

November 22, 2023

ISEE Award in 2023

Award Winner:

GOES, Joaquim Ignacio (Lamont Research Professor,
Lamont Doherty Earth Observatory at Columbia University)
GOMES, Maria Fatima Helga do Rosário (Research Scientist,
Lamont Doherty Earth Observatory at Columbia University)

**Title : Outstanding contribution to space-earth environmental research
through the study on interaction of climate change/material cycle and phytoplankton**

Phytoplankton abundance and community composition change due to various environmental factors including climate change. Phytoplankton absorb carbon dioxide through photosynthesis, supply carbon and energy as organic matter to higher trophic organisms in the aquatic ecosystems, and also reduce the concentration of carbon dioxide at the sea surface-atmosphere interface by transporting organic carbon from the surface to the deeper layer. Dr. GOES and Dr. GOMES of Lamont-Doherty Earth Observatory at Columbia University's Climate School are leading the research on phytoplankton dynamics and their impact on the health and biodiversity of our Earth ocean ecosystems using satellite ocean color, and internationally promoting the research of variation of primary production and their effects on material cycle.

As of August 2023, the number of peer-reviewed papers for both GOES and GOMES is 160 and 90, respectively. The basis for these studies were formed during their time as a Graduate students and postdoctoral fellows at the Institute of Hydrosphere and Atmosphere Sciences (IHAS) of Nagoya University, and later developed by joint research with the Hydrospheric-Atmospheric Research Center (HyARC). As ISEE foreign visiting Professors, they stayed in October-December 2015 and September-December 2017 and worked with ISEE researchers and graduate students mainly on phytoplankton community structure in the East China Sea, Sea of Japan, and the Gulf of Thailand. They are conducted joint research on environmental change and phytoplankton community, including the comparison of the responses to the discharge of large rivers, the Yangtze River and the Amazon River, into the coastal areas, and the ecology of green *Noctiluca*, a mixotrophic organism with the properties of both plants and animals. The results of this joint research have been published as 11 international co-authored papers with ISEE researchers and graduate students.

As mentioned above, both Drs. GOES and GOMES are internationally renowned researchers and have made outstanding contributions to space-earth environmental research based on joint usage/research program of ISEE. We have decided to award the 2023 ISEE Award (Institute of Space-Earth Environmental Research Award) to Drs. GOES and GOMES.

Related ISEE Joint Usage/Research Programs

Oct.-Dec. 2015 Visiting Professorship
Sept.-Dec. 2017 Visiting Professorship
Dec. 2017 Participation to Korea-Japan Workshop on Ocean Color
Dec. 2020 Participation to Korea-Japan Workshop on Ocean Color

Relate Publications

- 2023 Luang-on, J. J. Ishizaka, A. Buranapratheprat, J. Phaksopa, J.I. Goes, E.D. Maure, E. Siswanto, Y.L. Zhu, Q. Xu, P. Nakornsantiphap, H. Kobayashi, S. Matsumura, MODIS-derived green Noctiluca blooms in the upper Gulf of Thailand: Algorithm development and seasonal variation mapping, *Frontiers in Marine Science*, <https://dx.doi.org/10.3389/fmars.2023.1031901>
- 2022 Xu, Q; S.Q. Wang, C. Sukigara, J.I. Goes, H.D. Gomes, T. Matsuno, Y.L. Zhu, Y.J. Xu, J. Luang-on, Y. Watanabe, S. Yoo, J. Ishizaka, High-resolution vertical observations of phytoplankton groups derived from an in-situ fluorometer in the East China Sea and Tsushima Strait, *Frontiers in Marine Science*, <http://dx.doi.org/10.3389/fmars.2021.756180>
- 2022 Luang-on, J; J. Ishizaka, A. Buranapratheprat, J. Phaksopa, J.I. Goes, H. Kobayashi, M. Hayashi, E.D. Maure, S. Matsumura, Seasonal and interannual variations of MODIS Aqua chlorophyll-a (2003-2017) in the Upper Gulf of Thailand influenced by Asian monsoons, *Journal of Oceanography*, <http://dx.doi.org/10.1007/s10872-021-00625-2>
- 2020 Yang, MM; J.I. Goes, H.Z. Tian, E.D. Maure, J. Ishizaka, Effects of spring-neap tidal cycle on spatial and temporal variability of satellite chlorophyll-a in a macrotidal embayment, Ariake Sea, Japan, *Remote Sensing*, <http://dx.doi.org/10.3390/rs12111859>
- 2019 Zhu, Y.L. D.J. Suggett, C.G. Liu, J.F. He, L.S. Lin, F.F. Le, J. Ishizaka, J. Goes, Q. Hao, Primary productivity dynamics in the summer Arctic Ocean confirms broad regulation of the electron requirement for carbon fixation by light-phytoplankton community interaction, *Frontiers in Marine Science*, <http://dx.doi.org/10.3389/fmars.2019.00275>
- 2019 Xu, Q, C. Sukigara, J.I. Goes, H.D. Gomes, Y.L. Zhu, S.Q. Wang, A.G. Shen, E.D. Maure, T. Matsuno, W. Yuji, S Yoo, J. Ishizaka, Interannual changes in summer phytoplankton community composition in relation to water mass variability in the East China Sea, *Journal of Oceanography*, <http://dx.doi.org/10.1007/s10872-018-0484-y>
- 2018 Gomes, H.D., Q. Xu, J. Ishizaka, E.J. Carpenter, O.K. Yager, J.I. Goes, The influence of riverine nutrients in niche partitioning of phytoplankton communities-A contrast between the Amazon River plume and the Changjiang (Yangtze) River Diluted Water of the East China Sea, *Frontiers in Marine Science*, <http://dx.doi.org/10.3389/fmars.2018.00343>
- 2018 Yang, M.M. J. Ishizaka, J.I. Goes, H.D. Gomes, E.D. Maure, M. Hayashi, T. Katano, N. Fujii, K. Saitoh,

- T. Mine, H. Yamashita, A. Mizuno, Improved MODIS-Aqua chlorophyll-a retrievals in the turbid semi-enclosed Ariake Bay, Japan, *Remote Sensing*,
<http://dx.doi.org/10.3390/rs10091335>
- 2018 Maure, E.R., J. Ishizaka, H. Aiki, Y. Mino, N. Yoshie, J.I. Goes, H.R. Gomes, H. Tomita, One-dimensional turbulence-ecosystem model reveals the triggers of the spring bloom in mesoscale eddies, *Journal of Geophysical Research-Oceans*, <http://dx.doi.org/10.1029/2018JC014089>
- 2017 Maure, E.R., J. Ishizaka, C. Sukigara, Y. Mino, H. Aiki, T. Matsuno, H. Tomita, J.I. Goes, H.R. Gomes, Mesoscale eddies control the timing of spring phytoplankton blooms: A case study in the Japan Sea, *Geophysical Research Letters*,
<http://dx.doi.org/10.1002/2017GL074359>
- 2017 Zhu, Y.L., J. Ishizaka, S.C. Tripathy, S.Q. Wang, C. Sukigara, J. Goes, T. Matsuno, D.J. Suggett, Relationship between light, community composition and the electron requirement for carbon fixation in natural phytoplankton, *Marine Ecology Progress Series*,
<http://dx.doi.org/10.3354/meps12310>.

Career summary of the award winners:

GEOS, Joaquim Ignacio (Lamont Doherty Earth Observatory at Columbia University · Lamont Research Professor)

Received Doctoral degree in Nagoya University on 1996. Scientist in National Institute of Oceanography, India on 1996-1999. Post-doctoral fellow in Institute for Hydrospheric-Atmospheric Sciences of Nagoya University, on 1997-1999. Post-doctoral fellow on 1999-2001, following Senior Research Scientist on 2001-2010 in Bigelow Laboratory for Ocean Sciences, US. Lamont Research Professor, in Lamont Doherty Earth Observatory of Columbia University, US, from 2010 to present. Adjunct Professor in University of Main, US, on 2010-2019.



GOMES, Maria Fatima Helga do Rosário (Lamont Doherty Earth Observatory at Columbia University · Research Scientist)

Received Ph.D degree from Bombay University on 1987. Post-doctoral fellow in National Institute of Oceanography, India, on 1986-1992. Researcher in Institute for Hydrospheric-Atmospheric Sciences, Nagoya University, on 1992-1998. Eco-Frontier Fellow in Soka University, Japan, on 1998-1999. Research Scientist in Bigelow Laboratories for Ocean Science, US, on 1999-2010. Research Scientist in Lamont Doherty Earth Observatory at Columbia University from 2010 to present.

