



# Landscape level carbon, water balances and agricultural production in mountainous terrain of the Haean Basin, South Korea

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# Introduction

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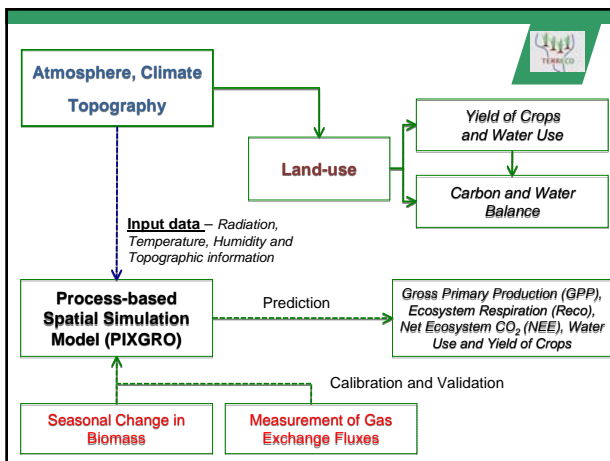
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# Materials and Methods

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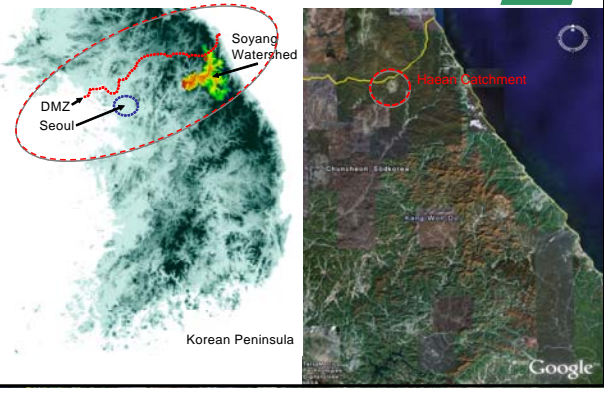
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## Site Description



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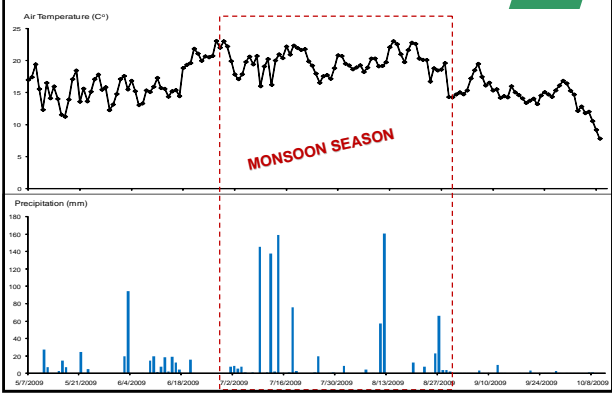
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## Weather Conditions in Haeen



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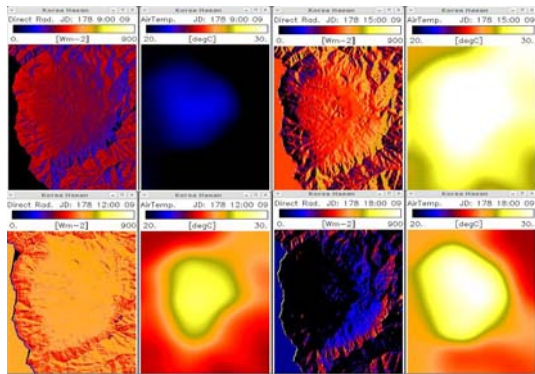
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# Spatial Framework



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# Results



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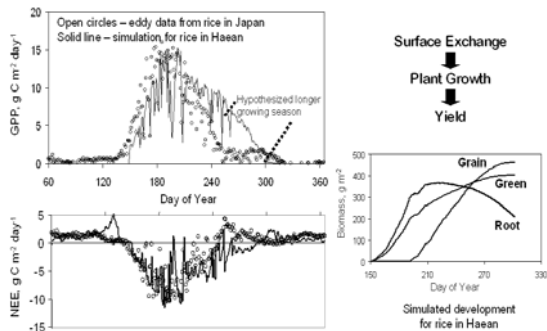
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# Hourly Information of "Test pixel"



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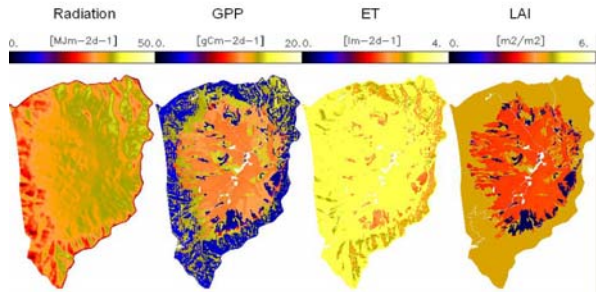
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## Daily Outputs for Haean



Initial Version Daily Output at Landscape Level: Haean-myun DOY 213 (August 1)




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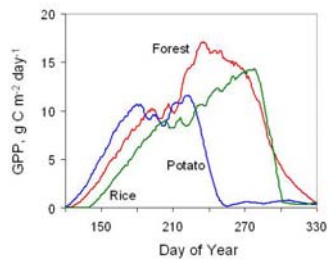
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## Seasonal Outputs in Haean



Crop	Planting Date DOY	Harvest Date DOY
Bean	126	289
Cabbage	141	202
Potato	121	246
Radish	146	228
Rice	137	284
Difference	25 days	87 days

**Planting and harvest dates for the most important crops**

*Simulated seasonal course of Daily GPP for representative pixels of deciduous oak forest, a potato field and a rice paddy.*

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## Conclusions and Ongoing Work




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• **PIXGRO provides**

- a useful landscape level tool
- a simple mechanistically-based approach
- opportunities for validation of process interactions at several scales

• **Determining factors of spatial simulations**

- Key parameter is  $V_{c_{uptake}}$
- Response to soil drying depends on three soil layers
- Decreases in gas exchange due to soil drying are hypothesized to occur via "patchy stomatal closure"



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• **Ongoing work**

- To extend the spatially explicit simulation of yield to include many crops
- To estimate services derived from at least 10 land use types
- To include influences with respect to management
- To develop and evaluate scenarios of expected global change in the Haeen basin



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**Thank you**



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