PhenoCam Fair Use Data Policy:

Updated 28 August 2025

General terms:

Since its inception, the mission of the PhenoCam Network has been to serve as a repository for phenologically-relevant, digital, repeat (time-lapse) imagery, and to make that imagery, and derived data products, freely available to a wide array of third-party data end-users, including researchers, educators, and the general public. Thus, imagery and data from the PhenoCam archive are made publicly available, without restriction, following the CC BY 4.0 license. We encourage you to download imagery and datasets for use in your own research and teaching. *In return, we ask that you acknowledge the source of the data and imagery, and understand and abide by the terms of the Creative Commons CC-BY-4.0 Attribution License.*

Acknowledgments:

For any publications using PhenoCam imagery or data, including both provisional data and curated data releases, we ask that you:

1. include the following text in your Acknowledgments:

    Data used in this research were provided by the PhenoCam Network, which has been supported by the National Science Foundation, the Long-Term Agroecosystem Research (LTAR) network which is supported by the United States Department of Agriculture (USDA), the U.S. Department of Energy, the U.S. Geological Survey, the Northeastern States Research Cooperative, and the USA National Phenology Network. We thank the PhenoCam Network collaborators, including site PIs and technicians, for publicly sharing the data that were used in this paper.

2. include site-specific acknowledgments for each site from which data were used. The appropriate text has been provided by site collaborators, and is included in the metadata file associated with each PhenoCam site. For an example of how we recommend these acknowledgments be included, please see the electronic supplement to the following paper:

Richardson, A.D., K. Hufkens, T. Milliman, and S. Frolking. 2018. Intercomparison of transition dates derived from the PhenoCam Dataset V1.0 and MODIS satellite remote sensing. Scientifc Reports 8, Article number: 5679. https://doi.org/10.1038/s41598-018-23804-6.

Note: Active engagement with our site contacts/collaborators is not required under this CC-BY-4.0 license, but it can help avoid misinterpretation or other data issues and is appreciated by data providers. It is recommended that data users inform site contacts of forthcoming publications that use a site's data.

3. cite the relevant publications that describe the image acquisition and data processing procedures (e.g. Richardson et al. 2018, Seyednasrollah et al. 2019, Young et al. 2025). Additionally, if you are using curated data or imagery from the PhenoCam Dataset version 1.0, 2.0, or 3.0, we also ask that you cite those datasets at the ORNL DAAC (see below).

Richardson, A.D., K. Hufkens, T. Milliman, D.M. Aubrecht, M. Chen, J.M. Gray, M.R. Johnston, T.F. Keenan, S.T. Klosterman, M. Kosmala, E.K. Melaas, M.A. Friedl, and S. Frolking. 2018. Tracking vegetation phenology across diverse North American biomes using PhenoCam imagery. Scientific Data 5, Article number: 180028. https://doi.org/10.1038/sdata.2018.28

Seyednasrollah, B., A. M. Young, K. Hufkens, T. Milliman, M. A. Friedl, S. Frolking, and A. D. Richardson. Tracking vegetation phenology across diverse biomes using version 2.0 of the PhenoCam dataset. Scientific Data, 6(1):222, 2019. https://doi.org/10.1038/s41597-019-0229-9

Young, A. M., T. Milliman, K. Hufkens, K. Ballou, C. Coffey, K. Begay, M. Fell, M. Javadian, A.K. Post, C. Schädel, Z. Vladich, O. Zimmerman, D.M. Browning, C.R. Florian, M. Moon, M.D. SanClements, B. Seyednasrollah, M.A. Friedl, and A.D. Richardson. Tracking vegetation phenology across diverse biomes using Version 3.0 of the PhenoCam Dataset, Earth Syst. Sci. Data Discuss. [preprint], 2025. https://doi.org/10.5194/essd-2025-120

Curated data sets:

Version 3.0. The PhenoCam Dataset version 3.0, and associated camera imagery, is made publicly available under a CC BY Attribution License.

Zimmerman, O., A. M. Young, T. Milliman, K. Hufkens, K. Ballou, C. Coffey, K. Begay, M. Fell, M. Javadian, A. K. Post, C. Schadel, Z. Vladich, D. M. Browning, C. R. Florian, M. A. Friedl, M. Moon, M. D. SanClements, B. Seyednasrollah, A. D. Richardson, M. Abraha, M. Alber, D. W. Allen, M. Apple, M. A. Arain, A. C. Axel, P. H. J. Badiou, M. Bahn, J. Baker, D. Baldocchi, S. L. J. Bayliss, N. Behrens, C. M. Beier, C. J. Bernacchi, D. Berveiller, J. Bhattacharjee, S. C. Biraud, J. J. Blais, P. Blanken, M. Bonfim, D. D. Bosch, R. Boughton, E. H. Boughton, R. F. Brown, N. Brunsell, S. P. Burns, M. S. Carbone, B. R. Carlson, A. Carrara, M. Cavagna, W. S. Chan, J. Chen, A. Christen, N. Chrysoulakis, H. Chu, P. E. Clark, B. J. Conrad, M. R. Cortese, R. M. Crandall, E. Cremonese, H. Crepaz, F. W. Davis, D. Debinski, A. R. Desai, M. Detto, R. Diaz-Delgado, L. Duchesne, A. Dunn, K. J. Easterday, D. M. Eissenstat, T. El-madany, D. S. S. Ellum, S. K. M. Ernest, A. Esposito, E. S. Euskirchen, L. Fenstermaker, L. F. Filchev, J. M. Fill, L. B. Flanagan, B. Forsythe, J. M. Frank, A. L. Freestone, J. Gallagher, M. García, D. Garcia-Diaz, M. Gharun, D. Gianelle, J. M. Gonet, S. C. Goslee, T. Griffis, P. Groffman, L. Gu, J. Guillemot, I. M. Halm, M. Halpin, A. Hammerle, P. J. Hanson, C. V. Hanson, Z. Harlow, K. M. Hart, C. E. Hatch, P. L. Heinrich, D. Hemming, M. Heskel, A. C. Hill, A. A. Hove, T. Hubner, D. Hui, E. R. Humphreys, P. C. Inkenbrandt, A. Jaimes-Hernandez, R. Jensen, J. Johnson, B. G. Johnson, L. S. K. Joseph, E. Keel, V. R. Kelly, K. W. King, J. W. Kirchner, P. B. Kirchner, M. A. Kline, S. H. Knox, M. Krassovski, K. L. Ladig, P. E. Laerke, O. Langvall, G. Lanthier, N. K. Lany, R. López Jiménez, G. l. Maire, H. Liu, Y. Luo, A. Manco, J. Marrs, T. A. Martin, M. Mauritz, G. McCarty, B. McNeil, F. Meier, M. Mensinger, G. Meyer, M. Migliavacca, T. Miura, B. P. Mohanty, C. E. Moore, R. Mudd, J. W. Munger, Z. E. Murrell, Z. Nesic, H. S. Neufeld, J. Norris, J. O'Connell, T. L. O'Halloran, W. Oechel, A. C. Oishi, B. Oryan, W. W. Oswald, D. M. P. Peltier, J. Perez-Quezada, T. D. Perkins, C. Phillips, M. Pizarro, D. Poursanidis, J. W. M. Pullens, P. Ramanamandimby, M. P. Rao, R. L. Ray, M. L. Reba, C. Redmond, A. Reinmann, D. A. Roberts, G. P. Robertson, M. Rodriguez-Caton, K. Rumora, B. C. Rundquist, B. R. K. Runkle, T. Sachs, E. J. Sadler, A. Saha, N. Z. Saliendra, T. S. Sankey, H. Scheifinger, L. Schmalbeck, M. R. Schuppenhauer, M. D. Schwartz, R. L. Scott, S. D. Sebestyen, D. Smale, E. M. Smith, J. Smith, O. Sonnentag, P. Stoy, S. Strachan, K. Suvocarev, D. Szutu, F. Tekinay, J. E. Thom, R. Q. Thomas, C. Trauernicht, D. Trejo, D. Tsirantonakis, A. Valero, A. K. Van den berg, M. K. Van der molen, R. Vargas, M. Vellend, J. Verfaillie, C. S. Vogel, A. Vrieling, J. J. Walker, J. R. Ward, D. A. Watts, N. Webb, P. Wetzel, S. Weyers, A. V. Whipple, C. W. Whippo, W. A. White, T. G. Whitham, C. Wille, A. Wingler, G. Wohlfahrt, S. Wolf, J. D. Wood, A. L. Woodley, J. Yang, X. Yang, G. Yenni, A. J. Zambrano-olimpo, A. Zandonai, Y. Zhang, and D. Zona. 2025. *PhenoCam Dataset v3.0: Vegetation Phenology from Digital Camera Imagery, 2000-2023*. ORNL DAAC, Oak Ridge, Tennessee, USA. https://doi.org/10.3334/ORNLDAAC/2389. **Download citation from Datacite:** RIS BibTex

Ballou, K., Z. Vladich, A. M. Young, T. Milliman, K. Hufkens, C. Coffey, K. Begay, M. Fell, M. Javadian, A. K. Post, C. Schadel, O. Zimmerman, D. M. Browning, C. R. Florian, M. A. Friedl, M. Moon, M. D. SanClements, B. Seyednasrollah, A. D. Richardson, M. Abraha, D. W. Allen, M. Apple, M. A. Arain, A. C. Axel, P. H. J. Badiou, M. Bahn, J. Baker, D. Baldocchi, S. L. J. Bayliss, N. Behrens, C. M. Beier, C. J. Bernacchi, D. Berveiller, J. Bhattacharjee, S. C. Biraud, J. J. Blais, P. Blanken, M. Bonfim, D. D. Bosch, R. Boughton,

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Version 2.0. The PhenoCam Dataset version 2.0, and associated camera imagery, is made publicly available under a CC BY Attribution License. We encourage you to use the newer 3.0 dataset.

Seyednasrollah, B., A.M. Young, K. Hufkens, T. Milliman, M.A. Friedl, S. Frolking, A.D. Richardson, M. Abraha, D.W. Allen, M. Apple, M.A. Arain, J. Baker, J.M. Baker, D. Baldocchi, C.J. Bernacchi, J. Bhattacharjee, P. Blanken, D.D. Bosch, R. Boughton, E.H. Boughton, R.F. Brown, D.M. Browning, N. Brunsell, S.P. Burns, M. Cavagna, H. Chu, P.E. Clark, B.J. Conrad, E. Cremonese, D. Debinski, A.R. Desai, R. Diaz- Delgado, L. Duchesne, A.L. Dunn, D.M. Eissenstat, T. El-Madany, D.S.S. Ellum, S.M. Ernest, A. Esposito, L. Fenstermaker, L.B. Flanagan, B. Forsythe, J. Gallagher, D. Gianelle, T. Griffis, P. Groffman, L. Gu, J. Guillemot, M. Halpin, P.J. Hanson, D. Hemming, A.A. Hove, E.R.

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Version 1.0. The PhenoCam Dataset version 1.0, and associated camera imagery, is made freely available under the CC0 Public Domain Dedication. We encourage you to use the newer V2 of the dataset.

Richardson, A.D., K. Hufkens, T. Milliman, D.M. Aubrecht, M. Chen, J.M. Gray, M.R. Johnston, T.F. Keenan, S.T. Klosterman, M. Kosmala, E.K. Melaas, M.A. Friedl, S. Frolking, M. Abraha, M. Alber, M. Apple, B.E. Law, T.A. Black, P. Blanken, D. Browning, S. Bret-Harte, N. Brunsell, S.P. Burns, E. Cremonese, A.R. Desai, A.L. Dunn, D.M. Eissenstat, E. Euskirchen, L.B. Flanagan, B. Forsythe, J. Gallagher, L. Gu, D.Y. Hollinger, J.W. Jones, J. King, O. Langvall, J.H. McCaughey, P.J. McHale, G.A. Meyer, M.J. Mitchell, M.

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