CURRICULUM VITAE

Jongmin Kim

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EDUCATION

2022	**Ph.D.** in Interdisciplinary Program in Landscape Architecture, Seoul National University, Seoul, Republic of Korea. **Advisor:** Youngryel Ryu
2017	**MS** in Landscape Architecture, Seoul National University, Seoul, Republic of Korea. **Advisor:** Youngryel Ryu
2015	**BS** in Department of Life Science, Chung-Ang University, Seoul, Republic of Korea.

EMPLOYMENT

2022- **Postdoctoral Fellow** in the Department of Environmental Sciences, University of Virginia, Charlottesville, Virginia, USA.
Advisor: Xi Yang

2023- **Postdoctoral Fellow** in the Department of Organismic & Evolutionary Biology, Harvard University, Cambridge, Massachusetts, USA.
Advisor: Noel Michele (Missy) Holbrook

RESEARCH INTERESTS

Exponential Technologies, Near-Surface Remote Sensing, Land-Atmosphere Interactions, Phenology, Plant Physiology (Light energy partitioning), Canopy structural information

PUBLICATIONS

Journal Articles

2023 Chen, R., Liu, L., Liu, Z., Liu, X., **Kim, J.**, Kim, H. S., ... & Gu, L. (2024). SIF-based GPP modeling for evergreen forests considering the seasonal variation in maximum photochemical efficiency. *Agricultural and Forest Meteorology*, *344*, 109814.

2023 Yan, Y., Ryu, Y., Dechant, B., Li, B. & **Kim, J**. (2023) Dark respiration explains nocturnal stomatal conductance in rice regardless of drought and nutrient stress. *Plant, Cell & Environment*, 1–12.

2023 Hwang, Y., **Kim, J., (Co-1st author)** & Ryu, Y. (2023). Canopy structural changes explain reductions in canopy-level solar induced chlorophyll fluorescence in Prunus yedoensis seedlings under a drought stress condition, *Remote Sensing of Environment*.

2023 Kong, J., Ryu, Y., Jeong, S., Zhong, Z., Choi, W., **Kim, J**., ... & Houborg, R. (2023). Super resolution of historic Landsat imagery using a dual generative adversarial network (GAN) model with CubeSat constellation imagery for spatially enhanced long-term vegetation monitoring. *ISPRS Journal of Photogrammetry and Remote Sensing*, *200*, 1-23.

2023 Yang, X., Li, R., Jablonski, A., Stovall, A., **Kim, J.**, Yi, K., ... & Lerdau, M. (2023). Leaf angle as a leaf and canopy trait: Rejuvenating its role in ecology with new technology. *Ecology Letters*.

2022 **Kim, J.**, Ryu, Y., & Dechant, B. (2022). Development of a filter-based near-surface remote sensing system to retrieve far-red sun-induced chlorophyll fluorescence. *Remote Sensing of Environment*, *283*, 113311.

2021 **Kim, J.**, Ryu, Y., Dechant, B., Lee, H., Kim, H. S., Kornfeld, A., & Berry, J. A. (2021). Solar-induced chlorophyll fluorescence is non-linearly related to canopy photosynthesis in a temperate evergreen needleleaf forest during the fall transition. *Remote Sensing of Environment*, *258*, 112362.

2019 **Kim, J.**, Ryu, Y., Jiang, C, Hwang, Y. (2019). Continuous observation of vegetation indices, fraction of absorbed photosynthetically active radiation, and leaf area index using an integrated low-cost near-surface remote sensing system. *Agricultural and Forest Meteorology*.

2018 Yang, K.**,** Ryu, Y.***,** Dechant, B**.**, Berry, J.A., Hwang, Y.**,** Jiang, C.**,** Kang, M., **Kim, J.,** Kimm, H.**,** Kornfeld, A., & Yang, X. (2018). Sun-induced chlorophyll fluorescence is more strongly related to absorbed light than to photosynthesis at half-hourly resolution in a rice paddy. *Remote Sensing of Environment*

Patents (Registered)

2023 Ryu, Y., Lee, J., **Kim, J.,** (June 2023). Measuring device of surface reflectance using the rotating prism module. South Korea

2023 Ryu, Y., Lee, J., **Kim, J.,** (May 2023). Automated ground-based hyperspectral field spectroscopy system that integrates two geometric observation configurations. South Korea

2022 Ryu, Y., Lee, S., Lee, J., **Kim, J.,** (May 2022). Device for surface reflectance. South Korea

2021 Ryu, Y., **Kim, J.,** (Jan 2021). Imaging system for monitoring SIF. South Korea

2020 Ryu, Y., **Kim, J.,** Kim, J (June 2020). Spectroscopic sensor circuit for monitoring vegetation and smart spectroscopic sensor including thereof. South Korea

2018 Ryu, Y., **Kim, J.** (November, 2018). Method for measuring chlorophyll fluorescence using band-pass filters. South Korea

2018 Ryu, Y., **Kim, J.** (July, 2018). Filter-based solar-induced chlorophyll fluorescence observation sensor. South Korea

2016 Ryu, Y., **Kim, J.**, Jiang, C. (October, 2016). A real-time monitoring system of canopy structure and functions. South Korea

Journal Articles in Progress

- **Kim, J.,** Ryu, Y., & ... (2023). Monitoring spring phenology of a multi-layer canopy in a deciduous broadleaf forest: What signals do we actually see from space?

- **Kim, J.,** Yang, X., & ... (2023). Continuous Observation of Leaf Angle Dynamics using a Low-cost Rotating LiDAR system

Under Revision Jablonski, A., Li, R., **Kim, J.,** Lerdau, M., Petras, C., Yang, X (2023). Spatiotemporal patterns of canopy fluorescence yield, NDVI, leaf angle distribution, and foliar pigments, covary in a mixed temperate system. *Under review*

Under Revision **Kim, J.,** Yang, X., & ... (2023). Leaf Angle Changes Enhance the Relationship between Quantum Yield of Photochemistry and Fluorescence in sugar maple and white oak seedlings under Drought Stress Conditions

TECHNOLOGY TRANSFER

Company	*Registered Patent*
SOLDAN	Ryu, Y., **Kim, J.**, Jiang, C. A real-time monitoring system of canopy structure and functions. South Korea

PRESENTATIONS (*Presenter)

Kim, J. (March 2024), 3D 식생구조 모니터링을 위한 저비용 연속 관측 LiDAR 시스템 개발 및 활용, **Invited talk,** Korean Society For Plant Image Science (한국영상식물학회), South Korea.

Kim, J. (Jan 2024), Continuous Observation of Leaf Angle Dynamics using a Low-cost Rotating LiDAR system, **Invited talk,** Bio-Inspired Fluid Lab (Professor Sunny Jung), Cornell University, Ithaca, USA.

Kim, J. (November 2023), Leaf angle changes enhance the relationship between quantum yield of photochemistry and fluorescence in sugar maple and white oak seedlings exposed to drought stress, **Invited talk,** Ryu Lab (Professor Youngryel Ryu), Seoul National University, Seoul, South Korea.

Kim, J. (March 2023), Continuous Observation of Vegetation Phenology Dynamics using low-cost, Near-Surface Remote Sensing System, **Invited talk,** Global Hydrology and Water Resources Group (Professor Venkataraman Lakshmi), UVA, Virginia, USA.

Kim, J., Jablonski, A., Root, A., Benson, M., Beverly, D., Lerdau, M., Phillips, R., Novick, K., Yang, X (February 2023). The structural response of trees to drought stress is related to light partitioning. **Oral Section**, Enviroday, UVA, Virginia, USA.

Kim, J., Jablonski, A., Root, A., Benson, M., Beverly, D., Yi, K., Paudel, I., Lerdau, M., Dukes, J., Phillips, R., Novick, K., Yang, X (December 2022). The coordinated Physiological and Structural response of trees to water stress. **Poster Section,** American Geophysical Union (AGU), Chicago, USA.

Kim, J., (February 2022), Continuous Observation of Vegetation Phenology and Solar Induced Chlorophyll Fluorescence using low-cost sensing system, **Invited Talk**, Graduate School specialized in Climate Change Seminar, Kyung Hee Univ, South Korea.

Kim, J., Ryu, Y., Park, H., Jeong, S., Kang, M (December 2021). Monitoring spring phenology of multi-layer canopy in a deciduous broadleaf forest: What signal do we actually see from space? **Oral Section**, American Geophysical Union (AGU), San Francisco, USA.

Kim, J., Ryu, Y., Dechant, B., Lee, H., Kim, H., (December 2020). Mechanistic Insights on canopy photosynthesis estimation in a temperate evergreen needleleaf forest using sun-induced chlorophyll fluorescence and relevant vegetation indices, **Poster Section**, American Geophysical Union (AGU), San Francisco, USA.

Kim, J., Ryu, Y., Dechant, B., Lee, H., Kim, H., Berry, J., Kornfeld, A (December 2019). Linking continuous observations of leaf- and canopy-level chlorophyll fluorescence in an evergreen needleleaf forest, **Poster Section**, American Geophysical Union (AGU), San Francisco, USA.

Kim, J., Ryu, Y., Dechant., B. (April 2019). Can sun-induced chlorophyll fluorescence track variations of photosynthesis over the senescence period in an evergreen needle leaf forest?, **Poster Section**, European Geophysical Union (EGU), Vienna, Austria.

Kim, J., Ryu, Y., Dechant., B. (June 2018). Monitoring sun-induced chlorophyll fluorescence using a filter based near-surface remote sensing system, **Poster Section**, POSTDAM Greenhouse gas (GHG) flux workshop, Nanjing, China.

Kim, J., Ryu, Y., (June 2018). Monitoring sun-induced chlorophyll fluorescence using a filter based near-surface remote sensing system, **Oral Section**, Mer Bleue peatland science meeting, Montreal, Canada.

Kim, J., Ryu, Y., Dechant, B., Yang, K., Cho, S., Kim, H (December 2017). Can sun-induced chlorophyll fluorescence track diurnal variations of GPP over the senescence period in evergreen needle leaf forest? NDVI using a Smart Surface Sensing System (4S), **Poster Section**, American Geophysical Union (AGU), San Francisco, USA.

Kim, J., Hwang, Y., Jiang, C., Ryu, Y. (December 2016). Automatic monitoring of ecosystem structure and functions using integrated low-cost near surface sensors, **Poster Section**, American Geophysical Union (AGU), San Francisco, USA.

Kim, J., Hwang, Y., Jiang, C., Ryu, Y. (September 2016). Monitoring LAI, fPAR and NDVI using a Smart Surface Sensing System (4S), **Poster Section**, International Consortium of Landscape and Ecological Engineering (ICLEE), Seoul, Korea.

Kim, J., Hwang, Y., Jiang, C., Ryu, Y. (September 2016). Monitoring LAI, fPAR and NDVI using a Smart Surface Sensing System (4S), **Poster Section**, Integrated Carbon Observation System (ICOS), Helsinki, Finland.

Kim, J., Ryu, Y. (December 2015). Changes of NDVI across vertical canopy layers in temperate deciduous forest during a litterfall period, **Poster Section**, American Geophysical Union (AGU), San Francisco, USA.

RESEARCH ASSISTANT GRANTS

2017 – 2019	Salary and travel costs for the international conference from BK (Brain Korea) 21 Plus [$ 1,000 / mon]
2017 – 2018	International collaboration Travel Grant from BK (Brain Korea) 21 Plus, Département de géographie, Université de Montréal, Canada [$ 2,000]
2016	장순영 Schoarship, Seoul National University [$ 2,000]

RESEARCH PROJECTS

2022-2023	The Coordinated Structural and Physiological responses of trees to water stress.
2021.04 – 2021.10	위탁과제)산림생태계 총일차생산성 ATBD 작성 및 자동화 모듈 개발(1) Tracking forest photosynthesis using Korean satellite product.
2020.10 – 2021.04	초소형위성 지표반사도 알고리즘 검증 및 융합 반사도 산출 용역
2020.04 – 2022.12	산림분광 특성 시계열 변동 규명 Analysis of spatial and temporal variation in forest spectral characteristics.
2020.03 – 2021.02	동아시아 이산화탄소/에너지/복사 지면 플럭스 의 연간변동 및 경향에 대한 연구
2020.01 – 2020.12	중심도 지하수 및 그 상부 권역 CO2 누출 탐지 모니터링 기술 개발 CCS (Carbon Dioxide Capture. & Storage) project
2019.07 – 2020.03	지상관측 및 보정된 위성을 이용한 다목적실용 위성 지표반사도 비교검증 / 분광향상 가능성 평가
2019.04 – 2019.12	도시생태계 건강성 증진을 위한 구조 및 기능 관리 기술 개발
2019.01 – 2019.12	식물 분광특성을 이용한 바이오모니터링 기술실용화 CCS (Carbon Dioxide Capture. & Storage) project
2018.01 – 2018.12	위성 기반의 툰드라 지역 탄소와 물 플럭스 시공간 패턴 분석
2017.11 – 2019.10	근접 원격탐사를 통한 캐나다 타이가 지역 식생의 광합성과 증발산 모니터링 기술 개발 Remote sensing of spatial and temporal patterns in carbon and water fluxes across the arctic tundra region
2017.05 – 2019.04	위성 기반 태양유도 엽록소 형광물질 관측을 통한 육상생태계 광합성 모니터링 Monitoring canopy photosynthesis through remote sensing of sun-induced chlorophyll fluorescence
2017.03 – 2020.08	그린인프라 창조 인재 양성팀 (BK21) Brain Korea 21
2016.11 – 2017.11	다중 우주위성 기반 동아시아 육상 생태계의 탄소수지 모니터링
2016.05 – 2019.12	위성 기반의 툰드라 지역 탄소와 물 플럭스 시공간 패턴 분석 Korea-Canada Project from National Research Foundation.
2016.01 – 2017.12	위성기반 벼 작황정보 서비스 개발

2015.12 – 2017.11	무인기술 기반의 생물계절 모니터링 시스템 개발 Tracking vegetation phenology from leaf to regional scales with near-surface and satellite remote sensing (X Project)
2015.06 – 2016.06	알래스카 카운실 사이트 식생의 구조와 기능 정량화

TEACHING ASSISTANT

2016	Teaching Assistant, Urban park planning, Seoul National University
2015	Teaching Assistant, Ecological Analysis in Landscape Studies, Seoul National University

PROGRAMMING AND SOFTWARE

MATLAB

Visual Basic

Python, Shell

LINUX

Google Earth Engine

SCENE

EXPERIMENTAL FACILITIES

Plant canopy analysis

LAI-2200, Digital cover photography, Light emitting diodes (LEDs), LiDAR (FARO, Leica)

Spectral data measurement

Light emitting diodes (LEDs)
Ocean Insight products (Jaz hyper-spectrometer, FLAME, QE Pro, HR2000)
Radiometer
ASD field spec, ASD
SVC spec

Gas exchange measurements

LI-6400, LI-6800, LI-600

Fluorometer

MONI-PAM, PAM2500, LI-600

Micro computer

Raspberry pi (Linux OS) & Ubuntu based PC

Micro controller

Arduino, Data logger (Campbell)

Hyperspectral imager

PiKaII (Resonon)

LICENSES

Driving (Korea / USA)

SkinSCUBA, master degree (SSI)

LANGUAGES

Korean

English

MEMBERSHIPS

2015 –	Member, American Geophysical Union (AGU)
2019 –	Member, European Geosciences Union (EGU)
2015 – 2016	Member, Engineering Research Center (ERC)

ACADEMIC SERVICE

Reviewed for Journals:

Remote Sensing of Environment

Agricultural and Forest Meteorology