Direct Broadcast Ultra Low Latency

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Goals:

➔ Minimize CrIS calibrated radiance latency

➔ Increase granule yield

➔ Maintain quality

➔ All of the above while receiving/merging data from multiple antennas
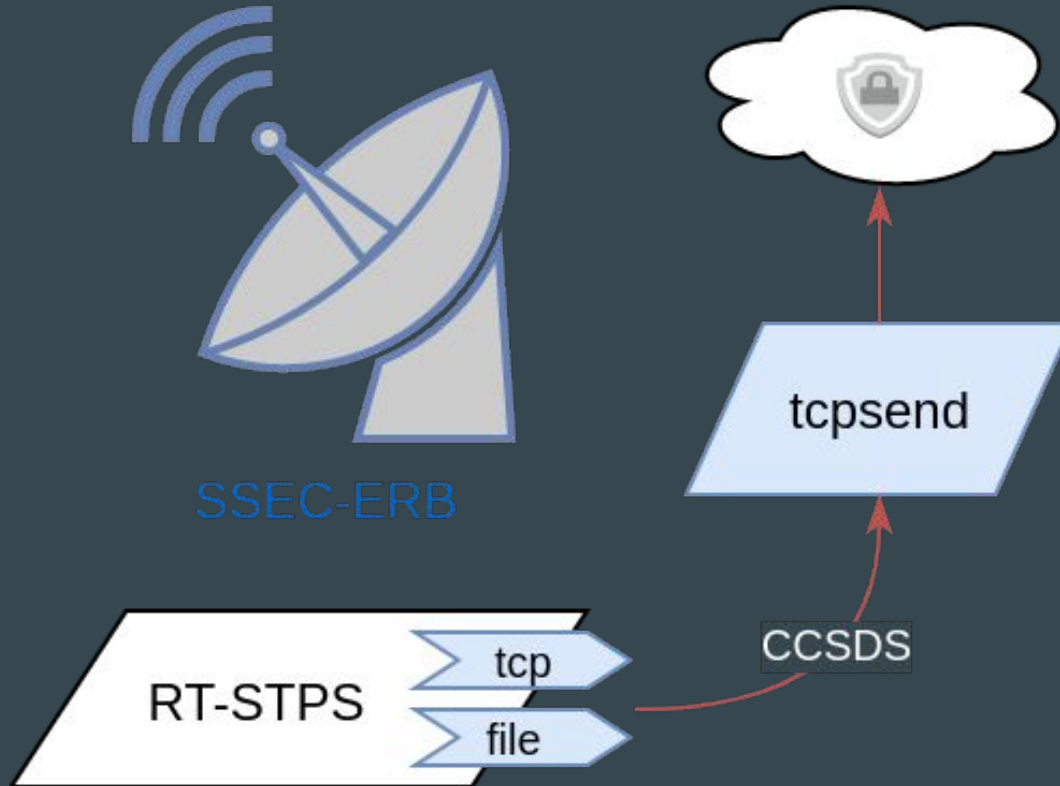
NASA CrIS L1B:

Key Advantages:

➔ Flexible with regard to calibration views
   ◆ latency, yield
➔ Handles partial data very well
   ◆ yield
➔ Handles PDS files directly, no RDRs
➔ Very easy to use, simple to run
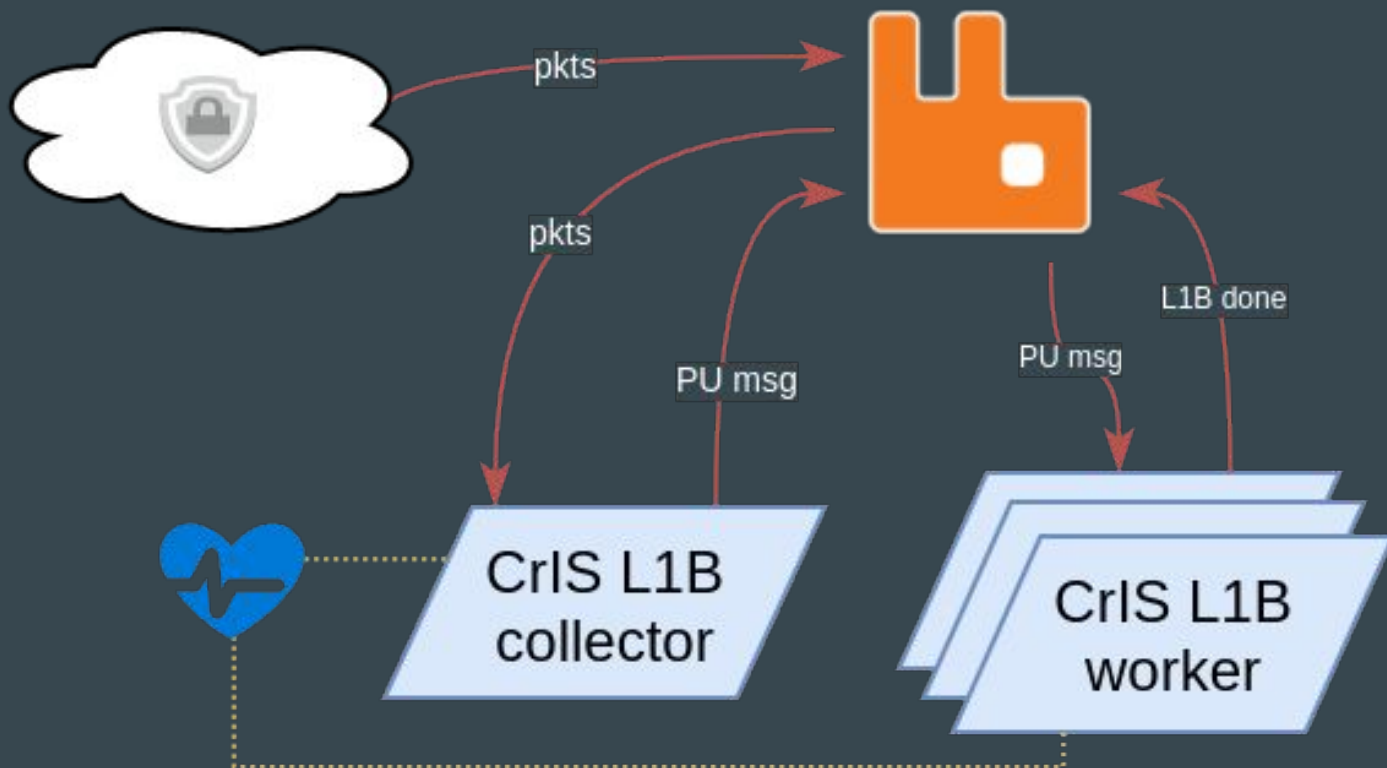➔ Support, literally, a shout away

Implementation: technologies
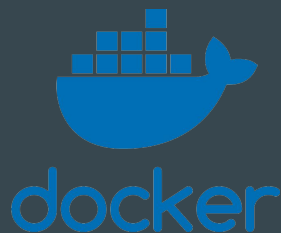
Implementation: client-side

Implementation: server-side

Implementation: level 0 slicing & dicing

EdosL0Util

Python library/toolkit for inspecting/merging/sorting CCSDS packet streams.

Processing Unit

Unit of data required for downstream processing.

Single CrIS scan L0	
	APIDs
ICT view	1342-1368
Space view	1369-1395
Earth view	1315-1341
ICT view	1342-1368
Space view	1369-1395
Engineering packet	1289
4-minute ENGR pkt	1290
S/C Diary (every second)	11

Implementation: monitoring

Results: latency

Client 1000ms
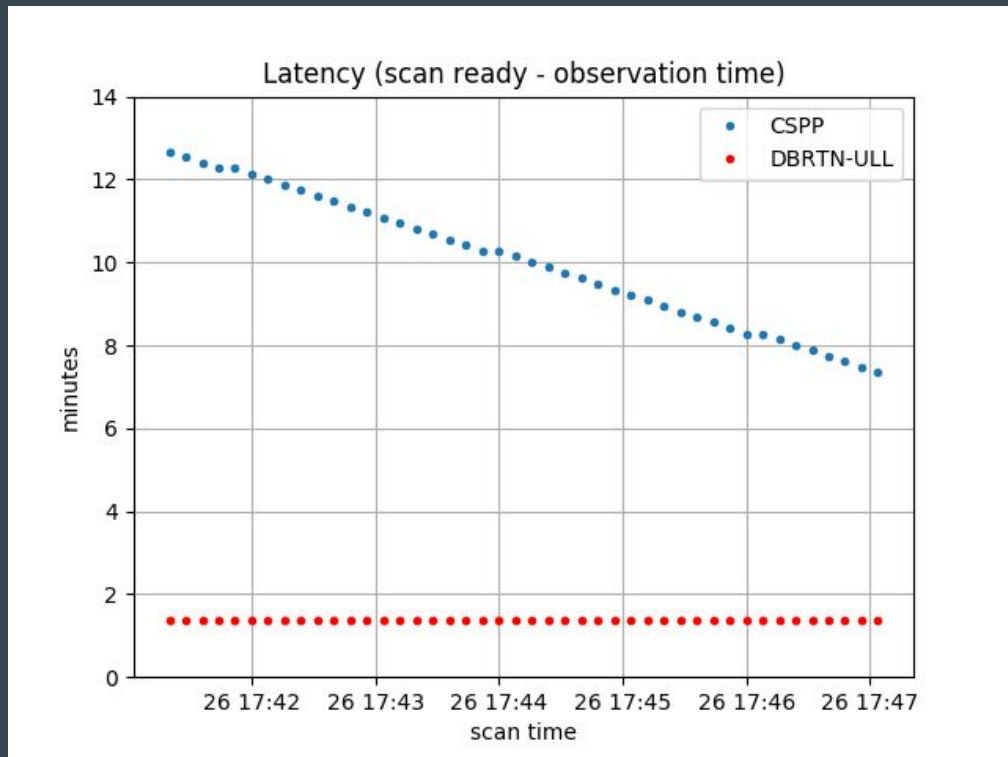
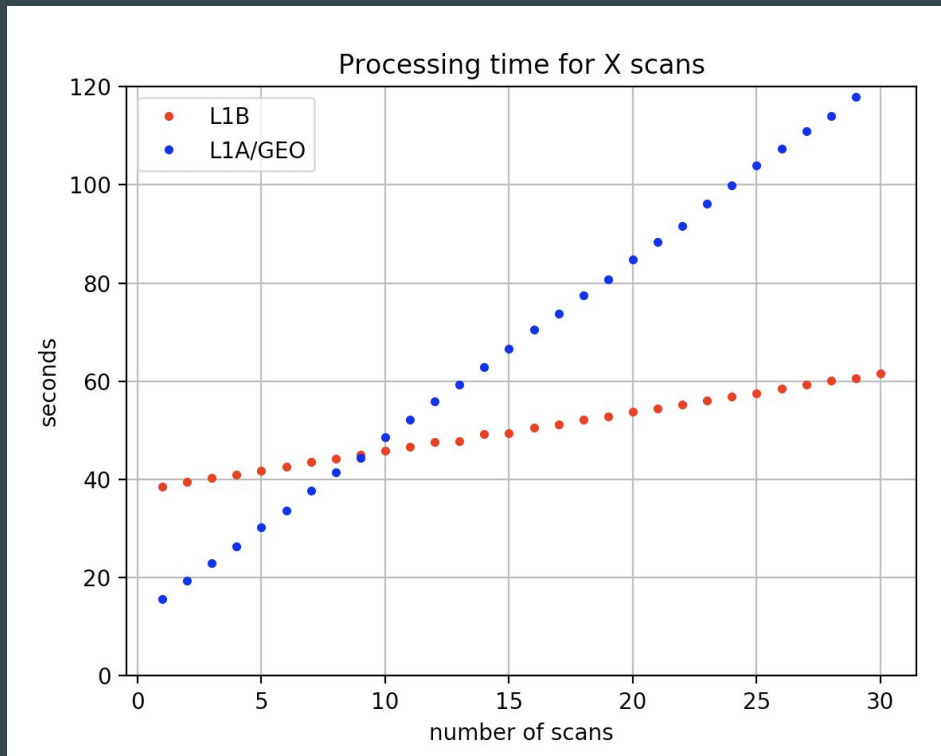|		Collection 10s	Processing 78s

Receive 200ms

- ➔ Total time to L1B available **~90 seconds**
- ➔ Packets available to the system in **~1.2 seconds**
- ➔ Single CrIS Processing Unit
  - ◆ 210 earth views
  - ◆ Preceding and trailing Cal views
  - ◆ Overlapping diary +/- 1 second
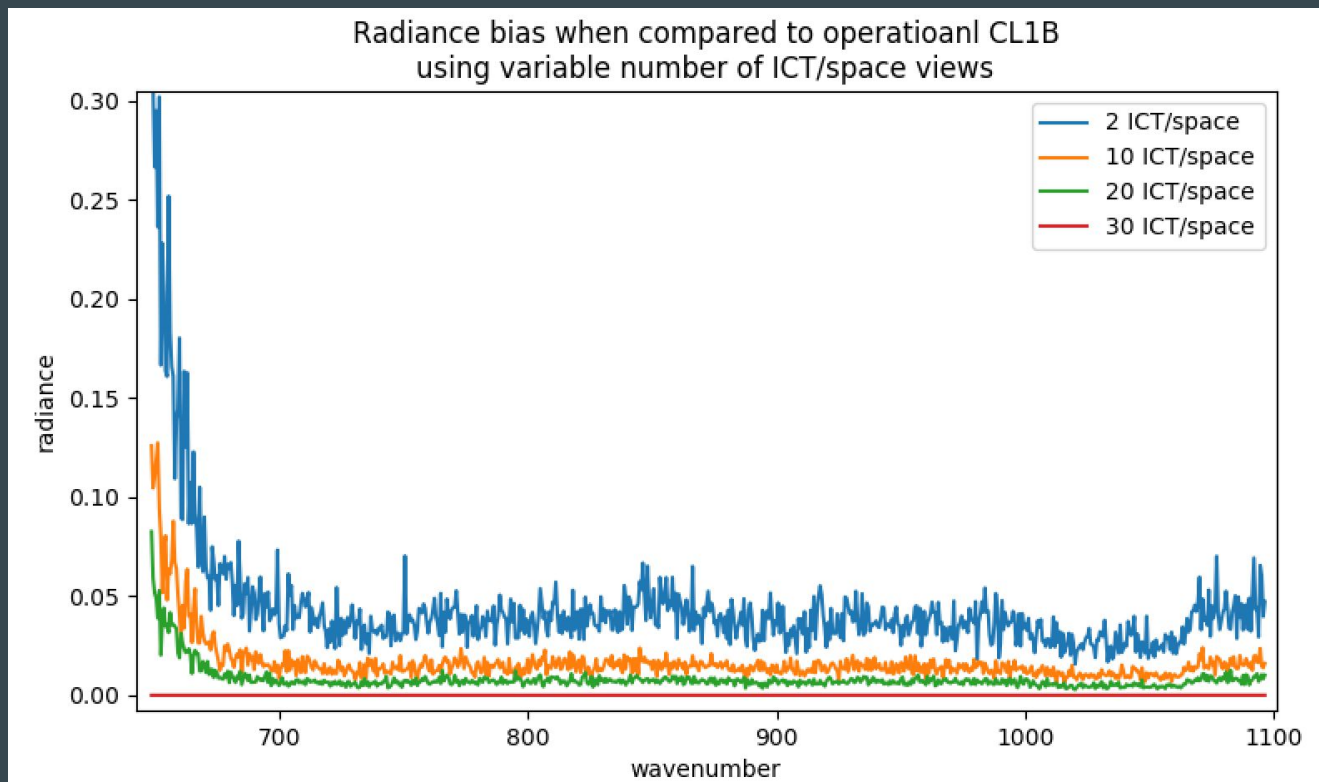- ➔ Single scan L1B NetCDF output

Results: latency

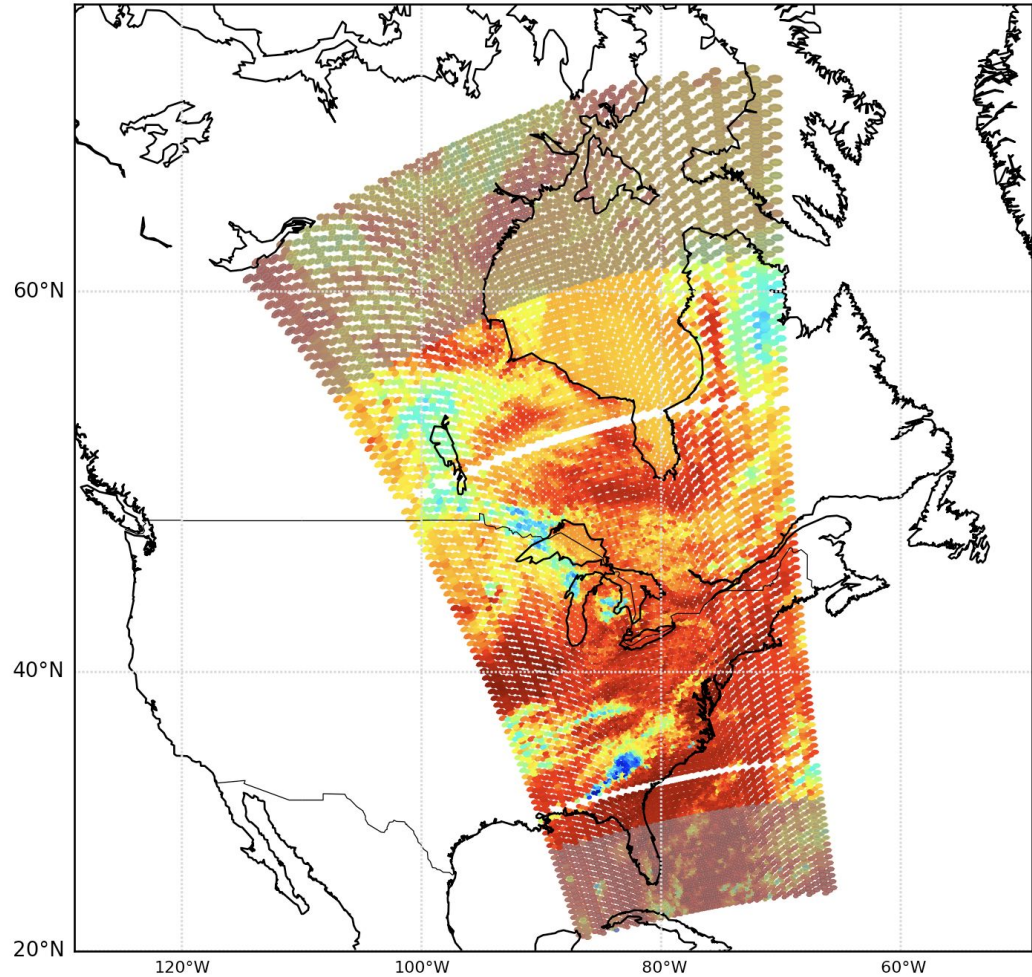# Results: latency - can we do better?

Results: quality

Radiance bias when compared to operatioanl CL1B
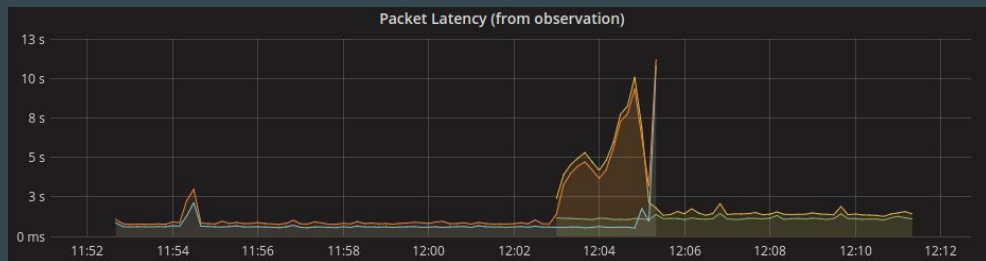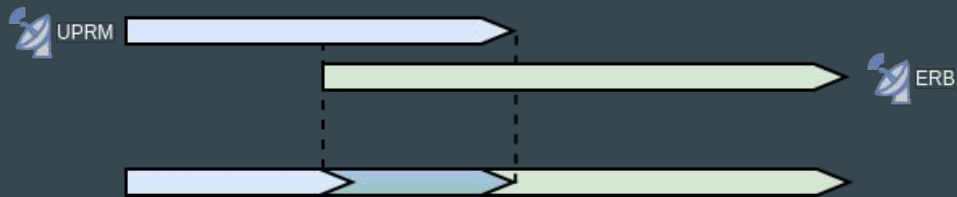using variable number of ICT/space views

Results: yield

Yesterday: 18:37Z

SSEC ERB, Madison

Super Passing: multiple stations

Overlap Region

19.5 minute overpass
6/28/2017
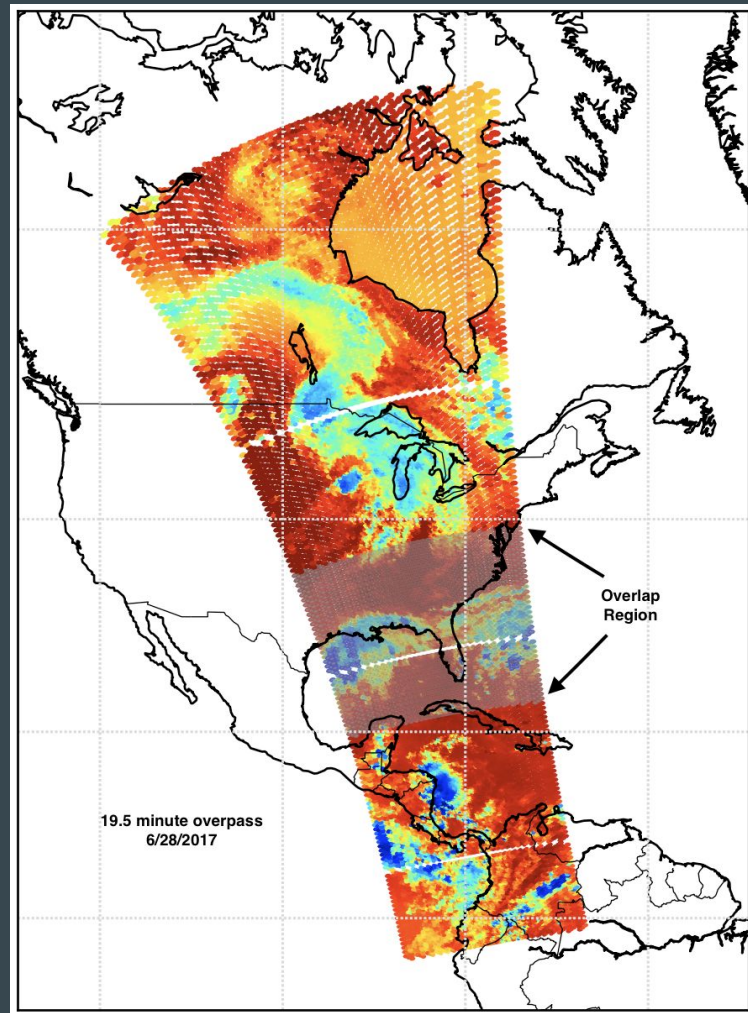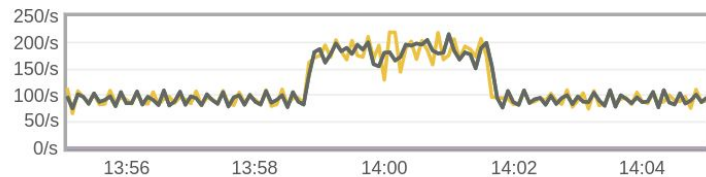
Questions, Comments, Suggestions?

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EdosL0Util:
https://gitlab.ssec.wisc.edu/sips/EdosL0Util