

## ALOS PALSAR Rice Mapping and Monitoring for Asia

### Overview

As part of JAXA's Kyoto and Carbon Initiative, our team is utilizing regional PALSAR acquisitions for routine monitoring of rice agricultures and modeling emissions

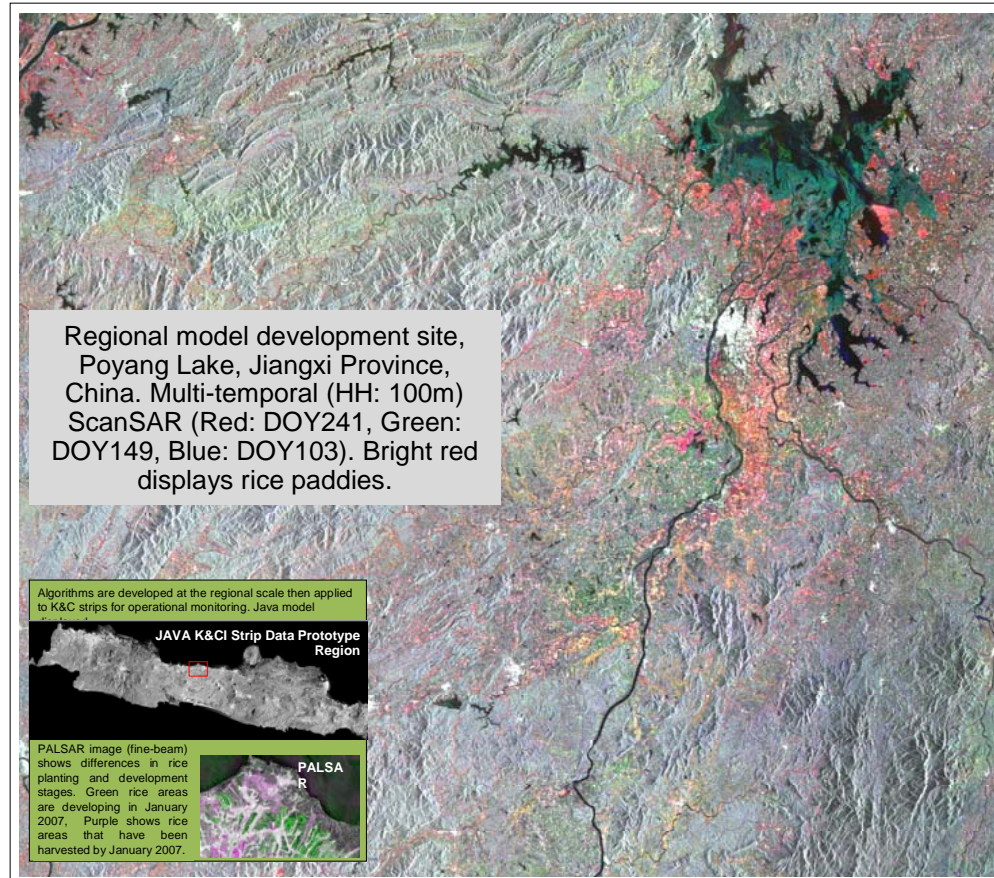
### Project Objectives

- Map rice paddy extent for Asia
- Characterize aquatic ecosystem attributes including hydroperiod and biomass
- Develop regional estimates of methane and nitrous oxide emissions from rice agriculture using PALSAR derived rice products and DNDC biogeochemical modelling

### Mid-term Results

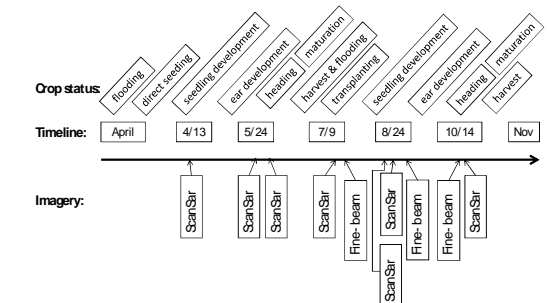
- Algorithm development using AUIG data.; multi-temporal ALOS L-band successfully captures hydroperiod and dynamic range; enabling characterization of paddy status and rice development
- Decision-tree, threshold models of dynamic range and paddy flooding allow large-area rice mapping with little to no *a priori* data
- Mid-term ScanSAR-based rice models moderately agree ( $R^2=0.6$ ; aggregated fractional rice cover in regions with smaller rice paddies) with China NLCD rice layers; however, PALSAR provides more detail such as cropping cycles and intensity

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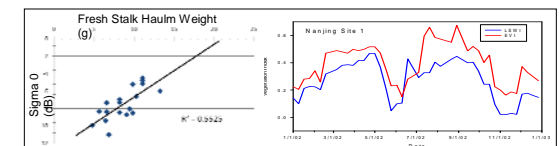
### ALOS PALSAR data

- Our operational rice monitoring utilizes multi-temporal ScanSAR K&C Strip Data for China, India, and Southeast Asia.
- Below: Example model development site for approximate double rice crop calendar for Jiangxi Province, China
- PALSAR ScanSAR is augmented with fine-beam data to examine scaling issues.



### Other data

- Field level plot data with measurements of plant fresh and dry weight, LAI & plant height
- Comparisons against & integration of MODIS products



### Emissions Modelling

- Utilizing PALSAR to parameterize DNDC

