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Cool Farm Tool (CFT) Water: Novel tool for water resource assessment on field scale

Benjamin Kayatz

German Research Centre for Geosciences, kayatz@gfz-potsdam.de

Gabriele Baroni

Helmholtz Centre for Environmental Research

Benjamin Kuster

German Research Centre for Geosciences

Stefan Lüdtke

German Research Centre for Geosciences

Daniella Malin

Cool Farm Alliance

See next page for additional authors

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Presenter/Author Information

Benjamin Kayatz, Gabriele Baroni, Benjamin Kuster, Stefan Lüdtke, Daniella Malin, Richard Heathcote, Carl von Tonder, and Martin Wattenbach

Cool Farm Tool (CFT) Water: Novel tool for water resource assessment on field scale

Benjamin Kayatz^a, Gabriele Baroni^b, Benjamin Kuster^a, Stefan Lüdtké^a, Daniella Malin^c, Richard Heathcote^c, Carl von Tonder^d, Martin Wattenbach^a

a German Research Centre for Geosciences, Potsdam, Germany (kayatz@gfz-potsdam.de); b Helmholtz Centre for Environmental Research, Leipzig, Germany; c Cool Farm Alliance, Oxford, UK; d Anthesis, Oxford, UK

Abstract: At the global scale over 70 % of all fresh water used is consumed by the agricultural sector. For this reason a sustainable water management at the basin level often requires the assessment of water that is used for crop production. In this context, the characterization of green and blue water footprint showed to be a useful and efficient approach to support analysis and decisions.

However determining the water footprint is cumbersome and often linked to additional data acquisition efforts. Furthermore the water footprint is often not revealing the basin impact of crop production. To overcome these limitations we developed CFTwater: A new field scale water tool that enables farmers to obtain crop water consumption with a very limited need for additional data beside the ones already available at the farm. The tool is fully integrated in the already existing greenhouse gas accounting tool CFT. The tool combines the FAO56 approach with various global datasets providing crop, soil and climate data. In this contribution we present the effect of using global datasets versus site measurements. Comparison of modelling results are based on water footprinting studies in the scientific literature and observations from eddy covariance systems from various agricultural sites from the Fluxnet database.

Results show that more precise observations of environmental drivers are not always linked to more accurate estimates of actual evapotranspiration. Estimates based on gridded climate observations are still able to reproduce daily patterns. However cumulative values over one growing season show a considerable offset to eddy covariance observations independent of input data.

Finding the optimum between data requirements and an accuracy that fulfils stakeholder needs is crucial. Engaging farmers and using a global network as the Fluxnet database will help to achieve this goal.

Keywords: water footprint, crop production, Cool Farm Tool, agricultural water management