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Agroclimatic conditions of past and future in Austria

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Climate and weather related agricultural production conditions can be well described by agroclimatic indices and be used as a complementary source of information for planning farm management options. They can describe normative aspects such as the severity and frequency of various adverse weather conditions or systemic aspects such as impacts on crops and agricultural production, given by quantitative or qualitative estimates (such as damage risks, yield loss potentials, crop phenology shifts etc.). In the Austrian project of the Austrian Climate Research Program “COMBIRISK” the GIS based operational monitoring system Agricultural Risk Information System (ARIS) was developed. It includes a wide set of agroclimatic biotic and abiotic (normative and systemic) algorithm based indicators for crop specific phenology, frost damage risk, drought and heat risk and impacts, overwintering damage risk, sowing and harvest conditions and selected pest and disease risks, calibrated for Austrian conditions. Beside the operational application for real time and short-term forecast, however, the set of indicators can be applied also for seasonal predictions and long-term climate scenarios. Complex and significant shifts in weather related agricultural production conditions can be expected under climate change conditions in Austria, due to highly variable climate and orographic conditions. In our study, we compared therefore the past and future indicator based agroclimatic conditions, using the ARIS set of agroclimatic indicators to assess single as well as combined potential weather related cropping conditions and risks under future climate conditions. Further, the indicators performance is tested at selected sites for seasonal predictions using seasonal weather forecast products.