

## Greetings from GTAP-Central!

### Message from the Director



Dominique van der Mensbrugge  
Research Professor  
Director of GTAP

The Covid-generated turbulence, exacerbated by the war in Ukraine and the violence in the Middle East, has contributed to an uncertain outlook for the global economy. Though inflation is abating in much of the world, much higher interest rates, after a long period of low rates, is impacting global investment and the fiscal sustainability of highly-indebted economies. The reshaping of global value chains adds further uncertainty about global trade and investment. Over 70,000 persons gathered in Dubai for COP28, but greenhouse gas emissions continue to climb, and throughout 2023 we witnessed excessive temperatures in many parts of the world and other extreme weather events. This rather depressing picture is complemented with more positive news—we will probably avoid a significant global downturn despite the high interest rates. In addition, ‘clean’ technologies continue to take market share from carbon-based technologies.

We are grateful for the significant contributions of the GTAP Network in providing insights and policy advice in these areas and many others. In support of your work, allow me to highlight some of the Center’s most important achievements in 2023:

- Version 11 of the GTAP Data Base was released to the public in April. Beyond the additional 2017 reference year, which extends the GTAP time series to more than a decade, the latest version includes an additional 20 countries—many from Africa—, updates to the input-output data for 39 additional countries, and a number of other improvements including improved estimates of greenhouse gas emissions and agricultural production targeting. The database documentation is available on the [GTAP website](#), and a summary description of the new version was published in December 2022 issue of the *Journal of Global Economic Analysis* (JGEA). Note that there have been some additional database releases since April. These include minor adjustments based on comments received from GTAP users.
- The Center has started work on GTAP 12, with an anticipated pre-release for the GTAP Advisory Board in mid-2024. Beyond the usual updating of the input data, version 12 will have a new 2019 reference year.
- The Center produced a nutrition database linked to the standard GTAP Data Base based on the FAO’s Food Balance Sheets. A description of the initial version linked to GTAP 10 was published in the *JGEA* and release of a version for GTAP 11 is imminent. This work is now being extended to account for food losses along the value chain, which will be available in 2024.

- Work is continuing on other data modules: (1) the work on the ‘circular’ economy will be extended to include so-called ‘critical’ minerals (e.g., lithium) and their downstream uses (e.g., batteries)—an important area of research as we transition towards a ‘net-zero emission’ economy; (2) biofuels; and (3) a more complete rendering of the balance of payments accounts and domestic savings.
- Work is ongoing to develop an integrated assessment version of the GTAP Model, GTAP-IAM, which will integrate the energy, power and land use versions of the GTAP Model into the recursive dynamic framework and will include a climate change and damages module.
- The Integrated Assessment Modeling (IAM) community is close to finalizing an update of the Shared Socio-Economic Pathways (SSPs). The demographic projections from the Wittgenstein Centre based at IIASA have been updated, as well as the IIASA-based GDP projections. The OECD-based GDP projections are scheduled to be released by the end of 2023. Once finalized, the Center will prepare a GTAP-compatible version of the updated SSPs.
- The Center has published two more issues of the highly ranked, peer-reviewed *Journal of Global Economic Analysis* (JGEA) and has also continued its quarterly *virtual seminar series*, based on these publications.

In 2023, the Center worked on a number of research projects. Last year’s letter mentioned the circular economy study focused on buildings. The final report, was published in October by the International Finance Corporation, entitled “Building Green: Sustainable Construction in Emerging Markets.” As part of an AgMIP-based multi-model comparison project, we are quantifying the economic and environmental impacts of a transition to more sustainable diets for the *EAT-Lancet Commission on Food, Planet, Health*. The Center was awarded a major USDA NIFA grant to look at sustainable livestock production, which will have payoffs for the broader GTAP community as a large component of the project involves improving the livestock and meat data in the GTAP Data Base. We are also continuing work on waste and nutrition, new energy technologies and their interactions with the agricultural sector and sub-regional modeling with the GTAP Model. The GLASSNET project spearheaded by Tom Hertel, with a focus on multi-disciplinarity and global-to-local-to-global linkages, produced a special issue of the journal *Environmental Research Letters*, on “Managing the Global Commons: Sustainable Agriculture and Use of the World’s Land and Water Resources in the 21st Century” and is preparing a book on the gridded version of the SIMPLE model: SIMPLE-G. GTAP-U will be offering a SIMPLE-G short course in April/May of 2024.

With Covid under control, we were able to return to a normal program for our courses and conference. For the standard and dynamic GTAP Short Courses, after an initial online component, participants traveled to Purdue for the final week—to engage in hands-on lab sessions, interact directly with fellow participants, and to present summary conclusions of their projects. The GTAP 101 Course was held twice—in its standard online format. The course was also fully converted to v7 of the GTAP Model. The Center has also developed a web-based application to facilitate creation of new courses in the GTAP-U universe. Those who would like to propose a course are encouraged to fill out a proposal. For specifics on our regular 2024 course offerings, please review the GTAP-U section below. Potential students should monitor the GTAP website, GTAP-L Mailing List, and GTAP social media for additional information.

It was a great relief and pleasure to finally have an in-person venue for the 2023 Annual Conference on Global Economic Analysis. The conference was held in Bordeaux, France, co-hosted with the Université de Bordeaux, at their central campus in the historic part of the city—and included a memorable dinner cruise on the Garonne River and an after-conference visit to Saint Emilion in the heart of wine country. During the 2023 conference, the Center was very pleased to award the 2023 Alan A. Powell Award to Ralf Peters, Chief of the Trade Information Section and Trade Analysis Branch, Division on International Trade in Goods and Services, and Commodities at the United Nations Conference on Trade and Development (UNCTAD). Ralf has been a long-time member of the GTAP Network and has been a valued board member since 2014. We have been working with Ralf and his team to develop a publicly available satellite database on non-tariff measures (NTMs).

This year, two prominent researchers were added to the GTAP Hall of Fame—Lionel Fontagné, Professor at Paris I and Scientific Advisor at the Centre d’Etudes Prospectives et d’Information Internationale, and Marijke Kuiper, Strategic Senior Scientist in the International Policy Department at Wageningen Economic Research. Both have made substantial contributions over many years to international economic modeling and the GTAP Network. In addition, three well-known members of the GTAP Network were selected to be Research Fellows for the period: 2023-2026: Amanda Countryman (Colorado State University), Justin Johnson (University of Minnesota) and Florian Schiffmann (Centre of Policy Studies, Victoria University). The Wallace E. Tyner Award, created in Wally’s name to honor his legacy doing interdisciplinary research, was awarded to Roshen Fernando (The Australian National University) and Dominic White (Auckland University of Technology). The Ken Pearson Award was given to Giovani Gianetti (Universidade de Sao

Paulo), and the Alex Meeraus / Thomas Rutherford Award was given to [Nyambaatar Batbayar](#) (Economic Research Institute, Ulaanbaatar) and [Laura Schürer](#) (University of Oldenburg).

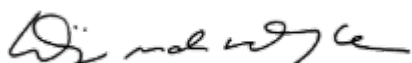
Looking ahead, the [2024 Annual Conference](#) will be held 5-7 June 2024 in Fort Collins, Colorado in partnership with Colorado State University. Please remember to [submit](#) your abstracts and organized session proposals by 15 January! Also note that [registration](#) is now open to facilitate the processing of U.S. visas for those who will need one. You can also mark your calendar for the 2025 conference to be held in Kigali, Rwanda, co-hosted with the United Nations Economic Commission for Africa, 25-27 June 2025.

As the GTAP Network continues to grow, with over 28,000 members in 179 countries, we encourage you to follow GTAP on [social media](#) and to visit the [GTAP website](#), which contains news about the network, upcoming events and courses, and an ever-increasing number of papers and references of critical importance to our research and work. We also encourage you to update your profile and submit your papers, programs, and tips for exploiting the database and enhancing our models.

The Center anticipates some changes in 2024. I have decided to step down next summer, after 10 years of service as Director of the Center. It has been a great pleasure and honor to lead the Center over the past decade and I believe it continues to stand on solid footing for the next Director. We are also assessing the opportunity to open a European-based hub—an old idea that has been revived. We are still in the early stages of the proposed project but will provide a status update at the 2024 conference.

We appreciate the efforts of all in the GTAP Network as we work together to make the world a better place. We will continue to lean on you to improve the products and services that facilitate your work. With these hopes, allow me to extend best wishes for a healthy, happy and productive 2024 from the Center for Global Trade Analysis at Purdue University.

Warm regards,



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## GTAP Data Base

The centerpiece of the Global Trade Analysis Project is the [GTAP Data Base](#), a fully documented, publicly available global database containing complete bilateral trade information, transport and protection linkages. The GTAP Data Base represents the world economy and is utilized by thousands worldwide as a key input into most applied general equilibrium (AGE) analysis of global economic issues.



**GTAP 11 Data Base**  
New & Updated  
Features

5 Reference  
**YEARS**

2004 2007  
2017  
2011 2014



The Center for Global Trade Analysis released the [GTAP 11 Data Base](#) in April. This latest version reflects five reference years (2004, 2007, 2011, 2014, and 2017), with the global economy described by 160 regions (141 individual countries and 19 aggregate regions). The individual countries account for 99% of Global Gross Domestic Product and 96% of global population. Relative to version 10, there has been an increase of 20 individual countries, mainly from Central Africa, which caused the reduction of aggregate regions from 20 to 19. In addition, 39 input-output tables were also updated during the GTAP 11 cycle.

In GTAP 11, agricultural production targeting complements OECD's Producer Support Estimates with UN's Food and Agriculture Organization (FAO) data. GTAP 11 also consider energy subsidies and updates the sourcing of services trade data. Furthermore, we introduce refinements to the processing of energy, CO<sub>2</sub> and non-CO<sub>2</sub> emissions, plus the addition of CO<sub>2</sub> emissions from non-combustion energy use.

Further details and documentation on GTAP 11 are provided at the [GTAP website](#) and its summary was published in the December 2022 issue of the *Journal of Global Economic Analysis* (JGEA).

Since it was first released, revisions have been made to GTAP 11 during the year. In turn, these improvements need to be accounted for in extensions such as: GTAP-E, Power and emissions. In the latest release, we have also included the nutrition accounts based on FAO's food and balance sheets, a description of which was published in the [JGEA](#).

The following satellite and extensions will be released next year: International Migration (GMIG2), Dynamic (GDYN), Multi Region Input Output (GTAP-MRIO), Land Use and Cover (GTAP-AEZ), and Bilateral time-series trade data. When available, notification about the public release of GTAP 11 extensions will be emailed to all subscribers, as well as the [GTAP-L Mailing List](#), and posted on GTAP's [social media](#).

## GTAP Research

The GTAP [Working Paper](#) and [Research Memoranda](#) Series report research in progress by Center for Global Trade Analysis staff which is of potential relevance to the broader GTAP community. The following pieces were added in the past year.

### [Using Python for Parallelization](#)

by Dominique van der Mensbrugge  
GTAP Working Paper No. 93

### [A Summary Guide to the Latin Hypercube Sampling \(LHS\) Utility](#)

by Dominique van der Mensbrugge

**The META 21 Integrated Assessment Model in GAMS and LHS Sampling**

by Dominique van der Mensbrugge

GTAP Working Paper No. 95



The *Journal of Global Economic Analysis* provides an open access, peer-reviewed platform for publication and dissemination of innovations in applied general equilibrium (AGE) modeling, publishes developments in theory, data, statistical analysis, methods, and teaching, enhances the credibility of AGE modeling by requiring replication of results during the peer-review process and, when possible, publication of new model code and data on the journal's website, and builds on and extends the high-impact, peer-reviewed GTAP Technical Paper Series.

**Vol 8, No 1 (2023)**

***Advances in Software***

**GEMPACK simulations in R**

Maros Ivanic

**A Latin Hypercube Sampling Utility: with an application to an Integrated Assessment Model**

Dominique van der Mensbrugge

***Advances in Methods and Theory***

**Calibrating Constant Elasticity of Substitution Technologies to Bottom-up Cost Estimates**

Edward Balistreri, Maxwell Brown

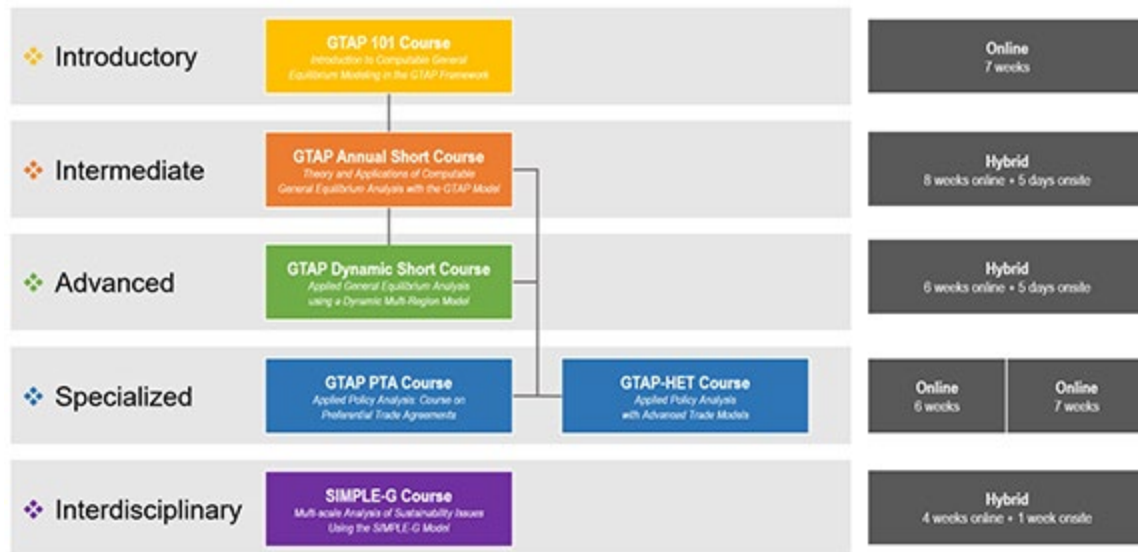
**Vol. 8 No. 2 (2023)**

*Coming Soon!*

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## GTAP-U Educational Offerings

GTAP-University (GTAP-U) is the formal education initiative of the Global Trade Analysis Project and builds on the Center for Global Trade Analysis' decades of teaching experience in the field of global economic analysis. The goal of GTAP-U is to expand access and improve educational and career opportunities for students and professionals, worldwide.



## 2024 Course Schedule

### 2024-1 GTAP 101 Course

*"Introduction to Computable General Equilibrium Modeling in the GTAP Framework"*

Online Course

March 18 - May 5, 2024 (Apply by December 31)

### 2024 SIMPLE-G Short Course

*"Multi-Scale Analysis of Sustainability"*

Hybrid Course (Online + Residential phase at Purdue University)

April 1 - May 3, 2024 (Applications closed)

### 31<sup>st</sup> Annual Short Course in Global Trade Analysis

*"Theory and Applications of Computable General Equilibrium Analysis with the GTAP Model"*

Hybrid Course (Online + Residential phase at Purdue University)

June 3 - August 9, 2024 (Apply by January 7)

### 2024-2 GTAP 101 Course

*"Introduction to Computable General Equilibrium Modeling in the GTAP Framework"*

Online Course

September 2 - October 20, 2024 (Apply March 11 - June 16)



**Calling all esteemed academicians and professionals in the field of economics!**

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**Are you interested in partnering with GTAP-U to develop and offer a course?**

The Center for Global Trade Analysis is thrilled to invite you to become part of GTAP's online course platform, dedicated to fostering excellence in teaching global economic analysis and computable general equilibrium (CGE) models.

We understand the unique challenges instructors face when developing and delivering online courses, which is why we have streamlined the course development and delivery process to offer comprehensive support at every step of the way. From initial concept to polished delivery, the GTAP-U platform provides you with the tools and guidance you need to create an engaging and impactful learning experience that reflects your unique teaching style. As a GTAP-U instructor, you will be part of a vibrant community of like-minded professionals, engage in meaningful discussions, share insights, and collaborate with peers from around the globe.

For more information, please visit: [www.gtap.org/events/gtap-u/](http://www.gtap.org/events/gtap-u/).

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## GTAP Events

Many participants remark that a highlight of GTAP events is the opportunity to get to know other members of the GTAP research community and form collaborative research relationships.

### 2024 Event Schedule

#### **GTAP Advisory Board Meeting**

In-person Meeting (Fort Collins, Colorado, USA)

June 3-4, 2024

#### **27<sup>th</sup> Annual Conference on Global Economic Analysis**

*"Enhancing Global Food System Sustainability"*

In-person Conference (Fort Collins, Colorado, USA)

June 5-7, 2024 (*Submissions due January 15, Registrations due April 15*)

#### **GTAP Virtual Seminar Series**

Online Seminars (check website for quarterly schedule)

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Follow GTAP on social media!

