

RINEX file name  
Station name

Static mode processing

Single or dual-frequency observables processed

**\*NEW for version 3\***  
The percentage of carrier-phase observations with fixed ambiguities

The Antenna Phase Centre (APC) to the Antenna Reference Point (ARP) offset used by CSRS-PPP. Based on antenna model listed on the RINEX header record.

The estimated coordinates (in the selected reference frame and epoch)

Uncertainties:  
SIG\_PPP: standard deviation (95%) of the PPP estimated coordinates  
SIG\_TOT: total standard deviation (95%); incorporates both PPP and epoch transformation uncertainties

A priori position (approx.) (from RINEX header or from code solution)

Orthometric Height (only if the position is within the geoid model bounds)

ARP to the Survey Marker distance is provided by the user on the "ANTENNA: DELTA H/E/N" RINEX header record. The ARP is usually the bottom of the antenna mount.

Used Products: ephemerides and clock corrections (FINAL, RAPID, or ULTRA-RAPID)



CSRS-PPP 3.45.0 (2020-07-08)

Sample\_Static.yyo  
DUBO CACS-GSD 924000 LAC DU BONNET MB Canada



Data Start	2018-01-10 00:00:00.00	Data End	2018-01-10 03:00:00.00	Duration of Observations	3:00:00
Processing Time	17:39:49 UTC 2020/08/05	Product Type	Final	Mode	Static
Observations	Phase and Code	Frequency	Double	Estimation Steps	30.00 sec
Elevation Cut-Off	7.5 degrees	Rejected Epochs	0.00 %	Fixed Ambiguities	97.19 %
Antenna Model	AOAD/M_T NONE	APC to ARP	L1 = 0.092 m L2 = 0.120 m	ARP to Marker	H:0.100m / E:0.000m / N:0.000m

(APC = antenna phase center; ARP = antenna reference point)

**Estimated Position for Sample\_Static.yyo**

	Latitude (+n)	Longitude (+e)	Ell. Height
NAD83(CSR5) (2002.0)†	50° 15' 31.68279"	-95° 51' 58.20893"	246.011 m
SIG_PPP(95%)‡	0.007 m	0.005 m	0.022 m
SIG_TOT(95%)‡	0.015 m	0.011 m	0.024 m
A priori*	50° 15' 31.71051"	-95° 51' 58.26171"	245.282 m
Estimated - A priori	-0.857 m	1.045 m	0.730 m

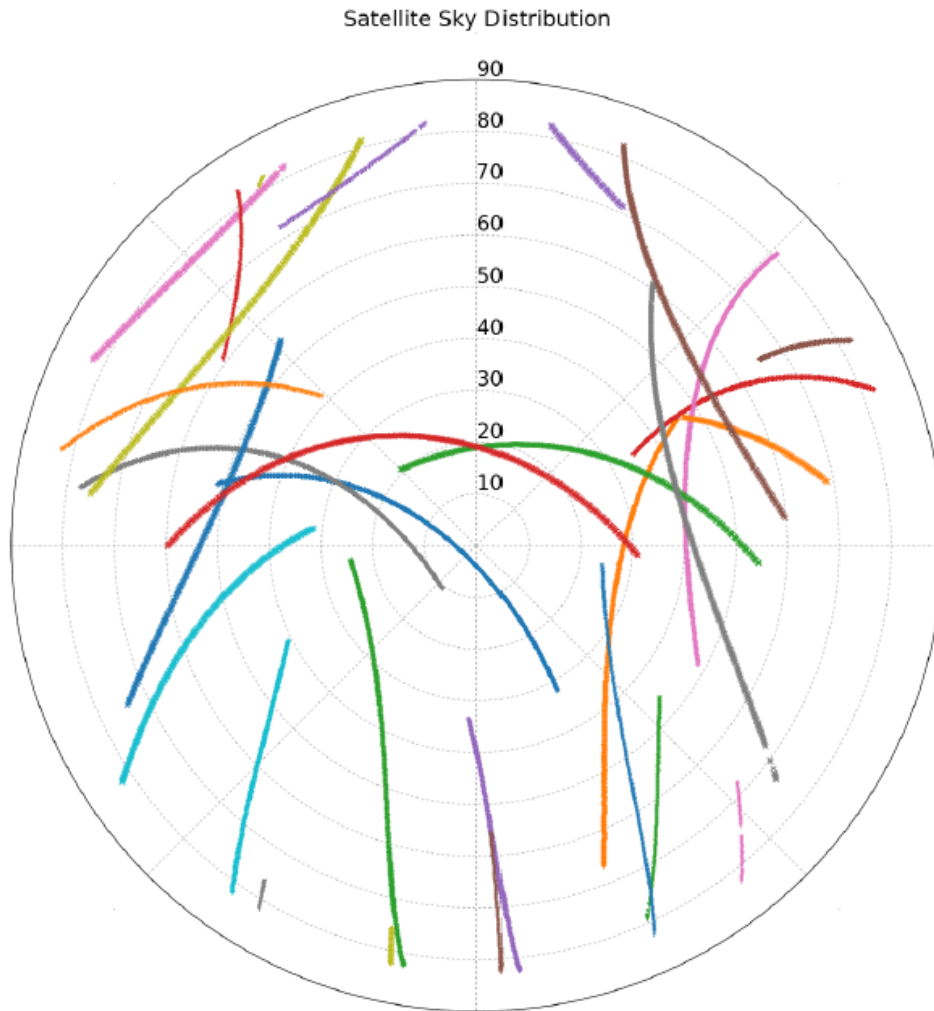
Orthometric Height CGVD2013 (CGG2013a) 274.980 m (click for height reference information)

95% PPP Error Ellipse (mm) semi-major: 8 mm semi-minor: 7 mm semi-major azimuth: 0° 0' 0.39"	95% TOT Error Ellipse (mm) semi-major: 19 mm semi-minor: 14 mm semi-major azimuth: 0° 0' 0.29"	UTM (North) Zone 15 5571336.552 m (N) 295710.307 m (E) Scale Factors 1.00011257 (point) 1.00007402 (combined)
---	---	--

\*(Coordinates from RINEX header used as a priori position)  
†(Epoch transformation using velocity grid NAD83v70VG (click for documentation))  
‡SIG\_PPP indicates PPP-derived uncertainties, SIG\_TOT incorporates uncertainties from epoch transformation

## Page 2 – Satellite Sky Distribution

The plot shows the track off each satellite in the sky relative to the antenna. The center of this polar projection plot would be directly overhead while the outer ring of this plot would be the horizon. The plot is oriented so that North is in the “up” direction on the page.



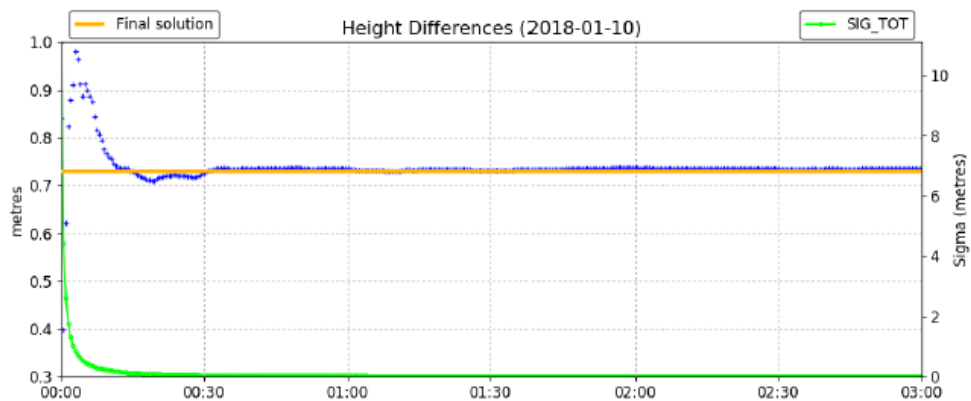
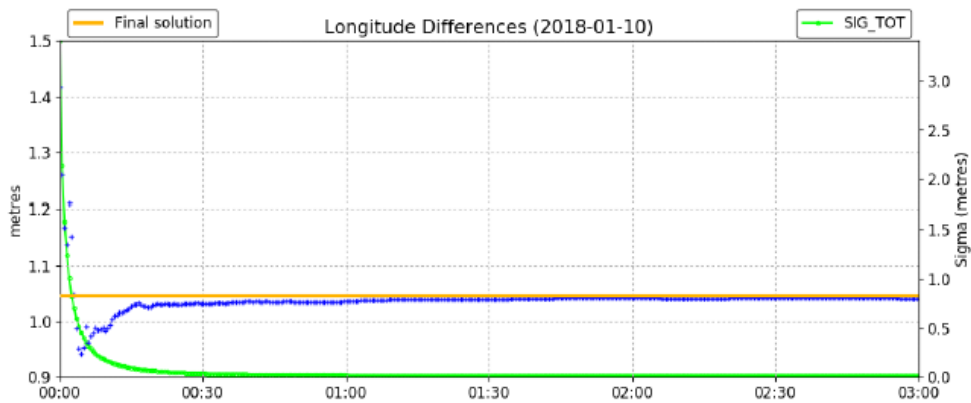
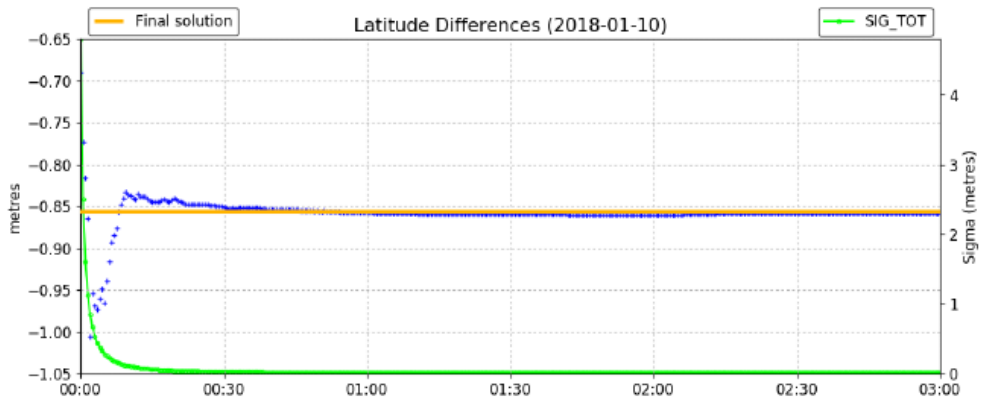
• G01	• G11	• G23	• R03	• R13	• R18
• G05	• G13	• G26	• R04	• R14	• R22
• G07	• G15	• G27	• R05	• R15	• R23
• G08	• G16	• G28	• R06	• R16	• R24
• G09	• G17	• G30	• R07	• R17	

# Page 3 – Latitude / Longitude / Height Differences

The convergence plots show the time-series of the difference between the estimated and a priori positions for each epoch where the a priori positions are taken from the RINEX header or from the code solution. A green line shows the total standard deviations (95%) including the uncertainties due to the epoch transformation, if any. A red line shows the PPP standard deviations (95%) if there is no epoch transformation.

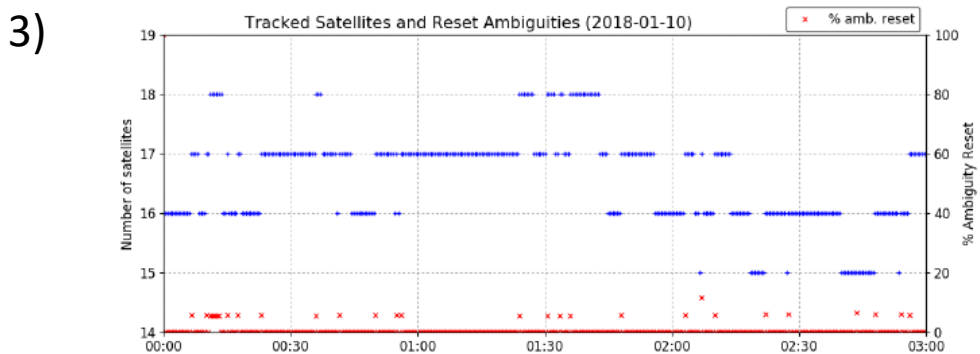
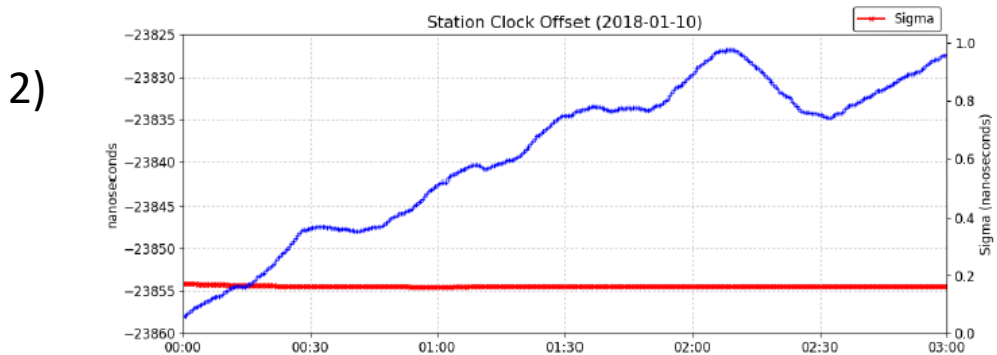
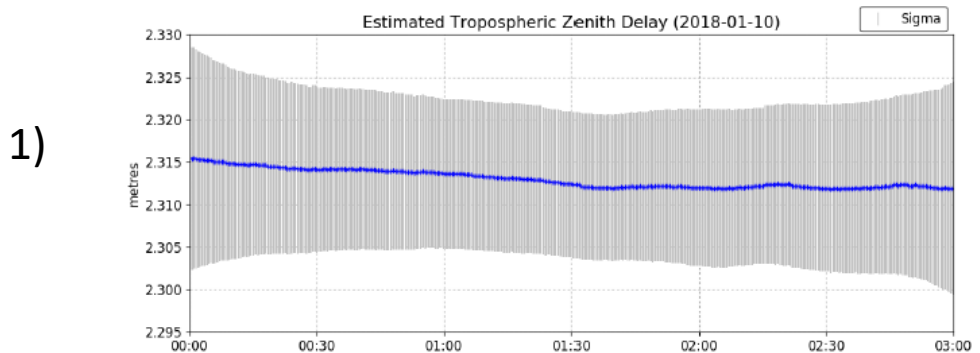
## \*NEW for version 3\*

The orange line represents the final estimated solution.



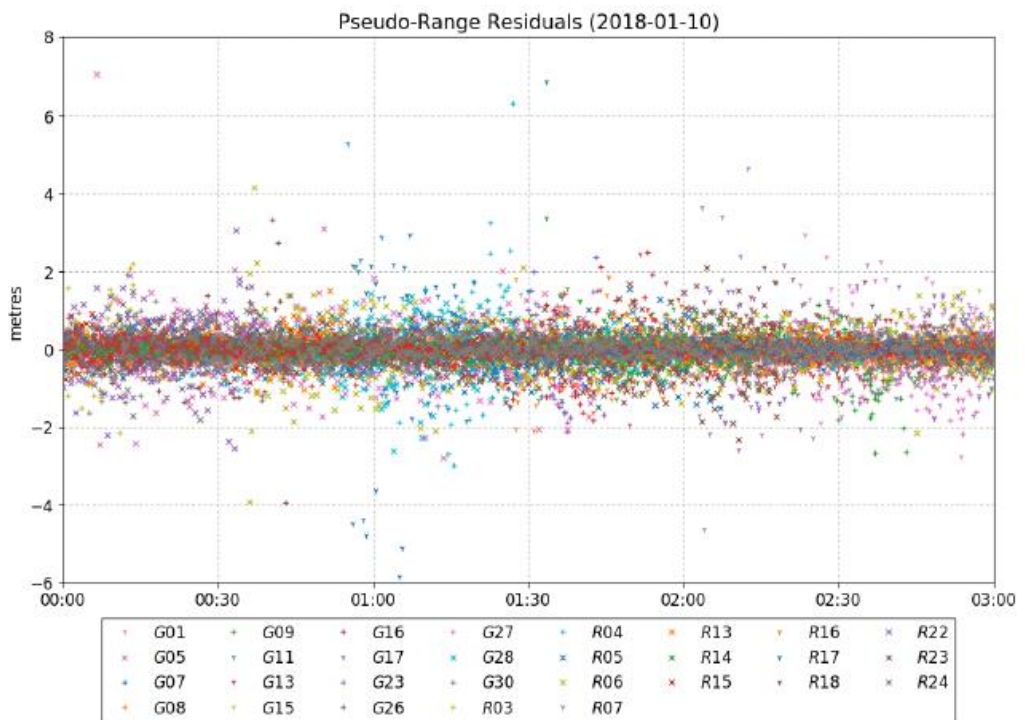
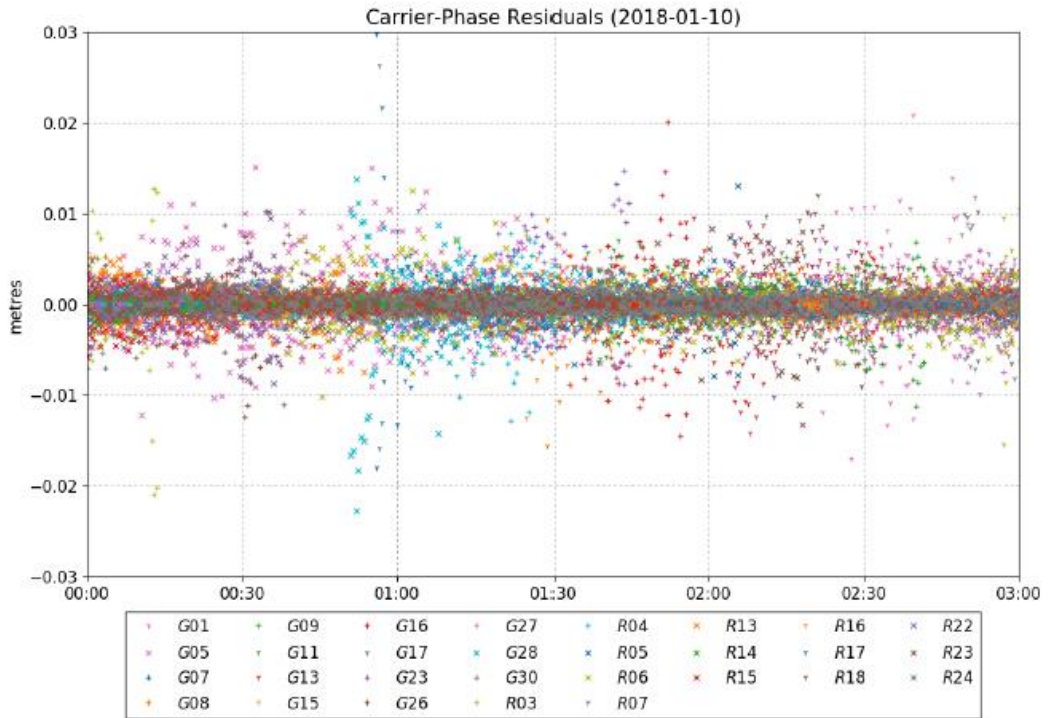
# Page 4 – Estimated Tropospheric Zenith Delay / Station Clock Offset / Tracked Satellites and Reset Ambiguities

- 1) The “Estimated Tropospheric Zenith Delay” plot shows the total estimated troposphere delay in the zenith direction for each epoch in the solution. Uncertainties (grey error bars) are scaled by a time correlation factor.
- 2) The “Station Clock Offset” plot shows the estimated offset between the receiver clock and GPS time for each epoch in the solution. Sigmas (red line) are scaled by a time correlation factor.
- 3) The “Tracked Satellites and Reset Ambiguities” plot shows the number of satellites tracked in blue and the percentage of ambiguities reset in red.



# Page 5 – Carrier-Phase / Pseudo-Range Residuals

The “Residuals” plots show the estimated Carrier Phase and Pseudo-Range (code) residuals for each processed satellite at each epoch.



# Page 6 – Phase Ambiguity Status (\*NEW for version 3\*)

This plot indicates, for all satellites at each epoch, the status of the estimated parameters:

- Fixed ambiguity (green): integer ambiguities that were validated by the software’s algorithms are indicated in green
- Float ambiguity (yellow): this ambiguity could not be resolved to an integer
- Datum ambiguity (cyan): to estimate receiver phase-bias parameters in the PPP filter, the filter must fix a priori a certain number of ambiguities. These selected ambiguities are called datum ambiguities.
- New arc (red): when an ambiguity parameter is first observed, it is plotted in red

