



TROP ICSU Newsletter

July-August 2019

Climate Across the Curriculum:

Strengthening Collaborations, Fostering Engagements

TROP ICSU continues to establish strong collaborations with United Nations organizations and to foster new engagements with teachers and educators across the world.

In a significant and valuable boost to the project, on **1 August 2019**, a **Memorandum of Understanding** for collaboration on climate change education was signed between the [TROP ICSU project](#), represented by [the International Union of Biological Sciences \(IUBS\)](#), and [the World Meteorological Organization \(WMO\)](#), the United Nations system's specialized agency for meteorology (weather and climate), operational hydrology, and related geophysical sciences. On the occasion of the [33rd General Assembly and centenary year celebrations of IUBS](#) at Oslo, Norway, the collaboration between TROP ICSU and WMO was formally announced and cemented through the signing of an MoU between the two parties.

On **1 August 2019**, at the same event, a **new interactive and user-friendly website for TROP ICSU** was officially launched. The new website is now accessible at <https://climatescienceteaching.org>. This enhanced version of the digital repository for TROP ICSU educational resources has been developed in collaboration with [IMAGINARY](#) (a partner of the TROP ICSU project) and [Mathigon](#).

In other significant news, TROP ICSU had the opportunity to participate in the **United Nations High Level Political Forum 2019 (HLPF 2019)** on Sustainable Development at the **United Nations Headquarters** on **11 July 2019** in a three-hour joint session with the International Federation of Social Workers (IFSW)

for TROP ICSU to present the concept of encouraging and improving environment and climate action through the formal education system.

Other key project accomplishments since the last newsletter include **new lesson plans for teachers** in the Biological Sciences, Environmental Sciences, Economics, History, and Geography; **TROP ICSU workshops for teachers in France, India, and China**; and a short workshop at the [ASE Futures Conference 2019](#) in Sheffield, UK.

[New lesson plans](#)—including region-specific case studies and teacher-contributed ideas—on topics such as **Agrarian Civilizations: Agriculture in the Nile Basin** (History, Economics, Agriculture), **Himalayan Glaciers and Climate Change in Bhutan** (Geography, Earth Sciences), **Carbon Pricing: Shadow and Market Prices** (Economics), and **Photosynthetic Pathways and Physiological Responses to Climate Change** (Biological Sciences)—have been published on the TROP ICSU website.

The team continued its efforts to introduce the project and its educational resources to different audiences, seek feedback on the ease-of-use and effectiveness of the content, and invite contributions from teachers. A TROP ICSU workshop for teachers was conducted in **Orsay, France** on **28 June 2019** in collaboration with [Paris-Sud University \(Université Paris-Sud\)](#). In **Pune, India**, a workshop for teachers was organized on **29 June 2019** at [Vidya Valley School](#). Another workshop for teachers and educators was held in **Beijing, China** on **16 and 17 July 2019** with valuable support from the [Beijing Institute of Genomics, Chinese Academy of Sciences](#).

A detailed report of our earlier workshop in Tirupati, India has been published and is now available [here](#).

The TROP ICSU team is now collating and analyzing the feedback received from teachers, educators, and climate experts across the world. The new website is being updated and enhanced. New lesson plan ideas from experts in climate science, pedagogy, and various disciplines are being discussed, reviewed, and developed further as a step toward increasing the number of educational resources on our portal.

We hope you enjoy reading this edition of our newsletter.

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Memorandum of Understanding Between IUBS (lead partner of TROP ICSU) and WMO for Collaboration on Climate Change Education



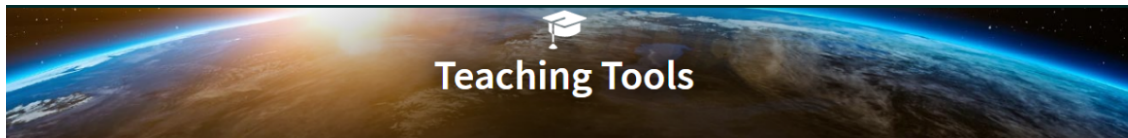
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Sustainable Development Goals (SDGs) of Quality Education (SDG 4) and Climate Action (SDG 13) and to enrich the implementation of the [One UN Climate Change Learning Partnership \(UN CC:Learn\)](#).

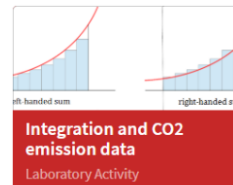
This formal agreement for partnership is a significant and key milestone in achieving TROP ICSU's goal of providing high-quality, scientifically accurate educational resources for teachers to integrate climate change education with existing curriculum of all disciplines including Science, Mathematics, Social Sciences, and Humanities.

TROP ICSU: New Interactive and User-Friendly Website



DISCIPLINE

- ☐ Biology
- ☐ Chemistry
- ☐ Cognitive Psychology
- ☐ Earth Sciences
- ☐ Economics
- ☐ Environmental Sciences
- ☐ Geography
- ☐ Humanities
- ☐ Mathematics
- ☐ Neuroscience
- ☐ Physics
- ☐ Social Sciences



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Introduction to Climate Change

Special introductory lesson for teachers and all public with basic resources to understand the science and challenges of Climate Change.

All public •



Calculus and CO2 Emissions

Learn to solve calculus and tangent line problems using atmospheric CO2 data and the Greenhouse effect.

High School, Undergraduate • 120 min



Malaria and Human Health

Learn about Protozoa, vectors, vector-borne diseases, the Spread of Malaria and human health.

High School • 180 min

On 1 August 2019, on the occasion of the [33rd General Assembly and centenary year celebrations of the International Union of Biological Sciences \(IUBS\)](#) at Oslo, Norway, the new TROP ICSU website <https://climatescienceteaching.org> was formally launched. The interactive portal provides an enhanced user experience for teachers, educators, and learners through improved ease-of-use and accessibility. This digital repository for the TROP ICSU educational resources has been developed in collaboration with [IMAGINARY](#) (a partner of the TROP ICSU project) and [Mathigon](#).

In the coming months, the new website will continue to be updated with more content and new features.

The launch of the new website <https://climatescienceteaching.org> is an important step toward wider dissemination of the TROP ICSU teaching resources across the world.

TROP ICSU at the United Nations High Level Political Forum 2019 (HLPF 2019) on Sustainable Development



TROP ICSU participated in the **United Nations [High Level Political Forum 2019 \(HLPF 2019\)](#)** on Sustainable Development at the **United Nations Headquarters** on **11 July 2019** in a three-hour joint session with the International Federation of Social Workers (IFSW) and Harvard University. This session was titled "[Practices and Approaches on quality education towards environment and climate action](#)".

Session details are available [here](#) and the proceedings of the entire session can be viewed [here](#).

Representatives from the participating organizations brainstormed on (i) approaches that formal (curriculum, pedagogy, cross-disciplinary linkages) and informal (such as NGOs working at the grass-root level) education systems can adopt to promote transdisciplinary thinking essential for public understanding of the science of environmental degradation and climate change and (ii) ways to obtain feedback from the community to design environmentally just sustainable infrastructure at local levels and identify ways to reverse and mitigate climate change at global levels.

All session documentation, including the programme and concept note, details of the case study "Bamboo for Good (B4G)" from Uganda, and presentation slides can be accessed [here](#).

New Lesson Plans



Lesson Plan: Agrarian Civilizations: Agriculture in the Nile Basin

As a High School History or Economics or Agriculture teacher, you can use this set of computer-based tools to teach about the rise of agriculture and the concomitant rise of agrarian societies/civilizations. This lesson plan

[Read more.](#)



Lesson Plan: Major River Systems: Climate Change and the River Nile

As a High School Geography or Earth Sciences teacher, you can use this set of computer-based tools to teach about river systems, the important aspects of some of the major river systems and how they

[Read more.](#)

How might climate change affect Egypt's agricultural economy? What are the possible effects of climate change on glaciers and glacier lakes in various countries? How is carbon pricing used as an instrument for climate policy? How do climate-related factors affect photosynthetic efficiencies in C3 and C4 plants? Find out the answers and detailed guides for teaching these topics by exploring the latest lesson plans on our website:

- [Agrarian Civilizations: Agriculture in the Nile Basin](#) in **History, Economics, and Agriculture**
- [Major River Systems: Climate Change and the River Nile](#) in **Geography and Earth Sciences**
- [Impact of Climate Change on Circadian Rhythms and Sleep](#) in the **Biological Sciences, Environmental Sciences, and Health Sciences**
- [Himalayan Glaciers and Climate Change in Bhutan](#) in **Geography and Earth Sciences**
- [Ecosystems and Food Webs](#) in the **Biological Sciences and Environmental Sciences**
- [Carbon Pricing: Shadow and Market Prices](#) in **Economics**
- [Ecological Niches and Biogeography: Mountain Gorillas, Bamboo and Climate](#) in the **Biological Sciences and Environmental Sciences**
- [Photosynthetic Pathways and Physiological Responses to Climate Change](#) in the **Biological Sciences**

lesson plans [here](#).

To contribute to our set of teaching resources, write to us at tropicsu@iubs.org.



TROP ICSU Workshop for Teachers in Orsay, France

Summary of the Workshop

A one-day TROP ICSU workshop for teachers, "**Enseignement et Changement Climatique**," was conducted in collaboration with [Paris-Sud University \(Université Paris-Sud\)](#) in Orsay, France, on June 28, 2019.

Participant Feedback and Reactions

Overall, the teachers and educators found the workshop content and activities to be useful and relevant. They provided valuable feedback on the TROP ICSU educational resources, including suggestions on ensuring the objectivity of the

French and was attended by 21 teachers of high school and undergraduate levels from various disciplines such as Physics, Biology, Chemistry, Languages, English for Scientists, and Earth Sciences.

The TROP ICSU team provided an introduction to the project and its teaching resources. Next, the participants worked in groups to review and provide feedback on the [teaching tools](#) and [lesson plans](#) from the TROP ICSU website.

Although a severe heat wave on that day threatened to sap everyone's energy, the teachers participated enthusiastically in the workshop activities and provided valuable feedback.

Participants said:

"Pour adapter ces outils et plans de cours à l'enseignement français, il faudrait rajouter les problématiques puis donner les objectifs pédagogiques au début."

"... il faut vraiment tester les divers outils proposés afin d'être assurés de pouvoir les réinvestir en classe en toute objectivité."

"... j'ai apprécié les échanges avec les collègues de différentes disciplines et ai pu recueillir auprès d'eux des pistes et des idées exploitables dans mes cours."

"Plus d'activités interactives pour les étudiants"





TROP ICSU Workshop for Teachers in Pune, India

Summary of the Workshop

A one-day TROP ICSU workshop for teachers, “**Climate Across the Curriculum: Educational Resources for Teachers**” was held in collaboration with [Vidya Valley School](#) in Pune on June 29, 2019.

Thirty-four teachers from the school attended this workshop. These participants teach a range of disciplines in the Sciences (Physics, Chemistry, Biology, Computer Science, Mathematics), the Social Sciences (History, Geography, Civics), and Languages (Hindi, Marathi, English and French) for grade levels 3 to 10.

In the workshop, teachers were introduced to the TROP ICSU project and participated in several interactive group activities including

Participant Feedback and Reactions

Overall, the participants found the workshop content to be useful and the activities to be effective in demonstrating the use of climate-related examples to teach topics in various disciplines. They also appreciated the introduction to effective digital pedagogy. Teachers requested the addition of teaching resources for primary and middle school instruction.

Participants said:

"Excellent workshop please add primary curriculum it will be a great help for the students."

"Hands on Activities to be included"

"Would like to see more material that can be used for the teaching of"

creation of new lesson plan frameworks for their classroom instruction.



TROP ICSU Workshop for Teachers in Beijing, China

Summary of the Workshop

A TROP ICSU workshop, “**Climate Across the Curriculum: Educational Resources for Teachers**” was held in Beijing, China on July 16 and 17, 2019 with valuable support from the [Beijing Institute of Genomics, Chinese Academy of Sciences](#).

Participant Feedback and Reactions

The teachers provided positive feedback about the workshop content and activities. They found the educational resources for climate change to be useful and relevant. They worked in groups to create new lesson plan frameworks or to customize existing teaching

and undergraduate-level teachers) attended this workshop. The participants were from various disciplines such as Biology, Chemistry, Physics, Geography, and Science and Technology Education.

The TROP ICSU team presented the project and its resources. Then, participants worked in discipline-based groups to review the existing teaching resources and to develop new lesson plan ideas.

Participants said:

"The teaching objectives should be based on syllabus published by authorities."

"Two days of study have taught us how to lead students to study common topics from different disciplines, to acquire the rich resources needed for interdisciplinary research and to carry out new approaches to instructional design."



TROP ICSU at the ASE Futures Conference 2019 in Sheffield, UK

TROP ICSU participated in the [ASE Futures Conference 2019](#) in Sheffield, UK. A short workshop, "Climate Across the Curriculum," was held in the afternoon on 5 July 2019.

This workshop, a "post-16" session (other sessions were "primary," "secondary," or "all"), was attended by high-level science educators. The workshop, facilitated by our partner the International Union of Geological

researching the TROP ICSU website and its resources. This was followed by a discussion in which participants provided their feedback.

Participants greatly appreciated the immense time and effort invested in researching, collating, and curating the tools related to climate change available across the world and in making these available on the TROP ICSU website. They recommended choosing a few tools and demonstrating/studying the use of each tool in a classroom as a case study. They recognized the importance of the TROP ICSU initiative and discussed ways in which it could be brought to the attention of schools and teachers as effectively as possible.

The TROP ICSU team is grateful to our project partner from IUGS for facilitating the workshop and sharing a brief report of the session.

Around the Web: Climate-related Educational Resources

Educational Resources for Topics in Climate and Energy

[Collection of Climate and Energy Educational Resources](#), from the Climate Literacy & Energy Awareness Network (CLEAN)

Teaching Module on Climate Change and Water

[Climate Change is About... Water](#), from The Democracy Center



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