



## UN Environment Programme GEMS/Water Capacity Development Centre Newsletter

December 2020

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Welcome to the ninth edition of the UN Environment Programme GEMS/Water Capacity Development Centre (CDC) newsletter.

We hope that you are safe and well. The last six months have been busy for the Centre despite the postponement of some training, travel and field activities. We are still mostly working from home as we have been since the Covid-19 pandemic reached Ireland in February. Our team and colleagues internationally have adapted to working fully on-line which has enabled us to meet people virtually and to continue much of our capacity development work, including delivering our on-line training courses. As this year draws to a close, the first phase of GEMS/Water capacity development ends and plans are being finalised for new activities for the next phase, starting in January 2021. All the Centre staff are taking a much-needed break over the Christmas period and will be off-line from 18<sup>th</sup> December to 4<sup>th</sup> January.

I hope you enjoy reading about our activities over the last six months. Please keep in contact and let us know how we can contribute to improving the water quality monitoring capacity of your country or region

Stay safe, enjoy the festive season and we wish you all a Very Happy New Year.

*Dr Debbie Chapman*

**Director, UNEP GEMS/Water Capacity Development Centre**

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## Meet the UN Environment Programme GEMS/Water Capacity Development Centre Team



**Deborah Chapman**

**Centre Director:** training and advice in freshwater quality, monitoring and assessment.



**Aoife Nagle**

**Administrator:** administration, project and Analytical Chemistry support for the GEMS/Water CDC.



**Stuart Warner**

**Training and Support Officer:** supporting capacity development for water quality monitoring with a focus on SDG Indicator 6.3.2.



**Lucía Hermida Gonzalez**

**Programme Coordinator:** developing and running our training courses, including the on-line CPDs, PG Diploma and MSc in Freshwater Quality Monitoring and Assessment.



**Steve Hutton**

**Research assistant:** assisting with the development and delivery of training



**Katelyn Grant**

**Project Assistant:** supporting development and delivery of on-line training and training workshops on water quality monitoring.

The UN Environment Programme GEMS/Water Capacity Development Centre Team is based in the Environmental Research Institute, University College Cork, Ireland and works closely with our colleagues in the UN Environment Programme GEMS/Water Data Centre at the Federal Institute of Hydrology, Koblenz, Germany and the UN Environment Programme, Global Programme Coordination Unit in Nairobi, Kenya.



## Update on our short, on-line, Continuous Professional Development (CPD) courses

Best of luck to our current CPD students that began their course(s) in September and have just one assessment left. These students have worked very hard despite the continued difficulties faced as a result of the Covid-19 pandemic in their countries.

The next round of the short, on-line courses will begin in January 2021 but the closing date for applications has passed, you can apply for the September 2021 courses shortly.

The short courses available are as follows, together with links for more information on each course:

- Freshwater Monitoring Programme Design: <https://www.ucc.ie/en/cpd/options/science/ev6012/>
- Quality Assurance for Freshwater Quality Monitoring: <https://www.ucc.ie/en/cpd/options/science/ev6013/>
- Data Handling, Assessment & Presentation for Freshwater Quality Monitoring: <https://www.ucc.ie/en/cpd/options/science/ev6014/>
- Water Quality Monitoring and Assessment in rivers/lakes/reservoirs: <https://www.ucc.ie/en/cpd/options/science/ev6015/>
- Water Quality Monitoring and Assessment of Groundwater: <https://www.ucc.ie/en/cpd/options/science/ev6016/>
- Alternative Methods for Freshwater Quality Monitoring: <https://www.ucc.ie/en/cpd/options/science/ev6017/>

You can find a link to the brochure for the short on-line, CPD, courses here:

[https://www.ucc.ie/en/media/research/watercapacitydevelopmentcentre/CPD\\_PRO\\_Promo.pdf](https://www.ucc.ie/en/media/research/watercapacitydevelopmentcentre/CPD_PRO_Promo.pdf)

## Update on the Postgraduate Diploma and MSc in Freshwater Quality Monitoring and Assessment

Our current cohort of Postgraduate Diploma and MSc students are in their second year and making great progress. Since September, they have studied “*Monitoring and Assessment of Surface Waters*”. They are covering material to help them monitor and assess the water quality of different types of rivers, lakes and reservoirs. In January, they will begin studying their next topic “*Monitoring and Assessment of Groundwater*”. These 15 students have been doing very well despite the continued difficulties caused by the pandemic in their countries. We wish them the very best of luck in their final assessment of the year and continued success into the new year.



**UN environment programme** **Water** **UCC** School of Biological, Earth and Environmental Sciences

### Postgraduate Diploma FRESHWATER QUALITY MONITORING AND ASSESSMENT

Through its global scoping exercise and bilateral discussions with the water and education sectors in developing countries, the Capacity Development Centre identified a need for a flexible, advanced course for individuals involved in water quality management. In addition, the new UN Agenda 2030 Sustainable Development Goal for water (SDG 6) is leading to an increased demand for knowledge, understanding and capacity in water quality monitoring and assessment worldwide. This Postgraduate Diploma in Freshwater Quality Monitoring and Assessment addresses these needs by enabling the development of expertise in countries through online learning.

The Postgraduate Diploma focuses on all aspects of water quality monitoring including: monitoring programme design, quality assurance, data analysis and presentation, monitoring and assessment of rivers, lakes and groundwater, and water quality monitoring with biological and ecological methods and with particulate material. There is also an opportunity to take part in a field workshop during the second year of the programme.

The programme aims to recruit highly-motivated, enthusiastic students who may be (i) currently involved in water quality monitoring, (ii) part of the United Nations Environment Programme GEMS/Water network, and/or (iii) seeking to specialise in water quality monitoring and assessment, and who wish to study on a flexible, part-time basis.

**Modules**

The PG Diploma in Freshwater Quality Monitoring and Assessment is a part-time programme taken over two full years. To be awarded the Diploma students must complete and pass 30 credits from Year 1 and 30 credits from Year 2.

Teaching will be online with the exception of module EV6004, which is an optional field-based module in a developing country and/or in Ireland. Students can exit the course after completion of EV6001, EV6002 and EV6003 with a Postgraduate Certificate in Water Quality Monitoring and Assessment.

**Year 1**

- EV6001 Monitoring programme design for freshwater bodies (10 credits)
- EV6002 Quality assurance in freshwater quality monitoring programmes (10 credits)
- EV6003 Data handling and presentation for freshwater quality monitoring programmes (10 credits)

**Year 2**

- EV6005 Monitoring and assessment of surface waters (10 credits)
- EV6007 Monitoring and assessment of groundwater (10 credits)

and any two from the following:

- EV6004 Freshwater quality monitoring in the field (5 credits)
- EV6008 Freshwater quality monitoring using biological and ecological methods (5 credits)
- EV6009 Freshwater quality monitoring with particulate material (5 credits)



### Postgraduate Diploma FRESHWATER QUALITY MONITORING AND ASSESSMENT

**Career Prospects**

The Postgraduate Diploma is designed to give students a strong foundation in all aspects of water quality monitoring and assessment, equipping them to work in the area of water quality management in public or private sectors, including water and environment ministries, regulatory agencies, agriculture and industry. The programme will be of particular benefit for the career advancement of employees already working in the water quality monitoring sector.

**Eligibility and Entry**

Applicants must possess a primary degree in a relevant science subject, such as a BSc in Environmental Science or cognate discipline; or a relevant professional qualification; or a portfolio of work and experience in the area of freshwater quality monitoring. Candidates who do not hold a BSc will be judged on a case-by-case basis for their suitability for the programme, subject to the approval of the College of Science, Engineering and Food Science, UCC. The number of places is limited and selection will be based on the candidate's performance in their primary degree, a personal statement and a portfolio, as appropriate.

Further information can be found online at: <https://www.ucc.ie/en/gemsdc/onlinecourses/>

Candidates, for whom English is not their primary language, should possess an IELTS of 6.5 (or TOEFL equivalent) with no less than 6.0 in each individual category. Please see here: <https://www.ucc.ie/en/study/comparison/english/> for detailed Postgraduate English Language Requirements.

Students can apply online at: <http://www.ucc.ie/apply>

**Fees**

Nominated candidates from UNEP GEMS/Water participating countries are eligible for a special fee of €500 per year. Fees for all other EU and Non-EU applicants can be found at: [www.ucc.ie/en/finance/office/fees/](http://www.ucc.ie/en/finance/office/fees/)

**University College Cork and the School of Biological, Earth and Environmental Sciences**

University College Cork is one of Ireland's oldest higher education institutions and internationally acclaimed as one of Ireland's leading research institutions. The School of Biological, Earth and Environmental Sciences (BEES) is a recognised leader in teaching and research in Zoology, Ecology, Plant Science, Geology and Environmental Science.

**United Nations Environment Programme GEMS/Water Capacity Development Centre**

The United Nations Environment Programme (UNEP) GEMS/Water Capacity Development Centre (CDC) was founded in 2015 to provide global capacity development in water quality monitoring and assessment to the UNEP global water quality monitoring system, GEMS/Water, through the provision of education, training and expert advice. The Centre is based in the Environmental Research Institute, UCC.

**For further information contact**

UNEP GEMS/Water CDC  
E-mail: [gemsdcadmin@ucc.ie](mailto:gemsdcadmin@ucc.ie)  
Website: <https://www.ucc.ie/en/gemsdc/>  
Telephone: +353 (0) 21 420 5276

**Programme Co-ordinator**  
Dr Lucia Hermida Gonzalez  
E-mail: [lucia.hermidagonzalez@ucc.ie](mailto:lucia.hermidagonzalez@ucc.ie)

Application Closing Date: 30th June 2021  
Starting Date: September 2021

You can find further information on the Postgraduate Diploma here: <https://www.ucc.ie/en/ckr55/>



**UN environment programme** **Water** **UCC** School of Biological, Earth and Environmental Sciences

### MSc FRESHWATER QUALITY MONITORING AND ASSESSMENT

Through its global scoping exercise and bilateral discussions with the water and education sectors worldwide, the United Nations Environment Programme (UNEP) GEMS/Water Capacity Development Centre (CDC) identified a need for a flexible, advanced course for individuals involved in water quality management. In addition, the UN Agenda 2030 Sustainable Development Goal for water (SDG 6) has created a demand for knowledge, understanding and capacity in water quality monitoring and assessment. The MSc in Freshwater Quality Monitoring and Assessment builds on the existing Postgraduate Diploma and addresses these needs by enabling the development of expertise in countries through part-time, online learning. It has been specifically designed to suit people who wish to study while in employment or have other commitments that prevent full-time attendance on an educational course.

Over the first two years, students study influences on the quality of water and ecological health of freshwater bodies and all aspects of water quality monitoring including: monitoring programme design, quality assurance, data analysis and presentation, monitoring and assessment of rivers, lakes and groundwater, and water quality monitoring with biological and ecological methods and with particulate material. There is also an optional field workshop during the second year of the programme. In the third year, students carry out an individual research project on a water quality topic and submit a dissertation for the MSc in Freshwater Quality Monitoring and Assessment.

The programme aims to recruit highly-motivated, enthusiastic students who may be currently involved in water quality monitoring or seeking to specialise in water quality monitoring and assessment, and who wish to study on a flexible, part-time basis.

**Modules**

The MSc is a part-time programme taken over 36 months, starting in September every second year. Students may exit the programme with a Postgraduate Certificate after successfully completing Year 1, and a Postgraduate Diploma after completing Year 2. To be awarded the MSc, students must also complete and pass the Dissertation.

Teaching is entirely online, with the exception of module EV6004, which is an optional field-based module, and EV6010 which is the research dissertation. The research project may be carried out in the student's place of work by agreement with the Programme Co-ordinator.

**Year 1**

- EV6001 Monitoring programme design for freshwater bodies (10 credits)
- EV6002 Quality assurance in freshwater quality monitoring programmes (10 credits)
- EV6003 Data handling and presentation for freshwater quality monitoring programmes (10 credits)

**Year 2**

- EV6005 Monitoring and assessment of surface waters (10 credits)
- EV6007 Monitoring and assessment of groundwater (10 credits)

and any two from the following:

- EV6004 Freshwater quality monitoring in the field (5 credits)
- EV6008 Freshwater quality monitoring using biological and ecological methods (5 credits)
- EV6009 Freshwater quality monitoring with particulate material (5 credits)

**Year 3**

- EV6010 Dissertation in Freshwater Quality Monitoring and Assessment (30 Credits)



### MSc FRESHWATER QUALITY MONITORING AND ASSESSMENT

**Career Prospects**

The MSc is designed to give students a strong foundation in all aspects of water quality monitoring and assessment, equipping them to work in the area of water quality management in public or private sectors, including water and environment ministries, regulatory agencies, agriculture and industry. The programme will be of particular benefit for the career advancement of employees already working in freshwater resources management.

**Eligibility and Entry**

Applicants must possess a primary degree in a relevant science subject, such as a BSc in Environmental Science or cognate discipline with a minimum grade of 2H2. The number of places is limited and selection will be based on the candidate's performance in their primary degree, and a personal statement supplied with their application.

Candidates, whose primary or official language is not English, should possess an IELTS of 6.5 (or TOEFL equivalent) with no less than 6.0 in each individual category. For detailed Postgraduate English Language Requirements please see here: <https://www.ucc.ie/en/study/comparison/english/>

Students can apply online at: <http://www.ucc.ie/apply>

Details for non-EU student applications are available at: [www.ucc.ie/en/international/studyatucc/postgraduateprogrammes/taughtprogrammes/](http://www.ucc.ie/en/international/studyatucc/postgraduateprogrammes/taughtprogrammes/)

Nominated candidates from UNEP GEMS/Water participating countries are eligible for special reduced fees (€500 per year for Years 1 and 2 and €750 for Year 3).

Further information, including fees for all EU and Non-EU applicants can be found at: <https://www.ucc.ie/en/gemsdc/onlinecourses/>

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**United Nations Environment Programme GEMS/Water Capacity Development Centre**

The United Nations Environment Programme (UNEP) GEMS/Water Capacity Development Centre (CDC) was founded in 2015 to provide global capacity development in water quality monitoring and assessment to the UNEP global water quality monitoring system, GEMS/Water, through the provision of education, training and expert advice. The Centre is based in the Environmental Research Institute, UCC.

**For further information contact**

UNEP GEMS/Water CDC  
E-mail: [gemsdcadmin@ucc.ie](mailto:gemsdcadmin@ucc.ie)  
Website: [www.ucc.ie/en/gemsdc/](https://www.ucc.ie/en/gemsdc/)  
Telephone: +353 (0) 21 4205276

**Programme Co-ordinator**  
Dr Lucia Hermida Gonzalez  
E-Mail: [lucia.hermidagonzalez@ucc.ie](mailto:lucia.hermidagonzalez@ucc.ie)

Application Closing Date: 30th June 2021  
Starting Date: September 2021

You can find further information on the MSc here: <https://www.ucc.ie/en/ckr17/>



The next intake of new students to the Postgraduate Diploma and MSc will be in September 2021. The applications are now open and will close 18<sup>th</sup> June 2021.

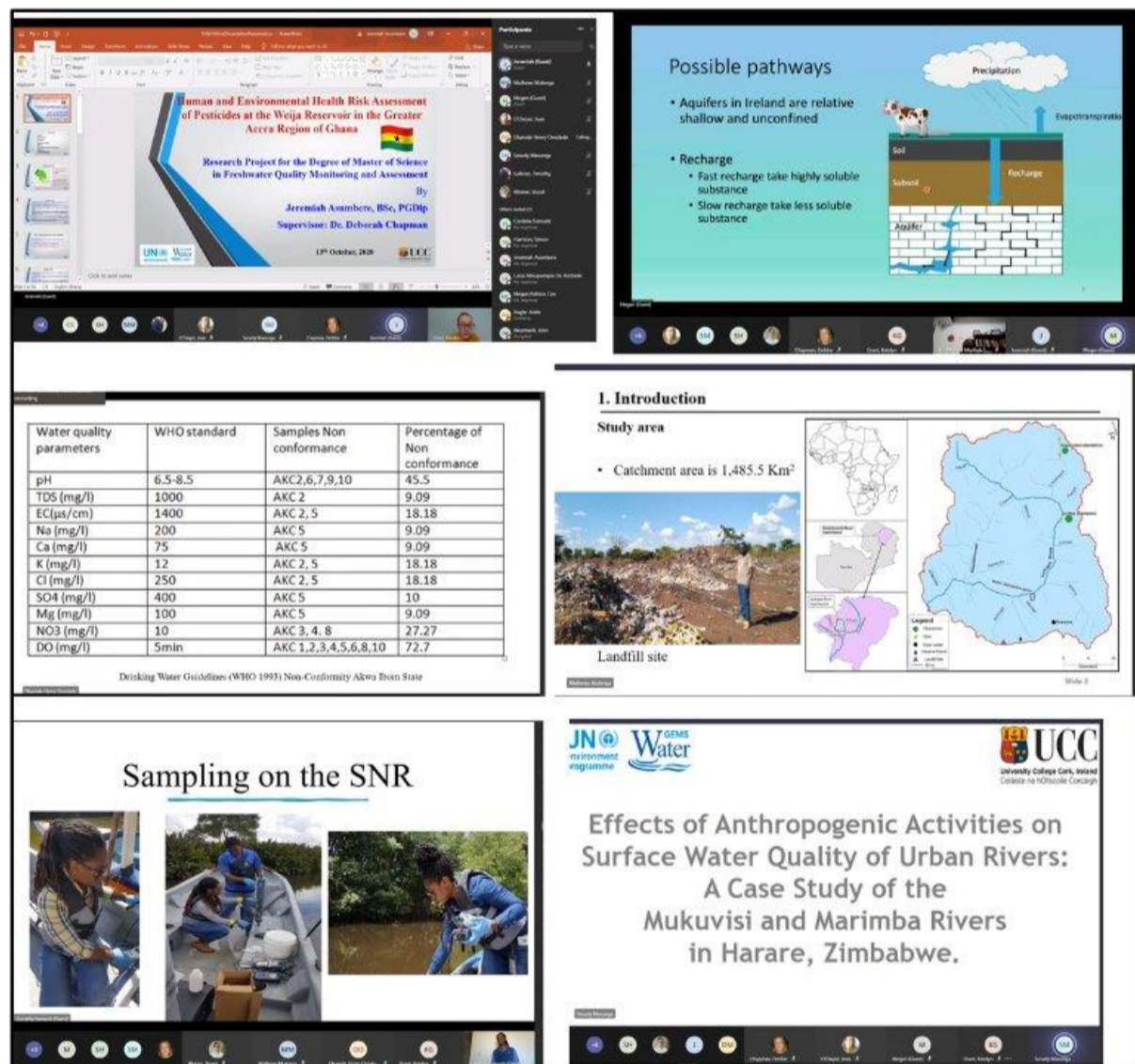
### MSc in Freshwater Quality Monitoring and Assessment

After completing the first two years of the MSc or Postgraduate Diploma, students who achieve the required grade can advance into a third year. This year requires students to undertake an individual research project, write-up a dissertation and give a short presentation about their project. After successful completion of this third year, they are awarded an MSc.

Six of our 12 students carrying out MSc research projects have finished. They submitted their dissertations in September and presented on their projects in October. We would like to congratulate these students on their success. They worked so hard despite the many challenges of this year.



**Our on-line oral presentation set-up in October with some of our audience members and MSc presenters.**



**A sneak peek of some of the presentation slides from our MSc student project presentations.**

Our remaining MSc students are finishing their dissertations and will be done in the new year.

We have more special MSc project features available on our website since the last newsletter. If you would like to read more about the variety of projects our students are carrying out, they are available in our website news section.

Check out Mathews Mulenga’s design of a freshwater monitoring programme in Zambia here: <https://www.ucc.ie/en/gemscdc/news/msc-project-feature-mathews-mulengas-water-quality-monitoring-programme-in-zambia-html>





**Mathews collecting water quality data at a designated monitoring location during the preliminary survey (Photo: M. Mulenga).**

Read about Cordelia Samuel's characterization of Wastewater Stabilization Ponds effluent and impact assessment on the South Negril River, Jamaica here:

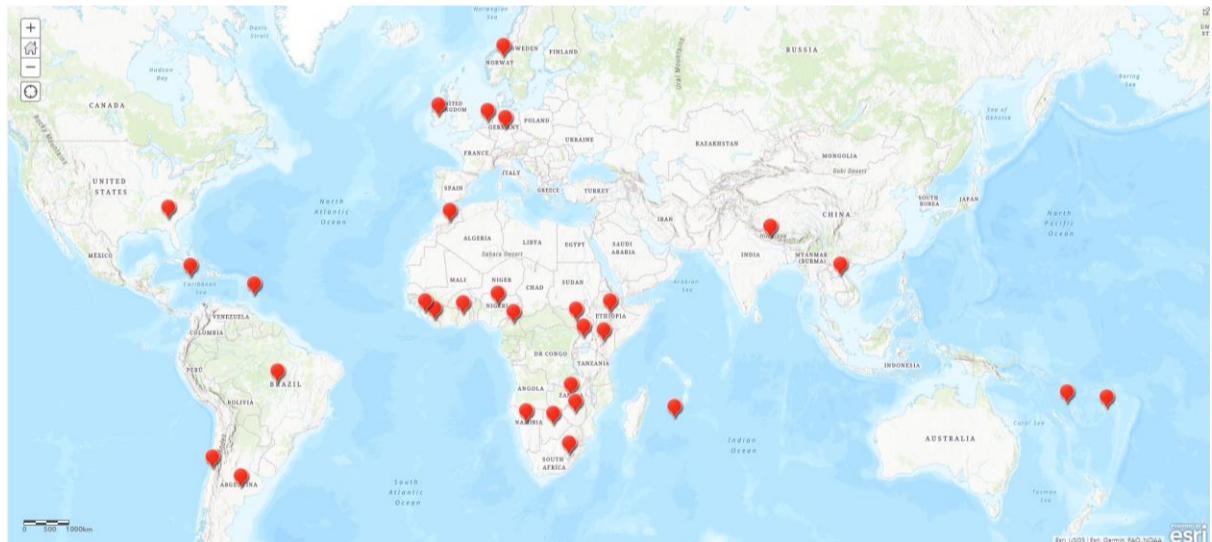
<https://www.ucc.ie/en/gemscdc/news/msc-project-feature-cordelia-samuels-characterization-of-wastewater-stabilization-ponds-effluent-discharge-and-its-impact-on-the-south-negril-river-in-jamaica.html>



**Cordelia carrying out in-situ measurement of some water quality parameters in the South Negril River (Photo: C. Samuels).**

### Updated world view of where people are studying our on-line water quality training programmes

This map shows the countries from which we have had on-line students over the last four years. We have added a number of new countries since the last intake of CPD students. The global coverage is likely to increase further with the new intake of Postgraduate Diploma and MSc students next year.



(Map made using ArcGIS online. Sources: Esri, DeLorme, HERE, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, and the GIS User Community).

### Open Access Capacity Development training materials

We have continued our work on developing more capacity development training materials over the last six months. These will take the form of open access courses and short handbooks.

The open access courses are being adapted from our University accredited short courses on a range of Freshwater Quality Monitoring and Assessment topics, including water quality monitoring programme design, monitoring and assessment of surface and groundwaters, and alternative monitoring methods. We are in the process of putting the open access courses on the UN Environment Programme's eLearning platform. They will be available next year.

### GEMS/Water Story Map

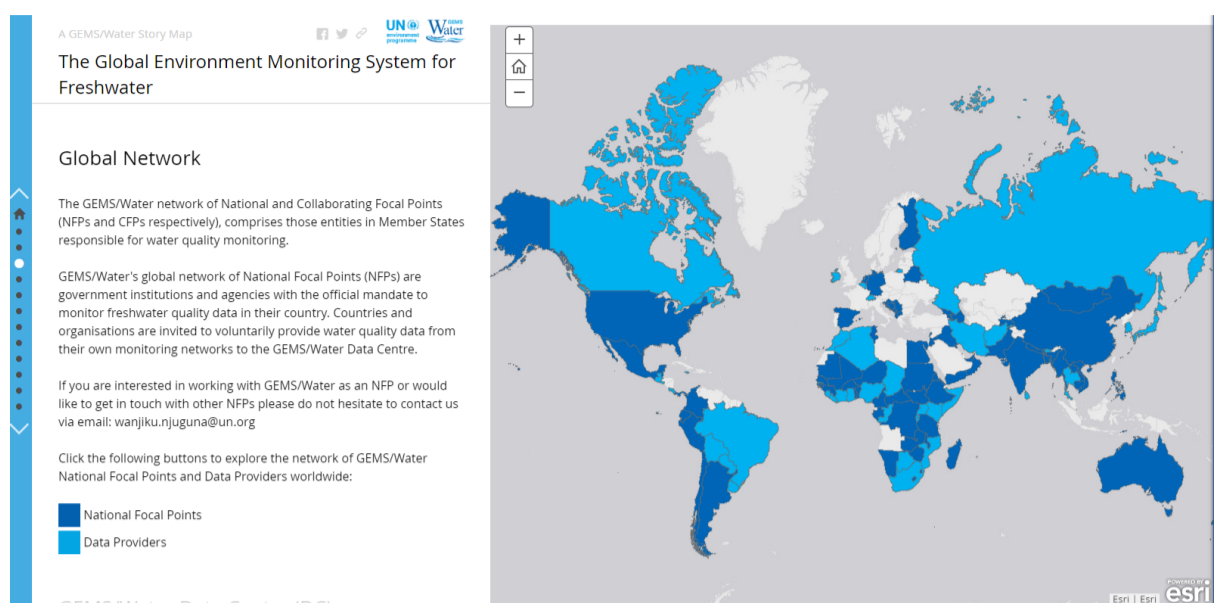
The Global Environment Monitoring System for Freshwater (GEMS/Water) Story Map went live in September. This interactive Story Map gives information about the Centre and our partners, the Global Programme Coordination Unit (GPCU) in Nairobi, Kenya and the Data Centre in Koblenz,



Germany. It also describes GEMS/Water's work with the Sustainable Development Goal (SDG) Indicator 6.3.2 on ambient water quality.

Check it out here:

<https://uneplive.maps.arcgis.com/apps/MapJournal/index.html?appid=4f0a0a31fa4f429b8903634dbe0fec14>



**A preview of the information in the GEMS/Water Story Map.**

### IHE Delft WaterPIP Project WaPOR Hackathon

The Water Productivity Improvement in Practice (WaterPIP) Project held a WaPOR Hackathon: From Database to Application, from 17 – 24 November 2020. WaPOR is a portal to monitor Water Productivity through Open-access of Remotely sensed derived data, developed by FAO to help countries increase efficiency of water use in agriculture. Debbie was part of the support for the Hackathon. She was available to help teams that created projects to support the Sustainable Development Goals. During the Hackathon teams designed ways to use the WaPOR data including developing apps, QGIS-plugins, web-service, and more. The Hackathon had not just one winner but two! Congratulations to the winners, the organisers and to all of the contestants for their hard work.

You can see the finalist's pitches and the selection of the overall winners here:

[https://www.youtube.com/watch?v=xZ3RACIUCM&ab\\_channel=WaterPIPproject](https://www.youtube.com/watch?v=xZ3RACIUCM&ab_channel=WaterPIPproject)



### The Irish Institute of Digital Business and DCU Business School – SDG4B

Debbie was asked to present at the Irish Institute of Digital Business (IIDB) and Dublin City University (DCU) Business School's SDG4B webinar. The topic in this webinar, which was the sixth in a series, was SDG Goal 6 which aims to achieve clean water and sanitation for all. Debbie highlighted how water has interactions with almost every aspect of sustainable development. She discussed the work of GEMS/Water in encouraging and supporting water quality monitoring by the development of the SDG 6.3.2 indicator methodology, the support given to countries to use this indicator to determine water quality and the delivering of online and *in-situ* training courses. Thank you to the organisers and attendees for a very interesting webinar.



### Citizen Science Monitoring for SDG Indicator 6.3.2

Stuart contributed to a paper about citizen science monitoring for the Sustainable Development Goal (SDG) Indicator 6.3.2 in England and Zambia. This came about through collaboration with

Earthwatch Europe and Water Resources Management Authority (WARMA) Zambia. The paper explores how citizen science and regulatory monitoring can work together to provide data for SDG6.

The full reference to the publication is below and you can find the paper [here](#).

Bishop, I.J., Warner, S., van Noordwijk, T.C.G.E., Nyoni, F.C. and Loiselle, S., 2020. Citizen Science Monitoring for Sustainable Development Goal Indicator 6.3.2 in England and Zambia. *Sustainability*, 12, 10271.

### World Water Quality Alliance Capacity Development Consortium

Under the umbrella of the [World Water Quality Alliance](#), the Capacity Development Centre together with the GPCU in Nairobi, initiated the formation of a Capacity Development Consortium early in 2020. The Consortium aims to increase the scope and global coverage of capacity development for water quality monitoring and management through collaboration in a platform which links providers and recipients for education, training, advice and support. The second virtual meeting of potential members of the Consortium was held in July at which Deborah Chapman presented the results from a survey of interests, activities and the potential for collaboration with 28 different organisations globally. Representatives of these organisation attended a further meeting in November at which the operation of the consortium was discussed, including terms of reference and criteria for membership. These will be finalised in December so that the Consortium can become operational early in 2021.



### SDG Indicator 6.3.2

The 2020 data drive for Sustainable Development Goal (SDG) Indicator 6.3.2 is drawing to a close. The planned *in situ* training and workshops for this second data drive were cancelled due to the pandemic. However, this did not deter our water sector colleagues all over the world. They engaged with us through online calls to discuss the methodology and how to apply it to their available water quality data. Many countries made a huge effort to report for the indicator despite the challenges they faced this year in particular. We, along with our colleagues in the GEMS/Water Data Centre and UNEP's Freshwater Ecosystems Unit, are very grateful to everyone that participated in this data drive. The country submissions are now being analysed and the SDG indicator progress report will be written over the coming months. The deadline for submissions that will be included in the preliminary analysis has passed, but if you wish to report for your country there is still time.

Our support platform is packed with information about the indicator and about freshwater quality monitoring in general, especially for the generation of good quality data for this indicator - <https://communities.unep.org/display/sdg632/Documents+and+Materials> .

You can contact us about reporting at the helpdesk: [SDG632@un.org](mailto:SDG632@un.org).

**Technical Support Information**

*This section provides a series of technical guidance documents and tutorials on challenging aspects of the methodology.*

	English	Français	Español	русский	عربي	中文
Monitoring Programme Design Document						
Monitoring Programme Design Presentation				недоступен	غير متوفرة	不可用
Target Values Document						
Target Values Presentation				недоступен	غير متوفرة	不可用
Monitoring and Reporting on Groundwater Document						
Monitoring and Reporting on Groundwater Presentation				недоступен	غير متوفرة	不可用
Level 2 Monitoring Document						
Level 2 Monitoring Presentation				недоступен	غير متوفرة	不可用

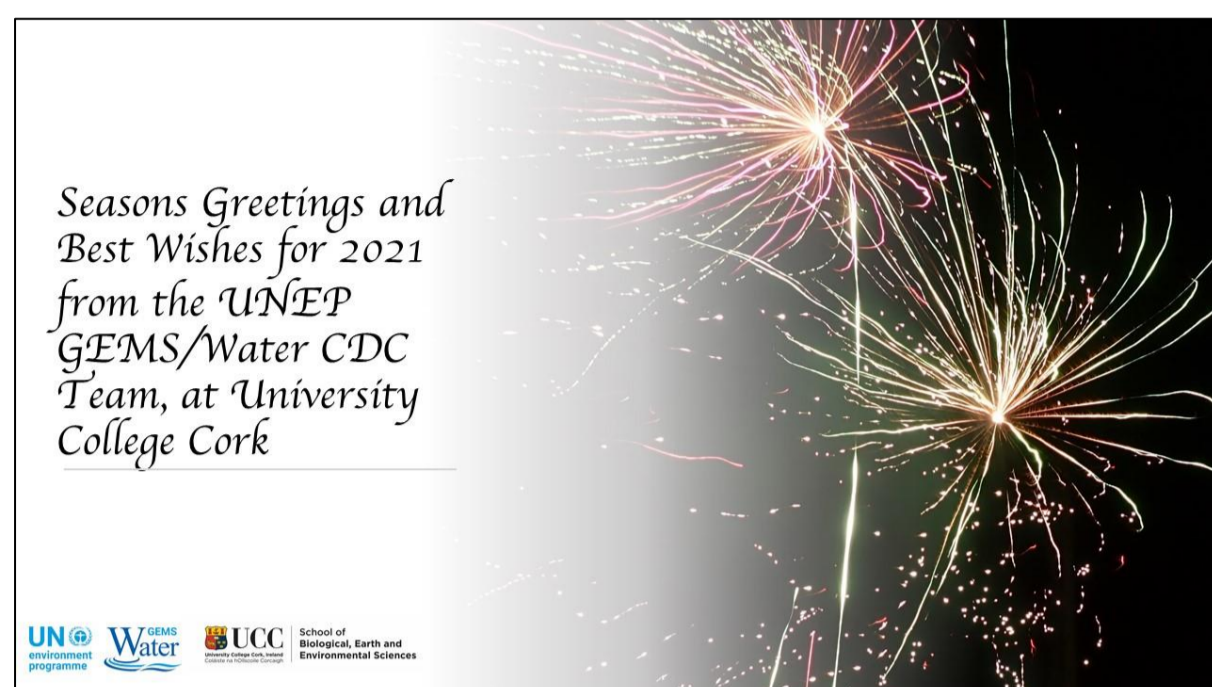
**A glimpse of the many resources available on the support platform in many languages.**



That brings us to the end of our December 2020 newsletter. We would like to wish you all a safe and peaceful end to the year. We are looking forward to the next phase of GEMS/Water and to working with you in 2021.

Keep an eye on our [Twitter](#) feed and [website](#) for the latest updates and further information.

GEMS/Water CDC team



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Our website address is:

<https://www.ucc.ie/en/gemscdc/>

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