

Local community and Tsunami-lesson from 2011 eastern Japan mega earthquake

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The coastal plain facing Pacific Ocean in north-eastern Japan was suffered by Tsunami and mega-earthquake at 2011 Easter Japan Mega-Earthquake. Still now, the regional planners are preparing for appropriate resuscitation or reconstruction for mitigation in the disaster-stricken areas. In this study, the authors tried to clarify local community activity for disaster prevention at the moment of Mega-earthquake occurrence and Tsunami intrusion. The lower Abukuma river basin and coastal and fluvial landforms comparing with former Tsunami intrusion referred to historical records on this site and local communities based on different landform units of the lower Abukuma river basin were selected for analysis to avoid disaster risk level using questionnaire survey. The local community activities were designed by strong leadership of community, former experience of disaster, preparedness of evacuation drill, work sheering experience of community building up social capital in each region. The land use pattern and recent land use change processes in this study area are analyzed and the rapid land use change dealing with urbanization is another trigger of disaster risk level enlargement under the disaster. The future disaster prevention work and disaster mitigation planning should be argued with local community social capital.

Keywords: Tsunami, Local community, landform

Fluvial Environmental Changes of the Ayeyarwady Delta: Case Study for Nyaungdon Borecore Area

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The Ayeyarwady River is one of the largest rivers in Myanmar and drains an area of 85,534 km². The study area is mainly located in the central part of deltaic of the Ayeyarwady River belonging to Nyaungdon Township, Ayeyarwady Region. The main purpose of this study is to clarify geomorphologic land classification mapping and fluvial features of the Ayeyarwady River Delta derived from aerial photos, Landsat +ETM7 Global Digital Elevation Model Version 2 with GIS and RS linkage and to check long term natural environmental restoration of the lower Ayeyarwady River at Nyaungdon drilling point in Ayeyarwady Region. The volume of sediment deposited rate and discharge rate should be accumulated rapidly before Holocene period because we could clarify with the results of ¹⁴C dating of the organic materials including each layer and all core drilling samples, concept of paleo-geography and geomorphologic evolution, landform development of the study area.

Keywords: Ayeyarwady River Delta, Geomorphologic land classification map, sedimentary facies, drilling bore core, discharge, radiocarbon age

The Impact of Joint Forest Management on Household Income and Forest Condition: The Case of Madhya Pradesh, India

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Joint Forest Management (JFM) is a benefit-sharing scheme between rural households and the state government. Rural households are the user of forest resources for their livelihood, such as grazing, fuel woods, wild foods, etc., while the state government is the owner of the forest land and trees in the forest and makes revenue from the sales of forest resource such as timber, medicinal plants, etc. In the past, the state government used to protect the state forest from rural households, but the protection had been becoming more costly due to the increasing population and as a result forest resources had been depleted. JFM scheme was formally introduced by the central government in 1988 to provide rural households with incentive for forest management by benefit sharing, and each state government adopted JFM since then. Under JFM scheme, rural households have to regulate their use of forest resources for their livelihood and they are promised to will a significant share (e.g. 50%) of timber sales revenue.

Although JFM has been implemented for almost 20 years in most states in India, its impact on the welfare of rural households and forest condition has rarely investigated quantitatively. Thus, the objective of this paper is to tackle this remaining question. This paper utilizes a two-year panel data of 360 households and the satellite images of forest around their residential places. The panel data were collected in 1998 and 2008 in 60 villages spread over 6 districts in Madhya Pradesh.

Our analyses show that JFM neither increased nor decreased household income per capita although household income per capita increased significantly during the 10 year period investigated. It implies that the restriction of forest use did not have any negative effect on the welfare of rural households, but that the benefit sharing was not realized or did not increase household income. The latter is consistent with the fact that most timber trees are still immature to harvest. On the other hand, forest condition was improved during the 10 year period in villages where JFM was implemented. The improvement of forest resources is considered to be caused by forest protection from grazing and tree plantation as part of JFM activities. In conclusion, the state government has benefited from JFM, while rural households have not benefited from JFM although they have not decreased their welfare at least in the short-run.

Keywords: joint forest management, impact assessment, panel data, household income, forest condition, India

Forming the Inter-mediate Region between Urban and Rural in India - a case of Mysore city, Karnataka -

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The fragmentation of agricultural land due to inheritance and partial selling has put the farming community into marginal farmers. A marginal farmer owning less than one acre of land, losses complete livelihood from his land. He becomes a partial non agriculture worker along with his farming occupation. Ultimately, leading to permanent change in occupation. In the later period he disowns the farming activity and migrates to the fringe of the nearby city. The CBD pressure on fringe begins as ripples from the city towards fringe. Consequence of this the fringe pressure ripples towards the farming and forest land. This has vice versa effect from Rural to Urban Fringe. The rural pressure which emanates from outer country land towards city mounts up its pressure on Fringe.

This paper discusses about the process of expanding cities, its pressure on fringe, the rural farming land, shifting occupation and bouncing effect towards city. A fast growing city like Mysore city bounded by farming land of Mysore and Chamaraja districts is a good example to explain the situation of many cities of India which are experiencing similar process and bouncing effect.

Keywords: Inter-mediate Region, Land Use and Cover Changes, Population Pressure, Urban - Rural, India

Time-serial trend of built-up area of China - A preliminary consideration of statistical data

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The research group of SLUAS (Research project of "Towards Sustainable Land Use in Asia" Grant-in-Aid for Scientific Research(S) 2009-2013, Yukio Himiyama) has executed several research field trips in various regions of China. The author fortunately has chance to join the field trips and to observe several land-use conditions and land-use changes on the way. As a result of those research field trips, the author confirmed that the built-up area remarkably expanded by fast growing economy of big cities in the coastal area such as Beijing and in those cities not only the industrial development but also the housing development and shopping malls are developed actively in the suburban area. On the other hand, the author also felt that the cities in the inland area, however, it is late comparatively its economic growth from the coastal region, a built-up area growth is generated recently by the industrial and housing developments in the high rise apartment building etc. The present study intends to confirm such a personal impression about recent built-up area growth of China by using statistical material.

The objectives of the research are as follows. First object is to confirm time serial feature of the built-up area expansion. Second is to analyse the relation between the built-up area expansion and population scale. Third is to confirm regional difference of built-up area expansion by using regional division in China. And forth is to consider factors or the background of the built-up area expansion. So the author analyses the relations among built-up area expansion, a population increase, and GDP indexes. Findings concerning obtaining by these objectives are beneficial to estimate how a spatial expansion of the China city will become in the future.

The author set up hypothesis obtaining by the research are as follows. One is that built-up area expands according to a population increase and economic growth of a city. Second is that structural change of an economic condition of a city such as secondary industry and tertiary industry is reflecting its expansion of built-up area of a city. Third is that the growth wave of a city spreads from the coastal region to the inland area.

Keywords: built-up area, population, regional division, economic structure

Study on the relationship between human activities. natural environment of food production in Xinjiang

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Maintaining the food production force is a basic condition for ensuring the food security in Xinjiang Uygur Autonomous Region. In this study, We have carried out the factors analysis from both sides of the natural and social factors on food production in Xinjiang, using the unit area production volume as the main indicator of food production. In order to understand the temporal change of the unit area production volume in Xinjiang at first, We extracted the unit area production volume data from the Statistical yearbook in Xinjiang, and analyzed the secular change of food production in Xinjiang. The result shows that the unit area production volume had been growing steadily over the 1990-2003, but shows an unstable state since 2004, and has been reduced in 2008; In order to understand the spatial variation of the unit area production volume, We have created a difference image using GIS technique, between 2008 when the unit area production volume reduced, and 2003 when the unit area production volume had been continued growth to analysis the regional changes of food production. It shows that the regions which the unit area production volume decreased are distributed more in the area of the north and east of Xinjiang in 2008 comparison to 2003.

In order to understand the change factor of food production, the analysis has been done on the causes of changes in food production in Xinjiang, by extracting the data of the chemical fertilizer that was used for the food production, irrigation area, agricultural machinery and the rural electricity from the statistical yearbook, The result shows that the effective irrigation rate in Xinjiang after 2005 was reduced by the loss of irrigation facilities and equipments, and it is confirmed that these area are substantially matches to the region in which the unit area production volume decreasing. The data of the agricultural production material price, commodity retail price, agricultural products purchase price are also used for the same analysis, It was estimated that the rise of agricultural production material prices, has become a factor in reduction of food production indirectly through reduced production cost in 2008 that unit area production volume was reduced.

On its outer, using the TRMMB343 precipitation data and CRU TS3.21 temperature data, analyzed the natural factors of food production change. It shows that the trend of precipitation in decline, and the reduction position matches well with the area of unit area production volume are decreased. However, it is suspected that both of human activities and natural factors have been the impact jointly to the changes in food production in Xinjiang.

Keywords: Xinjiang Uygur Autonomous Region, Food production, Human activities, Natural environmen, GIS

Framing Land Use Sustainability Research in Future Earth Context

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The Future Earth Initial Design issued late in 2013 emphasizes the importance of land use research related with sustainability. What are written about land use are not particularly new to land-use specialists, but what is significant is that land use is considered as a priority concern of Future Earth. The paper discusses how to frame land use sustainability research in Future Earth Context based on the achievements and experiences of IGU-LUCC (International Geographical Union Commission on Land Use/Cover Change), GLP (Global Land Project), SLUAS (Towards Sustainable Land Use in Asia Project) and others.

Keywords: Future Earth, land use, GLP, IHDP, IGU-LUCC