EINE ÜBERSICHT ZU FOUNDATION-MODELLEN IN DER ERDBEOBACHTUNG

Dr. Thorsten Höser | DLR – Deutsches Fernerkundungsdatenzentrum

DLR

Deutsches Fernerkundungsdatenzentrum – Land Surface Dynamics

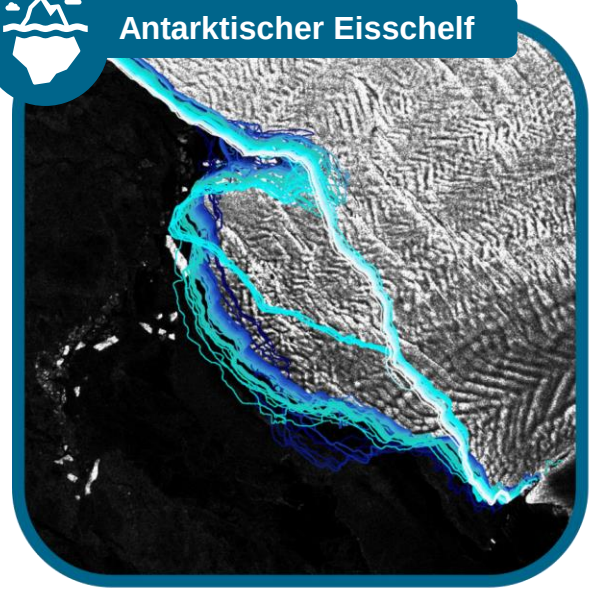
Polar and Cold Regions

Forest and Agroecosystems

Coast and River Basins

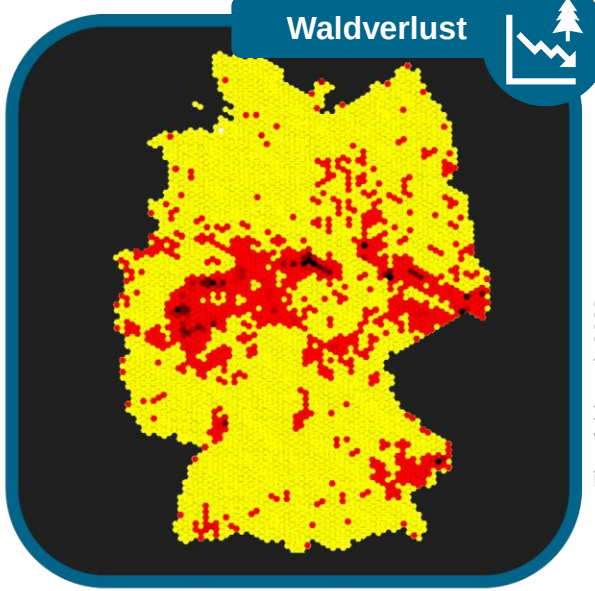
Smart Cities and Spatial Developments

Antarktischer Eisschelf



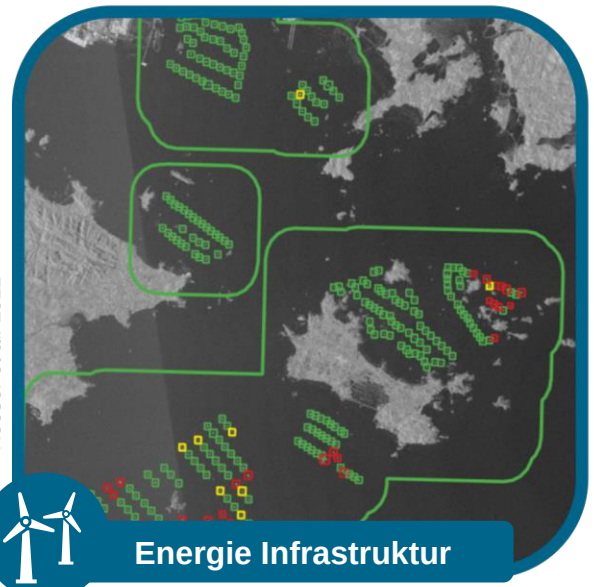
Baumhoer et al. 2023

Waldverlust



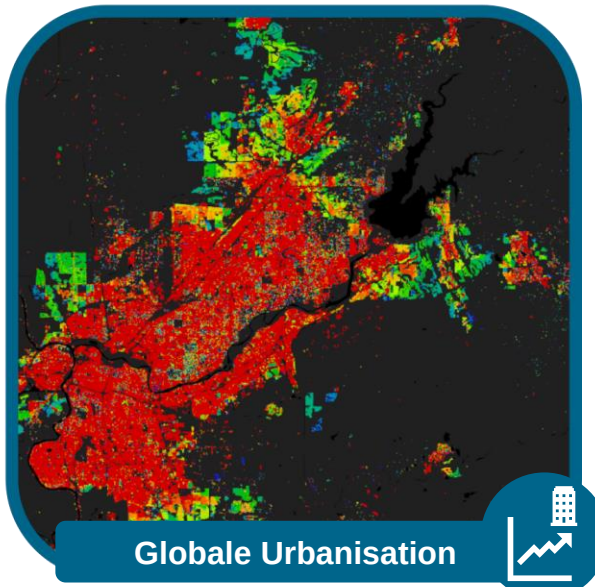
Thonfeld et al. 2022

Energie Infrastruktur



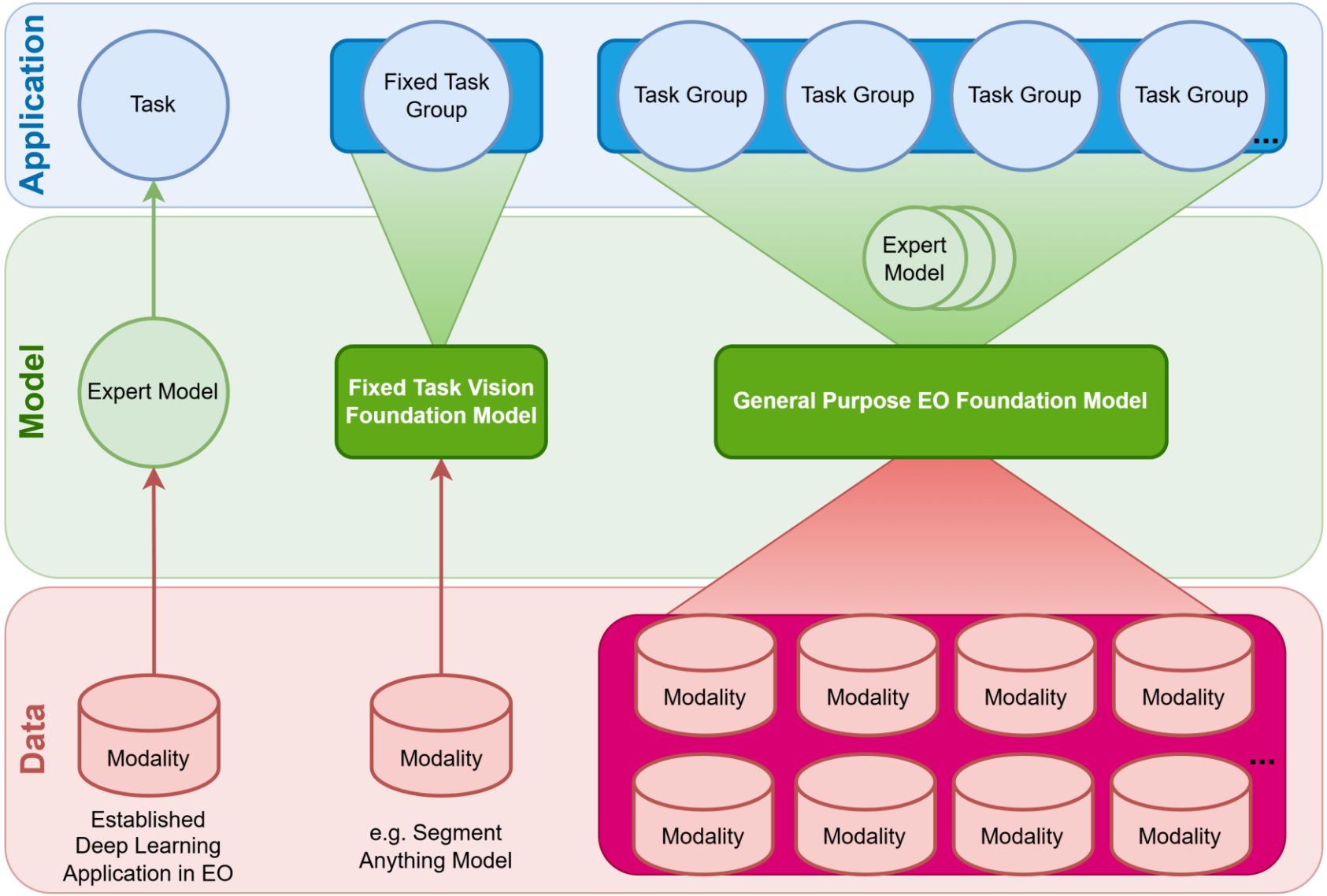
Hoeser et al. 2022

Globale Urbanisation

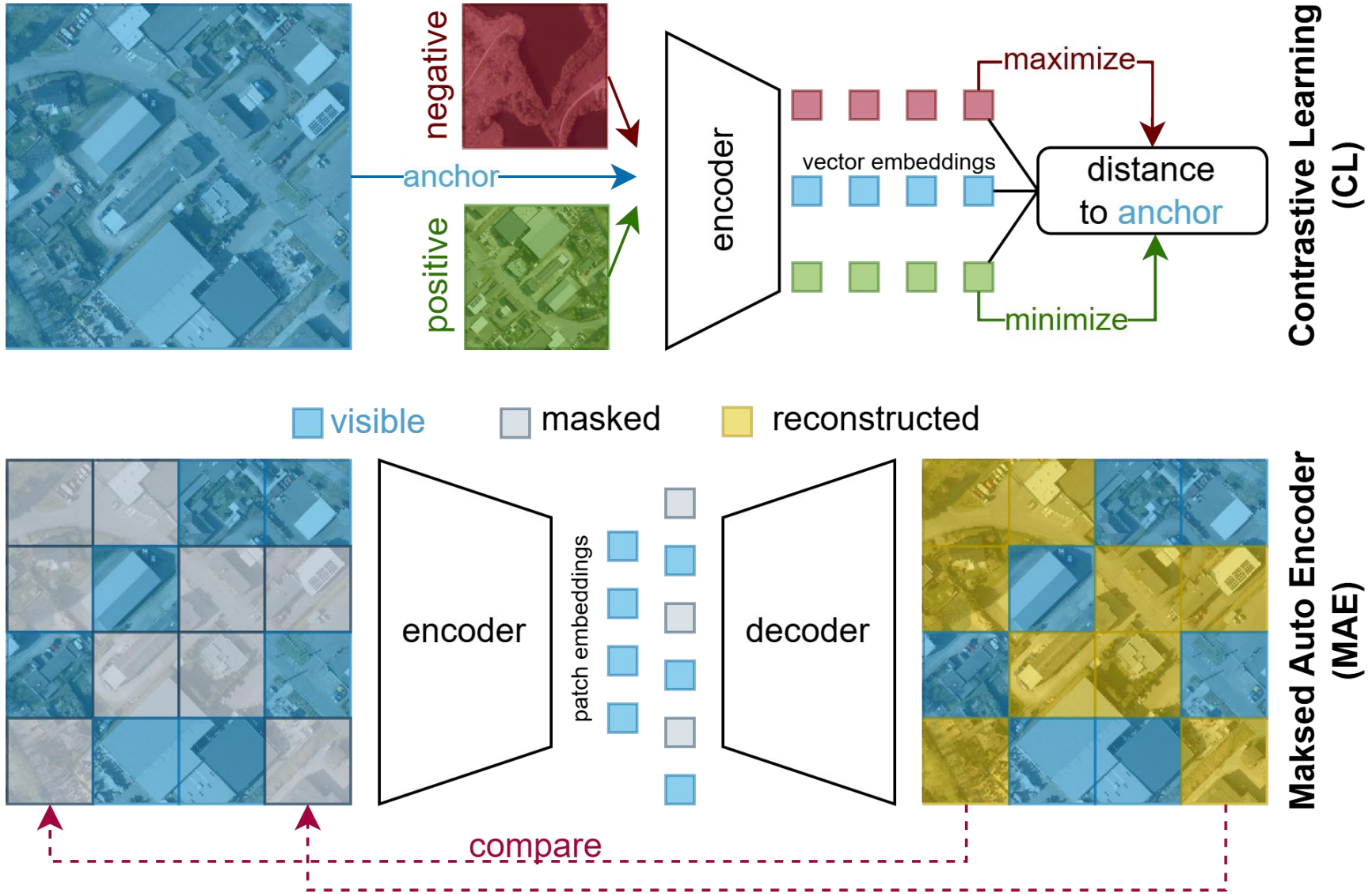


Marconcini et al. 2020

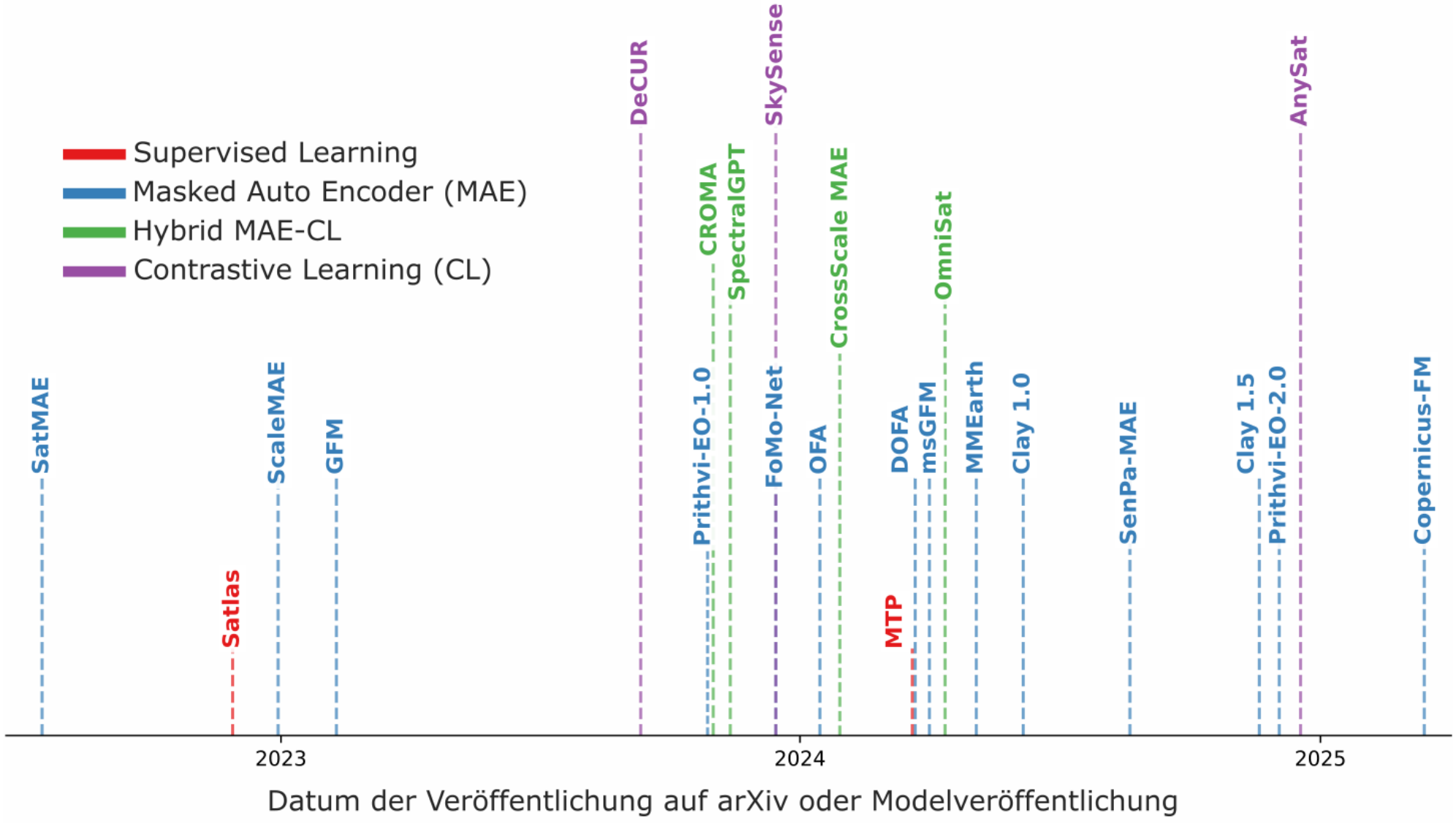
General Purpose EO-Foundation Modelle



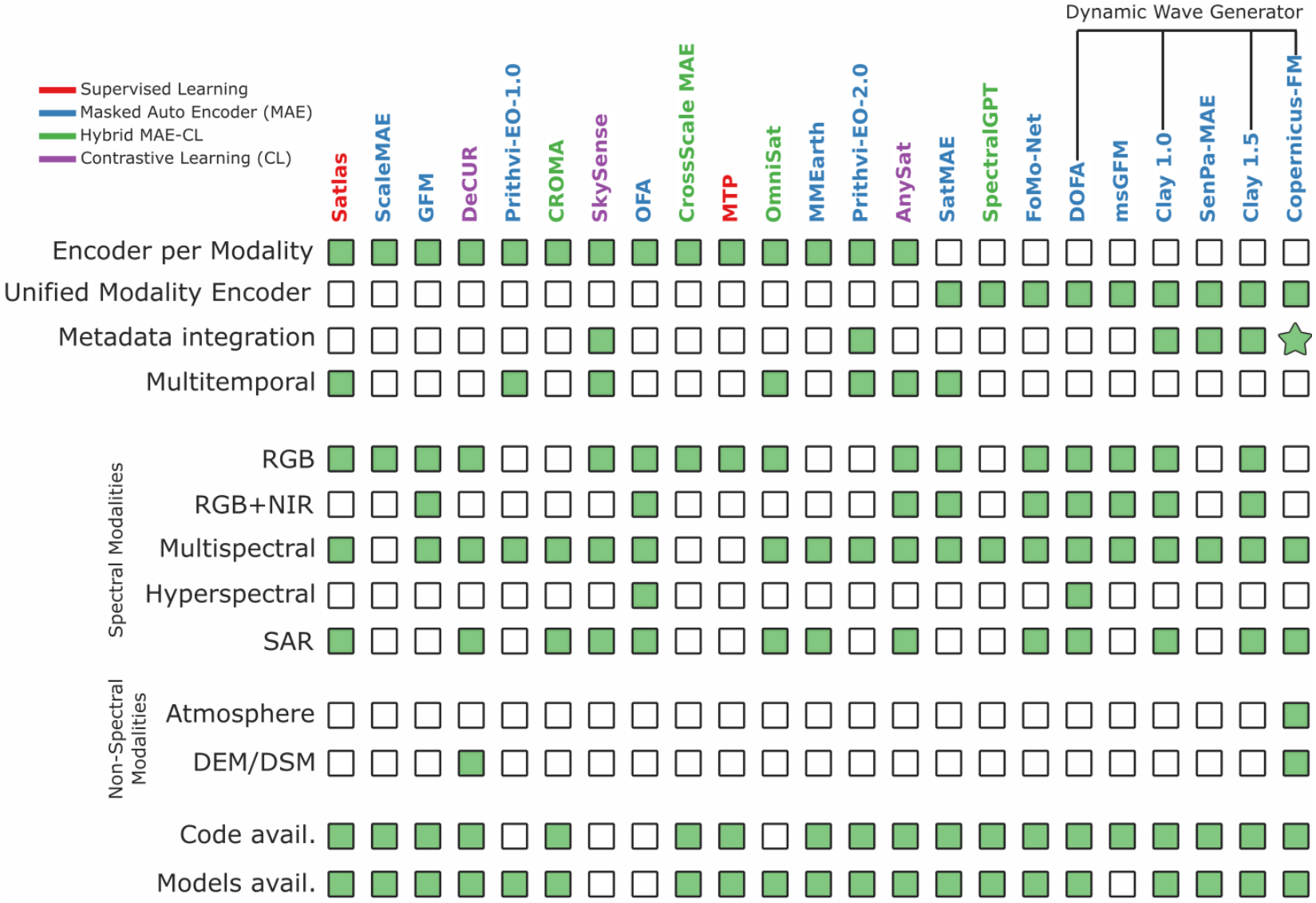
Bedeutende Self-Supervised Learning (SSL) Ansätze für EO-FMs

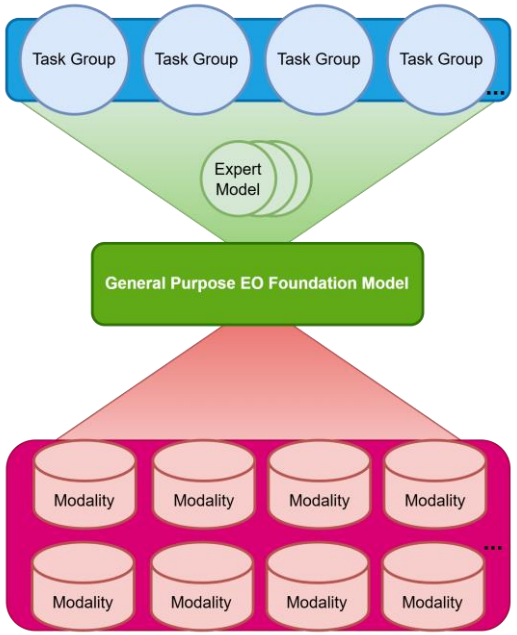


Evolution ausgewählter EO-Foundation Modelle zusammengefasst nach Trainingsansätzen

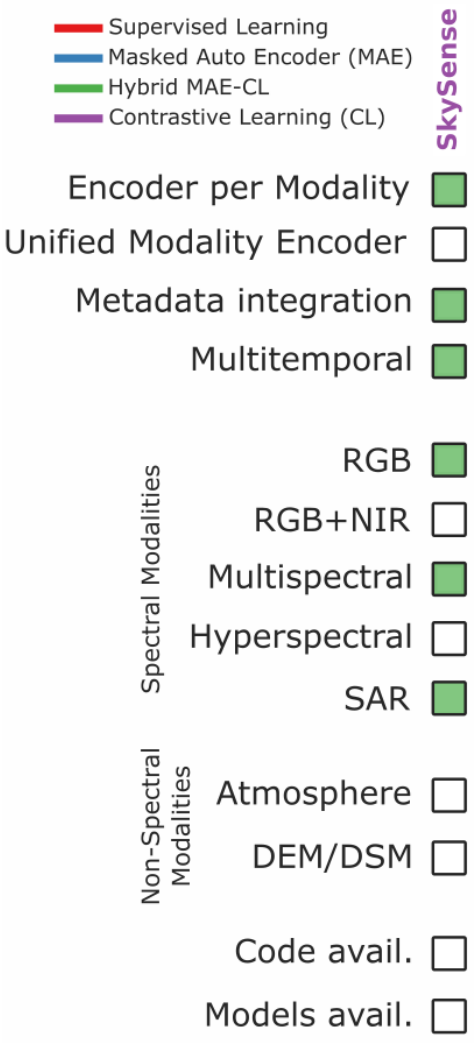


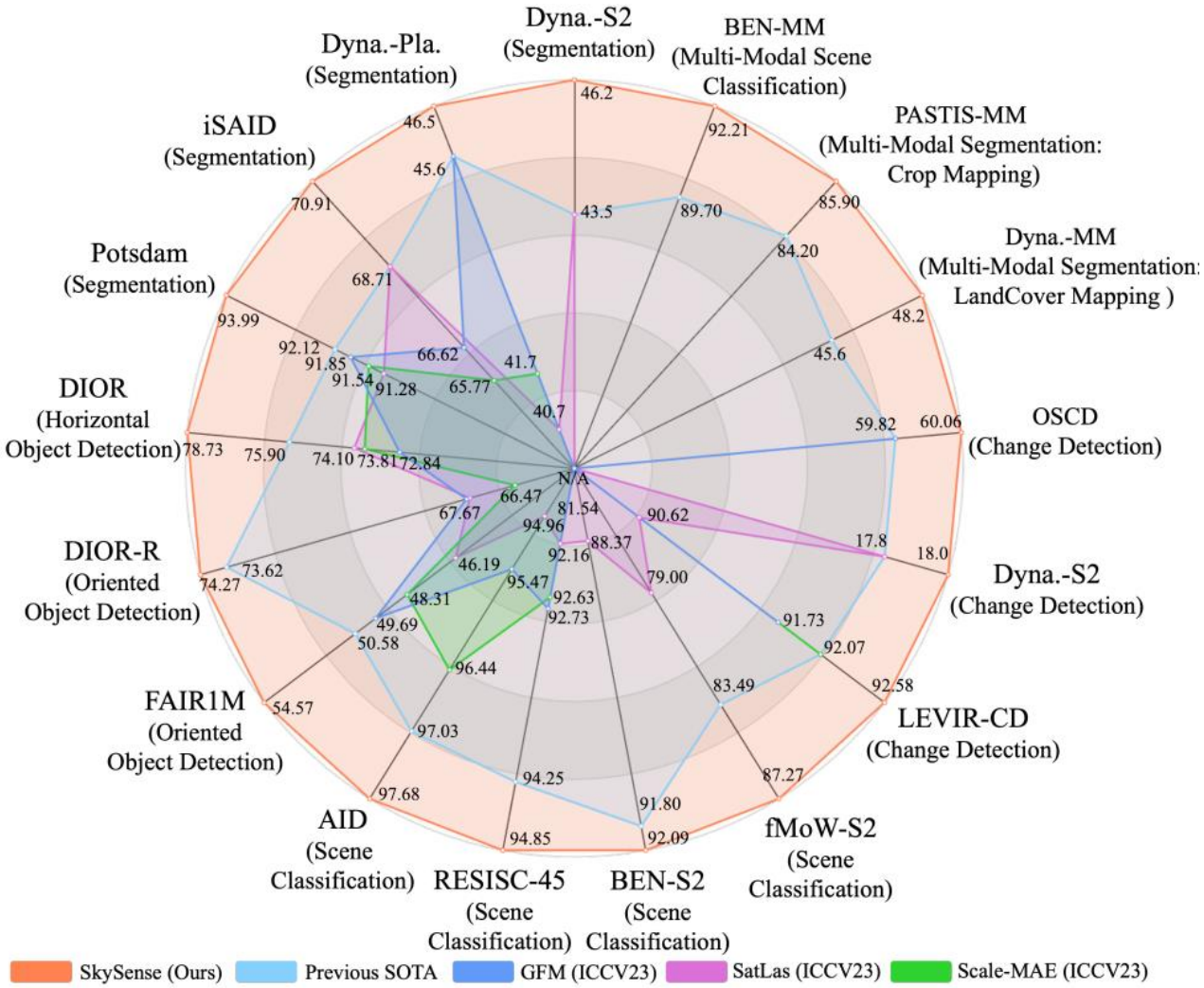
Charakteristika ausgewählter EO-Foundation Modellen





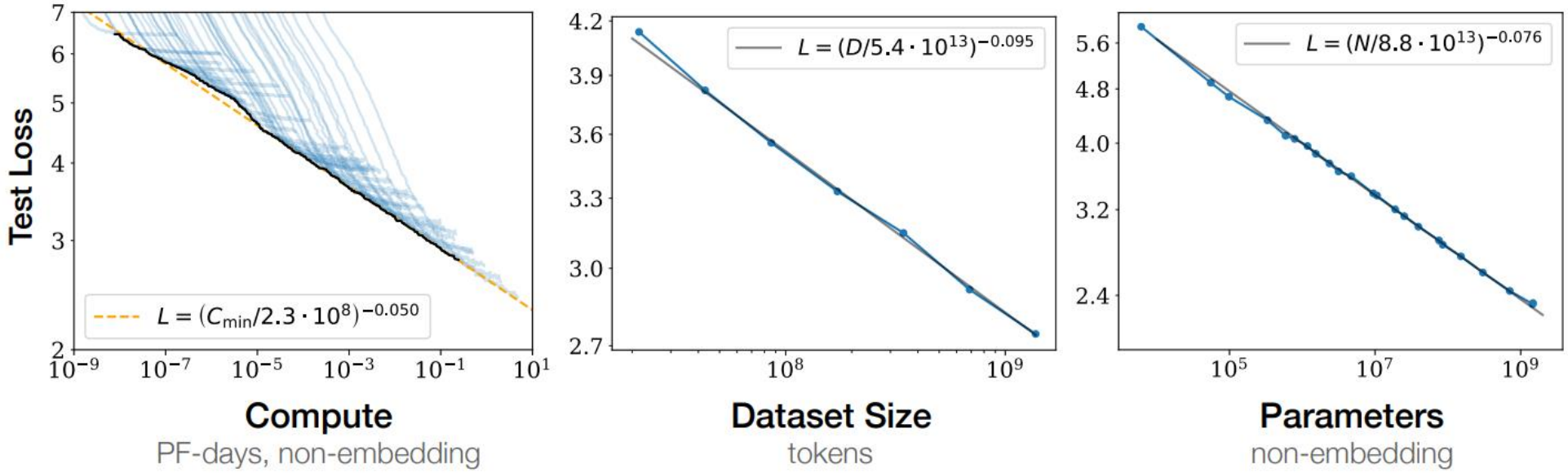
SkySense Performance, verglichen mit andere EO-FMs und SOTA Experten-Modellen





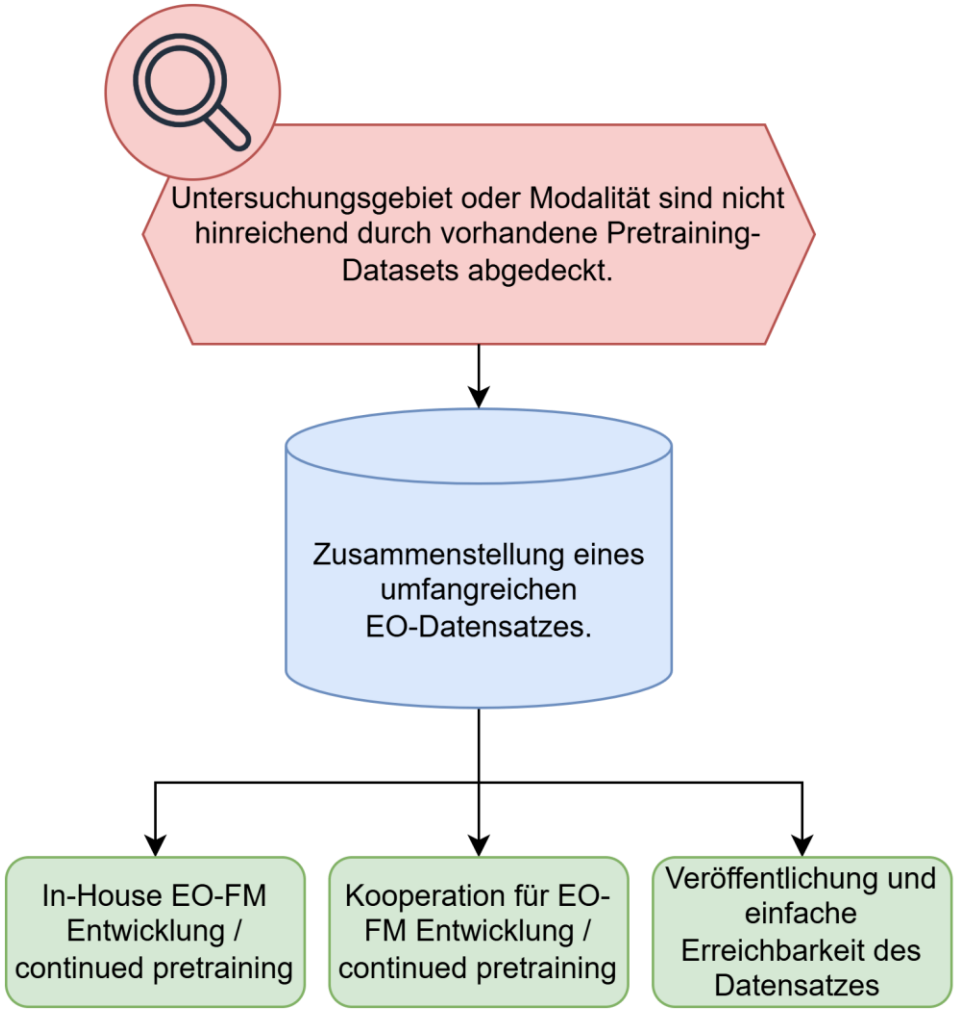
Guo, X. et al. 2024:SkySense: A Multi-Modal Remote Sensing Foundation Model Towards Universal Interpretation for Earth Observation Imagery. Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), pp. 27672-27683.

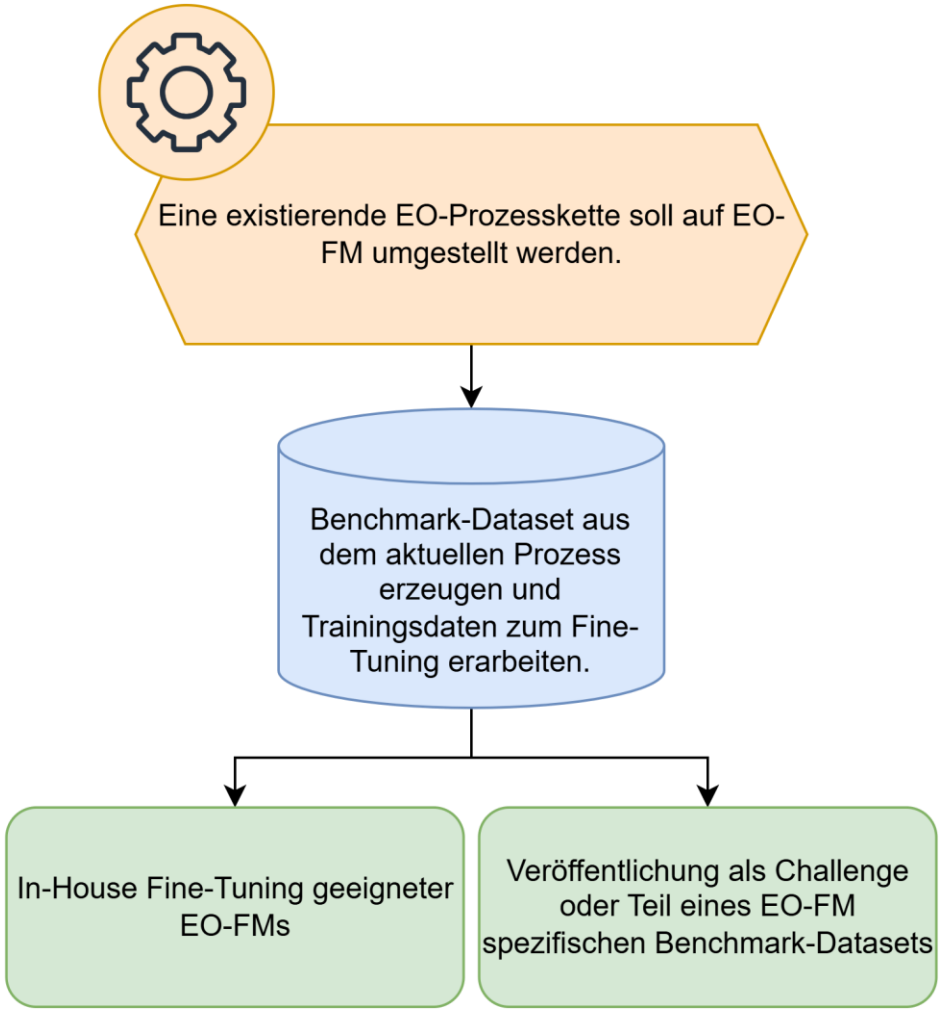
Skalierung von Rechenleistung, Daten und Modellparametern für das Training von Transformer basierten LLMs



Kaplan, J. et al. 2020: Scaling Laws for Neural Language Models. S. 3, https://arxiv.org/abs/2001.08361

Aktiv werden und EO-FMs gestalten





Quellen

Baumhoer, C.A., Dietz, A.J., Heidler, K. *et al. 2023* IceLines – A new data set of Antarctic ice shelf front positions. *Sci Data* **10**, 138. https://doi.org/10.1038/s41597-023-02045-x

Hoeser, T., Feuerstein, S., Kuenzer, C., 2022. DeepOWT: A global offshore wind turbine data set derived with deep learning from Sentinel-1 data. Earth System Science Data 14, 4251-4270. doi: https://doi.org/10.5194/essd-14-4251-2022.

Hoeser, T., Kuenzer, C., 2022b. Global dynamics of the offshore wind energy sector monitored with Sentinel-1: Turbine count, installed capacity and site specifications. International Journal of Applied Earth Observation and Geoinformation 112, 102957. doi: https://doi.org/10.1016/j.jag.2022.102957.

Marconcini, M., Metz-Marconcini, A., Üreyen, S. et al. 2020. Outlining where humans live, the World Settlement Footprint 2015. Sci Data 7, 242.

Thonfeld, F.; Gessner, U.; Holzwarth, S.; Kriese, J.; da Ponte, E.; Huth, J.; Kuenzer, C., 2022. A First Assessment of Canopy Cover Loss in Germany's Forests after the 2018–2020 Drought Years. *Remote Sens. 14*, 562. https://doi.org/10.3390/rs14030562

Quellen

Guo, X. et al. 2024:SkySense: A Multi-Modal Remote Sensing Foundation Model Towards Universal Interpretation for Earth Observation Imagery. Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), pp. 27672-27683.

Kaplan, J. et al. 2020: Scaling Laws for Neural Language Models. S. 3, https://arxiv.org/abs/2001.08361.