ALOS

K&C Initiative

An international science collaboration led by JAXA

Mapping land use land cover, agroecological attributes, & emissions with ALOS PALSAR

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Overview

As part of JAXA's Kyoto and Carbon Initiative, our team is utilizing PALSAR observations to monitor rice agriculture, map land use/cover patterns, and model greenhouse gas emissions.

Project Objectives

- Map rice paddy extent for Monsoon Asia using multi-temporal Alos PALSAR Mosaics and 'Strips'
- Characterize agro-ecological paddy attributes including hydroperiod, crop calendar, cropping intensity using K&C products
- Develop regional and continental scale products of rice paddy attributes, land use patterns, and land use land cover change by integrating PALSAR products, MODIS, and Landsat

ALOS PALSAR data

- FB Mosaic Products (FBS/D; HH & HV)
- Multi-temporal ScanSAR HH Strips Slant & Ground Range Products
- Multi-temporal ScanSAR Stamps
- AUIG FBS/D used for training & scaling

Other Data Sources

- GLS & Landsat 5 TM mosaics
- MODIS 8-day products
- ASTER DEM
- Geo-field photos
- Soils, Climate, Management (DNDC)

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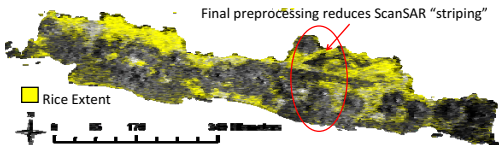
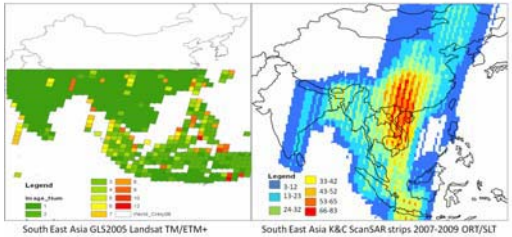
Indonesia Rice Mapping Efforts

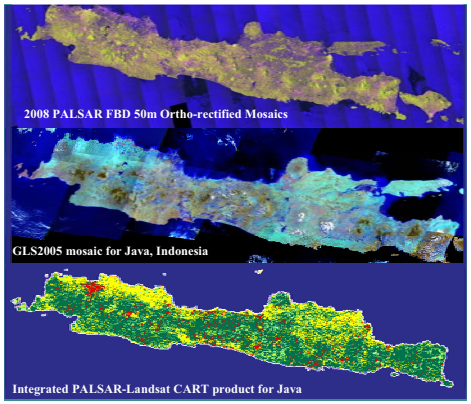
- Using to improve HPAI forecasting by enhancing rice paddy activity monitoring; events occur when people, poultry, and waterfowl mixed in paddy regions
- Applying 'operational' approaches
- Regional products include rice paddy extent, hydroperiod, cropping intensity, & crop calendar



Monsoon Asia LCLUC Continental Products

- Executing Classification and Regression Tree (CART) approach for land use /cover mapping across large areas
- Merging K&C Strips, Mosaics, & Landsat
- Four regional training areas (below)

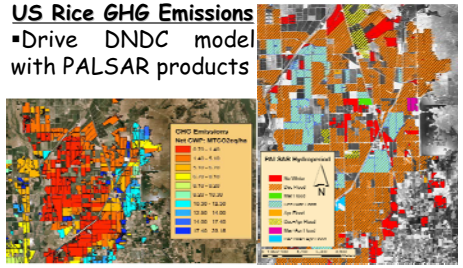




Recent (2010) field research locations and validation campaign routes

US Rice GHG Emissions

- Drive DNDC model with PALSAR products



Field campaigns completed

- Poyang Lake, China 2008/2009
- India 2010
- Java, Indonesia 2010
- Thailand 2009-2010
- Georeferenced field photos available to science community @ www.eomf.ou.edu

Recent papers

1. Zhang, Y., Wang, C., Wu, J., Qi, J., Salas, W.2009. Mapping Paddy Rice with Multi-temporal ALOS PALSAR Imagery in Southeast China. International Journal of Remote Sensing.
11Wang, C., Wu, J., Zhang, Y., Pan, G., Qi, J., Salas, W. 2009.
2. Characterizing L-band scattering of paddy rice in southeast China with radiative transfer model and multi-temporal ALOS/PALSAR imagery. IEEE transactions on Geoscience and Remote Sensing.
3. Torbick, N., Salas, W., Hagen, S., Xiao, X. 2010. Mapping rice agriculture in the Sacramento Valley, USA with multitemporal PALSAR and MODIS imagery. IEEE J. Selected Topics in Remote Sensing.
4. Torbick et al 2010. Integrating SAR and optical imagery for regional mapping of agro-ecological paddy attributes in the Poyang Lake Watershed, China. CJRS.

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