Geophysical Research Abstracts
Vol. 14, EGU2012-8081-3, 2012
EGU General Assembly 2012

Applying Earth Observation Data to agriculture risk management: a public-private collaboration to develop drought maps in North-East China

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Earth Observation Data (EO) can improve climate risk assessment particularly in developing countries where densities of weather stations are low. Access to data that reflects exposure to weather and climate risks is a key condition for any successful risk management approach. This is of particular importance in the context of agriculture and drought risk, where historical data sets, accurate current data about crop growth and weather conditions, as well as information about potential future changes based on climate projections and socio-economic factors are all relevant, but often not available to stakeholders. Efforts to overcome these challenges in using EO data have so far been predominantly focused on developed countries, where satellite-derived Normalized Difference Vegetation Indexes (NDVI) and the MERIS Global Vegetation Indexes (MGVI), are already used within the agricultural sector for assessing and managing crop risks and to parameterize crop yields.
This paper assesses how public-private collaboration can foster the application of these data techniques. The findings are based on a pilot project in North-East China where severe droughts frequently impact the country's largest corn and soybeans areas. With support from the European Space Agency (ESA), a consortium of meteorological experts, mapping firms and (re)insurance experts has worked to explore the potential use and value of EO data for managing crop risk and assessing exposure to drought for four provinces in North-East China (Heilongjiang, Jilin, Inner Mongolia and Liaoning). Combining NDVI and MGVI data with meteorological observations to help alleviate shortcomings of NDVI specific to crop types and region has resulted in the development of new drought maps for the time 2000-2011 in digital format at a high resolution (1x1 km). The observed benefits of this data application range from improved risk management to cost effective drought monitoring and claims verification for insurance purposes. This paper concludes by exploring the potential of replicating such a partnership approach to climate risk assessment in other regions.

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