

Remote sensing for improved irrigation in Central Asia

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Water Resources Management
KNOWLEDGE PARTNERSHIP WEEK
Partnership Forum:
Innovation for Resilient and Smart Communities

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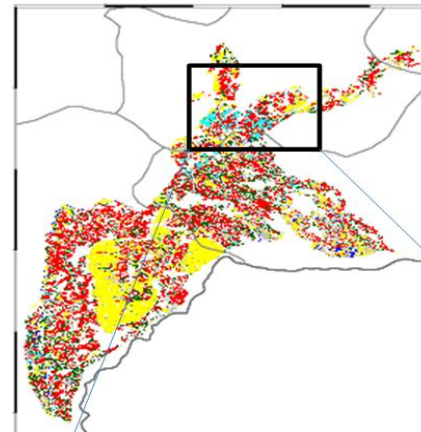
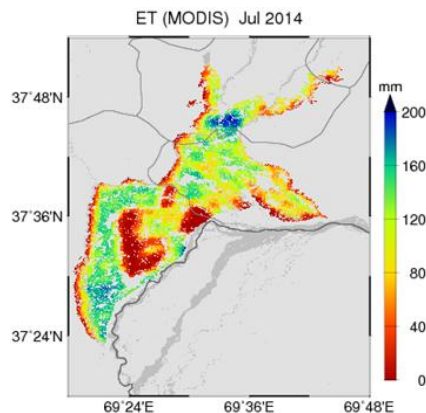
Difficult to Assess Irrigation Performance

- Important to understand “Irrigation Performance” for Irrigation Projects
- However, no cost-effective methods to evaluate

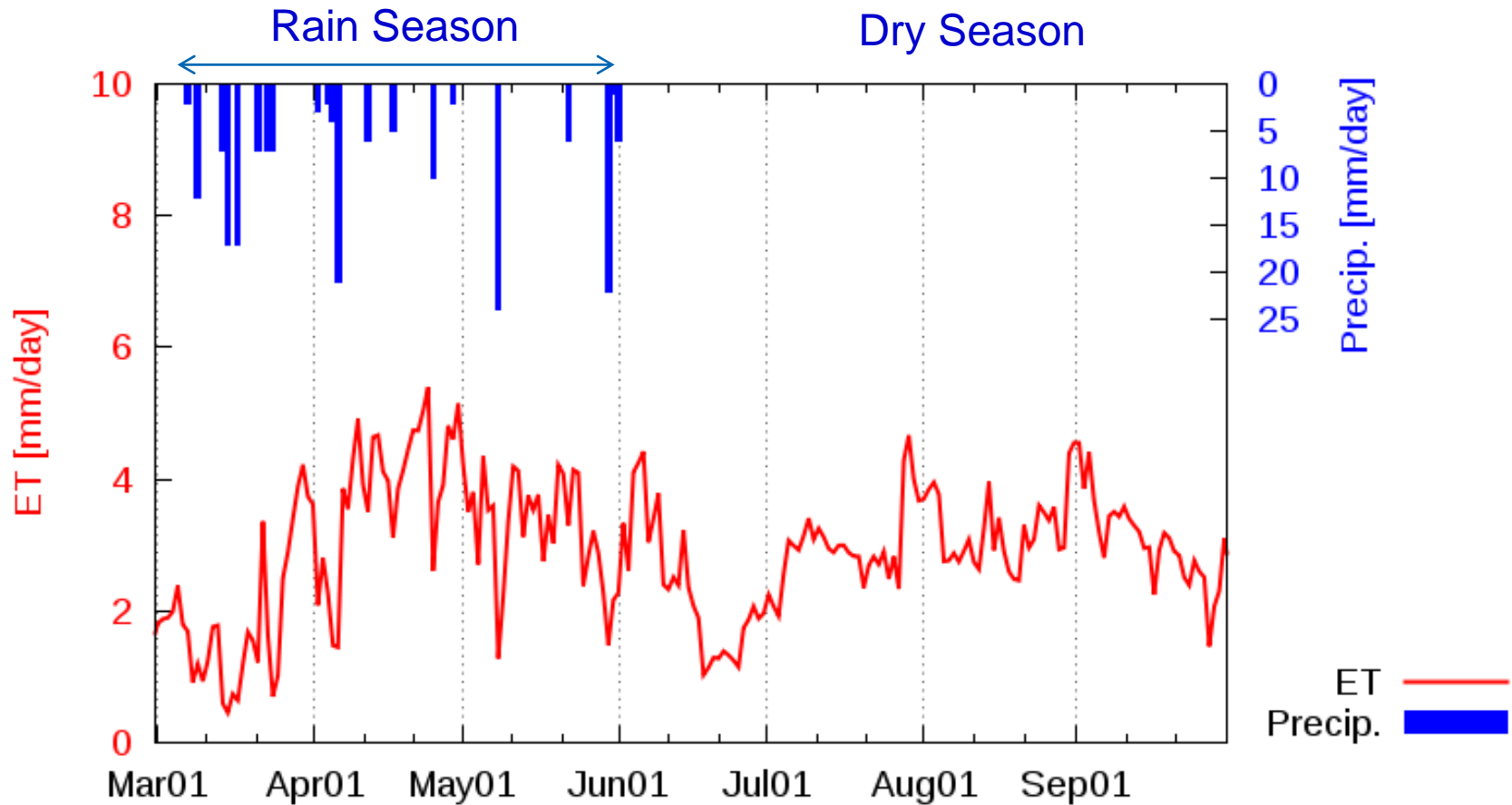


Satellite Remote Sensing can provide solution!!

- **Evapotranspiration (ET) maps** = Crop Water Consumption
- **Crop Cover maps.**

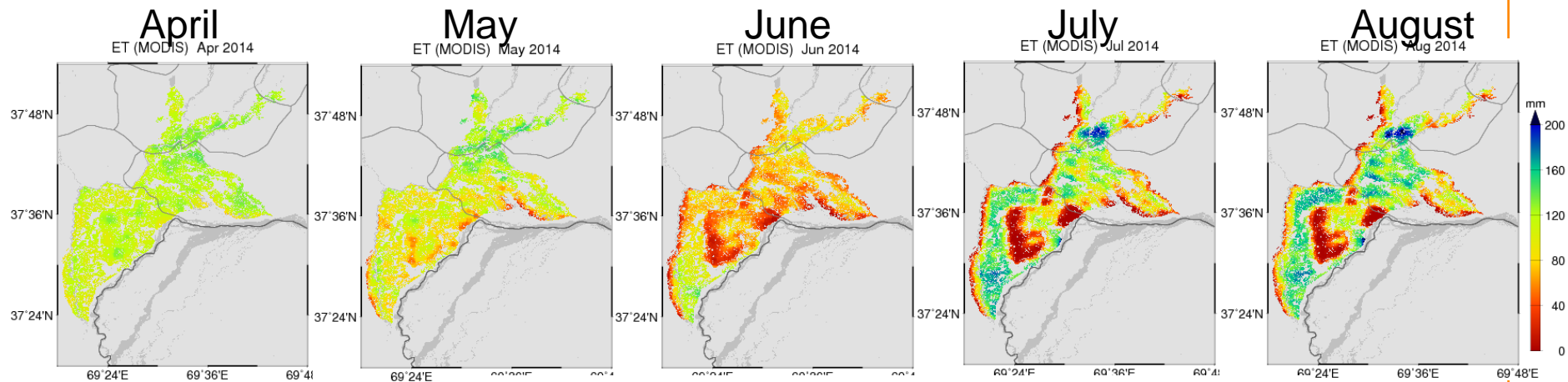


Precipitation and ET graph around Pyanji River Basin



- Irrigation system is operated and water is supplied in dry season.

ET maps from satellite (MODIS) data



Distribution map of Monthly cumulated-ET

- In rain season, water is homogeneously supplied by rainfall.
- In dry season, irrigation system performs and poor/good area appear in ET maps.

Irrigation Consumptive Use Coefficient (ICUC)

ICUC (%) =

Satellite-based ET data

Water consumptively used as ET

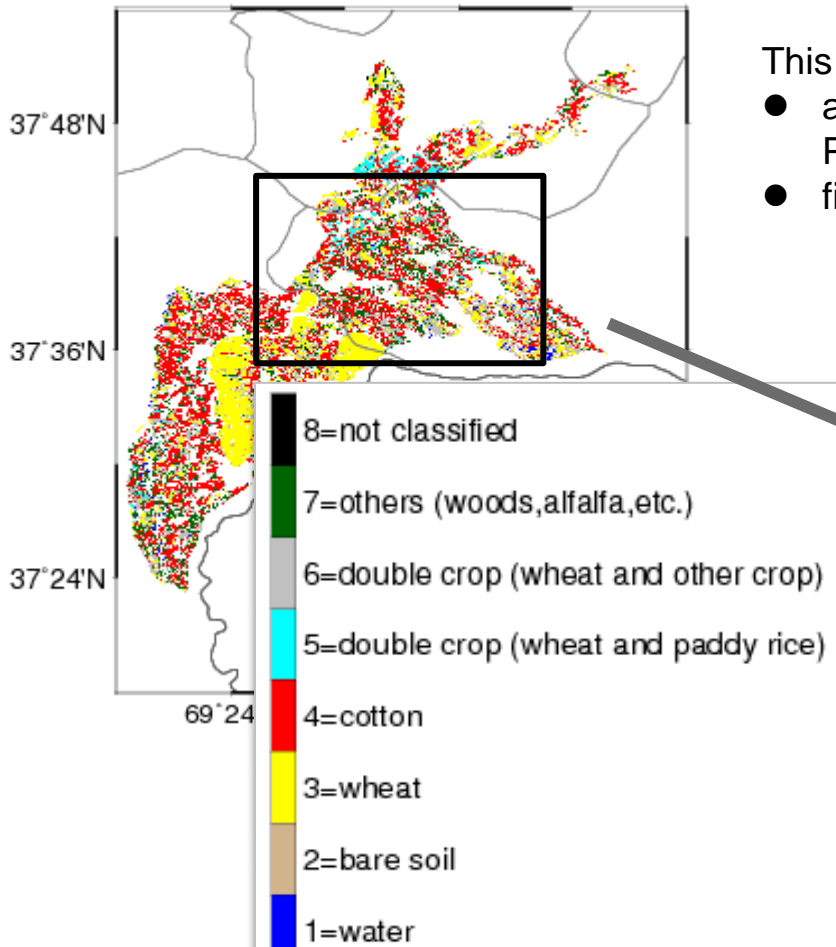
Water applied as Irrigation

Pump data and Rainfall data

- ICUC = How many portion of water was consumptively used at the irrigation system level

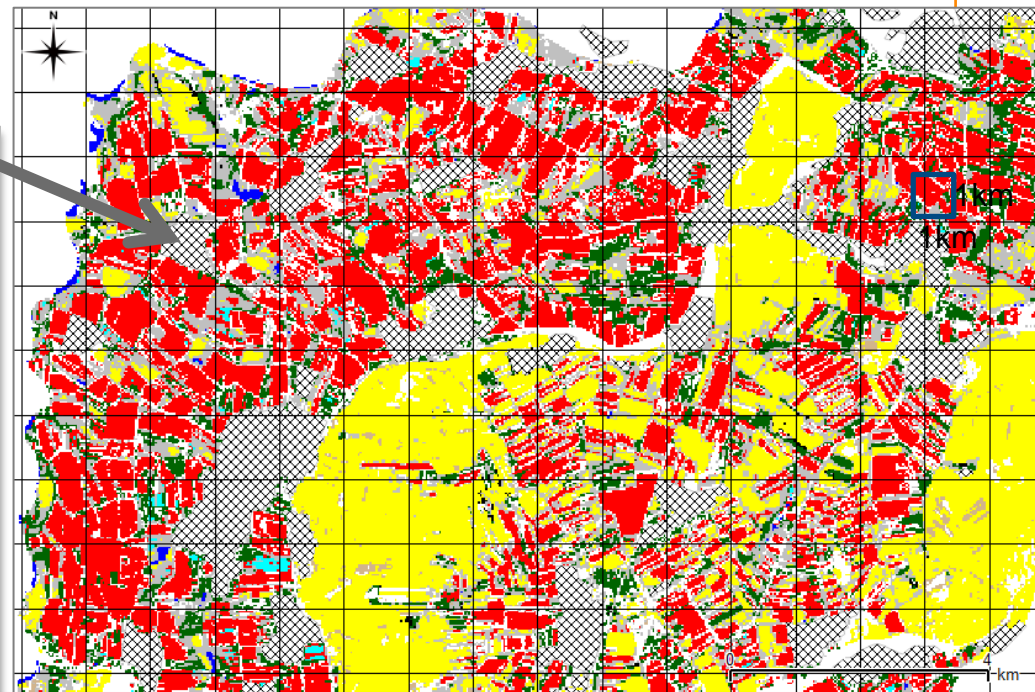
- ICUC can be indicator for the performance of irrigation system.
- By comparing ICUC before and after irrigation projects, it's possible to evaluate the improvement.

Crop Cover Map (Tentative version)



This cropping cover map was based on ;

- a result of Landsat cluster analysis, which was provided by Prof. Moriyama, Nagasaki University and
- field information collected by interview survey.



- Useful for irrigation optimality evaluation based on crop cover
- Planning /monitoring agricultural land use.

Summary of data and advantage

- Important to understand “Irrigation Performance”
- Cost-effective method to evaluate



- Satellite Remote Sensing can provide cost-effective method such as ET map
- Spatially and temporally evaluation
- Quantitative indicator, ICUC
- RESTEC tries to develop the method by using open satellite data.