Technische Universität Dresden

Sense^4 Fire

esa

CGLS v2
Leaf Area Index
(300 m, 2014 – 2025)

Downscaled
CGLS LAI (20 m)

White Nile wetlands

ESA FireCCI-S211
Burnt Area
(20 m, 2017-06 – 2025)

0 km 4

LAI and Burnt Area (Nov 2018) near Melut, South Sudan

Fuels and Fire Emissions at 20 m Spatial Resolution in African Savannahs

High-Resolution Insights from the TUD-S4F Data-Model Fusion Approach

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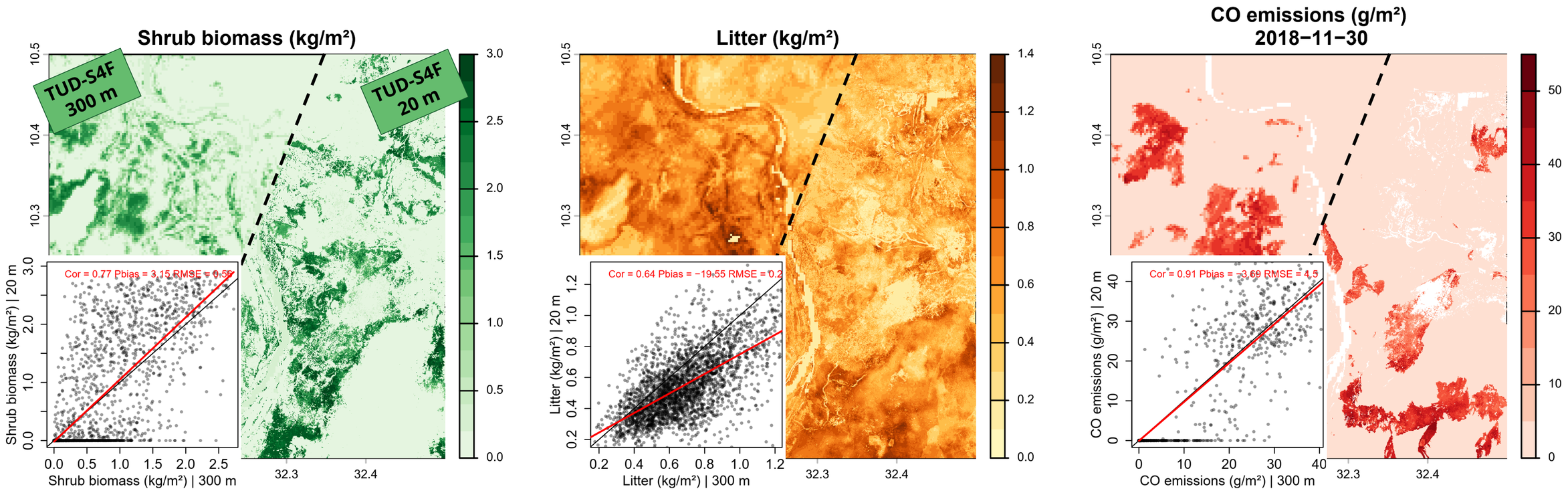
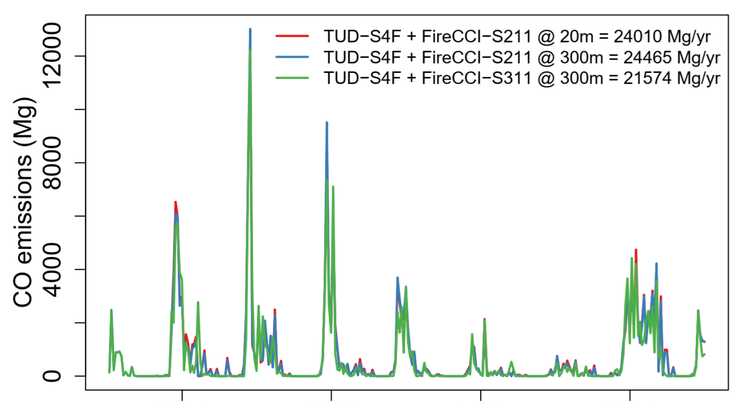
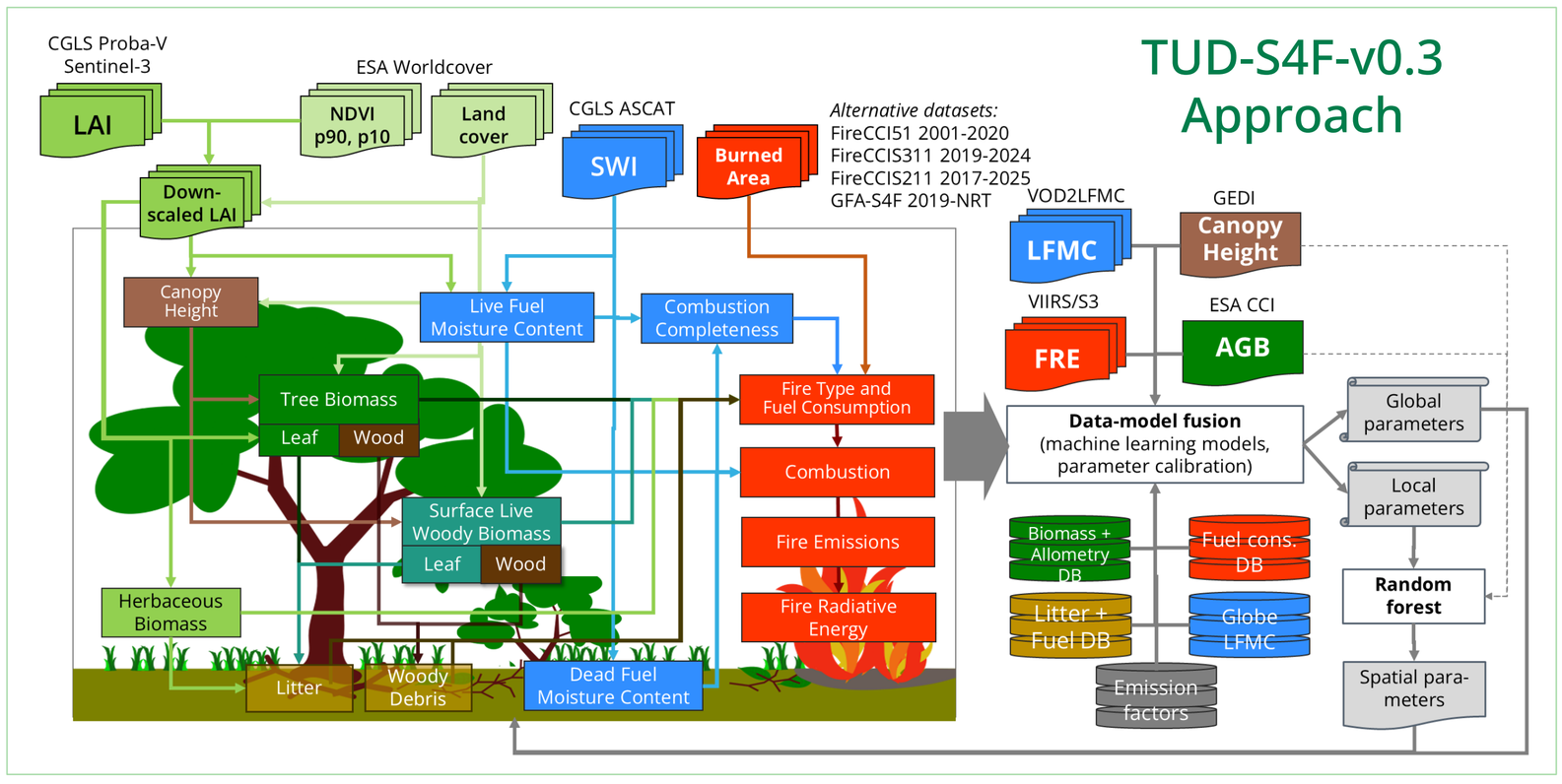


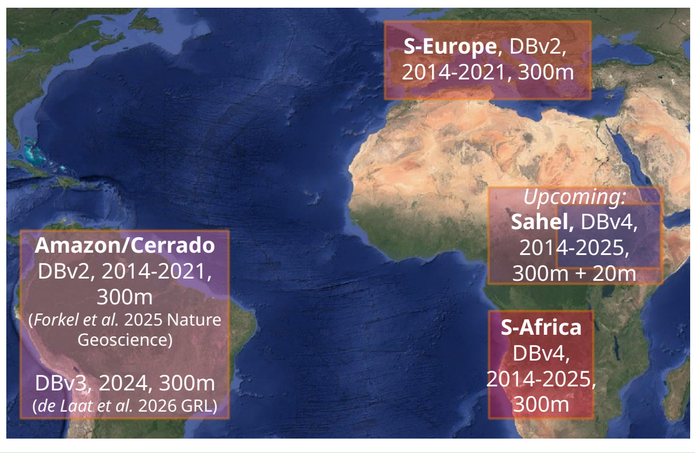
Small fires cause large carbon emissions underestimated by coarse-resolution burnt area data (Ramo et al., 2021; van der Velde et al., 2024). However, we do not know how small-scale variability in fuels affects large-scale fire emissions.

Using 20 m Sentinel-2 burnt area, land cover and LAI products in the TUD-S4F approach (↓ Forkel et al. 2025), we show that **local differences in fuel loads** between high and coarse resolution can be substantial (↑ up to 20% bias in litter), but they largely **cancel out in regional total** fire emissions →.





Sense4Fire study regions, databases and publications



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