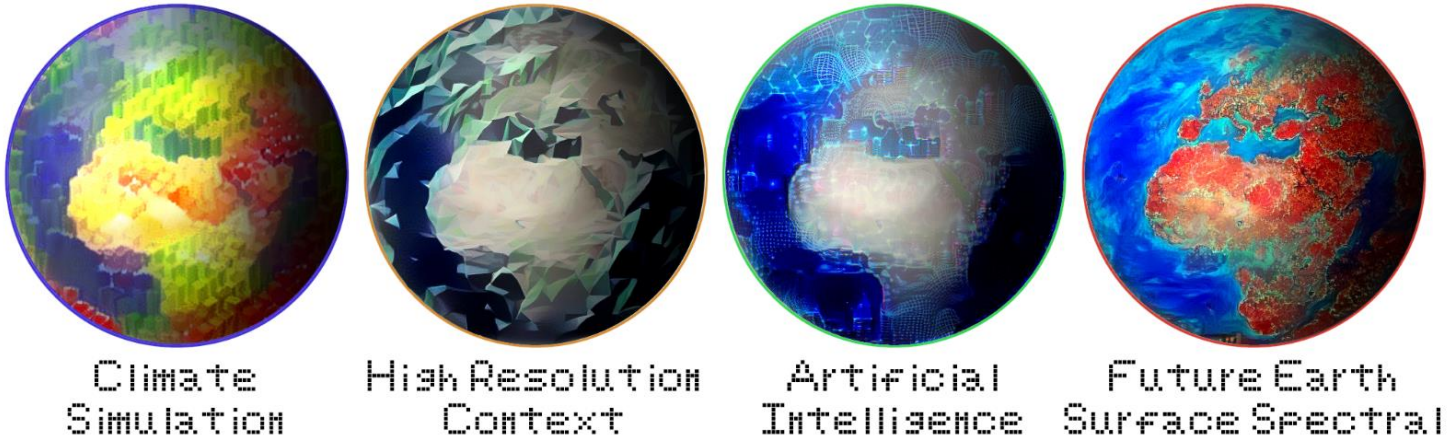
EarthNet2021



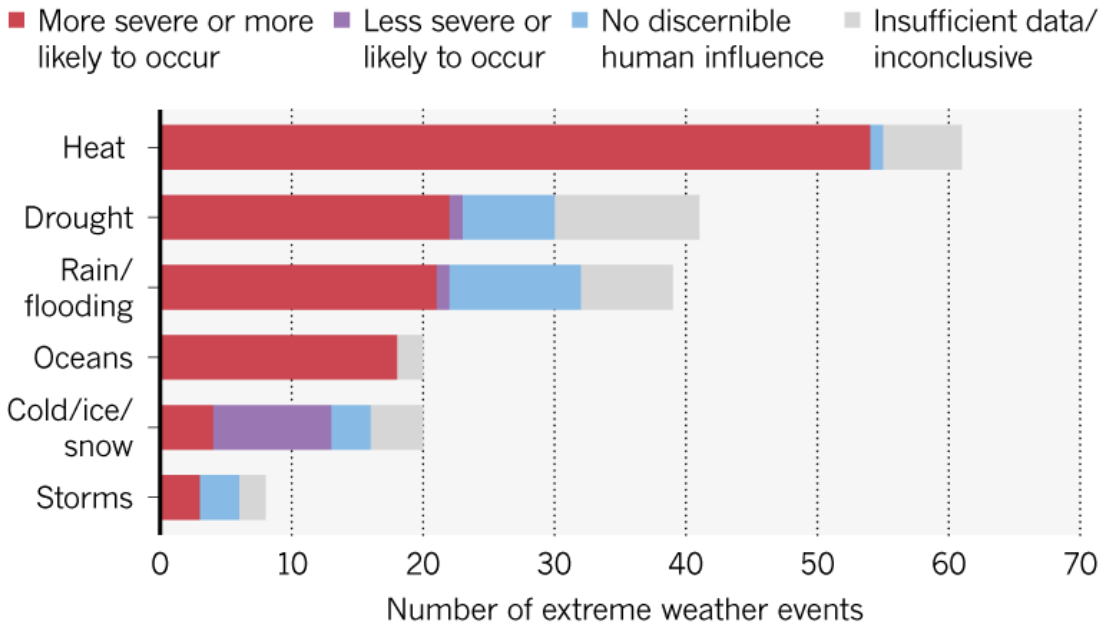
A novel large-scale **dataset** and **challenge** for forecasting **localized climate impacts**

Christian Requena-Mesa, Vitus Benson, Jakob Runge, Joachim Denzler, Markus Reichstein

Max Planck Institute for Biogeochemistry. In Cooperation with the ***Computer Vision Group, FSU Jena*** and the **German Aerospace Center** (***DLR***).

12/11/2020 Tackling Climate Change with Machine Learning @NeurIPS2020

Climate change increases frequency of extreme events.



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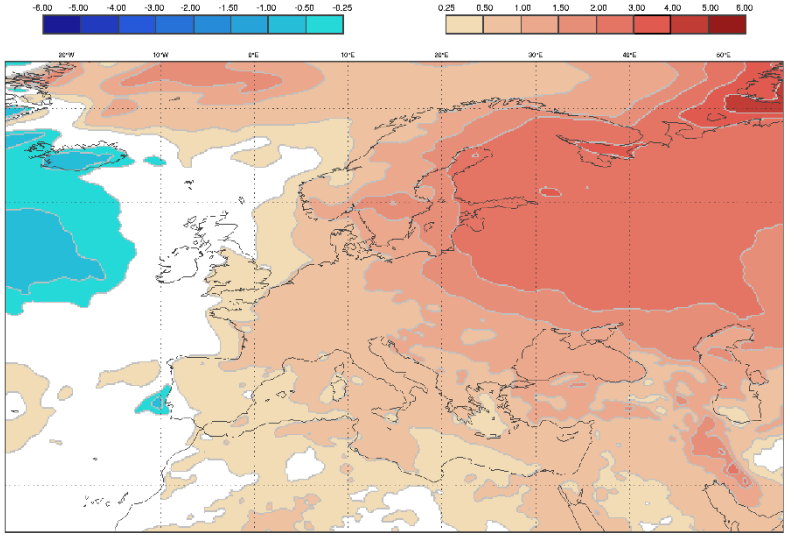
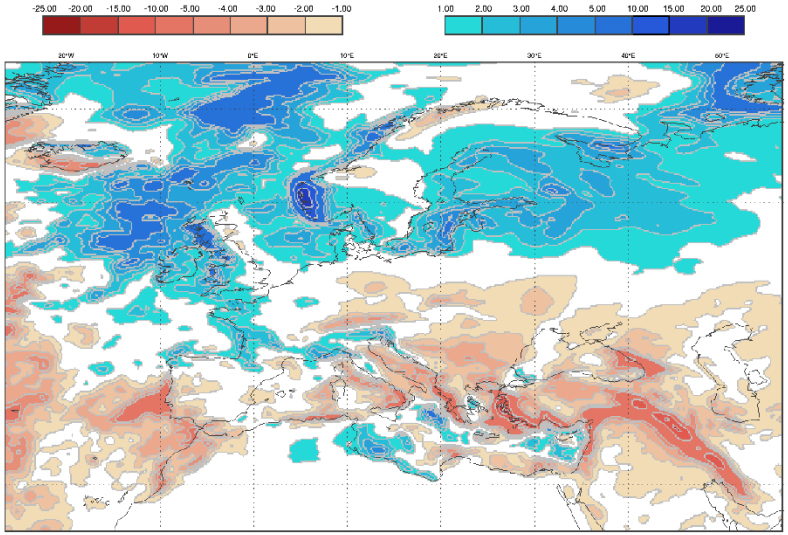
Seasonal weather prediction

January 2021

Temperature anomaly (Celcius)



Rain anomaly (mm)



Maps processed by EFFIS System based on ECMWF Seasonal Forecast

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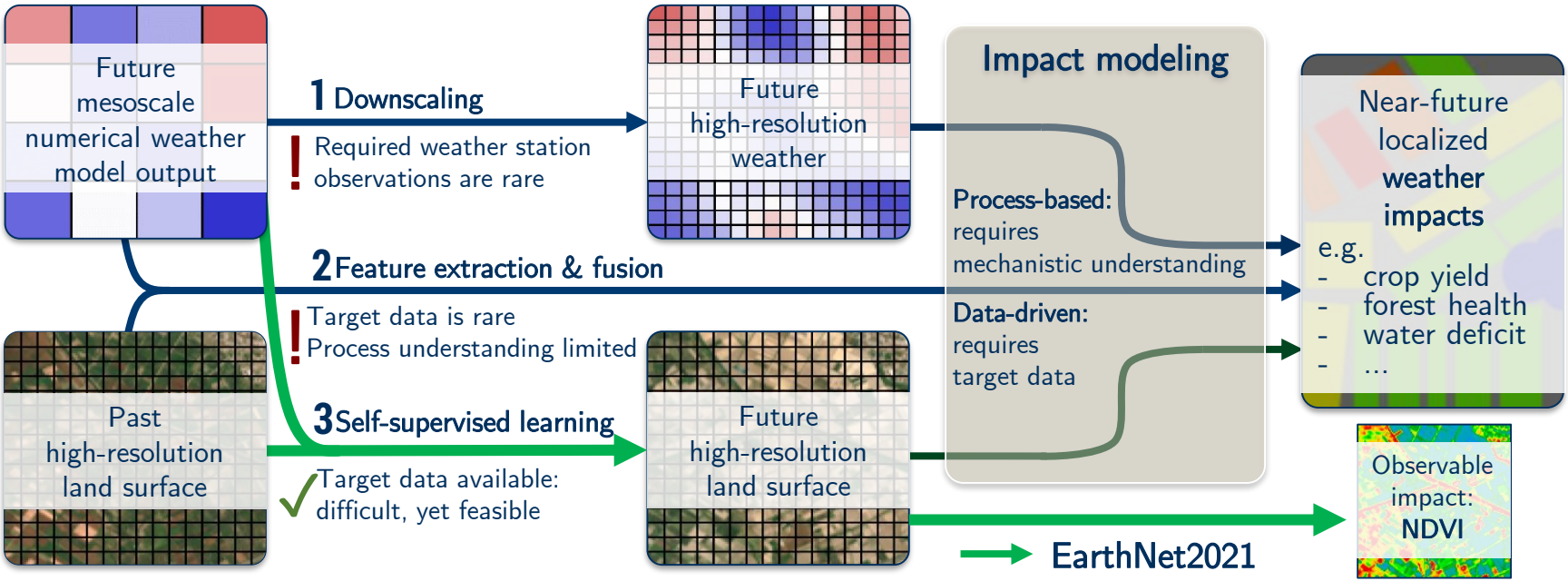
Localized climate impact forecasting



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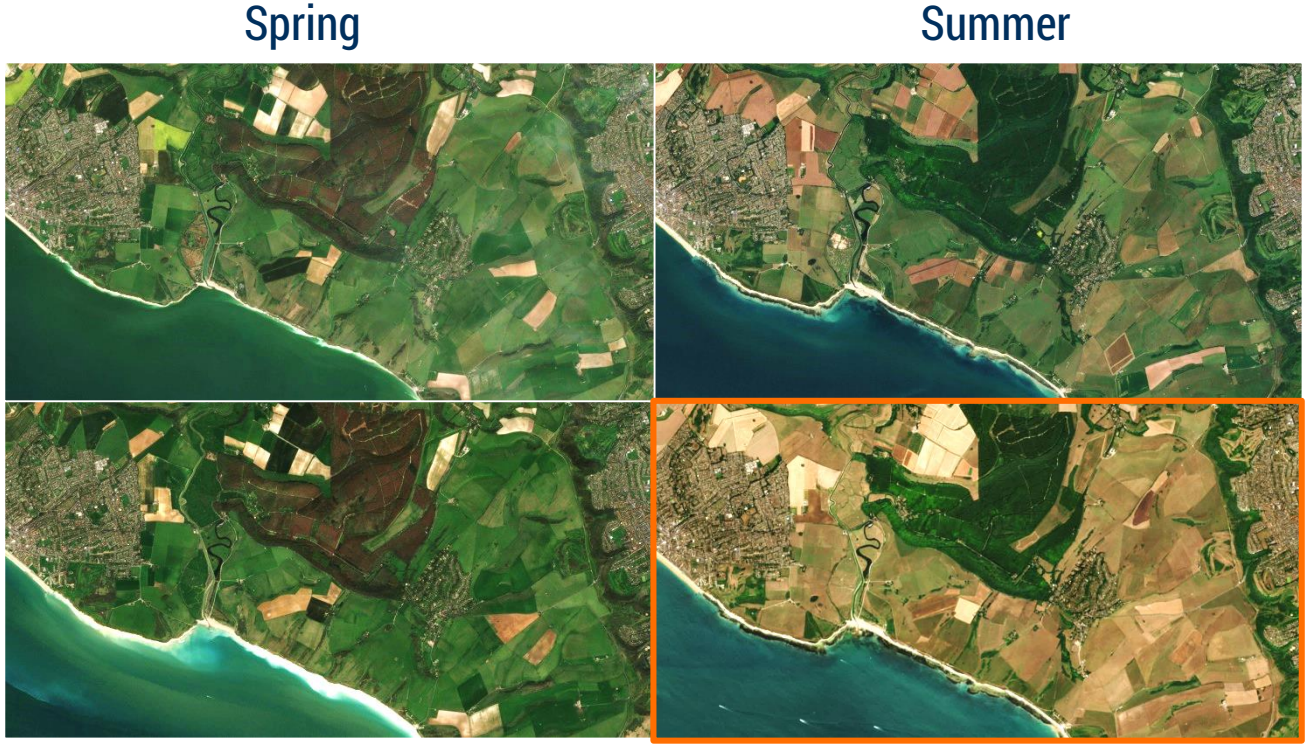
Impacts materialize at a very local scale



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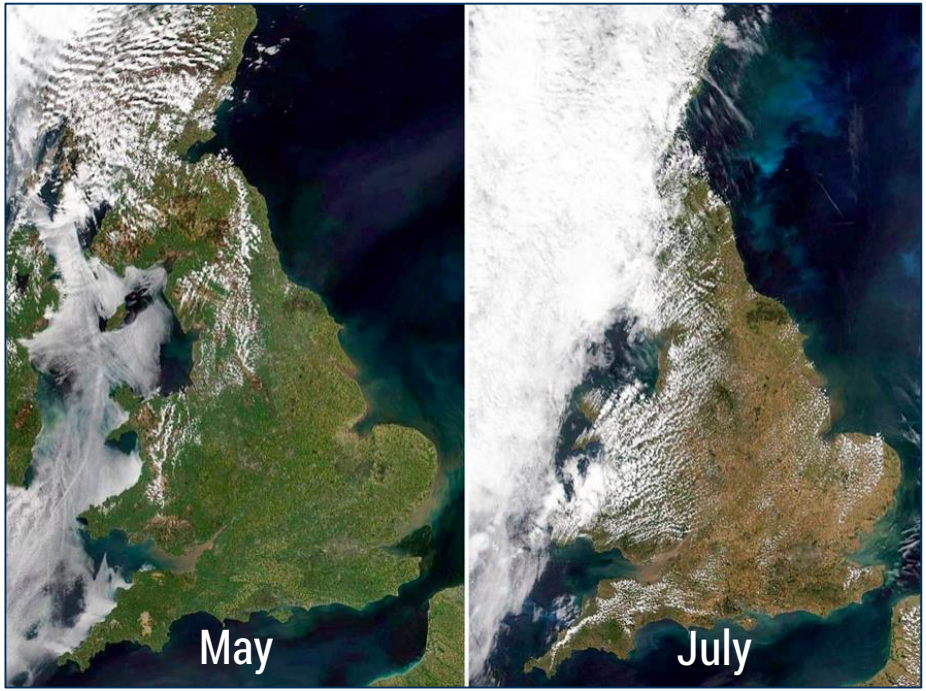
High-res imagery embeds the local impacts



2018 British Isles heat wave

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A challenge to **predict future land surface**, as seen from space, given coarse weather projections.

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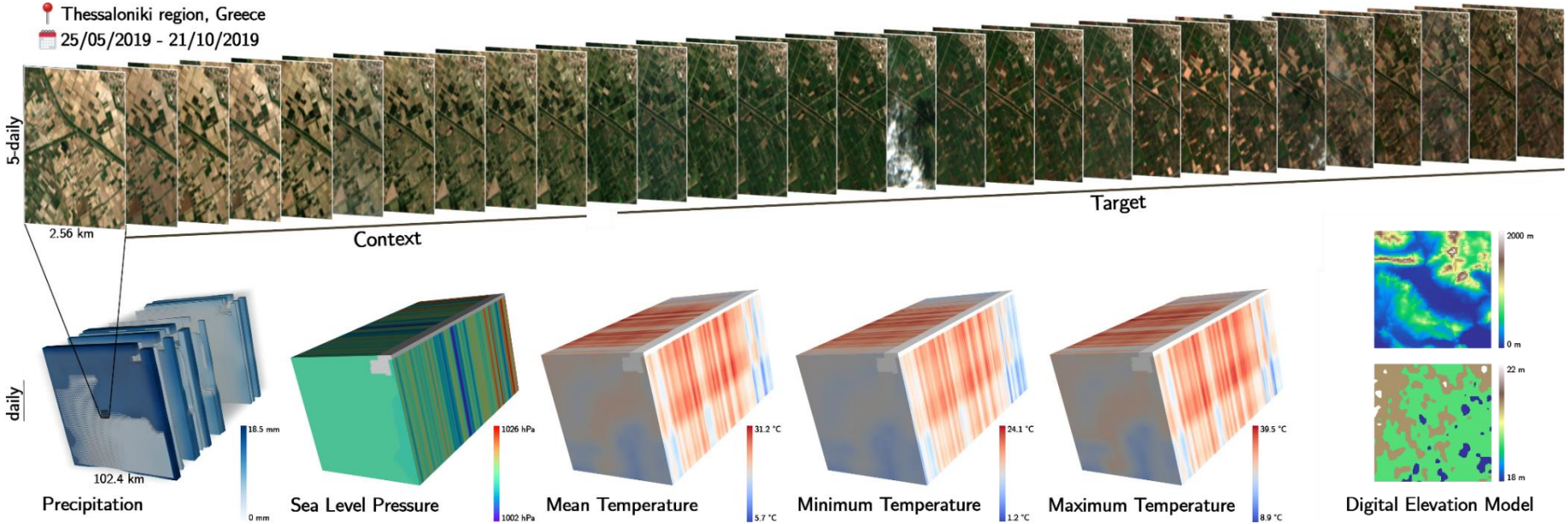
EarthNet2021 Dataset



Visualization single sample of the EarthNet2021 dataset

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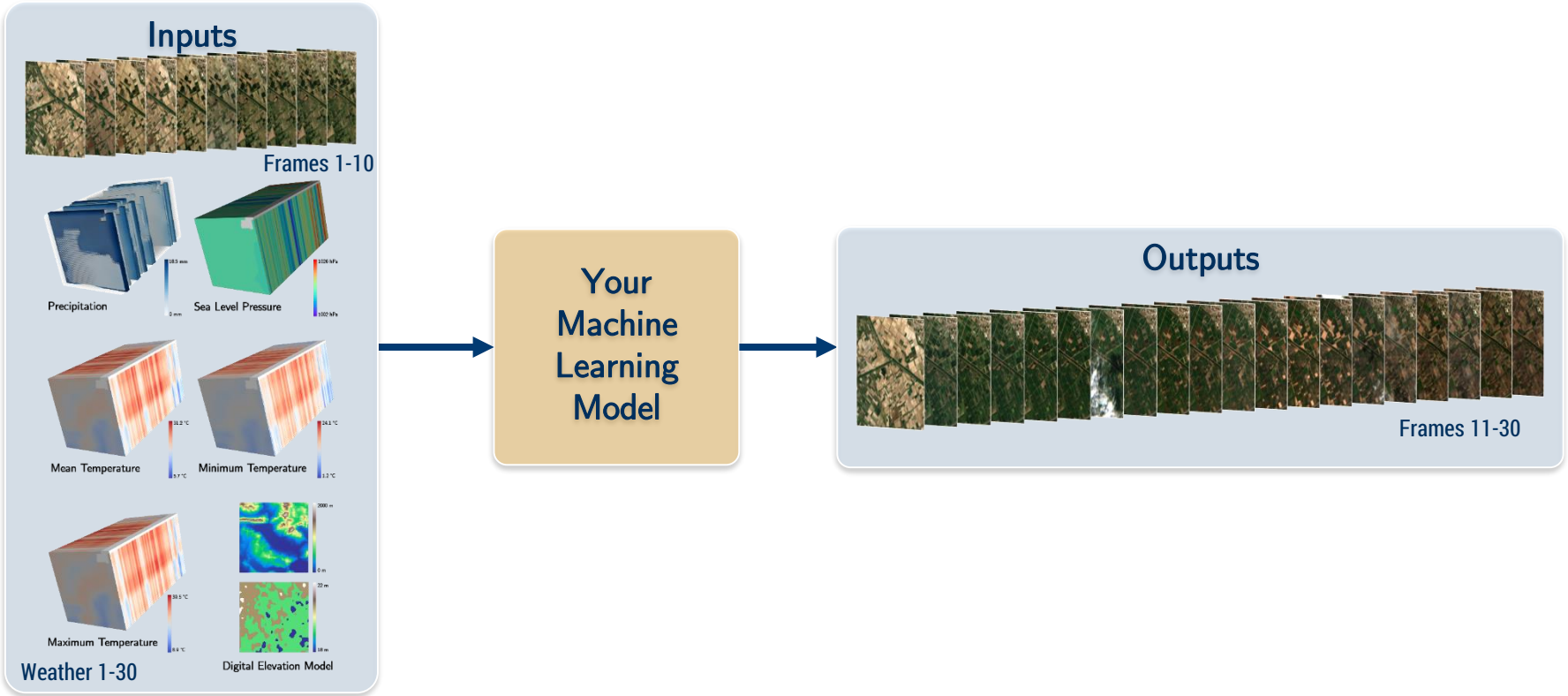
Machine learning setting



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Challenge tracks

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Evaluation metric: EarthNetScore

EarthNetScore is a composed metric that evaluates 4 subtasks:

Component	Metric
Overall accuracy	Median Absolute Deviation
temporal trend of vegetation state	Ordinary Least Squares
Temporal distribution of vegetation state	Earth Mover Distance
Spatial **perceptual similarity**	Structural Similarity Index

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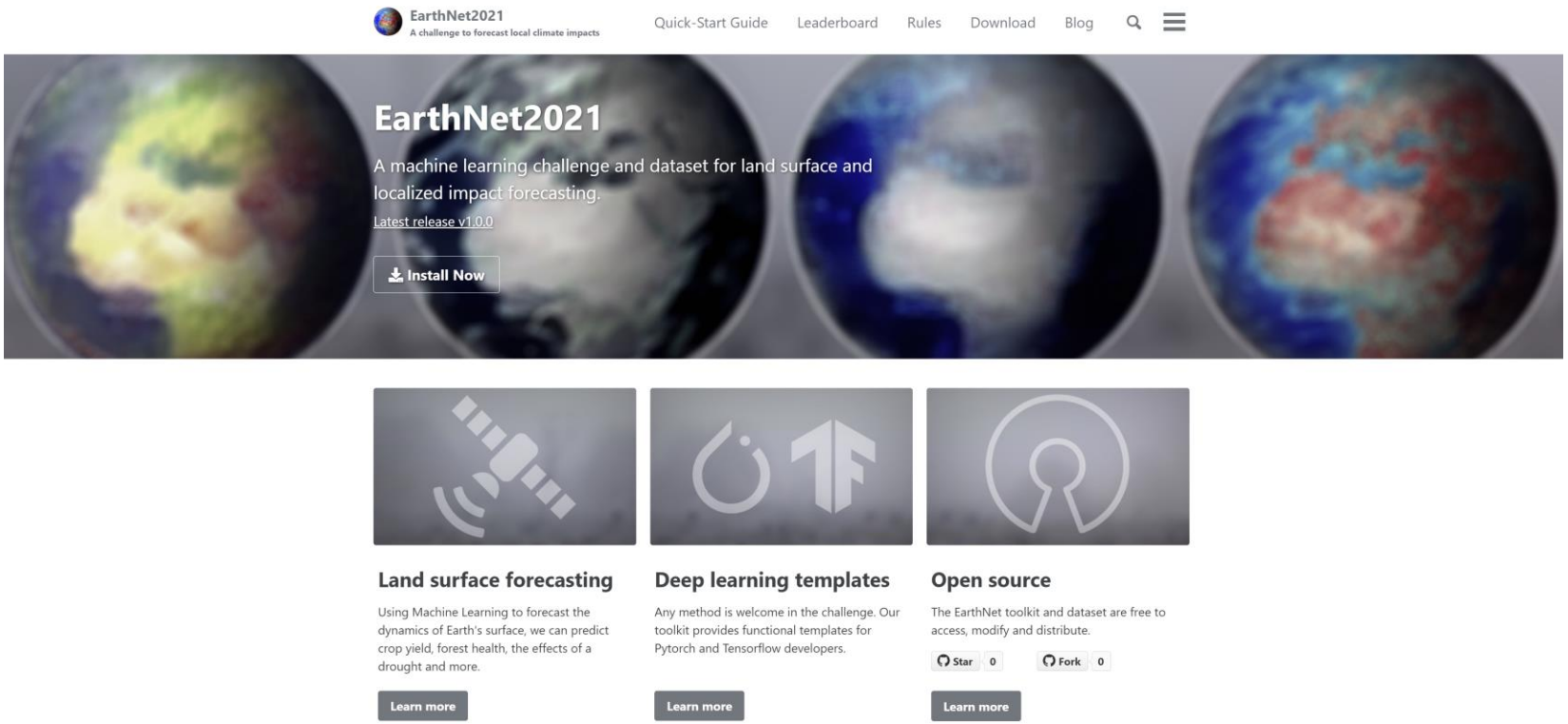

Learn more at earthnet.tech

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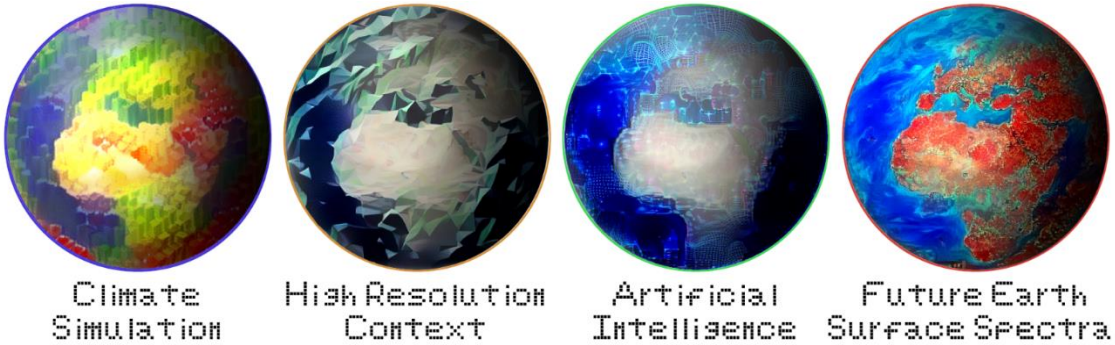
Thank you



See you on the leaderboard!

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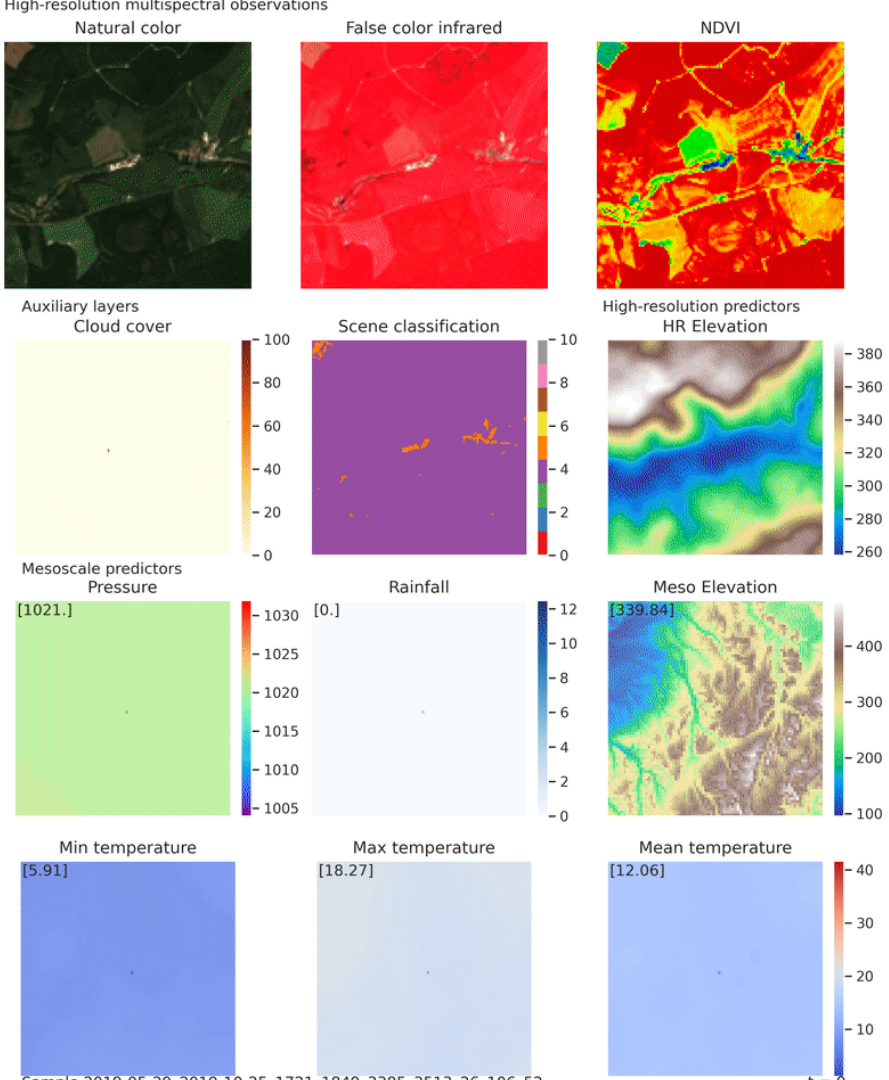
Sample visualization



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