

## **THERESA M. CRIMMINS**

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### **EDUCATION**

- 2005 Ph.D., School of Renewable Natural Resources, University of Arizona, Tucson, AZ
- 1999 M.A., Geography, Western Michigan University, Kalamazoo, MI
- 1997 B.S., Biological Sciences, Western Michigan University, Kalamazoo, MI

### **PROFESSIONAL EXPERIENCE**

- 2020-present Director, USA National Phenology Network, Tucson, AZ
- 2020-present Research Professor, School of Natural Resources and the Environment, University of Arizona, Tucson, AZ
- 2011-present Associate Research Scientist, School of Natural Resources and the Environment, University of Arizona, Tucson, AZ
- 2019-2020 Associate Director, USA National Phenology Network, Tucson, AZ
- 2015-2019 Assistant Director, USA National Phenology Network, Tucson, AZ
- 2007-2015 Partnerships & Outreach Coordinator, USA National Phenology Network, Tucson, AZ
- 2006-2007 Instructional Specialist, University of Arizona, Tucson, AZ
- 2002-2006 Quantitative Ecologist, Sonoran Desert Network Inventory & Monitoring, National Park Service, Tucson, AZ
- 2002-2004 UA/NASA Space Grant Fellow, University of Arizona, Tucson, AZ
- 2001-2002 Graduate Research Assistant, University of Arizona, Tucson, AZ
- 2001 Research GIS Consultant, Kalamazoo Nature Center, Kalamazoo, MI
- 1999-2001 Project Scientist, Kieser & Associates, Kalamazoo, MI
- 1997-2001 Graduate Assistant, Western Michigan University, Kalamazoo, MI

### **HONORS & AWARDS**

#### *Professional and Academic Honors & Awards*

- Linnean Society Fellow. 2021 - present
- OpEd Project: Tucson Public Voices Fellow. 2019-2020. Women's Foundation of Southern Arizona
- Alumni Achievement Award. 2018. Department of Geography, Western Michigan University
- Globally-Engaged Pillar Award. 2018. College of Arts and Sciences, Western Michigan University
- On-the-Spot Award. 2005. Sonoran Desert Network, National Park Service for outstanding job

performance

- Department Graduate Research and Creative Scholar. 1999. Western Michigan University Graduate College
- Outstanding Graduate Research Award. 1999. College of Arts & Sciences, Western Michigan University
- Graduate Student Outstanding Scholastic Achievement Award. 1999. Department of Geography, Western Michigan University
- Clifford and Ella Chapman Distinguished Senior Scholarship. 1997. Western Michigan University
- Frank Hinds Zoology Award. 1996. Western Michigan University Department of Biology
- Excellence Scholarship. 1993-1997. Western Michigan University

#### *Team Awards*

- *2021 Enduring Achievement Award* to the USA National Phenology Network. Advancing Research Impact in Society.
- *2020 Shoemaker Award for Communication Product Excellence*, Webpage/Website category for “Phenology Trail Dashboards: Connecting Wildlife Refuges to Partners.” US Geological Survey.
- *2019 Outstanding Scholarly Achievement* for the USA-NPN’s Pheno Forecast maps. School of Natural Resources and the Environment, University of Arizona.
- *2018 Shoemaker Award for Communication Product Excellence*, Excellence for the Webpage/Website category for “Tracking the Appearance of Spring: USA National Phenology Network’s Status of Spring website and maps product.” US Geological Survey.
- *2018 Climate Adaptation Leadership Award for Natural Resources* to the USA National Phenology Network. Association of Fish and Wildlife Agencies.
- *2018 Blue Pencil & Gold Screen Award of Excellence* for the USA National Phenology Network 2016 Annual Report. [nagc.com/2018-blue-pencil-gold-screen-awards](http://nagc.com/2018-blue-pencil-gold-screen-awards)
- *2017 Outstanding Achievement Award* for USA-NPN’s Start of Spring Maps and Access Tools. Renewable Natural Resource Foundation.
- *2016 Environmental Achievement Award* in Climate Champion category. US Geological Survey.
- *2016 Greening the Department of Interior*, Honorable Mention. [www.doi.gov/greening/awards/2016](http://www.doi.gov/greening/awards/2016). US Department of the Interior.
- *2015 Healthy Workplace Award*. Arizona Chapter of the American Psychological Association.
- *2014 Shoemaker Award for Communication Product Excellence*, Internet Product category for “Connecting People with Nature to Benefit Our Changing Planet: The *Nature’s Notebook* website.” US Geological Survey.

## **SERVICE**

### *Extramural Service*

- 2021-present    Contributing author, Ecosystems, Ecosystem Services, and Biodiversity chapter, Fifth National Climate Assessment
- 2021-present    NEON Ambassador
- 2020-present    Editorial Advisory Board, *International Journal of Biometeorology*
- 2016-present    Editorial Board, *Ecosphere*

- 2012-present Proposal reviews for NSF, Department of Defense/Strategic Environmental Research and Development Program, EarthWatch Research, National Park Service George Melendez Wright Climate Change Fellowship Program
- 2007-present Reviewer for scientific journals: >>100 articles reviewed
- 2020-2021 Collaborating partner organization representative, Colorado River Basin Water Resources NASA DEVELOP project. Pairing phenology citizen science observations with NASA Earth observations to monitor riparian vegetation
- 2020-2021 Collaborating partner organization representative, Georgia-Athens NASA DEVELOP project. Midwest farmlands food security & agriculture
- 2019 Association of Fish & Wildlife Agencies' Climate Adaptation Leadership Award Nomination Review Committee
- 2015-2016 Book proposal review, book review for Chicago University Press
- 2014-2017 Editorial Advisory Board, *International Journal of Biometeorology*
- 2010-2015 Phenology Research and Observations of Southwest Ecosystems Symposium Planning Committee
- 2011-2013 Community Cooperative Rain, Hail, & Snow (CoCoRaHS) Network NSF Advisory Board
- 2011-2012 Western Hummingbird Partnership Education Committee
- 2010 Led preparation of proposal to designate "Finger Rock Research Natural Area" within the Coronado National Forest. Awaiting final decision.

## PUBLICATIONS

### *Book Chapters*

1. **Crimmins, T.M.**, L. Barnett, E.G. Denny, A.H. Rosemartin, S. Schaffer, and J.F. Weltzin. 2020. "From tiny acorns grow mighty oaks: what we've learned from nurturing *Nature's Notebook*." In: *Handbook of Citizen Science in Ecology and Conservation*. Eds. C. Lepczyk, T. Vargo, and O.D. Boyle. University of California Press, pp 191-222.
2. Posthumus, E.E., L. Barnett, **T.M. Crimmins**, P.L. Warren, E. Stancioff, and J. Einerson. 2019. "Building local resilience to climate change through citizen science, environmental education, and decision-making." In: *Addressing Climate Change at the Community Level in the United States*. Eds. P.R. Lachapelle and D.E. Albrecht. New York: Routledge/Taylor & Francis, pp 50-64.
3. Schwartz, M.D., E. Beaubien, **T.M. Crimmins**, and J.F. Weltzin. 2013. "North America." In: *Phenology: An Integrative Environmental Science*. 2<sup>nd</sup> edition. Dordrecht: Kluwer Academic Publishers. Online: [www.springer.com/life+sciences/ecology/book/978-94-007-6924-3](http://www.springer.com/life+sciences/ecology/book/978-94-007-6924-3) pp 67-89.

### *Refereed Journal Articles*

1. Dwivedi, D., A.L.D. Santos, M.A. Barnard, **T.M. Crimmins**, A. Malhotra, K.A. Rod, K.S. Aho, S. Bell, B. Bomfim, F. Brearley, H. Cadillo-Quiroz, J. Chen, C.M. Gough, E.B. Graham, C.R. Hakkenberg, L. Haygood, G. Koren, E. Lilleskov, L.K. Meredith, S. Naeher, Z.L. Nickerson, O. Pourret, H.-S. Song, M. Stahl, N. Tas, R. Vargas, and S. Weintraub-Leff. 2022. Biogeosciences perspectives on Integrated, Coordinated, Open, Networked (ICON) science. *Earth and Space*

- Science* 9: e2021EA002119. [doi.org/10.1029/2021EA002119](https://doi.org/10.1029/2021EA002119)
2. Gerst, K.L., **T.M. Crimmins**, E.E. Posthumus, R.L. Marsh, J. Switzer, C. Wallace. 2021. The USA National Phenology Network's Buffelgrass Green-up Forecast map products. *Ecological Solutions and Evidence* e12109:1-6. [doi.org/10.1002/2688-8319.12109](https://doi.org/10.1002/2688-8319.12109)
  3. Morisette, J.T., K.A. Duffy, J.F. Weltzin, D.M. Browning, R.L. R. Marsh, A.M. Friesz, L.J. Zachmann, K.D. Enns, V.A. Landau, K.L. Gerst, **T.M. Crimmins**, K.D. Jones, T. Chang, B.W. Miller, T.K. Maiersperger, A.D. Richardson. 2021. PS3: The Pheno-Synthesis Software Suite for integration and analysis of multi-scale, multi-platform phenological data. *Ecological Informatics* 65:101400. [doi.org/10.1016/j.ecoinf.2021.101400](https://doi.org/10.1016/j.ecoinf.2021.101400)
  4. Bates, A., R.B. Primack, B. Biggar, ... **T.M. Crimmins**, ... and C.M. Duarte. 2021. Global COVID-19 lockdown highlights humans as both threats and custodians of the environment. *Biological Conservation* 263:109175. [doi.org/10.1016/j.biocon.2021.109175](https://doi.org/10.1016/j.biocon.2021.109175).
  5. **Crimmins, T.M.**, E.E. Posthumus, S.N. Schaffer, and K.L. Prudic. 2021. COVID-19 impacts on participation in large scale community science projects in the United States. *Biological Conservation* 256:109017. [doi.org/10.1016/j.biocon.2021.109017](https://doi.org/10.1016/j.biocon.2021.109017).
  6. Weltzin, J.F., J.L. Betancourt, B.I. Cook, **T.M. Crimmins**, C.A.F. Enquist, M.D. Gerst, J.E. Gross, G.M. Henebry, R.A. Hufft, M.A. Kenny, J.S. Kimball, B.C. Reed, and S.W. Running. 2020. Seasonality of biological and physical systems as indicators of climate variation and change. *Climatic Change* 163:1755-1771. [doi.org/10.1007/s10584-020-02894-0](https://doi.org/10.1007/s10584-020-02894-0).
  7. Gerst, K.L., **T.M. Crimmins**, E.E. Posthumus, A.H. Rosemartin, and M.D. Schwartz. 2020. How well do the Spring Indices predict phenological activity across plant species? *International Journal of Biometeorology*. [doi.org/10.1007/s00484-020-01879-z](https://doi.org/10.1007/s00484-020-01879-z)
  8. **Crimmins, T.M.**, K.L. Gerst, D.G. Huerta, R.L. Marsh, E.E. Posthumus, A.H. Rosemartin, J. Switzer, J.F. Weltzin, L. Coop, N. Dietschler, D.A. Herms, S. Limbu, R.T. Trotter III, M. Whitmore. 2020. Short-term forecasts of insect phenology inform pest management. *Annals of the Entomological Society of America* 113(2): 139-148. [doi.org/10.1093/aesa/saz026](https://doi.org/10.1093/aesa/saz026).
  9. **Crimmins, T.M.** and M.A. Crimmins. 2019. Biologically-relevant trends in springtime temperatures across the United States. *Geophysical Research Letters* 46(21):12377-12387. [doi.org/10.1029/2019GL085251](https://doi.org/10.1029/2019GL085251).
  10. Elmendorf, S.C., **T.M. Crimmins**, K.L. Gerst, and J.F. Weltzin. 2019. Time to branch out? Application of hierarchical survival models in plant phenology. *Agriculture and Forest Meteorology*. 279:107694. [doi.org/10.1016/j.agrformet.2019.107694](https://doi.org/10.1016/j.agrformet.2019.107694).
  11. Prudic, K.L., J.K. Wilson, M.C. Toshack, K.L. Gerst, A.H. Rosemartin, **T.M. Crimmins**, and J.C. Oliver. 2019. Creating the urban Farmer's Almanac with citizen science data. *Insects* 10(9): 294. [doi.org/10.3390/insects10090294](https://doi.org/10.3390/insects10090294).
  12. Crimmins, M.A. and **T.M. Crimmins**. 2019. Does an early spring indicate an early summer? Relationships between intraseasonal growing degree day thresholds. *Journal of Geophysical Research - Biogeosciences*. 124:1-14. [doi.org/10.1029/2019JG005297](https://doi.org/10.1029/2019JG005297)
  13. Waller, E.K., **T.M. Crimmins**, J.J. Walker, E.E. Posthumus, and J.F. Weltzin. 2018. Differential changes in the onset of spring across US National Wildlife Refuges and North American migratory bird flyways. *PLoS ONE* 13(9): e0202495. [doi.org/10.1371/journal.pone.0202495](https://doi.org/10.1371/journal.pone.0202495)
  14. Browning, D.M., **T.M. Crimmins**, D.K. James, S. Spiegel, M.R. Levi, J.P. Anderson, and D.C. Peters. 2018. Synchronous species responses reveal phenological guilds – Implications for management. *Ecosphere* 9(9):e02395. [doi.org/10.1002/ecs2.2395](https://doi.org/10.1002/ecs2.2395)
  15. **Crimmins, T.M.** 2018. The USA National Phenology Network's growing degree day maps and online visualization tool support management decisions. *Journal of Extension*. 56: 3, 3TOT4. [www.joe.org/joe/2018june/tt4.php](http://www.joe.org/joe/2018june/tt4.php)
  16. **Crimmins, T.M.**, M.A. Crimmins, K.L. Gerst, A.H. Rosemartin, and J.F. Weltzin. 2017. USA National Phenology Network's volunteer-contributed observations yield predictive models of phenological transitions. *PLoS ONE* 12:e0182919. [doi.org/10.1371/journal.pone.0182919](https://doi.org/10.1371/journal.pone.0182919)

17. Ellwood, E., **T.M. Crimmins**, and A.J. Miller-Rushing. 2017. Citizen science and conservation: Recommendations for a rapidly moving field. *Biological Conservation* 208:1-4.  
[dx.doi.org/10.1016/j.biocon.2016.10.014](https://doi.org/10.1016/j.biocon.2016.10.014)
18. Wright, K.W., K.L. Vanderbilt, D.W. Inouye, C.D. Bertelsen, and **T.M. Crimmins**. 2015. Turnover and reliability of flower communities in extreme environments: Insights from long-term phenology data sets. *Journal of Arid Environments* 115:27-34.
19. Fuccillo, K.K., **T.M. Crimmins**, C. DeRivera, and T.S. Elder. 2015. Assessing accuracy in citizen science-based plant phenology monitoring. *International Journal of Biometeorology* 59:917-926. [doi.org/10.1007/s00484-014-0892-7](https://doi.org/10.1007/s00484-014-0892-7)
20. **Crimmins, T.M.**, J.F. Weltzin, A.H. Rosemartin, E.M. Surina, and L. Marsh, E.G. Denny. 2014. Targeted campaign increases activity among participants in *Nature's Notebook*, a citizen science project. *Natural Sciences Education* 43:64-72.
21. **Crimmins, T.M.**, C.D. Bertelsen, and M.A. Crimmins. 2014. Within-season flowering interruptions are common in the water-limited Sky Islands. *International Journal of Biometeorology* 58:419-426. [doi.org/10.1007/s00484-013-0745-9](https://doi.org/10.1007/s00484-013-0745-9).
22. Denny, E.G., K.L. Gerst, A.J. Miller-Rushing, G.L. Tierney, **T.M. Crimmins**, C.A.F. Enquist, P. Guertin, A.H. Rosemartin, M.D. Schwartz, K.A. Thomas, J.F. Weltzin. 2014. Standardized phenology monitoring methods to track plants and animal activity for science and resource management applications. *International Journal of Biometeorology* 58:591-601.  
[doi.org/10.1007/s00484-014-0789-5](https://doi.org/10.1007/s00484-014-0789-5).
23. Rosemartin, A.H., **T.M. Crimmins**, C.A.F. Enquist, K.L. Gerst, J.L. Kellermann, E.E. Posthumus, J.F. Weltzin, E.G. Denny, P. Guertin, and L. Marsh. 2014. Organizing phenological data resources to inform natural resource conservation. *Biological Conservation* 173:90-97.  
[dx.doi.org/10.1016/j.biocon.2013.07.003](https://doi.org/10.1016/j.biocon.2013.07.003)
24. Davies, T.J., E.M. Wolkovich, N.J.B. Kraft, N. Salamin, J.M. Allen, T.R. Ault, J.L. Betancourt, K. Bolmgren, E.E. Cleland, B.I. Cook, **T.M. Crimmins**, S.J. Mazer, G.J. McCabe, S. Pau, J. Regetz, M.D. Schwartz, S. Travers. 2013. Phylogenetic conservatism in plant phenology. *Journal of Ecology* 101:1520-1530. [doi: 10.1111/1365-2745.12154](https://doi.org/10.1111/1365-2745.12154).
25. **Crimmins, T.M.**, M.A. Crimmins, and C.D. Bertelsen. 2013. Spring and summer patterns in flowering onset, duration, and constancy across a water-limited gradient. *American Journal of Botany* 100:1-11.
26. Posthumus, E.E., L. Barnett, **T.M. Crimmins**, G. Kish, W. Sheftall, E. Stancioff, and P. Warren. 2013. *Nature's Notebook* and Extension: Engaging citizen-scientists and 4-H youth to observe a changing environment. *Journal of Extension* 51(1): 11AW1. Online:  
[www.joe.org/joe/2013february/iw1.php](http://www.joe.org/joe/2013february/iw1.php).
27. Cook, B.I., E.M. Wolkovich, T.J. Davies, T.R. Ault, J.L. Betancourt, J.M. Allen, K. Bolmgren, E.E. Cleland, **T.M. Crimmins**, N.J.B. Kraft, L.T. Lancaster, S.J. Mazer, G.J. McCabe, B.J. McGill, C. Parmesan, S. Pau, J. Regetz, N. Salamin, M.D. Schwartz, S.E. Travers. 2012. Sensitivity of spring phenology to warming across temporal and spatial climate gradients in two independent databases. *Ecosystems* DOI: 10.1007/s10021-012-9584-5.
28. Wolkovich, E.M., B.I. Cook, J.M. Allen, **T.M. Crimmins**, S. Travers, S. Pau, J. Regetz, T.J. Davies, J.L. Betancourt, N.J.B. Kraft, T.R. Ault, K. Bolmgren, S.J. Mazer, G.J. McCabe, B.J. McGill, C. Parmesan, N. Salamin, M.D. Schwartz, and E.E. Cleland. 2012. Warming experiments underpredict plant phenological responses to climate change. *Nature* 485: 494-497.  
[doi.org/10.1038/nature11014](https://doi.org/10.1038/nature11014)
29. Deiz, J.M., I. Ibañez, A.J. Miller-Rushing, S.J. Mazer, **T.M. Crimmins**, M.A. Crimmins, C.D. Bertelsen, D.W. Inouye. 2012. Forecasting phenology: from species variability to community patterns. *Ecology Letters* 15:545-553.
30. Cleland, E.E., J.M. Allen, **T.M. Crimmins**, S. Pau, S.E. Travers, E.M. Wolkovich. 2012. Phenological tracking enables positive species responses to climate change. *Ecology* 93: 1765-

1771.

31. **Crimmins, T.M.**, M.A. Crimmins, and C.D. Bertelsen. 2011. Onset of summer flowering in a 'Sky Island' is driven by monsoon moisture. *New Phytologist* 191:468-479.
32. **Crimmins, T.M.**, M.A. Crimmins, and C.D. Bertelsen. 2010. Complex responses to climate drivers in onset of spring flowering across a semi-arid elevation gradient. *Journal of Ecology* 98:1042-1051.
33. **Crimmins, T.M.** and C.L. Rupprecht. 2010. Testing Online learning modules for an extension program – useful and utilized? *Journal of Natural Resources and Life Sciences Education* 39:102-108.
34. **Crimmins, T.M.**, M.A. Crimmins, and C.D. Bertelsen. 2009. Flowering range changes across an elevation gradient in response to warming summer temperatures. *Global Change Biology* 15:1141-1152.
35. **Crimmins, T.M.** and G.R. McPherson. 2008. Vegetation and seed bank response to *Eragrostis lehmanniana* removal. *Weed Research* 48:542-551.
36. Crimmins, M.A. and **T.M. Crimmins**. 2008. Monitoring plant phenology using digital repeat photography. *Environmental Management* 41:949-958.
37. **Crimmins, T.M.**, M.A. Crimmins, D. Bertelsen, and J. Balmat. 2008. Relationships between flowering diversity and climatic variables along an elevation gradient. *International Journal of Biometeorology* 52:353-366.
38. **Crimmins, T.**, M.S. Mauzy, and S.E. Studd. 2008. Assessing exotic plant distribution, abundance, and impact at Montezuma Castle and Tuzigoot National Monuments in Arizona, USA. *Ecological Restoration* 26:47-53.
39. Crimmins, M.A., G. Zaines, N. Haas, C.K. Jones, G. Garfin, and **T.M. Crimmins**. 2007. Changes on the range: A novel exercise to explore interactions between range management decision making and climate change. *Journal of Natural Resources and Life Sciences Education*. 36:76-86.
40. **Mau-Crimmins, T.** 2007. Effects of removing *Cynodon dactylon* from a recently abandoned agricultural field. *Weed Research*. 47:212-221.
41. Schussman, H.R., E.L. Geiger, **T.M. Mau-Crimmins**, and J. Ward. 2006. Spread and current potential distribution of an alien grass, *Eragrostis lehmanniana* Nees, in the southwestern USA: comparing historical data and ecological niche models. *Diversity and Distributions* 12:582-592.
42. **Mau-Crimmins, T.**, H.R. Schussman, and E.L. Geiger. 2006. Can the invaded range of a species be predicted sufficiently using only native-range data?: Lehmann lovegrass (*Eragrostis lehmanniana*) in the southwestern United States. *Ecological Modelling* 193:736-746.
43. **Mau-Crimmins, T.**, J.E. de Steiguer, and D. Dennis. 2005. The Analytic Hierarchy Process and public participation in forest planning: A pilot study involving natural resource students. *Forest Economics & Policy* 7(4):501-514.
44. **Mau-Crimmins, T.** and D.S. Lemberg. 2003. Reserve site selection at a non-profit educational nature center. *The Great Lakes Geographer*. 10(1): 34-45.
45. de Steiguer, J.E. and **T. Mau-Crimmins**. 2002. Economic analysis in watershed management planning: Methods, applications and education. *Annals of Arid Zone* 41: 343-357.

#### **Electronic Publications (peer-reviewed)**

1. **Crimmins, T.** and E. Posthumus. 2022. Data and code from: Do carefully-timed email messages increase accuracy and precision in citizen scientists' report of events? Zenodo dataset publication: [doi.org/10.5281/zenodo.5165318](https://doi.org/10.5281/zenodo.5165318)
2. Vogt, E., **T. Crimmins**, D. Dalan, D. Katz, A. Manangan and C. Brown. 2022. How well do volunteer-contributed observations of flowering characterize the springtime airborne pollen season? Published abstract. *Journal of Allergy and Clinical Immunology* 149(2): AB198

- [doi.org/10.1016/j.jaci.2021.12.653](https://doi.org/10.1016/j.jaci.2021.12.653)
3. **Crimmins, T.M.** 2021. Reading the leaves to track environmental hazards and health. *Eos* 102. [doi.org/10.1029/2021EO157181](https://doi.org/10.1029/2021EO157181). Published on 16 April 2021.
  4. **Crimmins, T.M.** 2021. The USA National Phenology Network: Big idea, productivity and potential – and now, at big risk. *Bulletin of the Ecological Society of America* 102: e01802. [doi.org/10.1002/bes2.1802](https://doi.org/10.1002/bes2.1802).
  5. Asrar, G., Y. Zhou, **T.M. Crimmins**, A. Sapkota. 2020. Eyes in the sky improve pollen tracking. *Eos*. [doi.org/10.1029/2020EO147021](https://doi.org/10.1029/2020EO147021). Published online 20 Jul 2020.
  6. Bradford, J.B., J.F. Weltzin, M. McCormick, J. Baron, Z. Bowen, S. Bristol, D. Carlisle, **T. Crimmins**, P. Cross, J. DeVivo, M. Dietze, M. Focazio, M. Freeman, K. Gaddis, J. Goldberg, M. Hooten, L. Hsu, K. Jenni, J. Keisman, J. Kennen, K. Lee, D. Lesmes, K. Loftin, B. Miller, P. Murdoch, J. Newman, K. Nowak, K. Prentice, I. Rangwala, J. Read, J. Sieracki, H. Sofaer, S. Taylor, S. Thur, G. Tovey, F. Werner, C.L. White, T. White, and M. Wiltermuth. Ecological Forecasting: 21st century science for 21st century management. U.S. Geological Survey Open-File Report 2020-1073, 54 p., [doi.org/10.3133/ofr20201073](https://doi.org/10.3133/ofr20201073).
  7. Gerst, K.L., A.H. Rosemartin, E.E. Posthumus, and **T.M. Crimmins**. Successes and challenges on a spectrum of stakeholder engagement. Collaboration Now for the Future: Biodiversity and Management of the Madrean Archipelago VI meeting proceedings, Tucson, Arizona, May 14-18, 2018. In press.
  8. Crimmins, M.A. and **T.M. Crimmins**. 2019. Data from: Does an early spring indicate an early summer? relationships between intra-seasonal growing degree day thresholds. Dryad Digital Repository. [doi.org/10.5061/dryad.pp045j3](https://doi.org/10.5061/dryad.pp045j3)
  9. Weltzin, J.F., **T.M. Crimmins**, E.E. Posthumus, J.J. Walker, and E.K. Waller. 2018. Spring leaf and bloom index dates (1880-2013) and migratory bird flyways: U.S. Geological Survey data release, [doi.org/10.5066/P9Z4C9LE](https://doi.org/10.5066/P9Z4C9LE).
  10. Rosemartin, A.R., M.L. Langseth, **T.M. Crimmins**, and J.F. Weltzin. 2018. Development and release of phenological data products--A case study in compliance with federal open data policy. U.S. Geological Survey Open-File Report 2018-1007. [doi.org/10.3133/ofr20181007](https://doi.org/10.3133/ofr20181007).
  11. Rosemartin, A.H., E.G. Denny, K.L. Gerst, R. L. Marsh, **T.M. Crimmins**, and J.F. Weltzin. 2018. USA National Phenology Network Observational Data Documentation. U.S. Geological Survey Open-File Report 2018-1060. [doi.org/10.3133/ofr20181060](https://doi.org/10.3133/ofr20181060)
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