Spatial-Temporal Modelling of Temperature for Pricing Temperature Index Insurance

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This paper discusses the pricing methodology of the temperature index insurance based on spatial temporal modelling of temperature. The crucial problem here is the location of the potential insurance buyer relative to the station where index is calculated. Since the observed temperatures at particular station are not always correlated to the temperature where the insurance holder lives, it is important to consider spatial issues in the pricing methodology. Thus, we model the temperature using spatial temporal stochastic processes and employ the universal Kriging method to predict the future temperature at some specific locations. Based on temperature index, we may then price the temperature insurance. We illustrate the pricing methodology using 20 years data from five stations in Malaysia. The findings are important for the development of weather index insurance.