in GEE, preparing technical documentation, project reporting, and generating attractive visuals</p>
<p>Duration: 10/2022 – 01/2023 Position: Climate Change Specialist Location: Uzbekistan Client: Asian Development Bank (ADB)</p>	<p>Climate Risk and Adaptation Assessment for the Energy sector in Uzbekistan. Background: This project supports ADB and the government of Uzbekistan to assist the Joint Stock Company Regional Electric Power Networks (JSC REPN), in preparing Climate Risk and Adaptation Assessment (CRA) and reflecting climate measures when modernizing the electricity distribution infrastructure. Main Activities: performing a detailed climate risk and GHG emission assessment using latest CMIP-6 projections and derived Extreme Climate Indices, identifying climate adaptation activities, calculating adaptation cost of climate change and resilience investments, calculating the carbon footprint, and providing justification for the climate financing.</p>
<p>Duration: 12/2021 – 05/2022 Position: Remote Sensing expert Location: Global Client: United Nations Convention to Combat Desertification (UNCCD)</p>	<p>Identification of Land Degradation and Climate Change Hotspots Globally Background: UNCCD aims to support reorientation of productive capacities towards sustainable patterns, to reverse the impact of land degradation and mitigate climate change impact. To this end, UNCCD is interested in the identification of regions and cash crops at a particularly high risk of land degradation and climate change impact. Main Activities: Methodological development, Spatial analysis of climate change impacts on croplands using CMIP-6 derived extreme climate indices, analysis of vulnerability to land degradation (remote sensing & GIS-based), reporting and generating attractive visuals</p>
<p>Duration: 09/2021 – 08/ 2023 Position: Project coordinator, Climate Change Specialist Location: Global Client: Dutch Ministry of Agriculture, Nature, and Food Quality</p>	<p>CREATE: Cross-Border Climate Vulnerabilities and Remote Impacts of Food Systems of the EU, Turkey, and Africa Background: To address remote climate risks and impacts related to food systems, CREATE aims to develop a novel cross-border climate risk/impact assessment methodology for food value chains based on embedded resource use (i.e., virtual water, carbon emission) and trade concept that maps representative connections between European socio-economic activities and remote climatic hazards in Africa and in Turkey. CREATE's climate assessment starts at farm level in producing regions in Africa and Turkey, focusing on crop yield changes under different climatic stressors and translates these impacts in a cascading way to the food systems and value chain in the EU in terms of vulnerabilities. Main Activities: General project management and coordination, conducting stakeholder interviews, organizing stakeholder workshops, technical lead & internship supervision into developing a crop-specific methodology to assess climate change impacts on the Agri-Food trade between Europe, Africa, and Turkey.</p>
<p>Duration: 02/2022 – 10/2022 Position: Project coordinator, Training developer & provider, Google Earth Engine expert Location: Zambia Client: NUFFIC</p>	<p>Tailor-made Training on Geo-spatial Data Skills Development in Zambia Background: The training focuses on building the capacity of participants in accessing and using public data and innovative open-source tools, to help improve soil water management and crop productivity at the national level. Main Activities: Project management and coordination, Preparation of training materials, providing the training on-site, providing technical support to participants implementing tools into their organization</p>
<p>Duration: 06/2021 – 12/2021 Position: Google Earth Engine & Remote Sensing expert Location: Lower Mekong Basin (LMB) Client: Mekong River Commission (MRC)</p>	<p>Evaluating the Extent of Salinity Intrusion and the Riverine, Estuarine and Coastal Habitat Conditions in the Lower Mekong Basin Background: Detailed methodologies are developed for periodic implementation of regional studies on the extent of salinity intrusion in the Mekong Delta, and the condition of riverine, estuarine, and coastal habitats in the Lower Mekong Basin. The proposed methodologies rely strongly on usage of satellite remote sensing to allow for spatial monitoring as well as temporal consistency of the obtained values. Main Activities: Technical lead in developing & testing RS methodologies in GEE to quantify salinity intrusion in the Lower Mekong Delta, developing a recommended methodology for adoption by MRC, including practical guidance documentation for its stepwise implementation</p>
<p>Duration: 03/2021 – 12/2021</p>	<p>Tailor-made Training on Climate Smart Irrigation Strategies to Improve Salinity Control and Enhance Agricultural Production</p>

<p>Position: Project coordinator, Training developer & provider, Google Earth Engine expert Location: Iraq, Netherlands Client: NUFFIC</p>	<p>Background: The training focuses on accessing and using innovative data and tools in the public domain, to gain insight into salinity issues, improve salinity control and enhancing agricultural production in Iraq by analyzing crop performance and assessing irrigation management. Main Activities: Project management and coordination, Preparation of training materials, providing the training on-site, providing technical support to participants implementing tools into their organization</p>
<p>Duration: 03/2020 – 02/2024 Position: Remote Sensing expert, Data Scientist Location: Global Client: European Space Agency (ESA) (Incubed Programme)</p>	<p>InfoSequia-4CAST: Forecasting and Quantifying Risks of Crop and Water Supply Failures using Machine Learning and Remote Sensing Background: Development and piloting of InfoSequia-4CAST, which combines historical and up-to-date observations of satellite-based meteorological and agricultural drought indices with climate variability indices to generate seasonal outlooks of water supply and crop yield failure alerts. These impact-based indicators are computed using a simple, robust, and easily understandable statistical forecasting-modelling framework that rests on the Fast-and-Frugal Tree (FFT) Machine Learning algorithm. The product is targeted at the needs of water managers and humanitarian NGOs to address their specific requirements. Main Activities: Co-developing data processing/analysis framework using the Python API for Google Earth Engine, to process raw RS products into meteorological, climatological, and agricultural drought indices, as predictors for Fast-and-Frugal Tree (FFT) Machine Learning algorithm to forecast seasonal drought and water supply, preparing technical documentation, project reporting, and generating attractive visuals</p>
<p>Duration: 09/2020 – 10/2021 Position: Remote Sensing Expert Location: Cambodia Client: Ministry of Water Resources and Meteorology (MoWRaM) / AFD</p>	<p>WAT4CAM: Mekong-Bassac Hydrological and Hydraulic Study Background: WAT4CAM program aims to apply IWRM principles towards achieving the strategies of the government of Cambodia. This project supports this objective by performing a detailed hydraulic and hydrological modelling study, of which the outcomes will be used in the implementation of irrigation scheme rehabilitation works. An integrated approach of models, satellite remote sensing and field surveys is applied to generate an advanced understanding of the complex dynamics of the hydrological system. Main Activities: Remote sensing analyses for flood extent and irrigation mapping, technical support to and data generation for hydraulic modelling team, project reporting and generating attractive visuals</p>
<p>Duration: 07/2020 – 01/2021 Position: Training developer & provider, Google Earth Engine expert Location: Rwanda Client: NUFFIC</p>	<p>Tailor-Made Training (TMT) on state-of-the-art remote sensing data and modeling tools to enable Food Security through Integrated Water Management Background: Providing a Tailor-Made Training to water professionals at the Rwanda Water Resources Board (RWB) on Water Allocation Modelling and Remote Sensing Analysis using Google Earth Engine (GEE) to enhance capacity for Integrated Water Resources Management (IWRM). Main Activities: Preparation of training materials, providing the training on-site, providing technical support to participants implementing tools into their organization</p>
<p>Duration: 02/2018 – 07/2022 Position: Researcher, UAV & Remote Sensing Expert, Drone extension service developer Location: Sub-Saharan Africa Client: Research and Innovation Action (H2020), European Commission</p>	<p>Transforming Weather Water data into value-added Information services for sustainable Growth in Africa (TWIGA) Background: The TWIGA project aimed to provide currently unavailable geo-information on weather, water, and climate for sub-Saharan Africa and develop services that answer the needs of African stakeholders and the GEOSS community. Main Activities: Lead developer of farm extension service 'MapYourCrop' where drones collect crop information to inform farmers on the fertility and moisture status of their fields, Lead researcher on how thermal and visible UAV imagery can be used to assess energy fluxes and crop evapotranspiration, Planning & performing drone flights over agricultural fields in several African countries, processing & interpreting thermal and multispectral UAV imagery, production of UAV-derived DTMs for flood mapping & modelling</p>
<p>Duration: 08/2018 – 12/2022 Position: UAV & GIS expert Location: Mozambique Client: Agência do Zambeze</p>	<p>APSAN-Vale: Piloting innovations to increase the Water Productivity and Food security for Climate Resilient smallholder agriculture in the Zambezi valley of Mozambique Background: This project aimed to increase climate resilient agricultural (water) productivity and food security, with a specific objective to increase the water productivity and profitability of smallholder farmers in Mozambique using drone imagery and crop simulation modelling (AquaCrop). Main Activities: Technical supervision of local drone operator unit, flight planning design, UAV imagery processing and interpretation, water productivity assessments using drone imagery and crop simulation modelling.</p>
<p>Duration: 11/2018 – 10/2019 Position: UAV & GIS expert Location: Iran</p>	<p>SMART-WADI (SMART WAtER Decisions for Iran) Background: This project aimed to provide up-to-date information and advice on water productivity, irrigation, and farm management. The project combines the latest satellite</p>

Client: Partners for Water, Netherlands government	technology for the quantification of water consumption and productivity, with high resolution drone images to monitor crop growth and crop health status indicators. Main Activities: Developing and testing crop modelling approach to predict crop yield and water productivity based on crop growth monitoring combining drones and remote sensing, technical supervision of local drone operator, flight planning, processing & interpretation of UAV-derived data products (NDVI & thermal orthomosaic, biomass maps (DSM – DTM), Canopy cover maps, soil moisture maps).
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Language Skills

Language	Speaking	Reading	Writing
English	Fluent	Fluent	Fluent
Dutch	Mother Tongue	Mother Tongue	Mother Tongue
French	Moderate	Moderate	Moderate
German	Moderate	Moderate	Moderate

Computer Skills

Programming	: R, Python, JavaScript, Linux Bash
GIS	: GDAL, QGIS, ArcGIS
Remote Sensing	: Google Earth Engine, Erdas Imagine, ENVI, eCognition
Photogrammetry / Lidar	: Agisoft Metashape, LAStools
Hydro-Agro models	: OpenFoam, WEAP, AquaCrop
Standard software	: Microsoft Office, InkScape, Latex
Project / data management	: GitLab, GitHub, Slack

Field, Laboratory, and Teaching Skills

- Certified UAV-pilot (BNUC-S Remotely Pilot Aircraft-License (RPA-L) for rotorcraft ≤ 25 kg)
- Co-developer and teacher GIS-course module Geometrical processing and analysis of UAV data at Wageningen University, Netherlands.
- To date, supervised 4 BSc- and 3 MSc-students with their thesis research & internships.
- Lecturer in hydrogeology & groundwater modelling courses and aiding during computer practicals.
- Experienced in equipment usage and laboratory techniques related to geodetic survey (e.g., total station, dGPS, GNSS), soil-hydrological processes (pF curve determination, porosity, grain size, bulk density), and meteorology (e.g., 3D sonic anemometry).

Publications

Peer-reviewed publications

- Carranza, C., **Nolet, C.**, Pezij, M. and Van Der Ploeg, M., 2021. Root zone soil moisture estimation with Random Forest. *Journal of Hydrology*, 593, p.125840.
- Nolet, C.** and Riksen, M.J., 2019. Accommodation space indicates dune development potential along an urbanized and frequently nourished coastline. *Earth Surface Dynamics*, 7(1), pp.129-145.
- Nolet, C.**, van Puijenbroek, M., Suomalainen, J., Limpens, J. and Riksen, M., 2017. UAV-imaging to model growth response of marram grass to sand burial: Implications for coastal dune development. *Aeolian Research*, 31, 50-61.
- Goossens, D., **Nolet, C.**, Etyemezian, V., Duarte-Campos, L., Bakker, G., & Riksen, M. (2018). Field testing, comparison, and discussion of five aeolian sand transport measuring devices operating on different measuring principles. *Aeolian Research*, 32, 1-13.
- Van Puijenbroek, M. E., **Nolet, C.**, de Groot, A. V., Suomalainen, J. M., Riksen, M. J., Berendse, F., & Limpens, J. (2017). Exploring the contributions of vegetation and dune size to early dune development using unmanned aerial vehicle (UAV) imaging. *Biogeosciences*, 14(23), 5533.
- Nolet, C.**, Poortinga, A., Roosjen, P., Bartholomeus, H., & Ruessink, G. (2014). Measuring and modeling the effect of surface moisture on the spectral reflectance of coastal beach sand. *PLoS one*, 9(11), e112151.

Selection of conference proceedings or posters

- Ercin, E., D'Haeyer, B., **Nolet, C.**, Alkaya, E., Mahsunlar, D., Pilevneli, T., and Capar, G.: Cross-border environmental impacts of agri-food systems and potential solutions towards sustainability: a case study of trade between Europe and Africa., EGU General Assembly 2023, Vienna, Austria
- Contreras, S., G. Nobre, G., Fernández-Rodríguez, A., Khanal, S., **Nolet, C.**, and Simons, G.: InfoSequia: Towards an operational satellite-based Drought Early Warning and Forecasting System for quantifying risks of crop and water supply by using machine learning and remote sensing, EGU General Assembly 2022, Vienna, Austria
- Van Opstal, J.D., A. Kaune, **C. Nolet**, J. van Til, J.E. Hunink. 2019. Flying Sensors for Smallholder Farming: An Innovative Technology for Water Productivity Assessment. Conference Paper 3rd World Irrigation Forum (WIF3), 1-7 September 2019, Bali, Indonesia.
- Wijnberg, K., Limpens, J., **Nolet, C.**, van Puijenbroek, M., Riksen, M. and Williams, I., 2018. Mega-nourishments and aeolian developments: Lessons learned six years into the sandmotor pilot project. Coastal Engineering Proceedings, (36), pp.55-55.
- Nolet, C.** (2016). Mapping coastal bio-geomorphic dune development with UAV-imaging. Oral presentation at 9th International Conference on Aeolian Research, Mildura, Australia
- Nolet, C.**, van Puijenbroek, M., Suomalainen, J., Limpens, J. and Riksen, M. (2016). Dune development from above: How do bio-geomorphic feedbacks control dune morphology? Poster presentation at Annual conference by Netherlands Centre for Coastal Research, Ouddorp, Netherlands
- Suomalainen, J., Anders, N., Franke, J., Bartholomeus, H., **Nolet, C.**, van Puijenbroek, M., Kramer, H., Keesstra, S., Múcher, S. and Kooistra, L., 2015. Overview of Uav Activities in Wageningen Unmanned Aerial Remote Sensing Facility. ISPRS-International Archives of Photogrammetry, Remote Sensing and Spatial Information Sciences, pp.261-262.
- Nolet, C.** (2015). The Salthphone: Aeolian mass flux estimation using the analogue output. Technical presentation at Desertland II Conference on Desertification and Land Degradation, Ghent, Belgium

Selection of technical reports

- Schults, T., **C. Nolet**. 2023. Climate Risk Assessment of Key Crops for the Agri-food Trade Between Europe, Africa, and Turkey. FutureWater Report 245.
- Contreras, S., **C. Nolet**, S. Khanal, A. Fernández, G.W.H. Simons. 2022. InfoSequia-4CAST: Report on InfoSequia Monitor Upgrading. FutureWater Report 235.
- Contreras, S., G. Guimarães, G.W.H. Simons, **C. Nolet**, J. Beard, S. Khanal, A. Fernández. 2021. InfoSequia-4CAST: Baseline Design Report. FutureWater Report 228.
- Van Opstal, J.D., M. de Klerk, A. Kaune, **C. Nolet**, J.E. Beard. 2020. Water Productivity Analysis: Rainfed Season 2019-2020. FutureWater Report 204.
- Faassen, K., **C. Nolet**, S. Contreras. 2020. Internship Report: Determining the dryness index and evaporative fraction for satellite and drone images. Internship report.
- Nolet, C.**, A.F. Lutz. 2021. Renewable Energy for Climate Resilience in Bhutan - Climate Risk and Adaptation Assessment. FutureWater Report 222.
- Nolet, C.**, J. Beard, A. Green, J.E. Hunink, G.W.H. Simons. 2019. Climate Risk Screening for the Tonle Sap River Basin and the Mekong Delta River Basin, Cambodia. FutureWater Report 208
- Nolet, C.**, A.F. Lutz. 2019. TA-9755 GEO: East-West Highway (Shorapani-Argveta Section) Project, Georgia. Climate Risk and Vulnerability Assessment. FutureWater Report 189
- Nolet, C.**, A.F. Lutz. 2019. TA 9530-TAJ: CAREC corridors 2, 3, and 5 (Obigarm–Nurobod) Road Project, Tajikistan. Climate Risk and Vulnerability Assessment. FutureWater Report 187
- Kaune, A., **C. Nolet**, A.F. Lutz. 2019. Glacio-hydrological Assessment for Hydropower, Mestiachala River, Georgia. FutureWater Report 188
- Nolet, C.**, A.F. Lutz. 2019. Climate Risk and Vulnerability Assessment North-South Corridor (Kvesheti-Kobi) Road Project, Georgia. FutureWater Report 182.