

EGU22-9513

<https://doi.org/10.5194/egusphere-egu22-9513>

EGU General Assembly 2022

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Remote sensing detection of climate-smart practices: Enhancing farm resilience in Austria

Juan Carlos Laso Bayas¹, **Martin Hofer**¹, Ian McCallum¹, Gernot Bodner², Maxim Lamare³, Olha Danylo¹, Victor Maus¹, David Luger², Linda See¹, and Steffen Fritz¹

¹International Institute for Applied Systems Analysis (IIASA), Laxenburg, Austria

²University of Natural Resources and Life Sciences (BOKU), Vienna, Austria

³SENTINEL HUB VAS GmbH, Graz, Austria

Climate-smart agricultural practices are techniques that help crops to endure “extreme” weather events. Practices such as minimum or no tillage, crop rotations, and cover crops reduce wind and rain-driven erosion, enhance soil physical quality, and enable soil to store water for a longer time. Climate change has already led to an increased frequency of “extreme” weather events including prolonged dry spells and intense rain. From a farmer’s perspective, a clearer and more spatially explicit demonstration of how these practices can enhance the resilience of farms would support their accelerated uptake and thus result in increased food security. From a policy maker’s perspective, knowing the extent of adoption and location of these more resilient farms would enable them to produce policies that facilitate and promote the adoption of these practices, which can buffer the effects of climate change. The use of remote sensing to detect these practices would, therefore, benefit this process. Several existing remote sensing-derived indicators, such as the Normalized Difference Vegetation Index (NDVI), are already in use. They inform farmers and policy makers on, e.g., crop and nutrient status. A combination of existing and new remote sensing-derived indices is needed to facilitate and streamline the detection and promotion of climate-smart practices, but a lack of in-situ data to date has prevented the development and verification of new models of detection. The “SATFARM services” project, which brings together expertise in agriculture, remote sensing, and data analysis, aims to connect a large agricultural time-series data set, provided by the Austrian Chamber of Agriculture, with various remote-sensing derived indicators. The goal is to detect and track climate-smart practices and to display the results on a platform (<https://apps.sentinel-hub.com/eo-browser/>) accessible to farmers, researchers, and policy makers. This presentation will showcase the methodology employed, the initial results and the display of these indicators on the platform.