



ICEBERG 2020

Happy New Year ICEBERG users! Thank you for all your support during the past year. 2019 was a pivotal and successful year for ICEBERG and we want to share with you some of the highlights and our goals for 2020:

SealNet paper published!

The first ICEBERG related domain science paper has been published in *Remote Sensing of Environment*.

B.C. Goncalves, B. Spitzbart, and H.J. Lynch. 2020. SealNet: A fully-automated pack-ice seal detection pipeline for sub-meter satellite imagery. *Remote Sensing of Environment* 239: 111617.

Highlights:

- First automated system for surveying seals using satellite imagery
- Finds 30% of seals while only generating less than 2 false-positives per correct detection
- Over 10X faster than an experienced human observer using a single GPU

Read the full manuscript at: <https://authors.elsevier.com/c/1aK917qzSnJY8> (open-access until Feb 17)

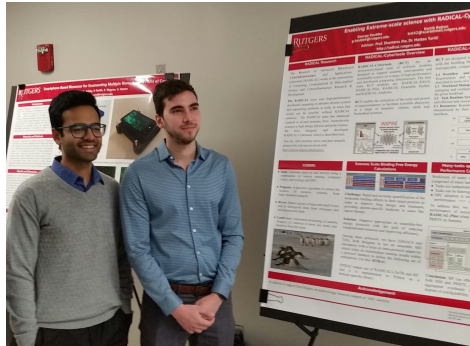
Cyberinfrastructure paper published!

The CI team also published “Workflow Design Analysis for High Resolution Satellite Image Analysis” by Ioannis Paraskevakos, Matteo Turrili, Bento Collares Gonçalves, Heather J. Lynch, and Shantenu Jha. It is available at: <https://arxiv.org/abs/1905.09766>

ICEBERG at AGU 2019

The fall meeting of the American Geophysical Union was held Dec 9-13 in San Francisco, CA. Samira Daneshgar Asl presented at the townhall meeting, “EarthCube: A Community-Driven Cyberinfrastructure for the Geosciences - A Progress Report”. Samira also presented a poster at the meeting, “Extracting Supraglacial Streams on Greenland Ice Sheet Using High-Resolution Satellite Imagery”.

ICEBERG highlighted at Rutgers Research Day



George Koubbe and Kartik Rattan presented “Enabling Extreme-scale science with RADICAL-Cybertools” on Dec 6.

ICEBERG Users Workshop

The inaugural Users Workshop was held Sept. 16-18 at Stony Brook University. Twenty-seven scientists and developers, including undergrads, PhD students, postdocs, faculty, and staff in geology, biology, and ecology from 12 institutions attended to discuss applications to their research from detecting wildlife in Antarctica or stream runoff in Greenland, to coastlines, lava flows, and landslides planet-wide. Institutions represented were: Stony Brook University, Rutgers University, UCLA, UC - Santa Barbara, Columbia University, Northern Arizona University, University of Connecticut, University of South Florida, The Ohio State University, George Mason University, University of Minnesota, and Missouri State University.

Thank you to all who attended the Users Workshop!



First public release of ICEBERG Seals search package

The ICEBERG Seals tiling and searching tool is now available as a stand-alone package to download and install via pip: iceberg-seals.search

Additional packages for other tools will be released in the coming months.

Congratulations to ICEBERG PI Heather Lynch who was awarded the prestigious Blavatnik National Award for Young Scientists (out of 343 nominees and 31 finalists)!

See the inspiring video here: <http://blavatnikawards.org/honorees/profile/heather-lynch/>

ICEBERG at EarthCube 2019

The 2019 EarthCube Annual Meeting was held in Denver, CO June 12-14 where Brad Spitzbart and Helen Eifert attended and presented posters:

Heather J. Lynch, Bento Goncalves, Bradley Spitzbart, Ioannis Paraskevakos, Matteo Turilli, Shantenu Jha. "Scaling up analyses of high-resolution satellite imagery using ICEBERG: A demonstration involving pack-ice seal surveys"

and

Helen Eifert, Mark Salvatore, Heather Lynch, Bradley Spitzbart, Brian Szutu. "Automating atmospheric removal from remote sensing data in Antarctica: Updates from the ICEBERG project"

Looking ahead ...

- There will be new releases of the Penguins code in February. Rivers and LandCover code will follow by August.
- We are assisting projects on mapping ice wedge polygons (University of Alaska Fairbanks and the University of Connecticut) and land cover in the Gulf Coast (University of South Florida) two projects that have become involved as ICEBERG Beta testers.
- We will be represented at CyberAmbassadors, EarthCube, PEARC, and other conferences throughout the year.
- The CI team has an invited paper in preparation for eScience. Additional manuscripts on the penguin detection and rivers delineation pipelines are also in development.
- Look for an ICEBERG Rivers workshop coming this year!

We wish you all a happy and healthy 2020. Please contact us if you are working on any high resolution imagery intensive projects that could benefit from an ICEBERG implementation. As always, feel free to reach out if you have any questions, comments, or suggestions. Find us at:

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- <https://iceberg-project.github.io/index.html>
- <https://github.com/iceberg-project>

Sincerely,

Heather Lynch and Brad Spitzbart for the ICEBERG Team