

Japan Geoscience Union Meeting 2011

(May 22-27 2011 at Makuhari, Chiba, Japan)

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HTT034-P01

Room:Convention Hall

Time:May 24 14:00-16:30

Study on the change in paddy field in dissected valley in Shimosa Upland, Chiba Prefecture

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SATOYAMA is secondary nature in new equilibrium by human participation. Many YATSU, dissected valleys, are formed in Northern part of Shimosa Upland, Chiba Prefecture. Dissected valley is used for rice cultivation, and many ecosystem services are produced from SATOYAMA environments including paddy field. However, recent development impair these services. This paper attempts the detection of abandoned paddy field by satellite remote sensing.

Land condition map (GSI) and Vegetation map (ME) are used to extract valley bottom plain. As for satellite images, ALOS/AVNIR2(May and August in 2009) and LANDSAT/TM (May, 1990 and September, 1993) are used to detect paddy field and abandoned paddy within the valley bottom plain. In spring, paddy field is filled with water and summer paddy is covered with canopy of rice. NDVI difference between summer and spring is large in paddy field, on the other hand, it becomes small in abandoned paddy, that usually is wetland.

Distribution of paddy and abandoned paddy fields in dissected valley bottom plain in early 1990's and in late 2000's are mapped, and verified by using high spatial resolution images such as Google Earth and field survey. The maps show housing development in early 1990's in western part of Shimosa upland, and land use changes are progressing in the eastern part of Shimosa Upland in late 2000's.

This study shows that extraction of abandoned paddy field in the dissected valley (YATSUDA) in Shimosa Upland is possible by using satellite remote sensing. YATSUDA has many ecosystem services. We should not harm ecosystem services to maintain sustainable society. The authors consider that the map of abandoned valley can be used to examine the way of desirable future society.

Keywords: paddy in dissected valley, abandoned paddy fields, ecosystem services, Hokuso upland, Chiba Prefecture, remote sensing

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HTT034-P02

Room:Convention Hall

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Detection of the cover change pattern of a coral community by satellite images

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Global and regional environmental changes (global warming, extreme weather, terrestrial runoff, etc.) can cause serious effects on coastal areas. Coral reefs have been damaged by multiple disturbances (e.g., rising sea temperature and soil runoff from adjacent lands). Several methods have been used to monitor these changes in the population structure of corals and seaweeds so far. In-situ monitoring includes observation of coverage of corals and seaweeds by snorkeling or diving. Although detailed examination is possible using these methods, it is difficult to observe the changes in large areas with high frequency. To solve these problems, it is effective to analyze satellite images that can observe the large area. In this research, we calculate the cover change pattern of a coral community from the past to present, and evaluate the validity by comparing it with the result of a long-term in-situ observation at Shiraho in Ishigaki Island, Okinawa. Green DN (Digital Number) value of LANDSAT5/TM and ALOS/AVNIR2 increased in the high coral coverage area. Moreover, the spatial distribution of the green DN value changed similar to the results of in-situ observation. Therefore, the satellite images can detect the cover change pattern of a coral community.

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HTT034-P03

Room:Convention Hall

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A Development of New Technique for Distributed HF Ocean Radar Systems

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Long-Range Ocean Radar (LROR) system has been developed by National Institute of Information and Communications Technology (NICT). LROR (9MHz band) can observe long range more than HF (24MHz band) Ocean Radar. But LROR System needs to set up with big area and high costs.

We, NICT, are planning USRP2 that is a cheap, generality, and software Radio is installed as a transmitting and receiving apparatus (A/D and D/A converter), and used for the wireless machine in each antenna. As a result, the wireless machine that provides with sending and receiving in the antenna of one is developed, and it aims at the thing that operates as a wireless system with all of the one antenna compositions by sharing the timing of sending and receiving and the communication of data by wireless (cable) LAN between the wireless machines.

Keywords: HF Ocean Radar