Step by step for SteveC on dealing with Multi-Day HCN Files

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Thesis: It is possible to record very long files with the X90-OPUS receiver. The automatic download file will choke when processing files longer than 48-hours (usually). This document describes how to convert the file and how to manually break the file into daily files for submission to OPUS.

Manually copy HCN file from GPS to a folder:



Run the RINEX Converter, click File: Open and select the file:

	Open File				×
() → ↑ ↓ → This PC	▹ Windows (C:) ▶ _tmp	~	✓ C Search SCorely		
Organize 🔻 New folder				•== •	0
🜏 Homegroup 🔷	Name	Date modified	Туре	Size	
Mark Silver	🗹 🗋 018529245A0.HCN	9/17/2014 6:40 AM	HCN File	50,099 KB	
🌉 This PC					
🥽 Libraries					
Documents 🗸					
File <u>n</u> ame:	018529245A0.HCN		✓ Huace Obs.	File(*.HCN)	~
			<u>O</u> pen	Cancel	

Click on Open:

W	RINEX Converter – –								
File(<u>F</u>) Convert(<u>C</u>) View(<u>V</u>) Abo	File(F) Convert(C) View(V) About(A)								
😂 🔘 🖉 🤣 🤇									
File Name	Epoch Decoded	Epoch Convert	GPS Eph	GLO Eph	BDS Eph	Ant.Height	Status		
C:_tmp\SCorely\018529245A0.HCN						0.000000			
Export Path									
CHC									
Ready							Num //		

Click the 'Gear' button:

Options							
Output RINEX Version	2.10 💌	[
RunBy/Obsv/Agency	СНС						
Comment		, 					
Maker Name	, 						
Rec #/Type/Vers							
Ant #/Type							
Approx Pos XYZ	0.000000	0.000000	0.000000				
Ant Delta H/E/N	0.000000	0.000000	0.000000				
INTERVAL	0.000000						
Satellite Systems Excluded Satellites Image: GPS GLO Galileo QZSS SBAS BeiDou Excluded Satellites Observation Types Frequencies							
	S VL1 VL	.2 🗌 L5 🔲 L7	7 🗖 L6 🗖 L8				
Option:	Debug	v	<u>O</u> K <u>C</u> ancel				

Uncheck 'GLO', 'Galileo' and BeiDou, then click OK.

Click the green 'GO' button:



Wait for 'Conversion Complete':



Now there will be a RINEX file in the same folder where the input file was. In the RINEX folder, there will be O and N file (Observation and Navigation file):



In this case, the resulting file is mega long (not necessarily BIG, but observations over a long time). Here are the first/last observation times:

2014	9	2	16	17	30.000000	GPS	TIME OF FIRST OBS
2014	9	16	8	24	0.000000	GPS	TIME OF LAST OBS

This file spans September 2nd through September 16th. Since the intent is to submit to OPUS, it would be nice to convert to daily files. TEQC's TBIN command is the way to go.

Here is a screenshot of the single command that will break up the LONG file into several 24-hour files AND simultaneously decimate to 30 second interval:

C:_tmp\SCorely\Rinex>tegc -0.dec 30s +obs + -tbin 24h SCOR 018529245A0.140
teqc: creating file 'SCOR2450.14o'
teqc: creating file 'SCOR2460.14o'
teqc: creating file 'SCOR2470.14o'
teqc: creating file 'SCOR2480.14o'
teqc: creating file 'SCOR2490.14o'
! Error ! 2014 Sep 7 00:00:30.000: poss. incr. of sampling int. OR data gap of 40.000 seconds (min. dt found= 30.000 s)
teqc: creating file 'SCOR2500.14o'
teqc: creating file 'SCOR2510.14o'
teqc: creating file 'SCOR2520.14o'
teqc: creating file 'SCOR2530.14o'
teqc: creating file 'SCOR2540.14o'
teqc: creating file 'SCOR2550.14o'
teqc: creating file 'SCOR2560.14o'
! Error ! 2014 Sep 14 00:00:30.000: poss. incr. of sampling int. OR data gap of 40.000 seconds (min. dt found= 30.000 s)
teqc: creating file 'SCOR2570.14o'
teqc: creating file 'SCOR2580.14o'
teqc: creating file 'SCOR2590.14o'
C:_tmp\SCorely\Rinex>_

The command is:

teqc -0.dec 30s +obs + -tbin 24h SCOR 018529245A0.140

Now there will be 15 files:



I like to zip the observations up before I submit them (to make the upload quicker):

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cuments	014					
Open			ip 9/17/2014 9:14 AM			
Open in new window			4o 9/17/2014 9:11 AM			
Open with HeyEdit		460.z	ip 9/17/2014 9:14 AM			
open with Hexedit		470.1	4o 9/17/2014 9:11 AM			
Extract All		470.z	ip 9/17/2014 9:14 AM			
Scan with AVG		480.1	4o 9/17/2014 9:11 AM			
Permanently shred with AVG		490.1	4o 9/17/2014 9:11 AM			
Pin to Start		500.1	4o 9/17/2014 9:11 AM			
True Image	۲	510.1	4o 9/17/2014 9:11 AM			
7-Zip	•		Open archive			
Open with	۲		Extract files			
Send to	•		Extract Here			
C .			Extract to "SCOR2450\"			
Cut			Test archive			
Сору			Add to archive			
Create shortcut			Compress and email			
Delete			Add to "SCOR2450.7z"			
Rename			Compress to "SCOR2450.7z" and email			
Properties			Add to "SCOR2450.zip"			
			Compress to "SCOR2450.zip" and email			
	Open Open in new window Open with HexEdit Extract All Scan with AVG Permanently shred with AVG Pin to Start True Image 7-Zip Open with Send to Cut Copy Create shortcut Delete Rename Properties	Open Open in new window Open with HexEdit Extract All Scan with AVG Permanently shred with AVG Pin to Start True Image 7-Zip Open with Send to Cut Copy Create shortcut Delete Rename	Open450.2Open in new window460.2Open with HexEdit470.2Extract All470.2Scan with AVG480.1Permanently shred with AVG490.1Pin to Start500.1True Image510.17-Zip10.1Open with10.17-Zip10.1CutCopyCreate shortcutDeleteRenameProperties			

Now you can submit the files to OPUS. Here is a screen shot of submitting a single file:

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Solve your GPS position & tie it to the National Spatial Reference System. What is OPUS?



CHCX90D-OPUS NONE P/N:1190403181, X90 L1/L2/L2C ▼ antenna - choosing wrong may degrade your accuracy.

0.0001 meters above your mark. antenna height of your antenna's reference point.

ms.igage@gmail.com

* email address - your solution will be sent here.

Options to customize your solution.

formats	extended			fc
base stations	Use:	Exclude:	Look up site IDs	ty
				N
state plane	let OPUS	5 choose	۲	0
project identifier				e
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share my solution	No, don't	share 💌		w
		\sim		
Upload to Rapid-Stat	ic Uploa	ad to Static		
for data 15 min 2 hr	rs. for da	ta 2 hrs 48 hrs.		

Here is the first few lines of the resulting OPUS-Static Report

NGS OPUS SOLUTION REPORT

All computed coordinate accuracies are listed as peak-to-peak values. For additional information: http://www.ngs.noaa.gov/OPUS/about.jsp#accuracy

USER:	ms.igage@gmail.com		DATE:	September 17, 2014	
RINEX FILE:	scor245q.14o	TIME:	15:21:48 UTC		
SOFTWARE:	page5 1209.04 master91.pl	022814	START:	2014/09/02 16:17:00	
EPHEMERIS:	igr18082.eph [rapid]		STOP:	2014/09/02 23:59:00	
NAV FILE:	brdc2450.14n		OBS USED:	17777 / 18955 : 94%	
ANT NAME:	CHCX90D-OPUS NONE	#	FIXED AMB:	90 / 100 : 90%	

REF FRAME:	NAD_83(2011)(EPOCH:2	010.0000)	IGS08 (EPOCH:2	2014.6708)
X:	-215420.720 (m)	0.017(m)	-215421.518 (m)	0.017(m)
z:	3618799.696 (m)	0.004 (m)	3618799.553 (m)	0.018(m) 0.004(m)
LAT:	34 47 24.40599	0.008(m) 0.018(m)	34 47 24.42805	0.008(m) 0.018(m)
W LON:	92 21 15.96982	0.018(m) 0.018(m)	92 21 16.00349	0.018 (m) 0.018 (m)
ORTHO HGT:	80.879 (m)	0.017(m) 0.034(m)	[NAVD88 (Computed using GF	EOID12A)]
UTM COORDINAT		DINATES ne 15)	STATE PLANE COORDINATES SPC (0301 AR N)	
Northing (Y)	[meters] 384995	7.615	50734.990	
Easting (X)	[meters] 55905	9.243	367560.836	
Convergence	[degrees] 0.368	35127	-0.20624603	
Point Scale	0.999	64299	1.00003124	
Combined Fac	tor 0.999	63451	1.00002276	

US NATIONAL GRID DESIGNATOR: 15SWU5905949957 (NAD 83)

]	BASE STAT	IONS USED		
PID	DESIGNATION		LATITUDE	LONGITUDE	DISTANCE (m)
DH7101	ARCM CAMDEN CORS ARP		N333232.635	W0925257.803	146721.6
DL7767	P777 ROCKYHILLAR 2008 CO	ORS ARP	N354209.553	W0923243.669	102726.3
DH8992	ARBT BATESVILLE CORS ARI	P	N354235.528	W0913742.738	121559.6

A little known secret, is you could ZIP all of the observation files into one ZIP file and submit them all at once. For an example, I ZIPped the first 7-full-days of observations files into a file called RINEX.ZIP and submitted it as a single submission.

I received back 7 reports, placed them in a folder called Batch and then ran them through the OPUSAccumulator tool:

0	OPUS Accumulator (Ver: 1.0.0.0)	-	
Path to Process	C:_tmp\SCorely\Rinex\Batch\		Process Now
OPUS Accumulato Issues, commen Reads every *,i Tabulated value Change Log: 2013.04.06: Wo 2013.04.14: Ad 2013.06.11: Ad 2013.06.17: Ch 2013.07.26: Tra	or Its: Mark Silver, ms@igage.com txt & *.msg file in 'Path to Process', attempts to extract OPUS results from each file. Is are sorted by start-tme then written to Summary.prn in the same folder. orked around issues with mailers that split report lines and strip whitespace. ded 'Ephemeris' column to reported data. ded tabulation of Min,Max,Rng,Avg,StdDev to numeric columns anged icon. Changed the names of header lines. Detect missing values on read, provide message. ap <tel:xxx.xxxx.xxx> strings from email containers.</tel:xxx.xxxx.xxx>		~
<			>
Quit Now	Show Output File		

After choosing the folder with the Microsoft Outlook .MSG files, click on Process Now and then open the resulting summary file in Excel:

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1	EL1_RMS	ORTHO1_HT	ORTHO1_RMS	UTM_X	UTM_Y	SPC_X	SPC_Y	RefFrame2	LAT2	LAT2_I
2	0.031	80.891	0.055	559059.242	3849957.613	367560.835	50734.988	IGS08 (EPOCH:2014.6729)	34.790118883	C
3	0.011	80.893	0.026	559059.242	3849957.612	367560.835	50734.986	IGS08 (EPOCH:2014.6757)	34.790118867	C
4	0.013	80.893	0.028	559059.241	3849957.612	367560.834	50734.986	IGS08 (EPOCH:2014.6788)	34.790118872	C
5	0.009	80.895	0.023	559059.244	3849957.618	367560.837	50734.992	IGS08 (EPOCH:2014.6797)	34.790118922	C
6	0.008	80.895	0.022	559059.242	3849957.615	367560.835	50734.990	IGS08 (EPOCH:2014.6836)	34.790118903	C
7	0.003	80.898	0.019	559059.239	3849957.612	367560.832	50734.986	IGS08 (EPOCH:2014.6868)	34.790118867	C
8	0.020	80.893	0.039	559059.241	3849957.613	367560.834	50734.987	IGS08 (EPOCH:2014.6884)	34.790118878	C
9										
10	0.003	80.891	0.019	559059.239	3849957.612	367560.832	50734.986		34.790118870	C
11	0.031	80.898	0.055	559059.244	3849957.618	367560.837	50734.992		34.790118920	C
12	0.028	0.007	0.036	0.005	0.006	0.005	0.006		0.00000060	C
13	0.014	80.894	0.030	559059.242	3849957.614	367560.835	50734.988		34.790118880	C
14	0.009	0.002	0.013	0.002	0.002	0.002	0.002		0.00000020	C
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Amazing!

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