



Skill of user-tailored seasonal temperature forecasts for agriculture in Peru

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The agriculture sector strongly depends on climatic conditions during the growing season. Unfavorable weather and climate events, such as droughts or frost can lead to crop losses and thereby to large economic damages or even life-threatening conditions in case of subsistence farming. The usual definition of these indices (e.g. frost days = days with a minimum temperature below 0°C) is often not satisfactory for agricultural purposes, e.g. some plants might exhibit lower critical temperature thresholds or only particular phenological stages are susceptible to low temperature damage. Therefore crop-tailored indices for different phenological stages are more useful than the generally defined indices.

In this contribution, user-tailored seasonal forecast products are discussed that have been developed for the agricultural sector in the Peruvian Andes in the framework of the CLIMANDES project (a pilot project of the Global Framework for Climate Services led by WMO [<http://www.wmo.int/gfcs/climandes>]). Specific indices derived from crop requirement studies are elaborated such as the number of days exceeding or falling below plant specific temperature thresholds for given phenological stages. From user requirement studies, frost has been named as one of the highest risks for the agriculture sector in Peru. Thus critical thresholds of minimum temperature are receiving special attention.

The applicability of these indices in seasonal forecasts highly depends on the forecast skill. In this study, potential predictability and skill of selected indicators are presented using seasonal hindcasts of the ECMWF system 4 for Peru during the time period 1981-2010. Furthermore, the influence of ENSO on prediction skill is investigated. An observational data set of 20 surface sites is used for verification. The results indicate that temperature-based indicators show sizeable skill in the Peruvian highlands.