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| Princeton University / NOAA-GFDL  AOS Program  201 Forrestal Road  Princeton, New Jersey 08540  United States | hyunggyu@princeton.edu  Phone: 609-452-5813  Mobile: 609-921-5791 |
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Hyung-Gyu Lim, Postdoc

<https://scholar.google.co.kr/citations?hl=en&user=jUme0XQAAAAJ&view_op=list_works&sortby=pubdate>

<https://www.researchgate.net/profile/Hyung_Gyu_Lim>

<https://sites.google.com/view/hglim/>

Education

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| *Mar 2015 – Feb 2019* | **PhD**  Pohang University of Science and Technology, Division of Environmental Science and Technology, South Korea  Thesis topic: *Climate feedback of bio-geochemical processes in the Arctic*  Advisor: Prof. Jong-Seong Kug |
| *2016 / winter* | Interdisciplinary Antarctic program by Gateway Antarctica and the Korea Maritime Institute at University of Canterbury |
| *2016 / summer* | IMBER, ClimEco5 summer school by Towards more resilient oceans: Predicting and projecting future changes in the ocean and their impacts on human societies |
| *Mar 2011 – Feb 2013* | **Master**  Hanyang University, Environmental Marine Science  Ansan, South Korea  Thesis topic: *Natural and anthropogenic contributions on the past millennium*  Advisor: Prof. Sang-Wook Yeh |
| *Mar 2005 – Feb 2011* | **Bachelor**  Hanyang University, Environmental Marine Science  Ansan, South Korea |

Research Experience

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| *Aug 2019 – Present* | **Postdoc**  AOS program in Princeton University/NOAA-GFDL  Princeton, NJ, United States  Advisor: Dr. John P. Dunne, Co-advisor: Dr. Charles A. Stock |
| *Feb 2019 – Aug 2019* | **Postdoc**  POSTECH, Environmental Research Lab  Pohang, South Korea |
| *Mar 2014 – Feb 2015* | **Researcher**  POSTECH, Environmental Research Lab  Pohang, South Korea |
| *Mar 2013 – Feb 2014* | **Researcher**  Korean Institute of Ocean Science and Technology, Ocean Circulation·Climate Research  Ansan, South Korea |

Research Interest

Earth system modeling, marine biogeochemistry, climate dynamics, ocean circulation, paleoclimate, earth system predictability, climate-marine ecosystem interaction

Awards & Grants

Award for Outstanding Ph.D. thesis from the Korean Society of Oceanography (2020)

Award for Globally Outstanding Student from Hyundai Motor Chung Mong-Koo Foundation (2018) Interview link (Korean): <https://www.cmkfoundation-scholarship.org/Story/Detail?ListID=64&HeaderID=6&PageListID=26>

Travel award from Hyundai: AGU, Ocean Science Meeting in Portland (2018)

Award for Globally Outstanding Student from Hyundai Motor Chung Mong-Koo Foundation (2017) Interview link (Korean): <https://www.cmkfoundation-scholarship.org/Story/Detail?ListID=26&HeaderID=6&PageListID=26>

Travel award from KIOST: PICES/ICES, Early Career Scientist Conference in Busan, South Korea (2017)

Travel award from Hyundai: Fourth International Conference on Earth System Modelling in MPI, Hamburg, Germany (2017)

Travel award from KMI: Interdisciplinary Antarctic program by Gateway Antarctica and the Korea Maritime Institute at University of Canterbury, New Zealand (2016)

Travel award from KIOST: IMBER, ClimEco5 in Natal, Brazil (2016)

Travel award from Hyundai: AGU, Fall meeting in San Francisco, USA (2016)

Travel award from KIOST: PICES, annual meeting in Qingdao, China (2015)

Scholarship(2015-2019): Hyundai Motor Chung Mong-Koo Foundation (fully covered PhD degree 4 year tuitions) Link: <https://www.cmkfoundation-scholarship.org>

Skills & Activities

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| *Skills* | Earth System Modeling |
| *Languages* | English, Korean |
| *Scientific Memberships* | AGU, EGU, IMBER, PICES, KMS, KSO |
| *Interests* | Biogeochemical Cycle and related Climate Feedback, Biogeochemical Prediction, Paleoclimate, Arctic bio-geochemical modeling |

Manuscript in preparation

Junghyun Park, Seong-Joong Kim, **Hyung-Gyu Lim**, Jong-Seong Kug, Eun Jin Yang and Baek-Min Kim: Impact of Additional Arctic River Discharge on Present and Future Distribution of Phytoplankton in Arctic Ocean, (submitted)

**Hyung-Gyu Lim\***, John P. Dunne, Charles A Stock, Paul Ginoux, Jasmin G John, John Krasting: *Oceanic and atmospheric drivers of the post-El-Niño chlorophyll rebound in the equatorial Pacific*, (submitted)

**Hyung-Gyu Lim\***, John P. Dunne, Charles A Stock, Sang-Ki Lee, Young-Ji Joh, *: Statistical prediction of Climate Modes on Global chlorophyll variability using simple linear regression model*, (in preparation)

Kyung Min Noh, **Hyung-Gyu Lim\***, Jong-Seong Kug: *Impact of Marine Heat waves on global chlorophyll concentration*, (submitted)

Kyung Min Noh, **Hyung-Gyu Lim\***, Eun Jin Yang, Jong-Seong Kug: *Emergent Constraint for Future changes in Arctic Phytoplankton*, (submitted)

Ji-Hoon Oh, Kyung Min Noh, **Hyung-Gyu Lim**, Emilia Kyung Jin, Sang-Yoon Jun, Jong-Seong Kug: Antarctic Meltwater-Induced Dynamical Changes in Phytoplankton in the Southern Ocean, (under review)

Journal Publications (Peer-reviewed)

Kyung Min Noh, **Hyung-Gyu Lim**, Jong-Seong Kug (2021): Zonally asymmetric phytoplankton response to the Southern Annular Mode in the marginal sea of the Southern Ocean, Scientific Report, https://doi.org/10.1038/s41598-021-89720-4

**Hyung-Gyu Lim**, Jong-Yeon Park, John Dunne, Charles Stock, Sung-Ho Kang, Jong-Seong Kug (2021): Importance of human-induced Nitrogen flux increases in simulated Arctic warming, Journal of Climate, DOI:10.1175/JCLI-D-20-0180.1

Ji-Hoon Oh, Won-Sun Park, **Hyung-Gyu Lim**, Kyung Min Noh, Emilia Kyung Jin, Jong-Seong Kug (2020): Impact of Antarctic meltwater forcing on East Asian climate under greenhouse warming, GRL, DOI:10.1029/2020GL089951

**Hyung-Gyu Lim**, Jong-Seong Kug, Jong-Yeon Park (2019): *Biogeophysical feedback of phytoplankton on Arctic climate. Part II: Arctic warming amplified by interactive chlorophyll under greenhouse warming*. Climate Dynamics, DOI:10.1007/s00382-019-04693-5

**Hyung-Gyu Lim**, Jong-Seong Kug, Jong-Yeon Park (2019): *Biogeophysical feedback of phytoplankton on the Arctic climate. Part I: Impact of nonlinear rectification of interactive chlorophyll variability in the present-day climate*. Climate Dynamics, DOI:10.1007/s00382-018-4450-6

**Hyung-Gyu Lim**, Jong-Yeon Park, Jong-Seong Kug (2018): *Impact of chlorophyll bias on the tropical Pacific mean climate in an earth system model*. Climate Dynamics, DOI:10.1007/s00382-017-4036-8

**Hyung-Gyu Lim**, Sang-Wook Yeh, Jong-Seong Kug, Young-Gyu Park, Jae-Hun Park, Rokjin Park, Chang-Keun Song (2016): *Threshold of the volcanic forcing that leads the El Niño-like warming in the last millennium: results from the ERIK simulation*. Climate Dynamics, DOI:10.1007/s00382-015-2799-3

**Hyung-Gyu Lim**, Sang-Wook Yeh, Ji-Won Kim, Rokjin Park, Chang-Keun Song (2014): *Contributions of solar and greenhouse gases forcing during the present warm period*. Meteorology and Atmospheric Physics, 126(1-2):71-79., DOI:10.1007/s00703-014-0324-6

Conference Proceedings

AGU, Ocean Science Meeting (2020), Seasonal dependency of Arctic marine phytoplankton response under greenhouse warming in CMIP5 earth system models

Korea Polar Research Institute (KOPRI) Symposium (May/2019), Impact of nonlinear rectification of interannual chlorophyll variability in ​present-day and future Arctic climate ​

IMBeR Open Science conference (2019), Effect of the anthropogenic nitrogen on Arctic amplification in present and future climate

AGU, Ocean Science Meeting (2018), Role of spring and summer phytoplankton to Arctic amplification

Asian Conference on Meteorology (2017), Role of spring and summer phytoplankton under greenhouse warming to Arctic amplification by biophysical feedback in Earth System Model

Fourth International Conference on Earth System Modelling (2017), Role of spring and summer phytoplankton to Arctic amplification

PICES/ICES, Early Career Scientist Conference (2017), Bio-optical effect of chlorophyll interannual variation to Arctic sea-ice using GFDL Earth System Model

AGU, Fall meeting (2016), Bio-optical effect of chlorophyll interannual variation to Arctic sea-ice using GFDL Earth System Model

IMBER, ClimEco5 (2016), Effect of Chlorophyll bias on tropical Pacific SST mean states with bio-geophysical feedback

PICES, annual meeting (2015), Impact of the chlorophyll bias on tropical mean states with bio-geophysical feedback

EGU, General Assembly (2012), Volcanic effect on the tropical sea surface temperature in a millennium coupled model simulation

Presentations (Invited Talk)

University of Bern (Oct/2021), Marine phytoplankton variability with climate

Jeonbuk National University (Sep/2021), Impact of Anthropogenic Nitrogen Flux on Arctic warming

Jeonbuk National University (Aug/2021), Marine phytoplankton variability with climate

POSTECH (Aug/2021), Marine phytoplankton variability with climate

Pusan National University (May/2021), Ocean climate modeling: Arctic ocean and marine ecosystem

University of Bergen (Mar/2019), Climate feedback of ​bio-geochemical processes in the Arctic​

NOAA-GFDL Lunchtime seminar (Mar/2021), Impact of Major Climate Modes on Total Chlorophyll Variability and ENSO-chlorophyll interaction in GFDL-ESM4.1

Korea Institute of Ocean Science and Technology (KIOST) (Feb/2021), Research on Marine Ecosystem modeling

Korea Maritime & Ocean University (Jan/2021), Marine physical and bio-geochemical interaction and feedback process

The Korean Society of Oceanography (Oct/2020), Climate feedback of bio-geochemical processes in the Arctic

NOAA-GFDL B-division seminar (Aug/2020), The role of atmospheric iron coupling in ENSO-related chlorophyll evolution in ESM4.1

National Institute of Meteorological Sciences (NIMS)-WMO/S2S workshop (Nov/2019), Seasonal dependency of marine phytoplankton and its climate feedback in tropical Pacific and Arctic Ocean

Princeton University, AOS program, Sarmiento Group seminar (Oct/2019), Climate Feedback of bio-geochemical processes in the Arctic

Jeonbuk National University (Apr/2019), Arctic climate change and related marine ecosystem responses

Hanyang University (Mar/2019), Climate feedback of bio-geochemical processes in the Arctic

National Oceanic and Atmospheric Administration (NOAA)-Geophysical Fluid Dynamics Laboratory (GFDL) (Mar/2019) Climate feedback of ​bio-geochemical processes in the Arctic​

Institute for Basic Science (IBS) Center for Climate Physics (ICCP) (Jan/2019), Impact of marine phytoplankton on tropical Pacific and Arctic climate using GFDL CM2.1

Korea Polar Research Institute (KOPRI) (Jan/2019), Climate Feedback of bio-geochemical processes in the Arctic

Korea Institute of Ocean Science and Technology (KIOST) (Dec/2018), Climate feedback of biogeochemical processes

Korea Polar Research Institute (KOPRI) (Dec/2018), Climate feedback of bio-geochemical processes in the Arctic​

Graduate Student Seminar at POSTECH (Apr/2018), Climate Feedback of biogeochemical processes in the Arctic

Onboard Activity

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| *Aug 2018 (3weeks)* | Atmospheric radiosonde observation in Central Arctic Ocean by Research Vessel “ARAON” in KOPRI |

Military Service

Korean Army (2006-2008)

Journal Review

Climate Dynamics, Ocean Science, Environmental Research Letters, GFDL internal review