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## Employment

### Postdoctoral fellow

Dept of Physical Geography and Ecosystem Science  
Lund University  
Lund, Sweden  
2014 Apr 20 → present

### Visiting research fellow

Division of Water Resources Engineering  
Lund University  
Lund, Sweden  
2025 Apr 15 → present

### Researcher

Department of Earth and Environmental Sciences (MGeo)  
Lund University  
Lund, Sweden  
2025 Dec 4 → present

## Research outputs

### Spatiotemporal averaging resolution of high importance within Earth-observation-based light use efficiency models of gross primary production

Tagesson, T., Senty, P., Diatta, O., Cai, Z., Wieckowski, A., Ndiaye, O. & Ardö, J., 2025 Dec, In: Science of Remote Sensing. 12, 100324.

**Quantifying the utility and uncertainty of multi-source fused precipitation products in hydrological simulations**

You, Z., Wang, K., Sun, H., Zhang, H., Ye, Y., Qu, S., Chen, L., Li, H., Wang, F., Qin, H. & Cai, Z., 2025 Oct, In: *Journal of Hydrology: Regional Studies*. 61, 102620.

**Evaluation and improvement of Copernicus HR-VPP product for crop phenology monitoring**

Prikaziuk, E., Silva, C. F., Koren, G., Cai, Z., Berger, K., Belda, S., Graf, L. V., Tomelleri, E., Verrelst, J., Segarra, J. & Ganeva, D., 2025 Jun, In: *Computers and Electronics in Agriculture*. 233, 110136.

**Global Distribution and Local Variation of Pre-Rain Green-Up in Tropical Dryland**

Huang, S., Sang, Y., Cai, Z. & Tian, F., 2025 Apr, In: *Remote Sensing*. 17, 8, 1377.

**Global ocean surface heat fluxes derived from the maximum entropy production framework accounting for ocean heat storage and Bowen ratio adjustments**

Yang, Y., Sun, H., Wang, J., Zhang, W., Zhao, G., Wang, W., Cheng, L., Chen, L., Qin, H. & Cai, Z., 2025 Mar 21, In: *Earth System Science Data*. 17, 3, p. 1191-1216 26 p.

**Design and Implementation of the Correntropy-Based Filter for GNSS Vector Tracking and Positioning**

Liu, J., Kong, Q., Yin, F., Cai, Z., Sun, M. & Chen, B., 2025, In: *IEEE Transactions on Aerospace and Electronic Systems*. 61, 5, p. 14894-14909 16 p.

**Estimation of district-level spring barley yield in southern Sweden using multi-source satellite data and random forest approach**

Li, X., Jin, H., Eklundh, L., Bouras, E. H., Olsson, P.-O., Cai, Z., Ardö, J. & Duan, Z., 2024 Sept 25, In: *International Journal of Applied Earth Observation and Geoinformation*. 134, 104183

**Wildfire impacts on the carbon budget of a managed Nordic boreal forest**

Kelly, J., Kljun, N., Cai, Z., Doerr, S. H., Donofrio, C., Holst, T., Lehner, I., Lindroth, A., Thapa, S., Vestin, P. & Santín, C., 2024 May 15, In: *Agricultural and Forest Meteorology*. 351, 110016.

**Assessing topographic effects on forest responses to drought with multiple seasonal metrics from Sentinel-2**

Sang, Y., Tian, F., Jin, H., Cai, Z., Feng, L., Dou, Y. & Eklundh, L., 2024 Apr, In: *International Journal of Applied Earth Observation and Geoinformation*. 128, 103789.

**Reviews and syntheses: Remotely sensed optical time series for monitoring vegetation productivity**

Kooistra, L., Berger, K., Brede, B., Graf, L. V., Aasen, H., Roujean, J. L., Machwitz, M., Schlerf, M., Atzberger, C., Prikaziuk, E., Ganeva, D., Tomelleri, E., Croft, H., Reyes Muñoz, P., Garcia Millan, V., Darvishzadeh, R., Koren, G., Herrmann, I., Rozenstein, O. & Belda, S. & 13 others, Rautiainen, M., Rune Karlsen, S., Figueira Silva, C., Cerasoli, S., Pierre, J., Tanır Kayıkçı, E., Halabuk, A., Tunc Gormus, E., Fluit, F., Cai, Z., Kycko, M., Udelhoven, T. & Verrelst, J., 2024 Jan, In: *Biogeosciences*. 21, 2, p. 473-511 39 p.

**Optimizing Remote Sensing Data and Light Use Efficiency Model for Accurate Gross Primary Production Estimation in African Rangelands**

Pal, M. K., Ardö, J., Eklundh, L., Cai, Z., Tagesson, T., Wieckowski, A., Buitenwerf, R., Davison, C., Grobler, D., Munk, M., Senty, P., Brümmer, C., Feig, G., Vanzyl, P. & Griffiths, P., 2024, *IGARSS 2024 - 2024 IEEE International Geoscience and Remote Sensing Symposium, Proceedings*. IEEE - Institute of Electrical and Electronics Engineers Inc., p. 4289-4293 5 p. (International Geoscience and Remote Sensing Symposium (IGARSS)).

**Remotely Sensed Herbaceous Rangelands Biomass from African Rangelands: Validation and Uncertainties**

Pal, M. K., Ardö, J., Eklundh, L., Cai, Z., Tagesson, T., Wieckowski, A., Buitenwerf, R., Davison, C., Grobler, D., Munk, M., Senty, P., Lo, A. & Griffiths, P., 2024, *IGARSS 2024 - 2024 IEEE International Geoscience and Remote Sensing Symposium, Proceedings*. IEEE - Institute of Electrical and Electronics Engineers Inc., p. 4986-4990 5 p. (International Geoscience and Remote Sensing Symposium (IGARSS)).

**In-situ start and end of growing season dates of major European crop types from France and Bulgaria at a field level**  
Ganeva, D., Tallec, T., Brut, A., Prikaziuk, E., Tomelleri, E., Koren, G., Verrelst, J., Berger, K., Graf, L. V., Belda, S., Cai, Z. & Silva, C. F., 2023 Dec, In: Data in Brief. 51, 109623.

**Higher vegetation sensitivity to meteorological drought in autumn than spring across European biomes**  
Jin, H., Vicente-Serrano, S. M., Tian, F., Cai, Z., Conradt, T., Boincean, B., Murphy, C., Farizo, B. A., Grainger, S., Lopez-Moreno, J. I. & Eklundh, L., 2023 Aug 25, In: Communications Earth and Environment. 4, 14 p., 299.

**Estimating local-scale forest GPP in Northern Europe using Sentinel-2: Model comparisons with LUE, APAR, the plant phenology index, and a light response function**  
Junttila, S., Ardö, J., Cai, Z., Jin, H., Kljun, N., Klemedtsson, L., Krasnova, A., Lange, H., Lindroth, A., Mölder, M., Noe, S., Tagesson, T., Vestin, P., Weslien, P. & Eklundh, L., 2023 Jun, In: Science of Remote Sensing. 7, 100075.

**Impacts of stump harvesting on carbon dioxide, methane and nitrous oxide fluxes**  
Vestin, P., Mölder, M., Kljun, N., Cai, Z., Hasan, A., Holst, J., Klemedtsson, L. & Lindroth, A., 2022 Jun, In: iForest - Biogeosciences and Forestry. 15, 3, p. 148-162 15 p.

**Improving neural network classification of indigenous forest in New Zealand with phenological features**  
Ye, N., Morgenroth, J., Xu, C. & Cai, Z., 2022 Apr 23, In: Journal of Environmental Management. 115134.

**Biodiversity decline with increasing crop productivity in agricultural fields revealed by satellite remote sensing**  
Abdi, A. M., Carrié, R., Sidemo-Holm, W., Cai, Z., Boke-Olén, N., Smith, H. G., Eklundh, L. & Ekroos, J., 2021 Nov, In: Ecological Indicators. 130, 108098.

**Calibrating vegetation phenology from Sentinel-2 using eddy covariance, PhenoCam, and PEP725 networks across Europe**  
Tian, F., Cai, Z., Jin, H., Hufkens, K., Scheifinger, H., Tagesson, T., Smets, B., Van Hoolst, R., Bonte, K., Ivits, E., Tong, X., Ardö, J. & Eklundh, L., 2021 Jul, In: Remote Sensing of Environment. 260, 112456.

**Early growing season anomalies in vegetation activity determine the large-scale climate-vegetation coupling in Europe**  
Wu, M., Vico, G., Manzoni, S., Cai, Z., Maoya, B., Tian, F., Zhang, J., Ye, K. & Messori, G., 2021, In: Journal of Geophysical Research: Biogeosciences. 126, 5, 19 p., e2020JG006167.

**Modelling daily gross primary productivity with sentinel-2 data in the nordic region—comparison with data from modis**  
Cai, Z., Junttila, S., Holst, J., Jin, H., Ardö, J., Ibrom, A., Peichl, M., Mölder, M., Jönsson, P., Rinne, J., Karamihalaki, M. & Eklundh, L., 2021, In: Remote Sensing. 13, 3, 18 p., 469.

**The complex multi-sectoral impacts of drought: Evidence from a mountainous basin in the Central Spanish Pyrenees**  
Vicente-Serrano, S. M., Peña-Angulo, D., Murphy, C., López-Moreno, J. I., Tomas-Burguera, M., Domínguez-Castro, F., Tian, F., Eklundh, L., Cai, Z., Alvarez-Farizo, B., Noguera, I., Camarero, J. J., Sánchez-Salguero, R., Gazol, A., S., G., Conradt, T., Boincean, B. & El Kenawy, A., 2021, In: Science of the Total Environment. 769, 144702.

**The confounding effect of snow cover on assessing spring phenology from space: A new look at trends on the Tibetan Plateau**  
Huang, K., Zhang, Y., Tagesson, T., Brandt, M., Wang, L., Chen, N., Zu, J., Jin, H., Cai, Z., Tong, X., Cong, N. & Fensholt, R., 2021, In: Science of the Total Environment. 756, 144011.

**Impacts of Clear-Cutting of a Boreal Forest on Carbon Dioxide, Methane and Nitrous Oxide Fluxes**  
Vestin, P., Mölder, M., Kljun, N., Cai, Z., Hasan, A., Holst, J., Klemedtsson, L. & Lindroth, A., 2020 Sept 1, In: Forests. 11, 9, p. 961 28 p., 11.

**Vegetation Observation in the Big Data Era: Sentinel-2 data for mapping the seasonality of land vegetation**  
Cai, Z., 2019 Jan, Lund: Lund University, Faculty of Science, Department of Physical Geography and Ecosystem Science . 56 p.

### **An empirical assessment of the MODIS land cover dynamics and TIMESAT land surface phenology algorithms**

Stanimirova, R., Cai, Z., Melaas, E. K., Gray, J. M., Eklundh, L., Jönsson, P. & Friedl, M. A., 2019, In: Remote Sensing. 11, 19, 2201.

### **A Method for Robust Estimation of Vegetation Seasonality from Landsat and Sentinel-2 Time Series Data**

Jönsson, P., Cai, Z., Melaas, E., Friedl, M. & Eklundh, L., 2018 Apr 19, In: Remote Sensing. 10, 4, 13 p., 635.

### **Effects of low thinning on carbon dioxide fluxes in a mixed hemiboreal forest**

Lindroth, A., Holst, J., Heliász, M., Vestin, P., Lagergren, F., Biermann, T., Cai, Z. & Mölder, M., 2018, In: Agricultural and Forest Meteorology. 262, p. 59-70

### **Performance of Smoothing Methods for Reconstructing NDVI Time-Series and Estimating Vegetation Phenology from MODIS Data**

Cai, Z., Jönsson, P., Jin, H. & Eklundh, L., 2017 Dec 7, In: Remote Sensing. 9, 12, 1271.

## **Activities**

### **Evaluating the impact of agriculture on albedo using Sentinel-2 data in southern Sweden**

Cai, Z. (Joint first/primary/lead supervisor) & Vestin, P. (Second supervisor)

2022 Sept 1 → 2023 Jun 10

### **POSTER: European drought impacts on vegetation: a new pattern in recent two decades**

Jin, H. (Presenter), Eklundh, L. (Presenter), Vicente-Serrano, S. M. (Role not specified), Murphy, C. (Role not specified), Tian, F. (Role not specified), Cai, Z. (Role not specified), Conradt, T. (Role not specified), Boincean, B. (Role not specified), Farizo, B. A. (Role not specified), Grainger, S. (Role not specified) & López -Moreno, J. I. (Role not specified)

2022 May 17

### **POSTER: How to study interactive effects of climate and climate change for pollinations in the future?**

Blasi Romero, M. (Presenter), Cai, Z. (Contributor), Jönsson, A. M. (Contributor), Sahlin, U. (Contributor) & Clough, Y. (Contributor)

2022 May 16

## **Projects**

### **CGLOPS-1 LSP: Copernicus Global Land Operations Service - Land Surface Phenology**

Eklundh, L. (Researcher), Cai, Z. (Researcher) & Jin, H. (Researcher)

2022/01/01 → 2023/12/31

### **HR-VPP: Copernicus High-Resolution Vegetation Phenology and Productivity**

Eklundh, L. (Researcher), Cai, Z. (Researcher) & Jin, H. (Researcher)

2020/01/01 → 2023/12/31

### **HR-VPP2: Copernicus High-Resolution Vegetation Phenology and Productivity II**

Eklundh, L. (Researcher), Jin, H. (Researcher), Cai, Z. (Researcher) & Ardö, J. (Col)

2024/09/16 → 2028/09/17

### **Twin-Waters: Digital Tools for Sustainable Water Resources Management: Integrating impact of change of climate, land use, and optimised solutions**

Li, J. (PI), Cai, Z. (Researcher), Zhang, L. (Researcher) & Persson, K. M. (Researcher)

FORMAS, The Swedish Research Council for Environment, Agricultural Sciences and Spatial Planning

2024/03/27 → 2026/11/30

**Improving African sub-seasonal vegetation feedback in Earth system models using multiple satellite observations and field measurements**

Wu, M. (Researcher), Tagesson, T. (Researcher), Duan, Z. (Researcher) & Cai, Z. (Researcher)  
2022/01/01 → 2024/12/31

**BioClima: Improving Monitoring for Better Integrated Climate and Biodiversity Approaches, Using Environmental and Earth Observations**

Duan, Z. (PI), Jin, H. (Col), Cai, Z. (Researcher), Eklundh, L. (Researcher), Wang, L. (Researcher) & Pettersson, L. B. (Researcher)  
European Commission - Horizon Europe  
2025/01/01 → 2028/12/31

**RECROP: Near real-time monitoring of crop growth and yield**

Eklundh, L. (PI), Olsson, P.-O. (Researcher), Cai, Z. (Researcher), Ohlsson, M. (Researcher) & Björkelund, A. (Researcher)  
Swedish National Space Agency  
2026/01/01 → 2029/12/31

**Remote sensing-based assessment of tundra's grazing capacity in northern Fennoscandia, with a focus on biodiversity conservation**

Terskaia, A. (PI), Cai, Z. (Researcher) & Eklundh, L. (Researcher)  
Swedish National Space Agency  
2025/05/01 → 2030/07/31

**TIMESAT - software to analyze time-series of satellite sensor data**

Eklundh, L. (PI), Jönsson, P. (PI) & Cai, Z. (Research student)  
2002/01/01 → ...