Matthew J. Gidden, Ph.D.

CONTACT INFORMATION

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CITIZENSHIP

USA

RESEARCH INTERESTS

Climate change mitigation and policy, integrated assessment models, sustainable development, carbon-free energy system transformation, scientific computation

EDUCATION

PH.D., *Nuclear Engineering*, **University of Wisconsin - Madison** **March 2015**
- An Agent-Based Modeling Framework and Application for the Generic Nuclear Fuel Cycle
- Advisor: Professor Paul P.H. Wilson

MASTERS, *Nuclear Engineering*, **University of Wisconsin - Madison** **December 2011**

B.S., *Nuclear Engineering*, **Texas A&M University** **May 2009**
- *Summa cum Laude*, With Honors in Engineering
- Minor in Mathematics

PROFESSIONAL EXPERIENCE

Climate Analytics, Berlin, GER **Sept 2019 – Present**
Team Leader Modelling & Mitigation Pathways Analysis
Co-lead a team of over 30 policy analysts, energy and climate scientists, and modellers; lead research, flagship projects, and reports related to climate chage mitigation; lead modelling and temperature quantifications of the Climate Action Tracker; support negotiators from SIDS and LDCs in UNFCCC processes.

International Institute for Applied Systems Analysis, Laxenburg, AUT
Guest Research Scholar, Energy Group **Sept 2019 – Present**
Research Scholar, Energy Group **Oct 2015 – Oct 2019**
Develop and use MESSAGEix-GLOBIOM, a global Integrated Assessment Model, to perform large-scale comprehensive climate mitigation and sustainable development analyses; develop common tools and procedures used by the global IAM community; perform GIS-based spatial modeling and analysis.

University of Wisconsin, Madison, WI, USA **Apr – Oct 2015**
Postdoctoral Researcher, Nuclear Engineering Department
Investigated novel methods for modeling recycle fuel fabrication in NFC simulations.

University of Wisconsin, Madison, WI, USA **Aug 2010 – Mar 2015**
Graduate Research Assistant, Nuclear Engineering Department **Aug 2009 – Jan 2010**
Developed and extended the Cyclus NFC simulator to model generic nuclear fuel cycles.

AREVA, Paris, FRA **Feb – Jul 2010**
Research Intern (Stagiaire), Core Design Group
Simulated and analyzed a boron dilution accident in multiple reactor configurations using MCNP.

Pacific Northwest National Lab, Richland, WA, USA **Jun – Aug 2009**
Research Assistant
Analyzed a design of an automated verification unit for canisters of enriched UF_6 using MCNP.

TN International (AREVA), Montigny-le-Bretonneux, FRA **Jun – Aug 2008**
Research Intern, Materials Group

Analyzed material suitability for nuclear cask shock absorber via dynamic compression testing.

Oak Ridge National Lab, Oak Ridge, TN, USA **Jun – Aug 2007**
Research Assistant **Jun – Aug 2006**
Tested the collimation of radiation portal monitors for use with the U.S. Megaports Initiative.

Select Project Leadership

Climate Action Tracker **2017 – Present**

I lead the emissions quantification and temperature quantification team for the Climate Action Tracker. These systems allow for both the estimation of current country trajectories as well as the assessments of needed progress from both a lens of equitable action as well as technical and economic feasibility.

1.5°C Pathways **2017 – Present**

I lead a team of modellers and analysts developing country and sector-specific pathways that reach the Long-term Temperature Goal of the Paris Agreement. Custom down-scaled transition pathways are developed using novel modelling and quantification techniques and are then iterated on through collaborative stakeholder engagement.

Integrated Assessment Modelling Development **2017 – 2019**

I led a team of more than five scientists tasked with the development and maintenance of the IAM MESSAGEix-GLOBIOM and related tools. In my role, I directed team members' efforts in critical feature additions and model developments to both our global model as well as individual country models which has facilitated the publication of a number of manuscripts in high-impact journals. Additionally, I reviewed the work of team members and set goals for future work.

Coupled Model Intercomparison Project Phase 6 **2016 – 2019**

During a three-year project, I managed an international scientific team of more than ten scientists across five institutes in order to deliver emissions scenarios for use in CMIP6. These results were delivered on time in order facilitate the latest round of Earth System Model experiments in order to further global scientific understanding of the uncertainty and impacts of climate change.

Scientific Computing Skills

I have deep and broad software development skills and experience. I help maintain and manage a number of open source scientific software packages including MESSAGEix, pyam, aneris, Cyclus, and PyNE.

Primary Languages	Python, C++/C
Other Languages	R, Java, Matlab
Optimization	pyomo, GAMS
Build Systems	CMake, Make, Autoconf/Automake
Version Control	Git
Tools	LaTeX, Doxygen, Jekyll, JSON, Sphinx, XML
Database Formats	SQL, HDF5, NetCDF
Test Frameworks	GoogleTest, PyTest, Nose
Other Applications	Jupyter (Notebooks, Slides, etc.)

JOURNAL PUBLICATIONS

[1] Andrijevic, M., Schleussner, C.-F., **Gidden, M. J.**, McCollum, D. L., Rogelj, J., "COVID-19 recovery funds dwarf clean energy investment needs.," *Science (New York, N.Y.)*, vol. 370, no. 6514, pp. 298–300, 2020, ISSN: 1095-9203. DOI: 10.1126/science.abc9697. [Online]. Available: https://science.sciencemag.org/content/370/6514/298http://www.ncbi.nlm.nih.gov/pubmed/33060353

[2] Forster, P. M., Forster, H. I., Evans, M. J., **Gidden, M. J.**, Jones, C. D., Keller, C. A., Lamboll, R. D., Quéré, C. L., Rogelj, J., Rosen, D., Schleussner, C. F., Richardson, T. B., Smith, C. J., Turnock, S. T., "Current and future global climate impacts resulting from COVID-19," *Nature Climate Change*, vol. 10, no. 10, pp. 913–919, 2020, ISSN: 17586798. DOI: 10.1038/s41558-020-0883-0. arXiv: arXiv:1011.1669v3. [Online]. Available: file:///C:/Users/User/Downloads/fvm939e.pdfhttps://doi.org/10.1038/s41558-020-0883-0

[3] Fyson, C. L., Baur, S., **Gidden, M.**, Schleussner, C.-f., "Fair-share carbon dioxide removal increases major emitter responsibility," *Nature Climate Change*, 2020, ISSN: 1758-678X. DOI: 10.1038/s41558-020-0857-2. [Online]. Available: http://dx.doi.org/10.1038/s41558-020-0857-2http://www.nature.com/articles/s41558-020-0857-2

[4] Roelfsema, M., Soest, H. L., Harmsen, M., Vuuren, D. P., Bertram, C., Elzen, M. G. J., Hoohne, N., Iacobuta, G., Krey, V., Kriegler, E., Luderer, G., Riahi, K., Ueckerdt, F., Despres, J., Drouet, L., Emmerling, J., Frank, S., Fricko, O., **Gidden, M. J.**, Humpenoder, F., Huppmann, D., Fujimori, S., Fragkiadakis, K., Gi, K., Keramidas, K., Koberle, A., Reis, L. A., Rochedo, P. R., Schaeffer, R., Oshiro, K., Vrontisi, Z., Chen, W., Iyer, G. C., Edmonds, J., Kannavou, M., Jiang, K., Mathur, R., Safonov, G., Vishwanathan, S. S., "Taking stock of national climate policies to evaluate implementation of the Paris Agreement," *Nature Communications*, vol. 11, no. 2096, pp. 1–12, 2020

[5] Daioglou, V., Rose, S. K., Bauer, N., Kitous, A., Muratori, M., Sano, F., Fujimori, S., **Gidden, M. J.**, Kato, E., Keramidas, K., Klein, D., Leblanc, F., Tsutsui, J., Wise, M., Vuuren, D. P., "Bioenergy technologies in long-run climate change mitigation: results from the EMF-33 study," *Climatic Change*, vol. 163, no. 3, pp. 1603–1620, 2020, ISSN: 1573-1480. DOI: 10.1007/s10584-020-02799-y. [Online]. Available: https://doi.org/10.1007/s10584-020-02799-y

[6] Zhou, W., McCollum, D. L., Fricko, O., Fujimori, S., **Gidden, M.**, Guo, F., Hasegawa, T., Huang, H., Huppmann, D., Krey, V., Liu, C., Parkinson, S., Riahi, K., Rafaj, P., Schoepp, W., Yang, F., Zhou, Y., "Decarbonization pathways and energy investment needs for developing asia in line with 'well below' 2°c," *Climate Policy*, vol. 20, no. 2, pp. 234–245, 2020. DOI: 10.1080/14693062.2020.1722606. eprint: https://doi.org/10.1080/14693062.2020.1722606. [Online]. Available: https://doi.org/10.1080/14693062.2020.1722606

[7] Meinshausen, M., Nicholls, Z. R. J., Lewis, J., **Gidden, M. J.**, Vogel, E., Freund, M., Beyerle, U., Gessner, C., Nauels, A., Bauer, N., Canadell, J. G., Daniel, J. S., John, A., Krummel, P. B., Luderer, G., Meinshausen, N., Montzka, S. A., Rayner, P. J., Reimann, S., Smith, S. J., Berg, M., Velders, G. J. M., Vollmer, M. K., Wang, R. H. J., "The shared socio-economic pathway (ssp) greenhouse gas concentrations and their extensions to 2500," *Geoscientific Model Development*, vol. 13, no. 8, pp. 3571–3605, 2020. DOI: 10.5194/gmd-13-3571-2020. [Online]. Available: https://gmd.copernicus.org/articles/13/3571/2020/

[8] Feng, L., Smith, S. J., Braun, C., Crippa, M., **Gidden, M. J.**, Hoesly, R., Klimont, Z., Marle, M., Berg, M., Werf, G. R., "The generation of gridded emissions data for cmip6," *Geoscientific Model Development*, vol. 13, no. 2, pp. 461–482, 2020. DOI:

10.5194/gmd-13-461-2020. [Online]. Available: https://gmd.copernicus.org/articles/13/461/2020/

[9] Muratori, M., Bauer, N., Rose, S. K., Wise, M., Daioglou, V., Cui, Y., Kato, E., **Gidden, M.**, Strefler, J., Fujimori, S., Sands, R. D., Vuuren, D. P., Weyant, J., "EMF-33 insights on bioenergy with carbon capture and storage (BECCS)," *Climatic Change*, vol. 163, no. 3, pp. 1621–1637, 2020, ISSN: 1573-1480. DOI: 10.1007/s10584-020-02784-5. [Online]. Available: https://doi.org/10.1007/s10584-020-02784-5

[10] Aboumahboub, T., Brecha, R. J., Shrestha, H. B., Fuentes, U., Geiges, A., Hare, W., Schaeffer, M., Welder, L., **Gidden, M. J.,** "Decarbonization of Australia ' s Energy System : Integrated Modeling of the Transformation of," *Energies*, vol. 13, no. 15, p. 3805, 2020. [Online]. Available: https://www.mdpi.com/1996-1073/13/15/3805

[11] **Gidden, M. J.**, Riahi, K., Smith, S. J., Fujimori, S., Luderer, G., Kriegler, E., Vuuren, D. P., Berg, M., Feng, L., Klein, D., Calvin, K., Doelman, J. C., Frank, S., Fricko, O., Harmsen, M., Hasegawa, T., Havlik, P., Hilaire, J., Hoesly, R., Horing, J., Popp, A., Stehfest, E., Takahashi, K., "Global emissions pathways under different socioeconomic scenarios for use in cmip6: A dataset of harmonized emissions trajectories through the end of the century," *Geoscientific Model Development*, vol. 12, no. 4, pp. 1443–1475, 2019. DOI: 10.5194/gmd-12-1443-2019. [Online]. Available: https://www.geosci-model-dev.net/12/1443/2019/

[12] Rogelj, J., Huppmann, D., Krey, V., Riahi, K., Clarke, L., **Gidden, M.**, Nicholls, Z., Meinshausen, M., "A new scenario logic for the Paris Agreement long-term temperature goal," *Nature*, vol. 573, no. 7774, pp. 357–363, 2019, ISSN: 1476-4687. DOI: 10.1038/s41586-019-1541-4. [Online]. Available: https://doi.org/10.1038/s41586-019-1541-4

[13] Zhou, W., McCollum, D., Fricko, O., **Gidden, M.**, Huppmann, D., Krey, V., Riahi, K., "A comparison of low carbon investment needs between china and europe in stringent climate policy scenarios," *Environmental Research Letters*, 2019. [Online]. Available: http://iopscience.iop.org/10.1088/1748-9326/ab0dd8

[14] **Gidden, M**, Huppmann, D., "Pyam: A python package for the analysis and visualization of models of the interaction of climate, human, and environmental systems," *Journal of Open Source Software*, vol. 4, no. 33, p. 1095, 2019

[15] Huppmann, D., **Gidden, M.**, Fricko, O., Kolp, P., Orthofer, C., Pimmer, M., Kushin, N., Vinca, A., Mastrucci, A., Riahi, K., Krey, V., "The messageix integrated assessment model and the ix modeling platform (ixmp): An open framework for integrated and cross-cutting analysis of energy, climate, the environment, and sustainable development," *Environmental Modelling & Software*, vol. 112, pp. 143 –156, 2019, ISSN: 1364-8152. DOI: https://doi.org/10.1016/j.envsoft.2018.11.012. [Online]. Available: http://www.sciencedirect.com/science/article/pii/S1364815218302330

[16] Parkinson, S., Krey, V., Huppmann, D., Kahil, T., McCollum, D., Fricko, O., Byers, E., **Gidden, M. J.**, Mayor, B., Khan, Z., Raptis, C., Rao, N. D., Johnson, N., Wada, Y., Djilali, N., Riahi, K., "Balancing clean water-climate change mitigation trade-offs," *Environmental Research Letters*, vol. 14, no. 1, p. 014 009, 2019. DOI: 10.1088/1748-9326/aaf2a3. [Online]. Available: https://doi.org/10.1088%2F1748-9326%2Faaf2a3

[17] Fiedler, S., Stevens, B., **Gidden, M.**, Smith, S. J., Riahi, K., Vuuren, D., "First forcing estimates from the future cmip6 scenarios of anthropogenic aerosol optical properties and an associated twomey effect," *Geoscientific Model Development*, vol. 12, no. 3, pp. 989–1007, 2019. DOI: 10.5194/gmd-12-989-2019. [Online]. Available: https://gmd.copernicus.org/articles/12/989/2019/

[18] Rao, N. D., Sauer, P., **Gidden, M.**, Riahi, K., "Income inequality projections for the Shared Socioeconomic Pathways (SSPs)," *Futures*, Aug. 2018, ISSN: 0016-3287. DOI: 10.1016/j.futures.2018.07.001. [Online]. Available: http://www.sciencedirect.com/science/article/pii/S001632871730349X

[19] Bauer, N., Rose, S. K., Fujimori, S., Vuuren, D. P., Weyant, J., Wise, M., Cui, Y., Daioglou, V., **Gidden, M. J.**, Kato, E., Kitous, A., Leblanc, F., Sands, R., Sano, F., Strefler, J., Tsutsui, J., Bibas, R., Fricko, O., Hasegawa, T., Klein, D., Kurosawa, A., Mima, S., Muratori, M., "Global energy sector emission reductions and bioenergy use: Overview of the bioenergy demand phase of the emf-33 model comparison," *Climatic Change*, 2018, ISSN: 1573-1480. DOI: 10.1007/s10584-018-2226-y. [Online]. Available: https://doi.org/10.1007/s10584-018-2226-y

[20] McCollum, D. L., Zhou, W., Bertram, C., Boer, H.-S., Bosetti, V., Busch, S., Després, J., Drouet, L., Emmerling, J., Fay, M., Fricko, O., Fujimori, S., **Gidden, M.**, Harmsen, M., Huppmann, D., Iyer, G., Krey, V., Kriegler, E., Nicolas, C., Pachauri, S., Parkinson, S., Poblete-Cazenave, M., Rafaj, P., Rao, N., Rozenberg, J., Schmitz, A., Schoepp, W., Vuuren, D., Riahi, K., "Energy investment needs for fulfilling the paris agreement and achieving the sustainable development goals," *Nature Energy*, 2018, ISSN: 2058-7546. DOI: 10.1038/s41560-018-0179-z. [Online]. Available: https://doi.org/10.1038/s41560-018-0179-z

[21] Grubler, A., Wilson, C., Bento, N., Boza-Kiss, B., Krey, V., McCollum, D. L., Rao, N. D., Riahi, K., Rogelj, J., De Stercke, S., Cullen, J., Frank, S., Fricko, O., Guo, F., **Gidden, M.**, Havlík, P., Huppmann, D., Kiesewetter, G., Rafaj, P., Schoepp, W., Valin, H., "A low energy demand scenario for meeting the 1.5° C target and sustainable development goals without negative emission technologies," *Nature Energy*, vol. 3, no. 6, pp. 515–527, 2018, ISSN: 2058-7546. DOI: 10.1038/s41560-018-0172-6. [Online]. Available: https://doi.org/10.1038/s41560-018-0172-6

[22] Byers, E. A., **Gidden, M.**, Leclère, D., Burek, P., Ebi, K. L., Greve, P., Grey, D., Havlik, P., Hillers, A., Johnson, N., Kahil, T., Krey, V., Langan, S., Nakicenovic, N., Novak, R., Obersteiner, M., Pachauri, S., Palazzo, A. M., Parkinson, S., Rao, N. D., Rogelj, J., Riahi, K., Satoh, Y., Wada, Y., Willaarts, B., "Global exposure and vulnerability to multi-sector development and climate change hotspots," *Environmental Research Letters*, 2018. [Online]. Available: http://iopscience.iop.org/10.1088/1748-9326/aabf45

[23] Liu, L., Parkinson, S., **Gidden, M.**, Byers, E., Satoh, Y., Riahi, K., Forman, B., "Quantifying the potential for reservoirs to secure future surface water yields in the world's largest river basins," *Environmental Research Letters*, vol. 13, no. 4, p. 044 026, 2018. [Online]. Available: http://stacks.iop.org/1748-9326/13/i=4/a=044026

[24] **Gidden, M. J.**, Fujimori, S., Berg, M., Klein, D., Smith, S. J., Vuuren, D. P., Riahi, K., "A methodology and implementation of automated emissions harmonization for use in integrated assessment models," *Environmental Modelling & Software*, vol. 105, pp. 187 –200, 2018, ISSN: 1364-8152. DOI: https://doi.org/10.1016/j.envsoft.2018.04.002. [Online]. Available: https://www.sciencedirect.com/science/article/pii/S1364815217307867

[25] Pfenninger, S., Hirth, L., Schlecht, I., Schmid, E., Wiese, F., Brown, T., Davis, C., **Gidden, M.**, Heinrichs, H., Heuberger, C., Hilpert, S., Krien, U., Matke, C., Nebel, A., Morrison, R., Müller, B., Pleßmann, G., Reeg, M., Richstein, J. C., Shivakumar, A., Staffell, I., Tröndle, T., Wingenbach, C., "Opening the black box of energy modelling: Strategies and lessons learned," *Energy Strategy Reviews*, ISSN: 2211-467X. DOI: 10.1016/j.esr.2017.12.002. [Online]. Available: https://www.sciencedirect.com/science/article/pii/S2211467X17300809

[26] **Gidden, M. J.**, Wilson, P. P., "A methodology for determining the dynamic exchange of resources in nuclear fuel cycle simulation," *Nuclear Engineering and Design*, pp. –, 2016, ISSN: 0029-5493. DOI: http://dx.doi.org/10.1016/j.nucengdes.2016.10.029. [Online]. Available: http://www.sciencedirect.com/science/article/pii/S0029549316304101

[27] Huff, K. D., **Gidden, M. J.**, Carlsen, R. W., Flanagan, R. R., McGarry, M. B., Opotowsky, A. C., Schneider, E. A., Scopatz, A. M., Wilson, P. P., "Fundamental concepts in the cyclus nuclear fuel cycle simulation framework," *Advances in Engineering Software*, vol. 94, pp. 46 –59, 2016, ISSN: 0965-9978. DOI: http://dx.doi.org/10.1016/j.advengsoft.2016.01.014. [Online]. Available: http://www.sciencedirect.com/science/article/pii/S0965997816300229

[28] Pearce, T. M., Williams, J. J., Kruzel, S. P., **Gidden, M. J.**, Williams, J. C., "Dynamic control of extracellular environment in in vitro neural recording systems," *IEEE Transactions on Neural Systems and Rehabilitation Engineering*, vol. 13, no. 2, pp. 207–212, 2005, ISSN: 1534-4320. DOI: 10.1109/TNSRE.2005.848685

Invited Talks & Presentations

[29] **Gidden, M. J.**, "Paris compatible pathways for china, the us, and europe," in *Seminar at Institute for Security and Development Policy in Sweden*, Feb. 2021

[30] **Gidden, M. J.**, Vuuren, D., "The ScenarioMIP Process: Deliveries to CMIP6," in *Plenary of the Eleventh Annual Meeting of the IAMC 2018*, Sevilla, Spain, Nov. 2018

[31] **Gidden, M. J.**, "Scenarios of climate change mitigation," in *Vienna NGO Committee on Sustainable Development*, Vienna, Austria, Nov. 2018

[32] **Gidden, M.**, *Overview and Timeline of ScenarioMIP Contributions to CRESCENDO*, CRESCENDO General Assembly, Paris, France, Sep. 2018

[33] **Gidden, M.**, *Messageix: Cutting edge research and challenges*, Centre National de la Recherche Scientifique (CNRS) Summer School: Integrated Assessment Modeling, Jun. 2018

[34] **Gidden, M.**, *Insights from scenarios targeting the Paris Agreement*, United Nations Climate Change Conference (COP23), EU Pavilion, Bonn, Germany, Nov. 2017

[35] **Gidden, M.**, *Developing future socioeconomic and greenhouse gas emission scenarios*, United Nations Climate Change Conference (COP23), UK Pavilion, Bonn, Germany, Nov. 2017

[36] **Gidden, M.**, *Emissions Pathways for Climate Modeling: Harmonizing the SSPs to CMIP6 Historical Data*, CRESCENDO General Assembly, Paris, France, Sep. 2017

[37] **Gidden, M.**, *Exploring Nuclear Fuel Cycle Simulation using HTCondor*, HTCondor Week, Madison, WI, May 2015

Refereed Proceedings

[38] **Gidden, M.**, Wilson, P., "Dynamic Resource Exchange with CoinOR-CBC in Cyclus, a Nuclear Fuel Cycle Simulator," in *Operations Research and Computing: Algorithms and Software for Analytics*, Richland, VA, United States, Jan. 2015

[39] **Gidden, M.**, Carlsen, R., Opotowsky, A., Rakhimov, O., Scopatz, A., Wilson, P., "Agent-based dynamic resource exchange in cyclus," in *Proceedings of PHYSOR*, Kyoto, Japan, Sep. 2014

[40] **Gidden, M.**, Wilson, P., "An agent-based framework for fuel cycle simulation with recycling," in *Proceedings of GLOBAL*, Salt Lake City, UT, United States, Sep. 2013

CONFERENCE PUBLICATIONS

[41] **Gidden, M. J.**, Byers, E., Riahi, K., "Assessing global vulnerability and exposure to land, energy, and water impacts from climate change," in *American Geosciences Union General Assembly*, Washington D.C., USA, Dec. 2018

[42] **Gidden, M. J.**, "The burgeoning ecosystem of IAM tools: Current status and next steps," in *Eleventh Annual Meeting of the IAMC 2018*, Sevilla, Spain, Nov. 2018

[43] **Gidden, M. J.**, Byers, E., Burek, P., Ebi, K., Greve, P., Havlik, P., Johnson, N., Kahil, T., Krey, V., Langan, S., Leclère, D., Obersteiner, M., Palazzo, A., Pachauri, S., Parkinson, S., Rao, N., Rogelj, J., Satoh, Y., Wada, Y., Willaarts, B., Riahi, K., "A global assessment of exposure and vulnerability to energy, water, and land climate change hotspots," in *The 37th Edition of International Energy Workshop*, Jun. 2018

[44] **Gidden, M. J.**, et al., "Exposure and Vulnerability to Energy, Water, and Land Hotspots under Different Climate Futures," in *Tenth Integrated Assessment Modelling Consortium Meeting*, Dec. 2017

[45] **Gidden, M. J.**, et al., "Emissions Pathways for Climate Modeling: Harmonizing the SSPs to CMIP6 Historical Data," in *Tenth Integrated Assessment Modelling Consortium Meeting*, Dec. 2017

[46] **Gidden, M. J.**, Huppmann, D., "Diagnostics and analysis of IAM results: presenting the pyam-analysis package," in *Tenth Integrated Assessment Modelling Consortium Meeting*, Dec. 2017. [Online]. Available: http://mattgidden.com/presentations/pyam-iamc2017

[47] **Gidden, M. J.**, Byers, E., Greve, P., Kahil, T., Parkinson, S., Raptis, C., Rogelj, J., Satoh, Y., Vliet, M., Wada, Y., Krey, V., Langan, S., Riahi, K., "Hydroclimatic risks and uncertainty in the global power sector," in *European Geosciences Union General Assembly*, Vienna, Austria, Apr. 2017

[48] **Gidden, M. J.**, Huppmann, D., Krey, V., Fricko, O., Kolp, P., Riahi, K., "The new MESSAGE$_{ix}$ Modeling Platform," in *Open Energy Modelling Workshop*, Frankfurt, Germany, Apr. 2017

[49] **Gidden, M. J.**, Parkinson, S. C., Rao, N. D., Riahi, K., "Spatial Downscaling of Urban and Rural Income and Inequality for the Shared Socioeconomic Pathways," in *Ninth Annual Meeting of the IAMC 2016*, Beijing, China, Dec. 2016

[50] **Gidden, M.**, Wilson, P., "Dynamic Resource Exchange Performance in Cyclus," in *Transactions of the American Nuclear Society*, San Antonio, TX, United States, Jun. 2015

[51] Carlsen, R. W., **Gidden, M. J.**, Wilson, P. P., "Deployment Optimization with the CYCLUS Fuel Cycle Simulator," in *Transactions of the American Nuclear Society*, DOI link for code, methods, etc: http://dx.doi.org/10.6084/m9.figshare.1086284, vol. 111, Anaheim, CA, Nov. 2014, pp. 241–244

[52] Biondo, E., Scopatz, A., **Gidden, M.**, Slaybaugh, R., Bates, C., WIlson, P. P., "Quality Assurance within the PyNE Open Source Toolkit," in *Transactions of the American Nuclear Society*, vol. 111, Anaheim, CA, Nov. 2014. [Online]. Available: https://github.com/pyne/ans-winter-2014-vnv

[53] **Gidden, M.**, Wilson, P., Scopatz, A., "Developing standardized, open benchmarks and a corresponding specification language for the simulation of dynamic fuel cycles," in *Proceedings of the 2013 ANS Summer Conference*, Atlanta, GA, United States, Jun. 2013

[54] **Gidden, M.**, Wilson, P., Huff, K., Carlsen, R., "Once-through benchmarks with cyclus, a modular, open-source fuel cycle simulator," in *Proceedings of the 2012 ANS Winter Conference*, San Diego, CA, Nov. 2012

[55] **Gidden, M.**, Wilson, P., Huff, K., "Once-Through Benchmarks with Cyclus," in *ANS Student Conference*, Las Vegas, NV, 2011

[56] Huff, K. D., Wilson, P. P., **Gidden, M. J.,** "Open Architecture and Modular Paradigm of Cyclus, a Fuel Cycle Simulation Code," in *Transactions of the American Nuclear Society*, vol. 104, 2011, p. 183

[57] Huff, K., Wilson, P., **Gidden, M.**, Elmore, R., *Cyclus : An Open, Modular, Next Generation Fuel Cycle Simulator Platform*, Poster, Mar. 2011

[58] **Gidden, M.**, Livesay, J., York, R., Blessinger, C., "Collimation of Radiation Portal Monitors to Reduce the Innocent Alarm Rate (Poster)," in *Transactions of the American Nuclear Society*, Washington, DC, Nov. 2007

OTHER PUBLICATIONS

[59] Wilson, P. P. H., Scopatz, A., **Gidden, M.**, Carlsen, R., Mouginot, B., Flanagan, R., *Market-Based and System-Wide Fuel Cycle Optimization*. 2017. [Online]. Available: http://www.osti.gov/scitech/servlets/purl/1363866

[60] Krey, V., Havlik, P., Fricko, O., Zilliacus, J., **Gidden, M.**, Strubegger, M., Kartasasmita, G., Ermolieva, T., Forsell, N., Gusti, M., Johnson, N., Kindermann, G., Kolp, P., McCollum, D. L., Pachauri, S., Rao, S., Rogelj, J., Valin, H., Obersteiner, M., Riahi, K., "MESSAGE-GLOBIOM 1.0 Documentation," International Institute for Applied Systems Analysis (IIASA), Tech. Rep., 2016. [Online]. Available: http://data.ene.iiasa.ac.at/message-globiom/

[61] **Gidden, M. J.**, "An Agent-Based Modeling Framework and Application for the Generic Nuclear Fuel Cycle," Thesis, University of Wisconsin, Madison, WI, United States, Mar. 2015

[62] **Gidden, M.**, "An agent-based modeling framework and application for the generic nuclear fuel cycle," Prelim, University of Wisconsin, Madison, Sep. 2013. [Online]. Available: http://dx.doi.org/10.6084/m9.figshare.1132596

SOFTWARE

[63] **Gidden, M.**, Huppmann, D., "Pyam: Analysis and visualization of assessment models," 2018. DOI: 10.5281/zenodo.1470489

[64] **Gidden, M.**, "Aneris: Harmonization for integrated assessment models," 2017. DOI: 10.5281/zenodo.802832

[65] Carlsen, R. W., **Gidden, M.**, Huff, K., Opotowsky, A. C., Rakhimov, O., Scopatz, A. M., Welch, Z., Wilson, P., *Cyclus v1.0.0*, Jun. 2014. [Online]. Available: http://figshare.com/articles/Cyclus_v1_0_0/1041745

[66] Carlsen, R. W., **Gidden, M.**, Huff, K., Opotowsky, A. C., Rakhimov, O., Scopatz, A. M., Wilson, P., *Cycamore v1.0.0*, Jun. 2014. [Online]. Available: http://figshare.com/articles/Cycamore_v1_0_0/1041829

[67] **Gidden, M.**, *Cyclopts*, http://mattgidden.com/cyclopts/, Dec. 2014. [Online]. Available: http://mattgidden.com/cyclopts/

[68] Scopatz, A., **Gidden, M.**, Welch, Z., "Polyphemus v0.1," Jun. 2014. [Online]. Available: http://dx.doi.org/10.6084/m9.figshare.1066058

[69] Scopatz, A., Bates, C. R., Biondo, E., Huff, K., Kiesling, K., Carlsen, R., Davis, A., **Gidden, M.**, Haines, T., Howland, J., Huff, B., Manalo, K., Opotowsky, A., Slaybaugh, R., Relson, E., Romano, P., Shriwise, P., Xia, J. D., Wilson, P., Zachman, J., "PyNE Progress Report," Nov. 2014. [Online]. Available: http://dx.doi.org/10.6084/m9.figshare.1250143

Professional Organizations & Service

American Geosciences Union, Member **2018 – Present**
Elsevier Energy Forum, Member **2017 – Present**
European Geosciences Union, Member **2016 – Present**
Institute for Operations Research and Management Science, Member **2014 – Present**
Alpha Nu Sigma, Member **2009 – Present**
American Nuclear Society, Member **2006 – Present**
- Communications Committee, Member **2013 – 2017**
- Public Policy Committee, Member **2013 – 2015**
- Special Advisory Committee on Nuclear Nonproliferation, Member **2012 – 2016**
- Student Sections Committee, Member **2010 – 2016**
- Local Sections Committee, Member **2010 – 2012**
- Nuclear Nonproliferation Special Committee, Member **2010 – 2012**
- ANS Student Conference, Co-Chair **2008**

Institute of Nuclear Materials Management, Member **2008 – 2015**
Nuclear Engineering Student Delegation, Delegate **2011 – 2013**
- Chair **2013**
- Vice Chair **2012**

American Nuclear Society, Texas A&M Chapter, Member **2005 – 2009**
- Vice President **2006 – 2007**

Honors & Awards

2^{nd} Place in Energy Policy, Innovations in Fuel Cycle Research **2014**
Winner, The Why Files Cool Science Image Contest **2014**
Nuclear Energy University Program Graduate Research Fellowship **2010 – 2013**
American Nuclear Society Graduate Scholarship **2013**
Nuclear Regulatory Commision Undergraduate Scholarship **2008 – 2009**
President's Endowed Scholarship, Texas A&M University **2005 – 2009**
Stinson Scholarship, Texas A&M University **2005 – 2009**

Academic Supervision

Hélène Benveniste, Princeton University, USA **Summer 2019**
IIASA Young Summer Scientist Program

Project: Develop migration quantifications for the Shared Socioeconomic Pathways and analyze their impact on national income, inequality, and emissions.

Ayelet Davidovich, Israel **2018 – 2029**
Postdoc

Project: Develop a country-level energy model for Israel for energy security analysis.

David Abel, University of Wisconsin, USA **Summer 2018**
IIASA Young Summer Scientist Program

Project: Develop a country-level energy model for South Africa for air pollution co-benefit analysis.

Lu Liu, University of Maryland, USA **Summer 2016**
IIASA Young Summer Scientist Program

Project: Estimate global hydropower potential using GIS techniques for inclusion in Integrated Assessment Models

TEACHING EXPERIENCE

European Geoscience Union General Assembly 2017, Vienna, Austria **April 27, 2017**
Working with big, multi-dimensional geoscientific datasets in Python: a tutorial introduction to xarray

Open Energy Modeling Workshop, Frankfurt, Germany **April 19 – 21, 2017**
Introduction to Scientific Programming in Python

African Institute for Mathematical Sciences (AIMS) **Aug 31 – Sept 11, 2015**
Structured Master's in Mathematical Sciences, Cape Town, South Africa
Scientific Computation with Python

University of Wisconsin Advanced Computing Initiative, Madison, WI **Aug 26 – 27, 2015**
Software Carpentry: Version Control with Git

University of Wisconsin Advanced Computing Initiative, Madison, WI **Jan 13 – 16, 2015**
Software Carpentry: Version Control

University of Wisconsin Advanced Computing Initiative, Madison, WI **Aug 25 – 26, 2014**
Software Carpentry: Version Control and Unit Testing

University of Wisconsin Advanced Computing Initiative, Madison, WI **Aug 28 – 29, 2013**
Software Carpentry: Version Control

University of Wisconsin Advanced Computing Initiative, Madison, WI **Apr 29 – 30, 2013**
Software Carpentry: Version Control and Unit Testing

REFERENCES

Available upon request