

The CoastWatch Utilities 2019 Update

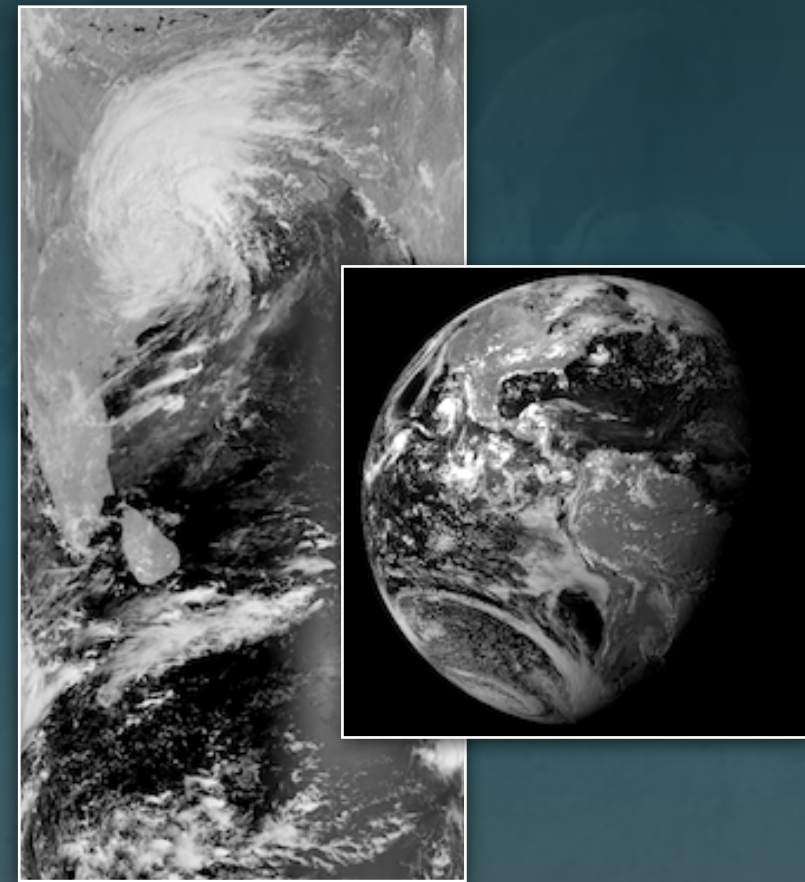


Peter Hollemans, Terrenus Earth Sciences for NOAA CoastWatch Central Operations
CoastWatch Annual Meeting, Ann Arbor, MI — Apr/May 2019

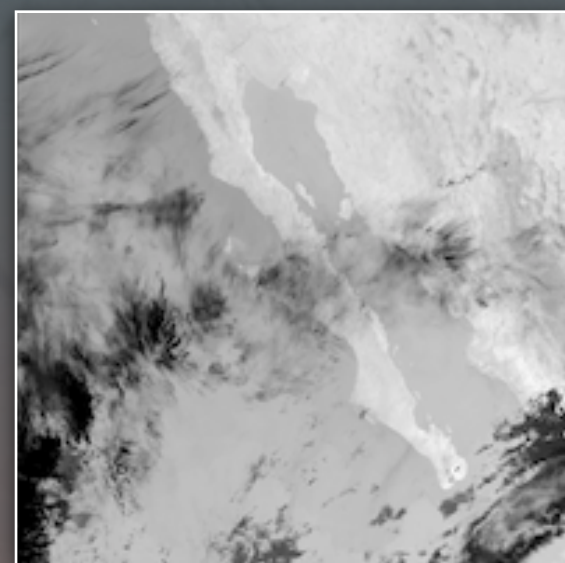
Topics

- Design and release
- Speed improvements
- Registration improvements
- Demo

Design



Satellite scan



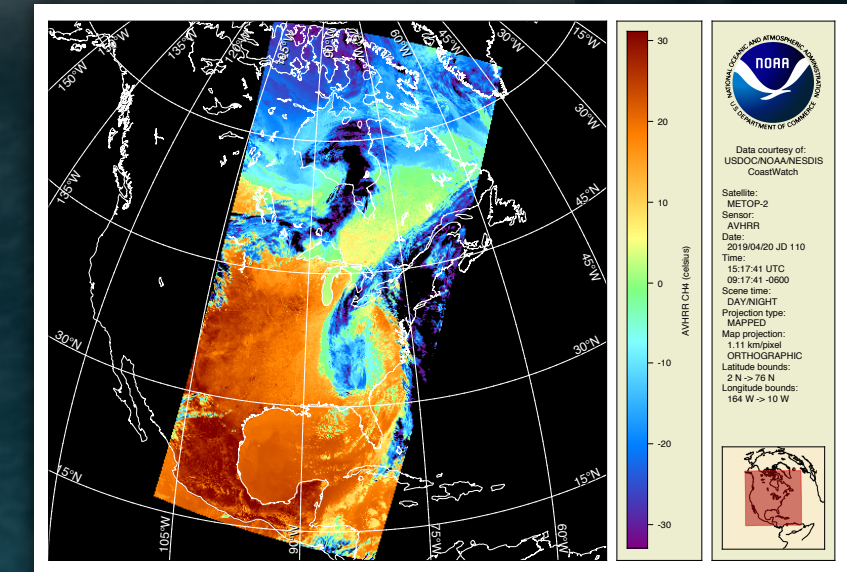
Map projected

HDF
NetCDF
NOAA 1b



20 Java-based
programs
+
common
library API

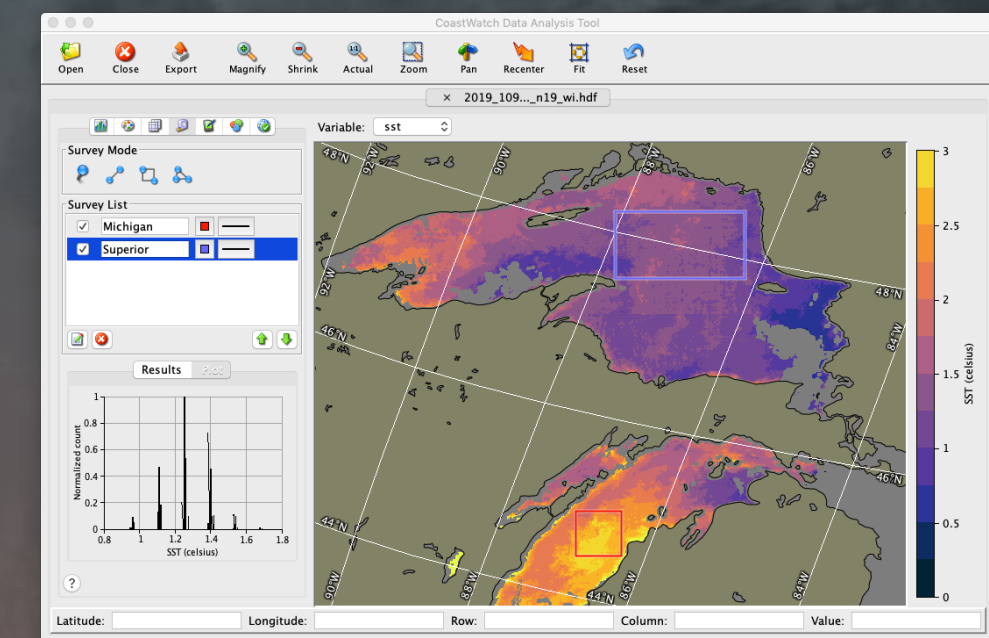
Windows
Linux
macOS



Rendering

```
phollemas$ cwstringer2 --diagnostic --proj mercator -clobber --match EV_BandM8  
VRSLCW.B2018157.213433.hdf VRSLCW.B2018157.213433.mercator.hdf  
[INFO] Opening input file VRSLCW.B2018157.213433.hdf  
[INFO] Creating optimal destination transform  
[INFO] Creating output file VRSLCW.B2018157.213433.mercator.hdf  
[INFO] Creating output variable EV_BandM8  
[INFO] Initializing resampling map factory  
[INFO] Source has size 768x3200  
[INFO] Destination has size 1378x4032  
[INFO] Found 8 processor(s) to use  
[INFO] Processing 384 chunks of size 512x512  
[INFO] Performing diagnostic
```

Processing



Analysis

Releases

6-month release schedule

October 2018
(3.4.1)



April 2019
(3.5.0)

Available at: coastwatch.noaa.gov/cw/user-resources/coastwatch-utilities.html

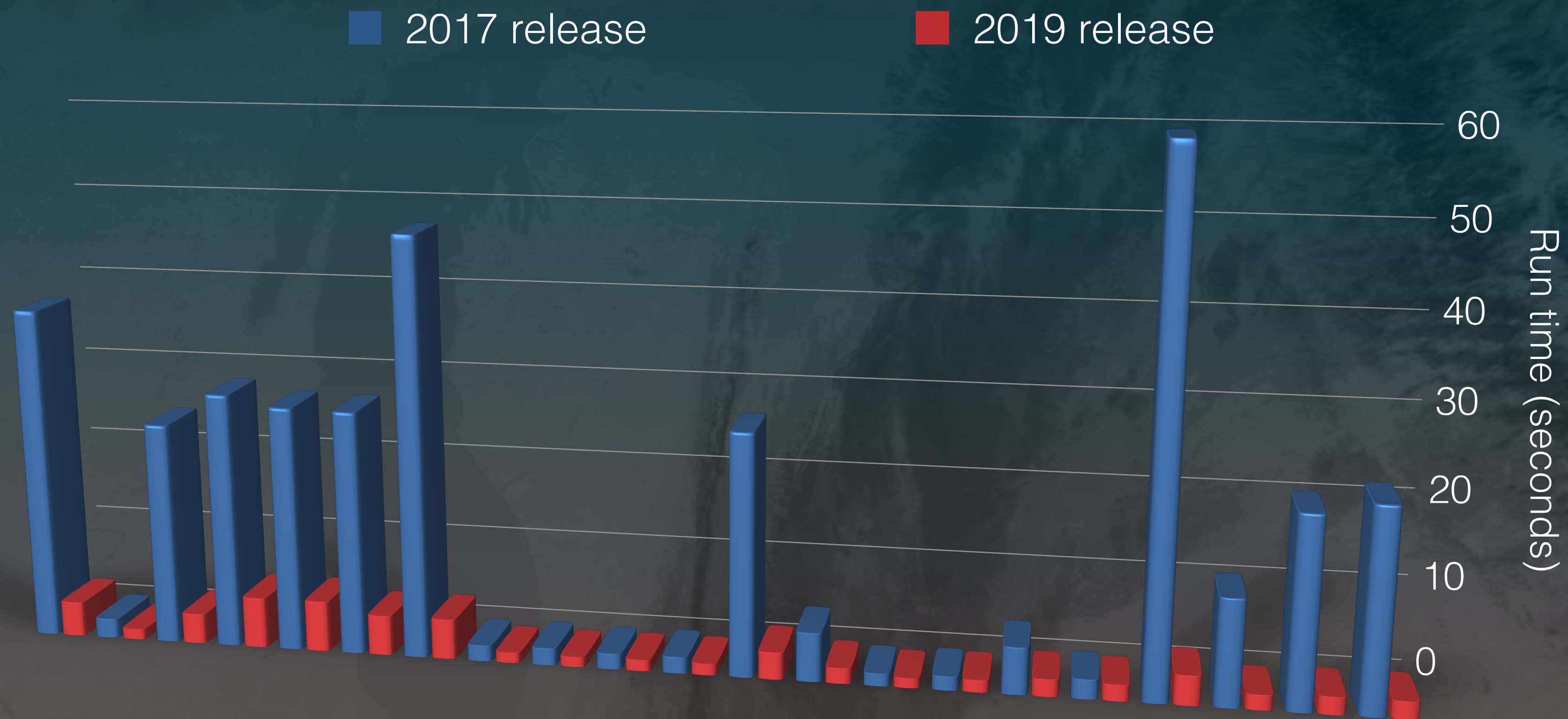
Also at: www.terrenus.ca/download/cwutils

Power Users

Category	Tool	Central	East Coast	ARMS	Polar SST	PH
Info & Statistics	info	✓	✓		✓	✓
	stats	✓	✓	✓		✓
	att	✓	✓		✓	✓
Data Processing	import	✓	✓	✓	✓	
	export	✓	✓		✓	
	sample	✓	✓			
	math	✓	✓	✓		✓
	composite	✓	✓	✓		✓
	script					✓
Graphics & Visualization	CDAT	✓	✓	✓	✓	✓
	render	✓	✓	✓	✓	✓
	coverage					✓
	graphics	✓		✓	✓	
Registration & Navigation	master	✓	✓	✓	✓	✓
	register	✓	✓	✓	✓	✓
	navigate					
	autonav					
	angles	✓	✓	✓		
Network & Monitoring	download	✓				✓
	status				✓	
Total		15/20	13/20	10/20	10/20	12/20

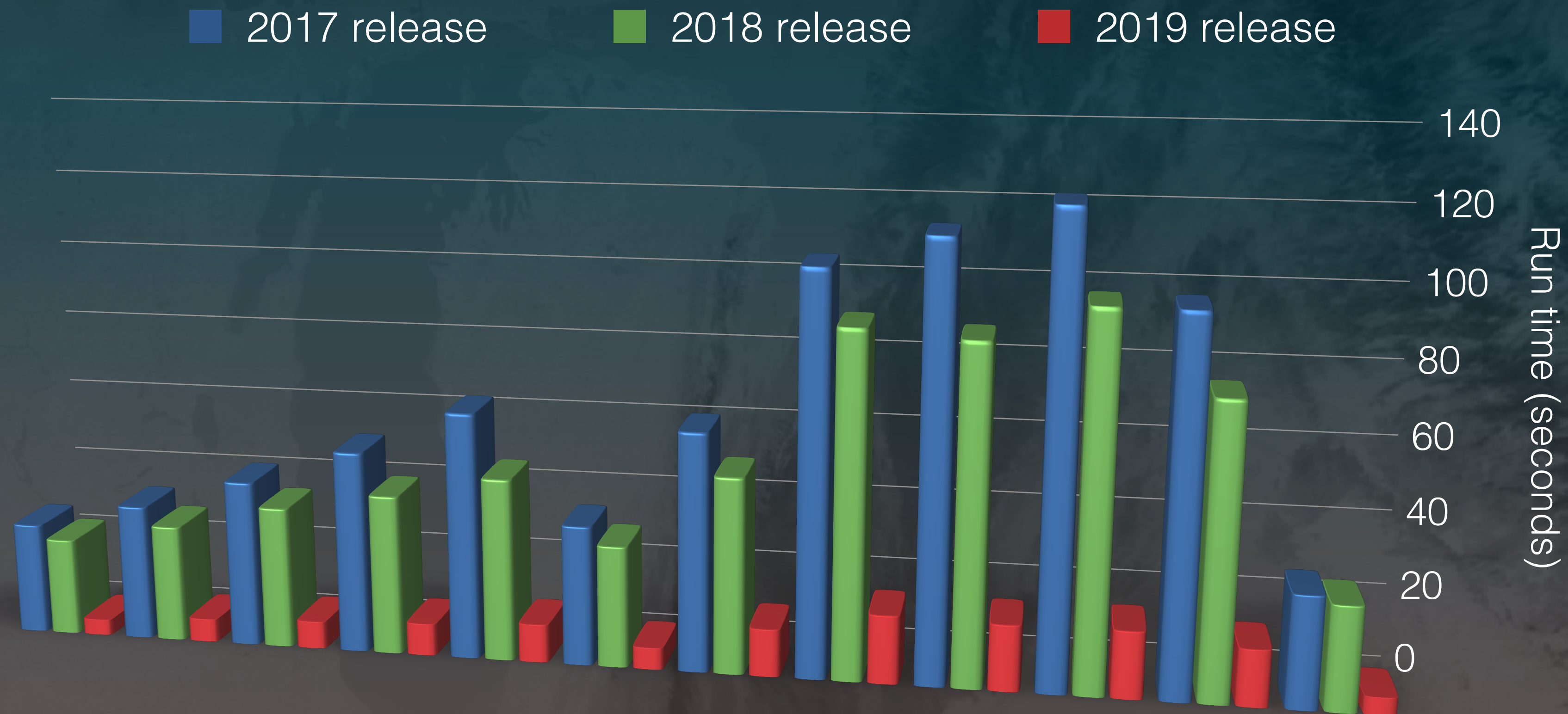
Speed Improvements

Math Tool



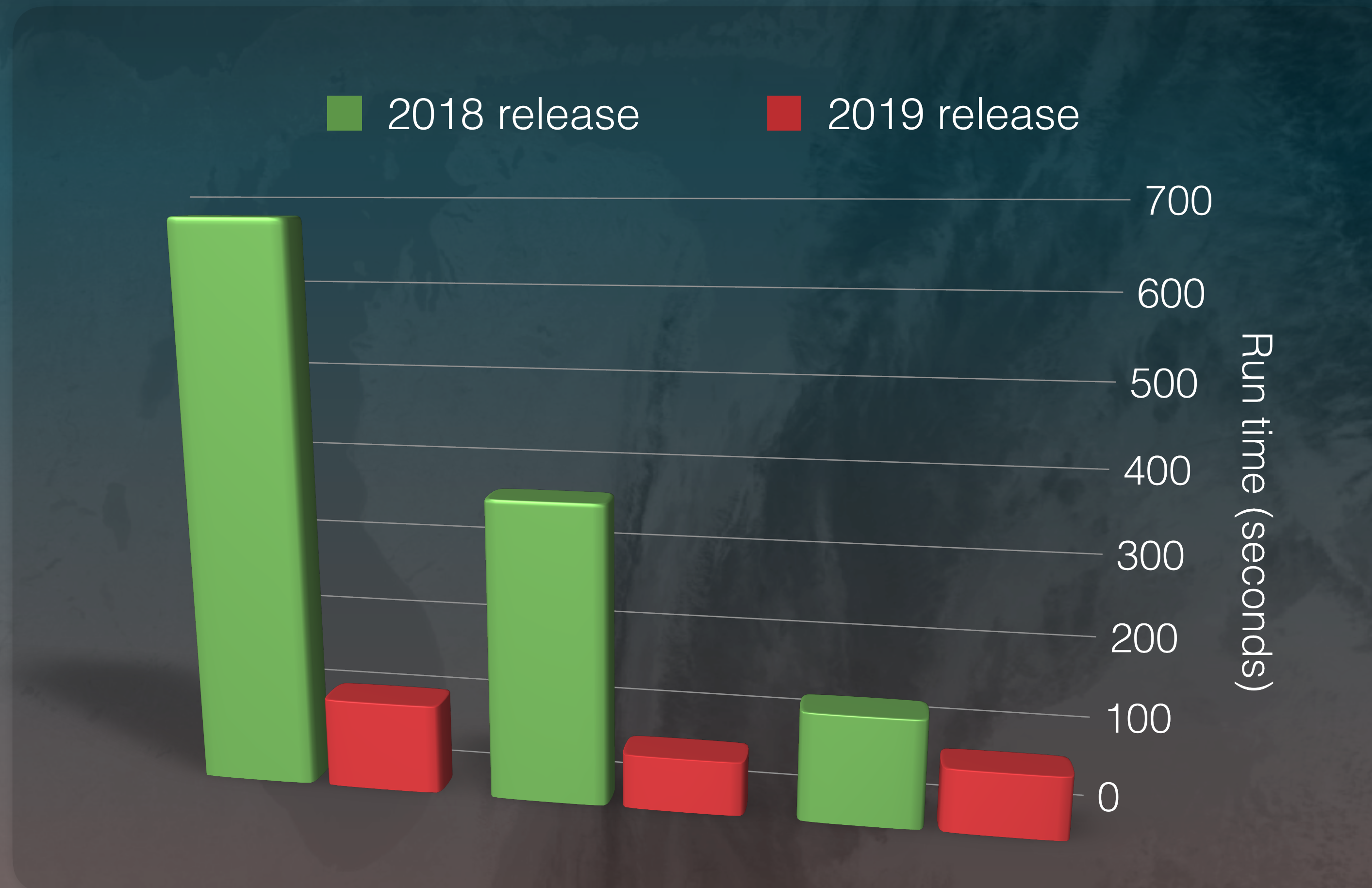
Speed Improvements

Registration Tool (L2→L3)

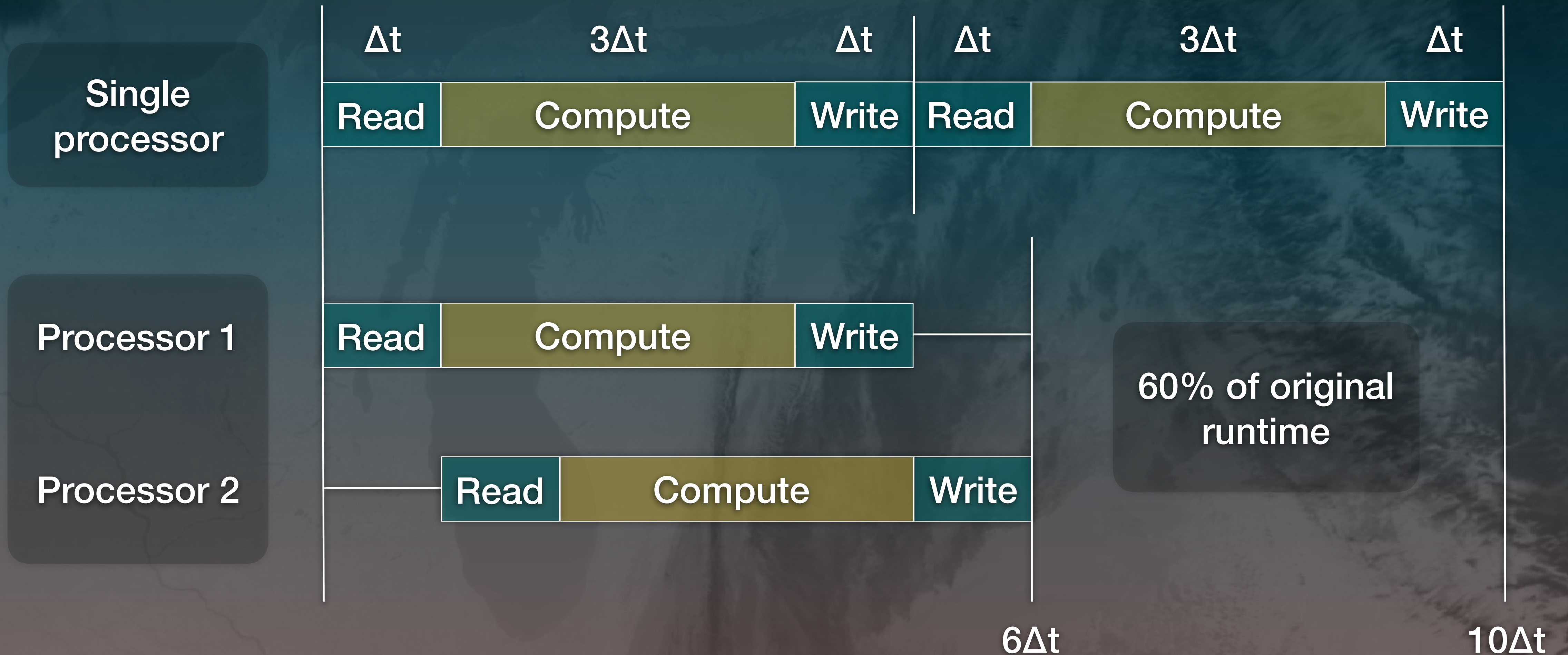


Speed Improvements

Composite Tool

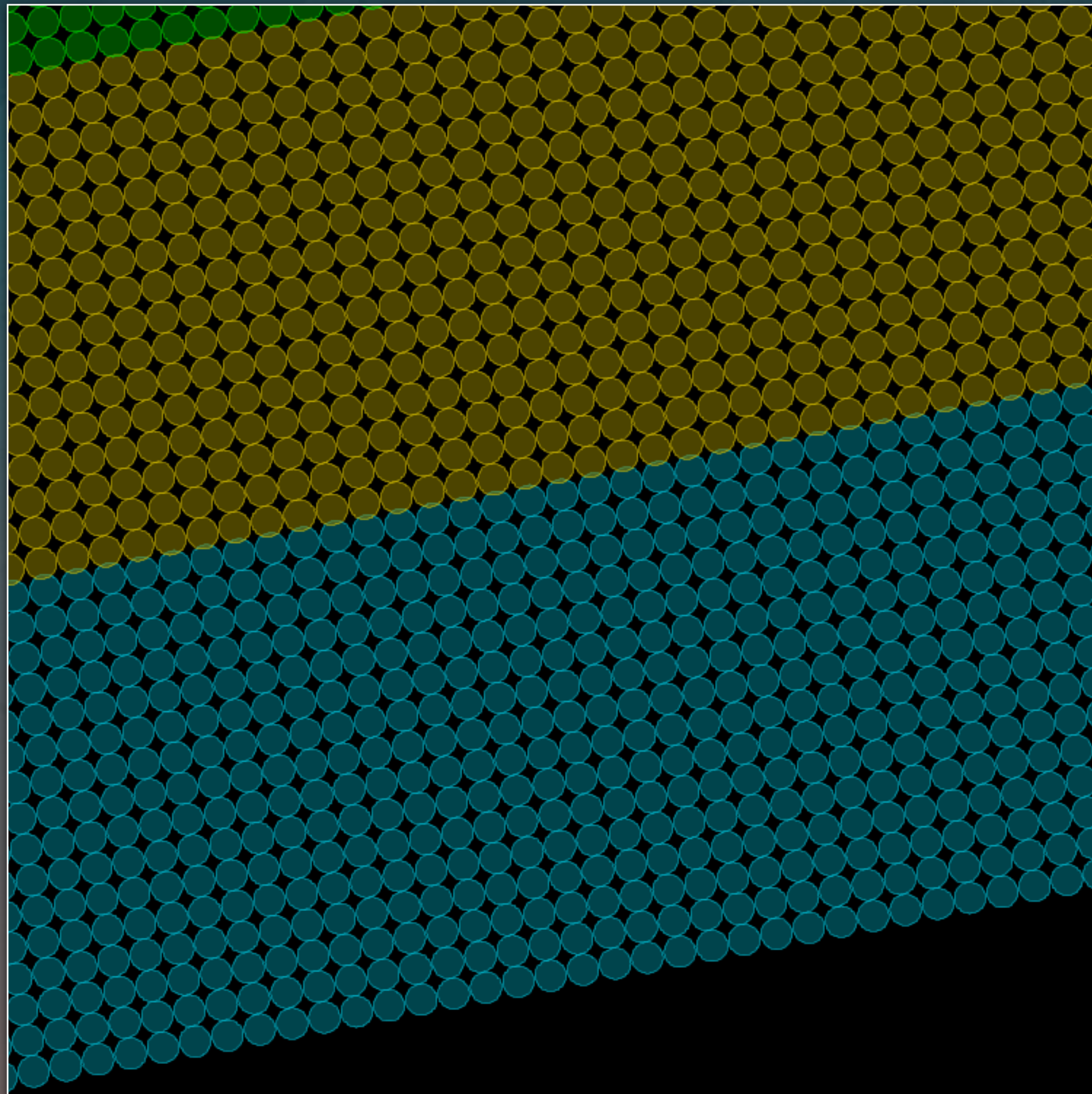


Parallel Operations

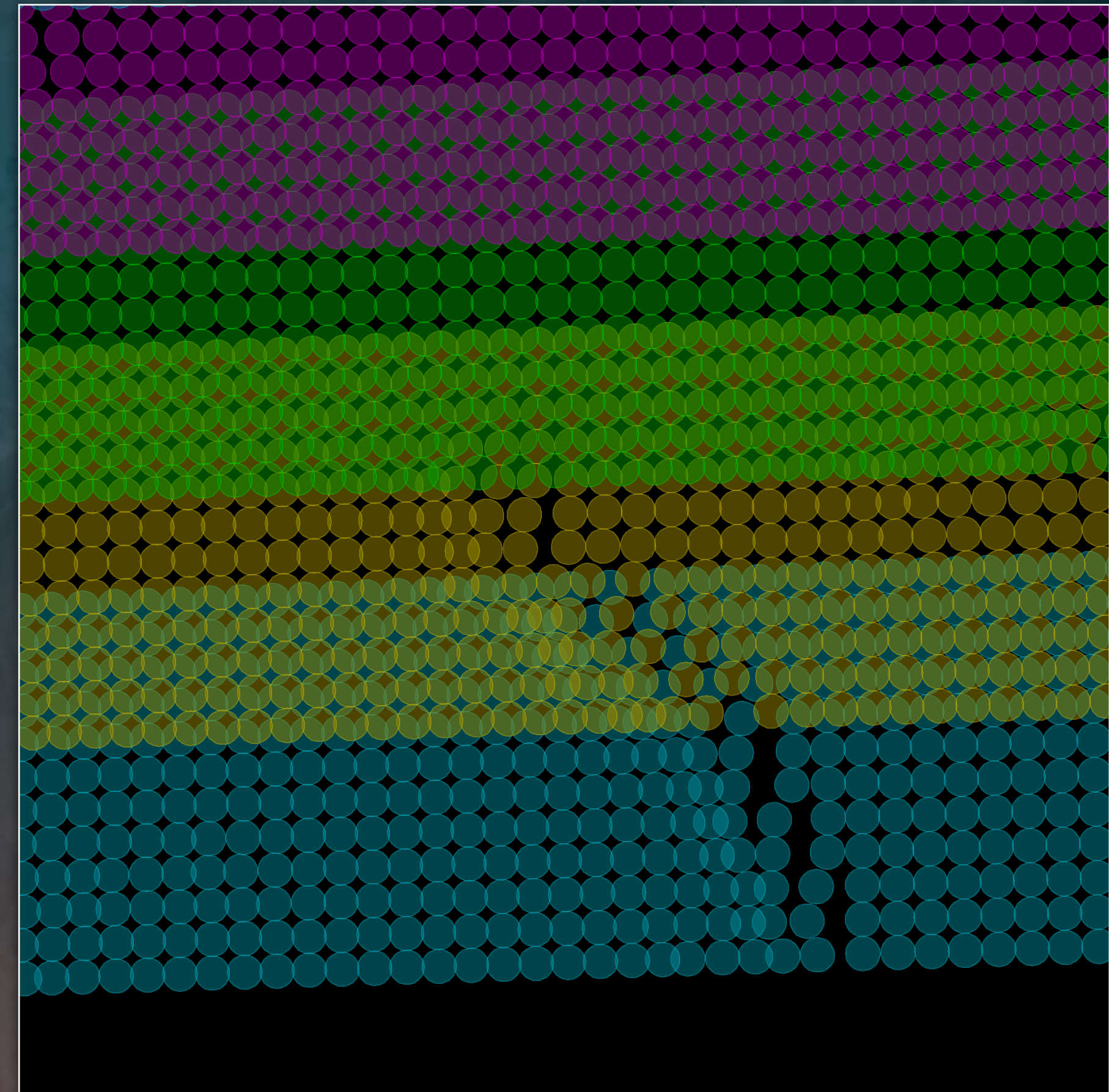


Terrain-corrected Locations

VIIRS nadir scan



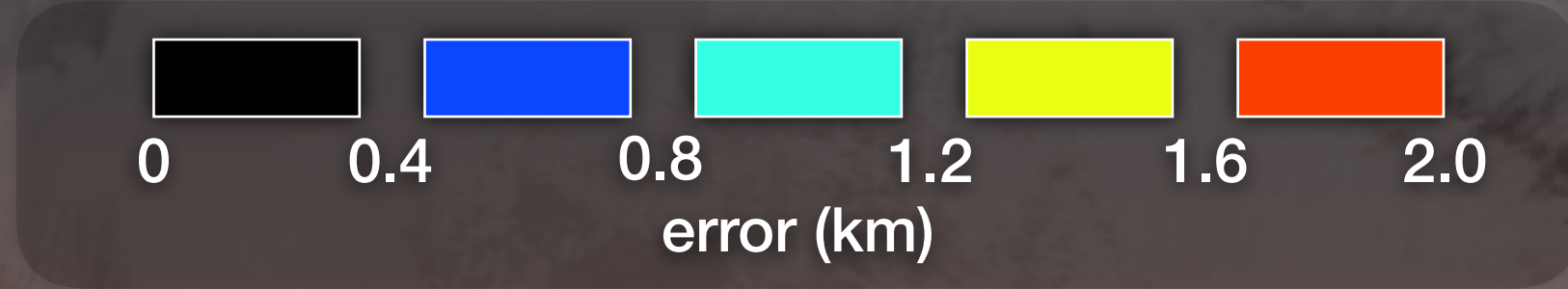
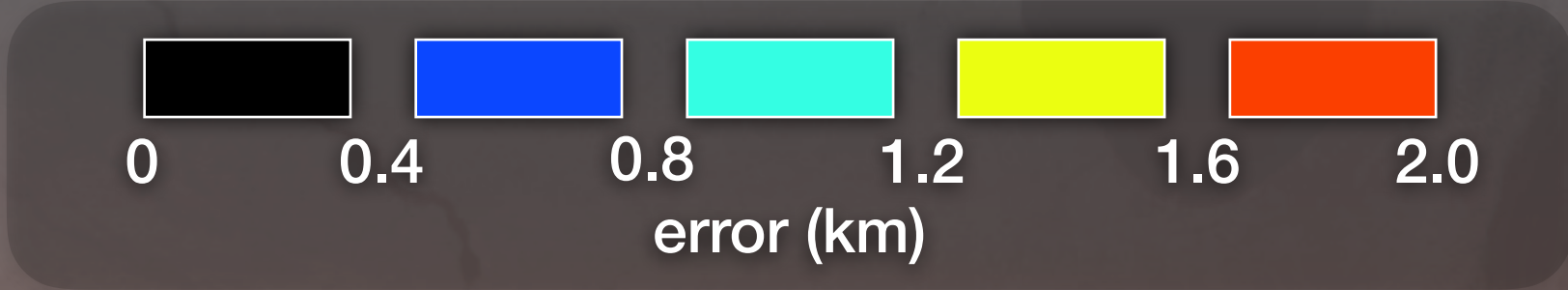
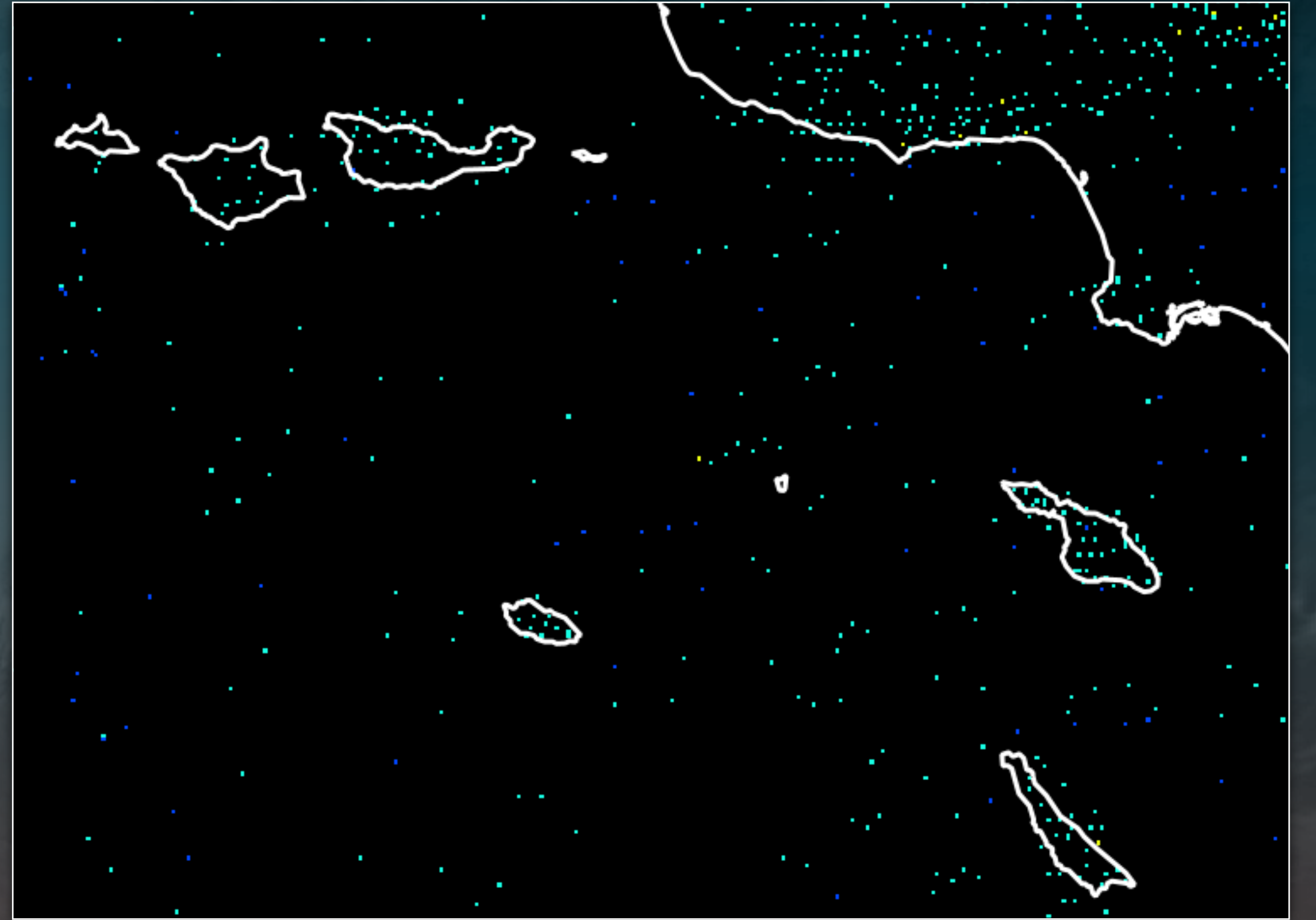
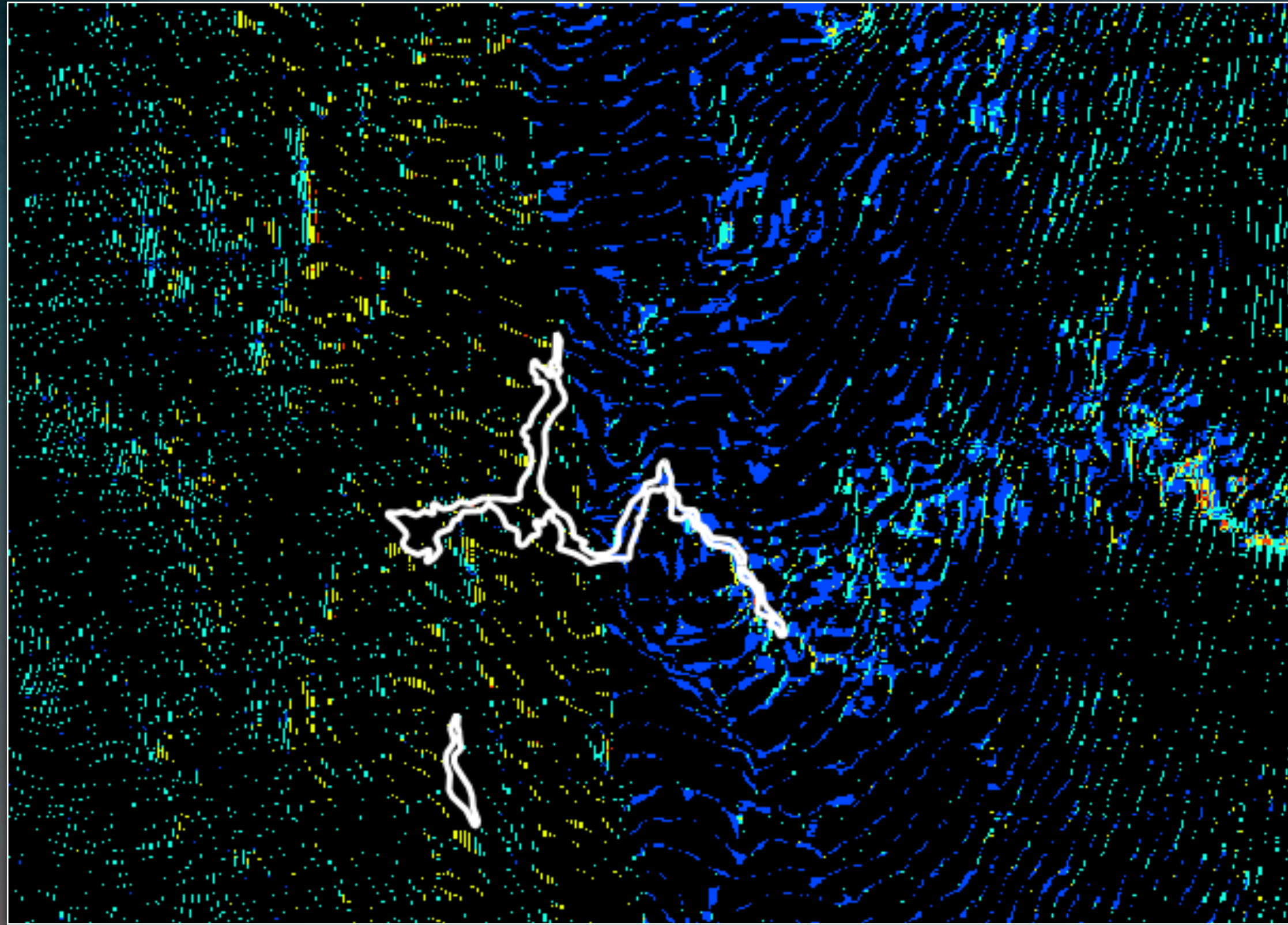
VIIRS off-nadir scan



Terrain Registration Errors

Land Errors

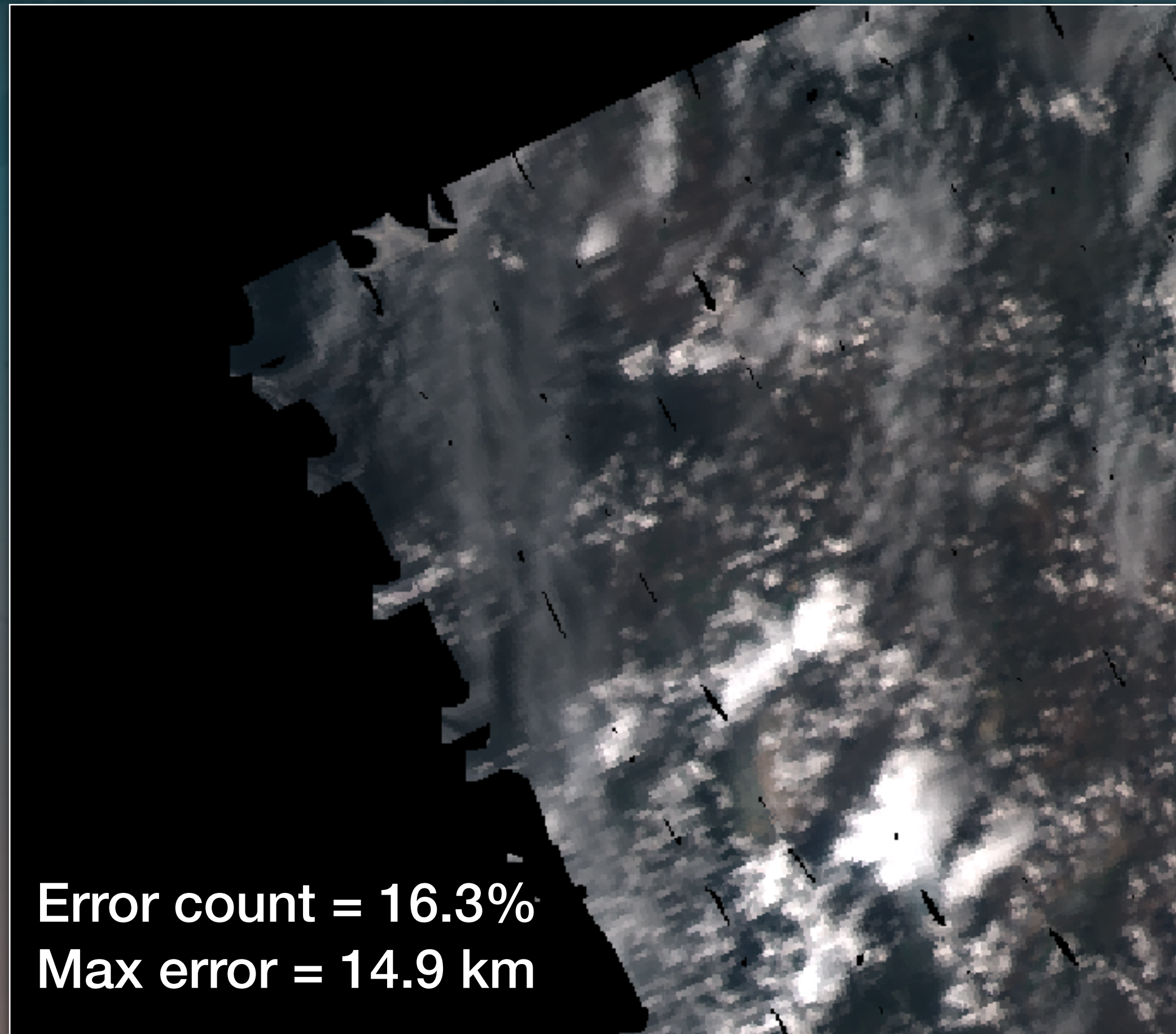
Ocean Errors



Registration Improvements

Numerical Problems

Corrected Registration



Future Ideas

- Improve speed of other tools as needed
- Improve CDAT usability (color scale range, data export, memory issues)
- Ability to perform math and registration from within CDAT (not command line)

Recap

- General design, 6-month release schedule, users
- Speed improvements in math, registration, and composite tools and parallel processing
- Registration accuracy improvements for terrain-corrected data
- Future ideas

Demo