Water, Energy and Carbon with Artificial Neural Networks (WECANN) Ver. 1.0

Product Description

WECANN is a global retrieval of surface turbulent fluxes including latent heat (LE), sensible heat (H), and gross primary productivity (GPP) using remote sensing observations. WECANN retrievals are posted on a 1°×1° geographic grid on monthly time scale. This is a statistically-based retrieval algorithm and it uses six remotely sensed observations as input: Solar Induced Fluorescence (SIF), Air Temperature, Precipitation, Net Radiation, Soil Moisture, and Snow Water Equivalent.

Currently, the retrievals are available from Jan. 2007 until Dec. 2015, and we plan to extend it forward to the present time.

File Format

WECANN retrievals are provided in the following two formats:

1- The WECANN_v1.0.nc file contains all three variables in netCDF.
2- The WECANN_v1.0.mat file contains all three variables in a MATLAB MAT-file.

The information contained in these files include the LE, H and GPP estimates in each month as well as Latitude and Longitude information.

LE and H estimates are in [W m^{-2}] and GPP estimates are in [gC m^{-2} day^{-1}].

Acknowledgement

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Data Usage and Citation

WECANN product is freely available for any non-commercial application. Redistribution of these data without prior permission from the developers is prohibited. Developers request to be contacted and invited to collaborate in any research study that uses the WECANN product so they can provide guidance as they have the best knowledge of this product.

Users are asked to cite the following publication when using this product:

Alemohammad, S. H., Fang, B., Konings, A. G., Green, J. K., Kolassa, J., Prigent, C., Aires, F., Miralles, D., and Gentine, P.: Water, Energy, and Carbon with Artificial Neural Networks (WECANN): A statistically-based estimate of global surface turbulent fluxes using solar-induced fluorescence, Biogeosciences Discuss., doi:10.5194/bg-2016-495f, 2016.

Contact

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