Paper ID	158
Author(s)	Hao Dong, Satomi Kurosu, Mika ICHINO and Kooiti MASUDA
Title	The Demographic Consequences of Solar Radiation Variations: Evidence from Japan, 1708-1870

Abstract

This study, among the first in historical demography, examines the demographic consequences of solar radiation variations in early modern Japan. We take advantage of individual-level panel data constructed from local population registers of three villages and a neighboring town in northeastern Japan in 1708-1870, and incorporate newly available monthly data of solar radiation transcribed from diary weather records in two locations near the studied populations. We estimate the effects of monthly and seasonal solar radiation variations on mortality risks and out-migration probabilities in the following year, accounting for the confounding effects of individual characteristics, household structures and socioeconomic status, famine years, and fixed effects of communities and periods. We further compare the effect sizes between solar radiation variations and local rice prices to gauge their relative importance in shaping demographic consequences. Our findings suggest systematic associations between solar radiation variations and demographic outcomes. The association patterns further differ by individual life stages (i.e., childhood, adulthood, and old ages), as well as between regular and famine years. With these unique data and systematic evidence, this study contributes to a better understanding of the seasonality and irregularity in demographic outcomes of historical populations from a climate hazard perspective.

Keywords	Humans, Climate, Demography

Paper ID	271
Author(s)	Kumiko Takata
Title	Impacts of climate change on ecosystems through phenology

Abstract

The impact of climate change on phenology varies significantly among the species, which could threaten biodiversity. The global warming generally makes them early for spring blooms and cicadas' eclosions, while makes them late for emergence of some insects in spring and for autumn color of leaves. However, its large-scale picture is unclear. The data of phenological observations by the Japan Meteorological Agency for 57 species of plants and animals at 102 sites allover Japan from 1953 to 2020 enables us to investigate long term trends of various kinds of phenology in relation to climate change. Our analysis so far have revealed that the first chirping date of cicada has become early except for the regions with heavy snow, and that the first appearance date of Barn swallows has become early while that of Cabbage white butterflies has become late at many sites in Japan. Examination for changes in seasonality of climate by the global warming and its impact on phenology would give us an insight for risk assessment of the biodiversity.

Keywords	Animals, Plants, Phenology, Climate change

Paper ID	085
Author(s)	Juri YOSHIZAWA
Title	Transformations in Environmental Consciousness Through Analysis of Primal Landscape Mapping

Abstract

This study aimed to determine the relationship between the landscapes depicted on the Proto-scenery Map and the level of interest in the natural environment among students at a university with a teacher training course. Forty-eight students were asked to draw a Proto-scenery Map in pencil on A4 paper for 25 minutes. The map was classified as natural or non-natural regarding Nonaka's (1993) typological classification of Proto-scenery Maps. Students were then asked to complete a three-question multiple-choice questionnaire and a one-question descriptive questionnaire.

The results revealed that 1) students who drew nature had a higher level of experience with nature, 2) students who drew nature had a higher level of interest in nature, and 3) students who drew nature had a higher level of interest in environmental education. This suggests that the method using the ' Proto-scenery Map ' is effective as an indicator for measuring the level of interest in nature and environmental education.

Keywords	Original Landscape Map, Environmental Education, Natural Environment, Level of Interest, University Students