

## OKI LAB.

Global Monitoring for Ecology  
and Environment, and its applications

Department of Human and Social Systems

Department of Civil Engineering, Department  
of Biological and Environmental Engineering, Global Monitoring for Ecology and Environment  
Graduate School of Engineering<https://park.itc.u-tokyo.ac.jp/iis-okikazuo/>

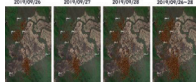
**In Oki lab, by using wide-area environmental monitoring & remote sensing techniques, we capture and improve current situations of water, food & energy!**

### Development on methods for estimating population size of deer

Deer are currently being caught both inside and outside the Oze wetland area, but the number of catches required to reduce vegetation damage in Oze has not yet been established. There is need for a new density survey method that can determine population size in places that are difficult for people to enter, such as Oze.

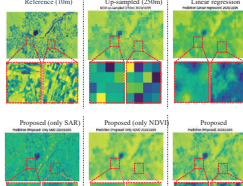


Deer in Oze

Visualization of deer cry position  
using multiple microphonesEstimation of deer population by  
night drone observation

### Downscaling of MODIS NDVI by Using a Convolutional Neural Network-Based Model

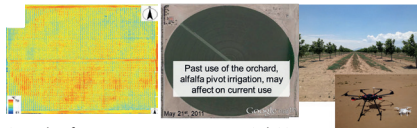
This research produce 10-m resolution NDVI in high temporal resolution from MODIS 250-m NDVI by using Convolutional Neural Network-Based Model with higher resolution synthetic aperture radar (SAR) data.

Qualitative results for  
different methods

	MAE
Only SAR	0.189
Linear Regression	0.114
Random Forest	0.115
Proposed	0.107

### Discovery of a mysterious circle in a pecan orchard with UAV

In this study, we established consecutive monitoring methods using UAV in pecan orchards of 64 ha each, in Arizona, USA. Using established continuous monitoring methods, the UAV images of a three-year-old pecan orchard showed circular traces of alfalfa cultivation prior to the installation of pivot irrigation that was previously not observed.

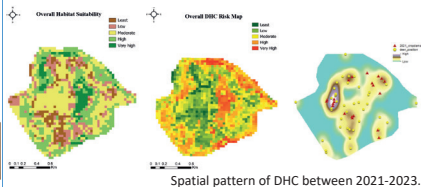


Ground surface temperature map on June 3rd, 2017.

Past use of the orchard, alfalfa pivot irrigation, may affect on current use

### GIS-Based Assessment of Sika Deer Habitat Suitability and Human Conflict Risk

This study uses GIS technology to assess habitat suitability and deer-human conflict (DHC) in Japan's Taki region. It analyzes spatial-temporal conflict patterns and develops habitat suitability models, with potential applications in other areas.



Spatial pattern of DHC between 2021-2023.

