

EGU2020-3582

<https://doi.org/10.5194/egusphere-egu2020-3582>

EGU General Assembly 2020

© Author(s) 2021. This work is distributed under the Creative Commons Attribution 4.0 License.



## Can we deduce irrigation trends at global scale from the ones of essential climate variables?

Agnes Ducharne<sup>1</sup>, **Amen Al-Yaari**<sup>2</sup>, Frédérique Cheruy<sup>3</sup>, and Jean-Pierre Wigneron<sup>4</sup>

<sup>1</sup>Sorbonne, METIS, METIS, Paris, France (amen.al-yaari@inra.fr)

<sup>2</sup>Sorbonne Université, IPSL (Institut Pierre Simon Laplace) FR 636, CNRS, Paris, France

<sup>3</sup>Sorbonne Université, UMR 8539, LMD-IPSL, CNRS, Paris, France

<sup>4</sup>INRAE, UMR1391 ISPA, F-33140, Villenave d'Ornon, France

Irrigation is the most important water use sector that can impact land-atmosphere feedback and climate. The use of irrigation is increasing but its effects on climate are still ignored in most of the climate models due to the lack of accurate information on its sources or its extent over the whole globe. The only map that presented a global inventory on the extent of areas irrigated with groundwater and surface water was published in 2013 (Siebert et al., 2013). Here, we take advantage of the abundance of global satellite observations to investigate the effects of irrigation on long-term trends in essential climate variables: (i) temperature obtained from the Climate Research Unit (CRU data), (ii) precipitation obtained from CRU, Global Precipitation Climatology Project (GPCP), and Global Precipitation Climatology Centre (GPCC), (iii) soil moisture obtained from Soil moisture and ocean salinity (SMOS) satellite, (iv) evapotranspiration obtained from CRU and the Global Land Evaporation Amsterdam Model (GLEAM), and (v) land cover based on the multi-epoch ESA LC dataset. Based on the potential links between the existing information of irrigation and these five climate and land-surface variables, possible tracking of the irrigation extent over other regions, where no information exist, will be investigated. This study is ongoing and preliminary results will be presented.

### References

Siebert, S., Henrich, V., Frenken, K., Burke, J., 2013. Update of the Global Map of Irrigation Areas to version 5. Proj. Rep.