

Curriculum Vitae

Name: De. Peter Droogers
 First Name: Peter
 Date of Birth: 5 June 1961
 Nationality: Dutch
 Main Disciplines: Hydrology, Irrigation, Climate Change, Remote Sensing, Agro-hydrology, Soil Physics, Soil Salinity, Computer Simulation, Agro-meteorology
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Key Qualifications

Dr. Peter Droogers is an expert on integrated water resources management at different spatial scales with emphases on water for food issues, climate change, decision support systems, simulation modeling in combination with data mining and remote sensing. Peter has over 20 years of experience working in The Netherlands and overseas (as a resident in Sri Lanka and Turkey).

Non-resident assignments include: Albania, Algeria, Azerbaijan, Belgium, Burundi, Cambodia, China, Colombia, Denmark, Ethiopia, France, Gambia, Georgia, Germany, India, Indonesia, Iran, Kazakhstan, Kenya, Kyrgyzstan, Laos, Mexico, Morocco, Netherlands, Niger, Pakistan, Portugal, Qatar, Rwanda, South Africa, South Sudan, Spain, Sri Lanka, Sweden, Tajikistan, Tanzania, Thailand, Turkey, Uganda, Uzbekistan, Vietnam, and USA.

Peter has worked at various institutions and companies including Wageningen University (Netherlands), International Irrigation Management Institute (Turkey), International Water Management Institute (Sri Lanka), SEI (Sweden), HiView (Netherlands), and FutureWater (Netherlands).

Peter is part-time lecturer at several universities and has written over 200 publications of which 60 appeared in peer-reviewed journals (h-index of 25). He is reviewer for a number of Journals. Peter is external advisor to various projects and institutions including: World Bank, European Commission, FAO and National Science Foundations.

Educational Background

1997 Ph.D. Wageningen University, The Netherlands.
 Subject: Quantifying differences in soil structure induced by farm management using simulation modeling.

1989 B.Sc. Larenstein International Agricultural College, Netherlands.
 Subjects: groundwater- and surface water-hydrology, hydraulics, irrigation

1981 Vocational School for Land and Water Management, Netherlands.
 Subjects: hydrology, hydraulic engineering.

Professional Experience

- 2002 - to date FutureWater, The Netherlands
Scientific Director and Founder. FutureWater is a research company concerned with the future of our water resources. FutureWater applies and, if required, develops scientific methodologies, concepts and tools to assure sustainable water resources solutions for the future. Activities can be summarized as water for food and water for nature under changing environments, including climate change. Simulation models, GIS and RS are the tools used to assist in these activities. Projects take place in the developed as well as the developing world. Emphasis on a pro-active approach with strategic thinking and tools.
- 2013 – 2019 HiView, The Netherlands
Director and co-founder. HiView supports professionals by providing data, information and services based on ultra-high resolution imageries obtained by Flying Sensors. Specific focus on agriculture, dike monitoring, vegetation inventories, and mining.
- 2012 – 2019 Elsevier, Agricultural Water Managements, International.
Editor in Chief of scientific journal Agricultural Water Management. Responsible for and control over the scientific content of the Journal, including Aims and Scope, review process, editorial policies, associated editors supervision and review process.
- 2010 WaterWatch, The Netherlands
Senior hydrologist and operational manager. WaterWatch is a scientific advisory firm that diagnoses historic and current water management practices across large irrigated river basins by means of satellite measurements. WaterWatch supports in providing key data for integrated water and environmental resources plans in regions where complete and accessible data records are scarce. WaterWatch is the original developer and intellectual owner of Surface Energy Balance Algorithm for Land (SEBAL).
- 2005 – 2010 SEI, Stockholm, Sweden
Fellow. SEI (Stockholm Environment Institute) is an independent, international research institute specializing in sustainable development and environment issues.
- 1999 – 2002 International Water Management Institute, Sri Lanka.
Senior Researcher. Research on improving integrated water management by using simulation models, remote sensing, GIS, global and local datasets applied over different spatial scales. Projects are carried out in several countries and support is provided to IWMI's regional offices. Global issues, such as climate change, food security, global mapping of irrigated areas, potential for rainfed agriculture, and water for agricultural vs. environment are research areas as well. Additional tasks include supervision of MSc and PhD candidates from various universities, managing GIS lab and as Group Manager supervision of about 15 staff.
- 1997 – 1999 International Water Management Institute, Turkey.
Researcher. Collaborative research between IWMI and the General Directorate of Rural Services in Turkey to evaluate past and current water resources management, to advice on future alternatives for sustainable management and to improve the research capacity of the counterpart. Integration over different scales (basin, irrigation system, field), using global and local datasets, remote sensing, GIS and simulation models, were the key issues. The project was successful in improving the research capacity of the counterpart, handing over the tools developed (GIS, RS, databases and simulation models), and numerous publications both in international as well as national journals and conferences.

- 1993 - 1997 Wageningen Agricultural University, Dept. Soil Science, The Netherlands.
Research Associate. Research on the effects of farm management on soil structure and sustainability. A thorough measurement campaign concentrating on morphological and physical properties emphasising crop-water requirement parameters was followed by an extensive use of simulation models for water dynamics, crop-growth, agro-meteorology and nutrient dynamics. Supervision of MSc-students and teaching.
- 1989 - 1993 Wageningen Agricultural University, Dept. Water Resources, The Netherlands.
Research Associate. Research on the processes of the role of water in land surface schemes. Large-scale field experiments were performed on various soils and in various climatic zones (France, Spain, Niger). Collected data were used to develop, improve and verify existing simulation models. Research was performed in close collaboration between experts in the area of hydrology, soil science, meteorology and remote sensing from European countries and the United States.
- 1984 - 1985 State Forestry, Netherlands
Manager forestry and natural reserves
- 1983 Ministry of Agriculture, nature Conservation and Fisheries, The Netherlands
Manager wetland preservation
- 1981 – 1983 Military service, The Netherlands
- 1981 Delta Bouw, Germany
Engineer small-scale hydraulic structures

Overseas Professional Experience

Resident:

Netherlands, Sri Lanka, Turkey

Non-resident assignments:

Albania, Algeria, Azerbaijan, Belgium, Burundi, Cambodia, China, Colombia, Denmark, Ethiopia, France, Gambia, Georgia, Germany, India, Indonesia, Iran, Kazakhstan, Kenya, Kyrgyzstan, Laos, Mexico, Morocco, Mozambique, Nepal, Netherlands, Niger, Pakistan, Portugal, Qatar, Rwanda, South Africa, South Sudan, Spain, Sri Lanka, Sweden, Tajikistan, Tanzania, Thailand, Turkey, Uganda, Uzbekistan, USA, Vietnam.

Computer Skills

Standard software	Excellent (Word, Excel, PowerPoint)
Programming	Excellent (R, VBA), fair (Python, Fortran, Delphi)
GIS	Excellent (ARC-GIS, QGIS), fair (IDRISI, ILWIS)
Simulation Models	Excellent (WEAP, SPHY, SWAT, SWAP, HEC-HMS), fair (IQQM, MIKE-BASIN, SOBEK, HEC, RIBERSIM, SWMM)
Others	Good (HTML, WordPress)

Selection of Assignments and Projects

- 2019-2020 **Achieving real water savings at basin scale (South Asia)**
Supporting FAO South-Asia in their water savings program. Specific tasks were (i) developing a guidance to support irrigation water managers in developing and introducing agricultural water management options that will lead to overall water savings in stead of local (field) ones; and (ii) develop and organize a training package for water managers in evaluating proposed water saving options. Client: UN Food and Agricultural Organization (FAO). *(Agro-hydrologist)*
- 2019 **Small hydropower climate risk assessment (Global)**
Exploring the feasibility (technical and economic) to develop a small-hydro climate risk assessment tool. The tool would enable small hydropower facilities constructors to evaluate the climate resilience of their proposed investments. Client: NL Innovation Grant (RVO). *(Hydrologist / climate expert)*
- 2019 **Water Resources Assessment to Support Irrigation Sector Interventions (Cambodia)**
The project aimed at supporting the Min. of Water Resources and Meteorology to make more informed, evidence-based water resources management and irrigation investment decisions through better understanding of water resources and ecosystems of two river basin groups: the Tonle Sap and the Mekong Delta in Cambodia. Client: Asian Development Bank (ADB). *(Senior Hydrological Modeler)*
- 2018 **A River for Jaffna (Sri Lanka)**
The Jaffna Peninsula has no rivers and the people depend on rainwater and groundwater for domestic use and agriculture. The project envisages to block three lagoons that are connected to the sea and let fresh water gradually create a fresh water environment for a substantial part of the peninsula. The aim of the project was to provide the Sri Lankan Government with research tools and data to support a go-no-go decision for the completion of the Jaffna project. Client: Dutch Risk Reduction. *(Agro-hydrologist, Climate Expert)*
- 2017-2019 **Building Climate Change Resilience in Asia's Critical Infrastructure (Indonesia, Sri Lanka, Vietnam)**
Critical infrastructure in South Asia and Southeast Asia needs to become more resilient to climate change. A Technical Assistance project, supported by Asian Development Bank (ADB), looks at three key sectors: transportation, transport and water. FutureWater is responsible for the assessment of the water sector which will aim to increase knowledge, promote innovation and good practice, and identify priorities for scaling up climate resilient investments in the Asia and Pacific region. Client: Asian Development Bank (ADB). *(Water sector specialist)*
- 2018 **Mekong State of the Basin Report (Cambodia, Laos, Thailand, Vietnam)**
Supporting the development of the Mekong River Commission State of Basin Report. Specific subjects of the consultancy were: 1. Flow condition at Phnom Penh, Tan Chau and Chau; 2. Salinity intrusion in Delta 3. River bank erosion, river channel condition and sediment transport, sand mining; 4. Flood and drought data; 5. Climate change covering greenhouse gas, extreme events, temperature, rainfall; 6. Navigation Client: Mekong River Commission Secretariat (MRCS). *(Water and climate specialist)*
- 2017 **Climate Risk and vulnerability assessment in the irrigation sector (Kazakhstan)**
Kazakhstan is in the process to expand and rehabilitate its irrigation sectors. To ensure that a irrigation systems will be climate resilient a climate risk and vulneravility assessment has been undertaken. Advanced data analysis, climate projections and impact models were used. Client: ADB. *(Project Leader, Hydrologist)*

- 2017-2018 Flying Sensors to support agriculture (**Kenya**)
Flying Sensors (drones) were used to support farmers in improving their agricultural practices with emphasis on water management. Project included capacity building and training to develop a financially viable service. Client: Netherlands Development Aid. (*Project Leader, Trainer*)
- 2017 Climate risk assessment water supply sector (**Uzbekistan**)
Proposed Western Uzbekistan Water Supply System Development Project Climate Risk and Vulnerability Assessment (CRVA). Assess and report on the climate risks to the beneficiaries, structure, and performance of the Project. Application for project financial support to the Green Climate Fund (GCF) and all subsequent clarification processes. Client: ADB. (*Team Leader, Hydrologist, Climate Expert*)
- Mar – Dec 2016 Improved watershed practices for hydropower in Mbé River (**Gabon**)
Modeling support to analyze benefits and costs of improved watershed management for hydropower services. Client: The Nature Conservancy (*Project Leader and Senior Expert*)
- 2016 - 2019 IMPREX: impact and adaptation to climate change (**Netherlands, Spain, Germany, UK**)
H2020 integrated project on impact and adaptation to climate change. Client: European Commission H2020). (*Project Leader, supervisor*).
- 2016 – 2017 Water balance and allocation modelling (**Rwanda**)
Perform analysis on future water balances and water allocation in Rwanda to support strategic decision making. Client: Mott MacDonald. (*Project Leader and Senior Expert*)
- Jun – Sep 2015 Soil moisture information to detect fluke (leverbot) transmission (**Netherlands**)
Providing soil moisture information based on integrated modeling and remote sensing to detect and forecast fluke (leverbot) transmission. Client: Gezondheidsdiens voor Dieren. (*Project Leader*)
- Jan – Jun 2015 Earth observation information to support Q-fever research (**Netherlands**)
Providing earth observation information based on integrated modeling and remote sensing to support research on Q-fever transmission. Client: RIVM. (*Project Leader*)
- Jun – Dec 2014 Training on modeling tools (**Mozambique**)
Training and development on WEAP and SPHY models to support water managers of water boards (ARAs) Client: Nuffic. (*Project Leader and Trainer*)
- Jun – Dec 2014 Water allocation tools for the Umbeluzi Basin (**Mozambique**)
Development of water planning tools (WEAP) to support decision making in the Umbeluzi Basin. Client: ARA-Sul. (*Project Leader and Modeler*)
- 2016 - 2019 System-Risk: impact and adaptation to climate change (**Netherlands, Spain, Germany, UK**)
H2020 integrated project on impact and adaptation to climate change. Client: European Commission H2020). (*Project Leader, supervisor*).
- Jan – Oct 2015 Erosion assessment for the Tuungane project, Lake Tanganyika (**Tanzania**)
To develop a first order integrated land and water resource management model for the Kenate Basin that forms the basis for (i) decision making, (ii) capacity building, (iii) identifying data needs, and (iv) further refinement. Client: TNC, The Nature Conservancy. (Hydrological modeler)

- Mar – Oct 2015 Water Resources Model for the Kenate Basin (**South-Sudan**)
Development of a first order integrated land and water resource management model for the Kenate Basin that forms the basis for (i) decision making, (ii) capacity building, (iii) identifying data needs, and (iv) further refinement. Client: ZOA. (*Project Leader, Water Resources Model Developer, trainer*)
- Feb – Jun 2015 Hydrological pre-feasibility assessment for the Romuku hydropower plant, Central Sulawesi (**Indonesia**)
To undertake a first order assessment on the expected flow at the inlet of the proposed Romuku run-of-river power plant. Client: Hydropower Evolutions, EON). (*Modeler*)
- 2015 – 2018 HI-AWARE: Himalayan Adaptation, Water and Resilience (**Nepal, India, Pakistan, Bangladesh**)
High caliber research and pilot activities, capacity building and policy engagement on climate resilience and adaptation in the mountains and flood plains of the Indus, Ganges, and Brahmaputra river basins. Client: CARIAA, DFID. (*Water resources specialist*)
- Jun – Sep 2014 AGRIDRONE: supporting farmers by using Flying Sensor (drone) information (**Netherlands**)
Piloting real-time information services to farmers based on Flying Sensor in the near-infrared and visible spectrum. Client: Climate-KIC. (*Project Leader, image analysisist*)
- Jan – Dec 2015 Fresh Water Options Optimization (**Spain**)
Potential for local solutions to optimize fresh water supply in European regions under increasing water stress. Client: Climate-KIC. (*Water Resources Modeler*)
- 2015 - 2016 Demonstration of remote sensing information for integrated reservoir management in the Red River Basin in Northern Vietnam (**Vietnam**)
Develop infrastructure to support decision making in the management of multi-purpose reservoirs in the Vietnamese Red River Basin, using integrated modeling and remote sensing analysis. Client: Netheralnds Space Office (NSO). (*Project Leader*)
- Oct 2014 – Dec 2015 Dike monitoring using Flying Sensors (**Netherlands**)
Operational pilot study to monitor dike safety based on Flying Sensors (drones). Client: Waterboard and Province of Friesland. (*Project Leader, Flying Sensor specialist*)
- 2014 - 2016 ThirdEye: Flying Sensors to Support Farmers' Decision Making (**Mozambique**)
Supporting farmers and water managers in Mozambique by using Flying Sensors (drones) to improve their agricultural practices. Client: USAID. (*Project Leader, Flying Sensor specialist*)
- Jan 2014 – Jun 2015 Observatory of Water Availability – System of Integrated Services (OWASIS-UK) (**United Kingdom**)
Study and investigate the feasibility of new integrated services innovative technologies, based on satellites, drones and models to improve the monitoring of water availability, quality and distribution. Client: European Space Agency (ESA). (*Project Leader, RS and drone specialist*)
- 2014 - 2015 Nature drought monitoring (**Netherlands**)
Develop a monitoring system, based on satellites, drones and models, for past and current droughts in nature reserves in province of Brabant (southern Netherland). Client: Provincie Brabant. (*Project Leader*)
- Jun - Dec 2014 Central Asia Regional Energy Sector Vulnerability (**Tajikistan, Kazakhstan, Kyrgyzstan, Turkmenistan, Uzbekistan**)
Assess the impact of climate change on the energy sector, with focus on hydropower in Central Asia. Client: World Bank (*Project Leader, Modeler, RS specialist*)

- 2014 Water planning tools (**Mozambique**)
Development of water planning tools (SWAT and WEAP) to support decision making in the Pungwe Basin. Client: ARA-Centro. *(Project Leader and Modeler)*
- 2014 Groundwater for crops (**Netherlands**)
Application of the spatial model SPHY to forecast crop water requirements at high spatial resolution. Client: KWR. *(Project Leader)*
- Sep 2013 - Mar-2014 Food analysis under climate change (**Laos, Cambodia, Thailand, Vietnam**)
Evaluation of future food balances under changing climates and socio-economic developments. Client: Mekong River Commission (MRC). *(Project Leader, Modeler, RS specialist)*
- Sep 2013 - Mar-2014 Historic and future climate in Mekong Basin (**Laos, Cambodia, Thailand, Vietnam**)
Provide a complete dataset of past and future climate over the entire Greater Mekong Sub-region Client: Mekong River Commission (MRC). *(Project Leader, RS specialist)*
- 2013 - 2014 Water allocation under climate change (**Colombia**)
Evaluate current and future water shortages in the Coello-Combeima basin. Client: Corporación Autónoma Regional del Tolima (CORTOLIMA). *(Modeler)*
- Jul - Sep 2013 Water, food, energy nexus (**Denmark**)
Writing position paper on water-food-energy nexus to support Denmark's nomination for the World Water Forum. Client: COWI, Min. of Environment Denmark. *(Researcher)*
- Apr - Jul 2013 Climate change indicators (**Laos, Cambodia, Thailand, Vietnam**)
Development of indicators to be used to assess the impact of climate change. Client: Mekong River Commission (MRC). *(Researcher)*
- 2012 - 2014 Intogener (**Chile**)
Hydropower forecasting by integrating earth observations and modeling of the hydrological reservoir inflow Client: ENDESA / ESA. *(Project Leader)*
- 2012 - 2014 Daisy: sensing technique (**Netherlands**)
Impact of innovative radar rainfall products on the hydrological forecasting. Client: Thales Group. *(Project Leader)*
- 2012 – 2013 Holland Delta Portal - Vietnam (**Vietnam**)
Drought monitoring toolbox as part of the Holland Delta Portal in Vietnam to support policy makers in their decision process. Client: Min. of Foreign Affairs. *(Researcher)*
- 2012 - 2014 Water2Invest (**Global**)
Development of a interactive platform to evaluate real-time impact and adaptation strategies to climate change. Client: European Institute of Innovation and Technology (EIT). *(Principle Investigator)*
- 2012 - 2013 Adaptation to Climate Change in the Agricultural Sector Caucasus (**Armenia, Azerbaijan, Georgia**)
Quantitative analysis using AquaCrop on impact and intervention options towards climate change including capacity building. Client: World Bank. *(Principle Investigator)*
- 2012 - 2013 Green Water Credits (**Algeria**)
Quantitative assessment of options Green Water Credit offer for the Chellif Basin in Algeria. Client: Min. of Foreign Affairs. *(Project Leader)*
- 2012 High resolution precipitation product (**Ecuador**)
Development of very high resolution rainfall data based on TRMM, observations, NDVI and elevation. Client: Province of Tungurahua, Ecuador. *(Researcher)*

2012	Tana Water Funds (Kenya) Development of further action planning to develop the Tana Water Funds based on payment for environmental services schemes. Client: ETC-Kenya. <i>(Project Leader)</i>
2011 - 2013	Climate responsive drainage systems (Netherlands) Testing and implementing of an innovative drainage system to retain water to overcome excessive flooding at regional scale. Client: Min. of Water Resources. <i>(Project Leader)</i>
2012	Infrastructure and Climate Change (Africa) Support to the development of a large scale infrastructure and climate change program of the World Bank in Africa. Client: World Bank. <i>(External Advisor)</i>
Mar 2011 - May 2012	Irrigation Potential Southern Nile Countries (Burundi, Eastern DRC, Kenya, Rwanda, South Sudan, Tanzania, Uganda) Assessment of the potential to develop irrigation in seven Southern Nile countries. Client: NBI / World Bank. <i>(Project Leader)</i>
Nov 2010 - Jun 2011	Assessment of sedimentation Tana Basin (Kenya) Based on observations and modeling current erosion and associated siltation of major reservoirs in Tana Basin has been assessed. Potential interventions were explored as well. Client: Government of Kenya. <i>(Senior Advisor)</i>
Mar 2011 - Mar 2012	Water and Adaptation Interventions in Central and West Asia (Tajikistan, Kazakhstan, Kyrgyzstan, Turkmenistan, Uzbekistan) Quantitative analysis of impact and adaptation strategies of climate change in the Aral Sea basin. Client: Asian Development Bank (ADB). <i>(Senior Advisor and Modeler)</i>
May - Dec 2011	Soil Water Management (Algeria) Development of a soil and water conservation package tailored toward the Algerian conditions. Client: Min. of Foreign Affairs. <i>(Project Leader)</i>
Nov 2010 - Feb 2011	Green Water Credits (Morocco) Proof of concept study on the potential for water and erosion control in the context of green water credits. Client: IFAD. <i>(Project Leader)</i>
Sep - Nov 2010	Climate change guidelines (Europe) Initial development of a guidance on climate change and water resources for OECD. Client: OECD. <i>(Project Leader)</i>
Jan - Apr 2010	National model development (Netherlands) Development of the first national quick assessment model on climate change impact on water resources. Client: Min. of Water Resources. <i>(Principal Modeler)</i>
Jun - Dec 2010	Climate Change impact Brabant en Limburg (Netherlands) Assessment of climate change impact on water resources in the context of "Deltaplan Hoge Zandgronden". Client: Local governments. <i>(Senior Advisor)</i>
Nov 2010	European Union evaluator for research potential programs (Brussels) EU evaluator Client: European Commission (EC). <i>(External Advisor)</i>
Aug - Dec 2010	Water outlook MENA region (Middle East, North Africa) Extensive study on changes in water demand and supply between 2010 and 2050. Client: World Bank. <i>(Principal Modeler, RS specialist)</i>
Oct 2010 - Feb 2011	Drought assessment Mekong Basin (Laos, Cambodia, Thailand, Vietnam) Development of an initial drought assessment framework and associated large grant proposal. Client: MRCS. <i>(Project Leader)</i>

- Oct - Dec 2010 Development of water accounting framework (**Botswana, Angola, Namibia**)
Innovative remotely sensed based water accounting development for the Okavango Basin.
Client: FAO. (*Project Leader*)
- Jun 2010 - Jun 2011 Climate change and agricultural production (**Albania, Uzbekistan**)
World Bank study on the impact of climate change and adaptation options for agricultural production. Client: World Bank. (*Project Leader*)
- Jul - Oct 2010 Climate responsive drainage system research (**Netherlands**)
Development of an innovative drainage system to retain water to overcome excessive flooding at regional scale. Client: Min. of Water Resources. (*Project Leader*)
- Jan - 2010 Irrigation and drainage advisory (**Ethiopia**)
Large scale agricultural irrigation and drainage advisory services for the Gambela region.
Client: Karaturi Ltd.. (*Advisor*)
- Nov - Dec 2009 Identification research topics in water and food (**Germany**)
Advisory services to the German Ministry of Education and Research (BMBF) to identify research topics to be implemented over the period 2010-2020. Client: BMBF. (*External Expert*)
- Oct - Nov 2009 Impact of climate change on hydro-power (**Kenya**)
Evaluation using the WEAP model on the impact of climate change on hydro-power generation in Tana Basin in Kenya. Client: IFAD. (*Principal Investigator and Modeler*)
- Aug - Dec 2009 Environmental impact on Q-fever transmission (**Netherlands**)
Evaluation of the impact of environmental factors like soil moisture, land cover and soil type on Q-fever transmission. Client: RIVM. (*Project Leader*)
- Jun - Dec 2009 Climate change preparedness (**Netherlands**)
For a water management organization methodological development for climate change impact and adaptation assessment was developed and tested. Client: Waterboard Hunze en Aas. (*Principal Investigator*)
- Apr 2009 Agricultural information system Nile Basin (**Ethiopia**)
The Nile Basin Initiative (NBI) is developing an integrated information and modeling system with specific focus on agriculture. Client: NBI. (*External Expert*)
- Jan - May 2009 Development drought insurance (**Netherlands**)
Weather related insurances are under development by insurance companies. The project calculated, based on modeling approaches, the required premium and risks of claims.
Client: Interpolis. (*Principal Investigator and Modeler*)
- Feb - Jun 2009 Green Water Credits (**Kenya**)
Model development to support decision making process. Client: IFAD. (*Principal Investigator and Trainer*)
- Jan - Jun 2009 Drought assessment tool (**Belgium**)
Development of an integrated GIS-modeling framework to evaluate the impact of changes in groundwater extraction on agriculture and nature. Client: Vlaamse Milieu Maatschappij. (*Advisor and Modeling Expert*)
- Sep - Dec 2008 Evaporation (**Netherlands**)
En extensive project, including stakeholder meetings, expert knowledge, data assimilation and modeling efforts, to develop a new standard for determining reference evapotranspiration in The Netherlands. Client: STOWA. (*Project Leader*)

Aug - Dec 2008	Evaluation National Water Plans (Egypt, Saudi Arabia, Tunisia) World Bank project on the use of advanced analysis techniques remote sensing, models to support the development of National Water Plans. Demonstration for three countries: Egypt, Saudi Arabia, and Tunisia. Client: World Bank. <i>(Project Leader)</i>
Dec 2008 - May 2009	DSS Data support (Ethiopia) Advisory services on the use of data to be included in the Nile Basin Decision Support System Client: NBI. <i>(Project Leader)</i>
Dec 2009	Training course remote sensing and models (Ethiopia) The Nile Basin Initiative (NBI) is developing an integrated information and modeling system with specific focus on agriculture. Client: NBI. <i>(Trainer)</i>
Aug - Nov 2008	Scenario based water resources model (Morocco) World Bank project to demonstrate the use of water resources modeling to evaluate alternatives to adapt to climate change and other changes Client: World Bank. <i>(Project Leader and Principal Investigator)</i>
Jul - Aug 2008	Expert opinion physical potential of irrigation (Tanzania) Consultancy for the Nile Basin Initiative to assess the physical potential to develop irrigation in the Lake Victoria area Client: NBI. <i>(External expert)</i>
May - Jun 2008	Water requirements under climate change (The Netherlands) Evaluation of current water delivery and future changes as a consequence of climate change. Client: Waterboard Hunze en Aas. <i>(Project Leader and Principal Investigator)</i>
Feb - Mar 2008	Green Water Credits in Sebou Basin (Morocco) Evaluation of potential green water credits options in Sebou Basin in Morocco. Client: IFAD. <i>(Principal Investigator)</i>
Jan - Jun 2008	Book Climate Change Adaptation in the Water Sector (Netherlands) Editor and reviewer of eight regional case studies Client: Min. of Foreign Affairs. <i>(Editor)</i>
May 2008	Conference on advanced tools in water resources management (Beijing) International conference on the used of advanced tools in water resources management with special emphasis on Sino-Dutch linkages. Client: Min. of Foreign Affairs. <i>(Initiator and Project Leader)</i>
Apr 2008	European Union evaluator for research potential programs (Brussels) EU-FP7 Evaluator Client: European Commission (EC). <i>(External Advisor)</i>
Dec 2007	International expert modelling services. Mekong River Commission (Laos) Advisory services on future modelling development and applications in the Mekong River Commission Modelling Group. Client: MRCS. <i>(External Advisor)</i>
Nov-Dec 2007	Flood risk evaluation of Shell infrastructure (Oman) Pre-evaluation of flood risk of infrastructure to be built by Shell in Oman. Client: Shell. <i>(External Advisor and Modeller)</i>
Nov 2007	European Union evaluator for research potential programs (Brussels) EU-FP7 Evaluator Client: European Commission (EC). <i>(External Advisor)</i>
Oct 2007 - Jul 2008	Groundwater management and exploration package (China) For the Yellow River Basin an evaluation package was developed to monitor and explore groundwater resources. Client: Min. of Foreign Affairs. <i>(Project Leader)</i>
Oct 2007	External advisor World Bank GEF Hai Basin project (China) Mission to advise the Hai Basin World Bank project on progress and future directions. Client: World Bank. <i>(External Advisor)</i>

Sep 2007	<p>Training course: Water management and climate change. (The Netherlands) A tailor-made course for water managers and policy makers in The Netherlands was organized to provide practical background information on climate change issues related to water management. Client: Waterboards. (<i>Trainer</i>)</p>
Jul-Aug 2007	<p>Adaptatie Ruimte en Klimaat, ARK (The Netherlands) Research inventory of projects that can contribute to adaptation agenda Client: Min. of Water Resources. (<i>Project Leader</i>)</p>
Jan - Oct 2007	<p>Green Water Credits (Kenya) Model development to support decision making process. Client: IFAD. (<i>Principal Investigator</i>)</p>
May 2007	<p>European Union evaluator for research potential programs (Brussels) EU-FP7 Evaluator Client: European Commission (EC). (<i>External Advisor</i>)</p>
Mar 2007	<p>Decision Support System for Shiyang Basin Commission (China) Development of Decision Support Systems. Client: DFID. (<i>International Advisor</i>)</p>
Jan-Dec 2007	<p>Insurance policies for climate change impact on agriculture (The Netherlands) A multi-year research commissioned by the Dutch government focusing on exploring insurance options towards climate change impact on agriculture. Client: Min. of Water Resources. (<i>Project Leader</i>)</p>
Dec2006 - Jun 2007	<p>Water Management Support Tools (Turkey) Assist water managers and policy makers in development of strategic tools to model decision making tools, including environmental issues and climate change. Client: Min. of Foreign Affairs. (<i>Project Leader</i>)</p>
Jan-Dec 2007	<p>Adaptation strategies to climate change (The Netherlands) A multi-year research commissioned by the Dutch government focusing on exploring adaptation strategies to climate change. Client: Min. of Water Resources. (<i>Principal Investigator</i>)</p>
Dec2006 - Jun 2007	<p>Water Management Support Tools (Kenya) Assist water managers and policy makers in development of strategic tools to model decision making tools, including environmental issues and climate change. Client: Min. of Foreign Affairs. (<i>Project Leader</i>)</p>
Nov 2006	<p>External advisor World Bank GEF Hai Basin project (China) Mission to advise the Hai Basin World Bank project on progress and future directions. Client: World Bank. (<i>External Advisor</i>)</p>
Nov 2006	<p>Water retention options (The Netherlands) Using modeling tools options were explored to use adjustable weirs to retain water Client: Waterboard Zuiderzeeland. (<i>Project Leader</i>)</p>
Sep 2006	<p>Decision Support System for Shiyang Basin Commission (China) Organizing and providing training on the DIFD funded project to develop a Decision Support System for Shiyang Basin Commission. Client: DFID. (<i>Trainer and Advisor</i>)</p>
Jul 2006	<p>European Union evaluator for mobility programs (Brussels) EU-FP7 Evaluator Client: European Commission (EC). (<i>External Advisor</i>)</p>
Jul 2006	<p>Water Management Support activities (Kenya) Mission to Kenya to assist and discuss with policy makers and water managers at various level options to improve water management to support food production and power generation. Client: IFAD. (<i>External Advisor</i>)</p>

Jan -Dec 2006	<p>Green Water Credits (Kenya) IFAD supported proof of concept study to explore options for improved water and soil management issues. Client: IFAD. <i>(Principal Investigator)</i></p>
Jun2006- May2007	<p>Integrated Water Management Support Methodologies (Kenya, Iran) Development of Integrated Water Management Support Methodologies for two countries to assist water managers and policy makers to improve water for food decision making, including environmental issues and climate change. Client: Min. of Foreign Affairs. <i>(Project Leader)</i></p>
May 2006	<p>European Union evaluator for mobility programs (Brussels) EU-FP7 Evaluator Client: European Commission (EC). <i>(External Advisor)</i></p>
Mar 2006	<p>Support mission for Krishna study (India) Development of decision support systems to be used by policy makers and researchers to evaluate impact of climate change on water-food issues. Client: Min. of Science. <i>(Project Leader)</i></p>
Jan-Dec 2006	<p>Coupling of models and Remote Sensing to support water managers (India) Development of decision support systems to be used by policy makers and researchers to evaluate impact of climate change on water-food issues. Krishna Basin, Andhra Pradesh. Client: Min. of Science. <i>(Principal Investigator)</i></p>
Mar 2006	<p>European Union evaluator for mobility programs (Brussels) EU-FP7 Evaluator Client: European Commission (EC). <i>(External Advisor)</i></p>
Jan 2006	<p>Assessment of improved sustainable water management options (Mexico) A one week training workshop for professionals from Mexico. Client: World Bank. <i>(Principal Trainer and Organizer)</i></p>
Oct-Jan 2006	<p>Assessment of improved sustainable water management options (Mexico) Evaluations, based on integrated water resources modeling and remote sensing, to improved water management options in Rio Bravo. Client: World Bank. <i>(Principal Investigator)</i></p>
Oct-Dec 2005	<p>Discharge criteria re-evaluated (The Netherlands) An analysis of the discharge criteria used currently compared to the so-called NBW ones. Client: Waterboard Hunze en Aas. <i>(Project Leader and Principal Investigator)</i></p>
Nov 2005	<p>Green water paradigm professional development workshop (Uganda) A one week training workshop for mid-career professional from Central and East Africa. Client: IFAD. <i>(Trainer)</i></p>
Jul-Sep 2005	<p>Water delivery requirements for agriculture (The Netherlands) For a Dutch waterboard an evaluation of current water delivery and future changes as a consequence of climate change were made. Client: Waterboard Zuiderzeeland. <i>(Project Leader and Principal Investigator)</i></p>
Jun 2005	<p>Green - Blue Water Initiative (Sweden) Initiation phase of the multi-million GBWI project Client: SEI. <i>(Panel member)</i></p>
Jan-May 2005	<p>Nutrient loads on surface water (The Netherlands) For a Dutch polder high level of nutrient loads were detected. Based on measurement and 2D modeling options were explored to reduce nutrient loading of surface water. Client: Waterboard Rijnland. <i>(Project Leader and Principal Investigator)</i></p>

- Jan-Feb 2005 Optimal water management for a wet forest (**The Netherlands**)
Improved surface and groundwater management for a wet forest in the Western part of Netherlands was analyzed using measurements and simulation modeling. Client: Amsterdams Bos. (*Principal Investigator*)
- Jan-Dec 2005 Insurance policies for climate change impact on agriculture (**The Netherlands**)
A multi-year research commissioned by the Dutch government BSIK focusing on exploring insurance options towards climate change impact on agriculture. Client: Min. of Water Resources. (*Principal Investigator*)
- Apr 2005 Groundwater irrigation efficiency in Saudi Arabia (**Saudi Arabia**)
Hydrological analysis of the groundwater irrigation practices in central-pivot systems in Saudi Arabia, based on detailed soil-water-crop modeling. Client: FAO. (*Principal Investigator*)
- Mar-Jun 2005 Impact of tail-drainage development on water management (**The Netherlands**)
Evaluation of the expected changes of tube drain development on large scale water management issues. Client: Min. of Water Resources. (*Principal Investigator*)
- Apr-Jun 2005 Pakistan drainage and salinity evaluation (**Pakistan**)
The World Bank Inspection Panel to evaluate Left Bank Outfall Project and National Drainage Program. Client: World Bank. (*Inspection Panel Consultant*)
- Mar-Jun 2005 Hai Basin integrated water management assessment (**China**)
International expert to assist the Hai River Basin Commission in the development of appropriate tools to reduce water consumption in agriculture. Client: World Bank. (*International Expert and Trainer*)
- Apr 2005 Training course: Integrated water resources management. (**The Netherlands**)
A training course for IHE, Delft on various aspects of integrated water resources management with focus on world food issues. Client: UNESCO-IHE. (*Trainer*)
- Apr 2005 Climate Change adaptation strategies (**Thailand and Vietnam**)
Project mission to assess and discuss potential partners for Dutch Foreign Aid assisted program. Client: Min. of Foreign Affairs. (*Project Developer*)
- Apr 2005 External evaluator of the EU 6th framework program. (**Belgium**)
EU-FP7 Evaluator Client: European Commission (EC). (*External Advisor*)
- Feb 2005 Training course: Integrated modeling in water resources management. (**Germany**)
A small training course was organized at the Center for Development Research, Bonn. Students from the developing world were trained in the capabilities of remote sensing in water resources management research. Client: ZEF. (*Trainer*)
- Jan 2005 Training course: Water management and climate change. (**The Netherlands**)
A tailor-made course for water managers and policy makers in The Netherlands was organized to provide practical background information on climate change issues related to water management. Client: Waterboards. (*Trainer*)
- Oct 2004 External evaluator of the EU 6th framework program. (**Belgium**)
EU-FP6 Evaluator Client: European Commission (EC). (*External Advisor*)
- Aug - Dec 2004 Hydrological characterization of a Dutch polder. (**The Netherlands**)
For a low-lying polder hydrological processes such as drainage, infiltration, groundwater recharge were obtained by a combined use of data, measurements, models and remote sensing. Principal Investigator. Client: Waterboard Rivierenland. (*Project Leader*)

- May - Oct 2004 Water storage options Dutch polder. **(The Netherlands)**
Regional evaluation of options to store and retain water in Dutch polders. Participative approach, modeling, Remote Sensing. Client: Waterboard Zuiderzeeland. *(Project Leader and Principal Investigator.)*
- May 2004 Training course on simulation modeling for students from developing world. **(The Netherlands)**
At the International Institute for Geo-Information Science and Earth Observation, Netherlands, a training course was given focussed on the use of simulation modeling to assist water managers. Trainer. Client: ITC. *(Trainer)*
- Nov 2003 - Apr 2004 Climate change adaptation strategies. **(Gambia)**
In the context of AIACC Assessments of Impacts and Adaptations to Climate Change assistance was provided to researchers at Gambian universities. Main assistance provided was in the context of climate change adaptation strategies and, more specific, on data Client: AIACC. *(Principal Investigator)*
- Feb 2004 Training course: Remote sensing applications in water resources management. **(Germany)**
A small training course was organized at the Center for Development Research, Bonn. Students from the developing world were trained in the capabilities of remote sensing in water resources management research. Client: ZEF. *(Trainer)*
- Feb 2004 Training course: Water management and climate change. **(The Netherlands)**
A tailor-made course for water managers and policy makers in The Netherlands was organized to provide practical background information on climate change issues related to water management. Client: Waterboard Regge en Dinkel. *(Project Leader)*
- Nov - Dec 2003 Editor book adaptation to climate change. **(The Netherlands)**
Contributing author of book describing adaptation strategies to climate change focussed on food production. Client: Min. of Water Resources. *(Contributing Author)*
- Oct - Dec 2003 Defining operational rules for flexible weirs. **(The Netherlands)**
Flooding and inundation has been on the rise in a Dutch polder. Increasing local storage capacity might mitigate this, where static and dynamic weir operational rules were the options to explore. Modeling and observations were combined. Client: Waterboard Zuiderzeeland. *(Project Leader and Principal Investigator)*
- Nov 2003 Water planning Dutch polder. **(The Netherlands)**
Development of a strategic land-water use plan for a Dutch polder. Client: Waterboard Zuiderzeeland. *(Project Leader)*
- Mar 2001 - Oct 2003 Enhancing Water Productivity. **(India)**
An extensive project aiming at enhancing water productivity in Haryana State, India, based on field observations, simulation modelling and remote sensing was undertaken in close collaboration with local universities, Dutch research institutes and the Inte Client: Min. of Science. *(Project Leader)*
- Sep 2003 Simulation model requirements for a water board. **(The Netherlands)**
A Dutch based water board was advised on which modelling framework would be the most appropriate to be implemented. Client: Waterboard Zuiderzeeland. *(External Advisor)*
- Apr 2002 - Jul 2003 Adaptation strategies to climate change in seven contrasting basins. **(Cambodia, Ghana, Iran, Netherlands, Sri Lanka, USA, Uzbekistan)**
Adaptation strategies to climate change were explored and compared among seven basins, ranging from dry to wet and located in developed and developing countries. From each basin local researchers were responsible for data and analyses. Initiator and Princ Client: CPWC. *(Project Leader)*

- May 2003 Training course on simulation modeling for students from developing world. **(The Netherlands)**
At the International Training Center in the Netherlands a training course was given focussed on the use of simulation modeling to assist water managers. Client: ITC. *(Trainer)*
- Apr 2003 Climate Change Book. **(The Netherlands)**
Contribution to book "Climate changes the water rules" covering global food issues and climate change. Client: CPWC. *(Contributing author)*
- Feb 2003 Basin scale water assessment **(India)**
Defining research setup to analyze and improve basin scale water resources for Krishna Basin, India. Client: Min. of Science. *(External Advisor)*
- Dec 1998 - Jan 2003 Irrigation management from a basin scale perspective. **(Iran)**
A major project in close collaboration with Iranian research institutes aiming at analyzing irrigation performance at different scales field to basin , and provide options for the future. Participatory research, training and reporting were the main tasks. Client: Iranian Science Foundation. *(Project Leader)*

Selection of Technical Reports and Other Publications

Summary (SCOPUS, Jan -2020)

h-Index: 30

Publications: 70

Citations:

SCOPUS: 1651

Google Scholar: 7135

Peer reviewed publications, books, book chapters

- Van Leuken, J.P.G., Swart, A.N., Brandsma, J., Terink, W., Van de Kasstelee, J., Droogers, P., Sauter, F., Havelaar, A.H., Van der Hoek, W. 2016. Human Q fever incidence is associated to spatiotemporal environmental conditions. *One Health* 2:77. <http://dx.doi.org/10.1016/j.onehlt.2016.03.004>
- van Leuken, J.P.G., Swart, A.N., Droogers, P., van Pul, A., Heederik, D., Havelaar, A.H. 2016. Climate change effects on airborne pathogenic bioaerosol concentrations: a scenario analysis. *Aerobiologia*: 1-11. <http://dx.doi.org/10.1007/s10453-016-9435-5>
- Terink, W., Lutz, A.F., Simons, G.W.H., Immerzeel, W.W., Droogers, P. 2015. SPHY v2.0: Spatial Processes in HYdrology. *Geoscientific Model Development* 8: 2009-2034. <http://dx.doi.org/10.5194/gmd-8-2009-2015>
- Kauffman, S., Droogers, P., Hunink, J., Mwaniki, B., Muchena, F., Gicheru, P., Bindraban, P., Onduru, D., Cleveringa, R., Bouma, J. 2014. Green Water Credits-exploring its potential to enhance ecosystem services by reducing soil erosion in the Upper Tana basin, Kenya. *International Journal of Biodiversity Science, Ecosystems Services and Management* 10: 133-143. <http://dx.doi.org/10.1080/21513732.2014.890670>
- Boehlert, B., J. Neumann, K. Strzepek, P. Droogers, S. Sharrow. 2014. Building Resilience to Climate Change in South Caucasus Agriculture; Georgia: Risks, Impacts, and Adaptation Menu. Chapter 5. World Bank. ISBN: 978-1-4648-0214-0. <http://dx.doi.org/10.1596/978-1-4648-0214-0>
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- Droogers, P., J. Bouma. 2014. Simulation modeling for Water Governance in Basins. *International Journal of Water Resources Development*. Volume: 30, Issue: 3. pages 475-494.
- Hunink, J. E., Immerzeel, W. W., & Droogers, P. 2014. A High-resolution Precipitation 2-step mapping Procedure (HiP2P): Development and application to a tropical mountainous area. *Remote Sensing of Environment*, 140, 179–188. doi:10.1016/j.rse.2013.08.036
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