

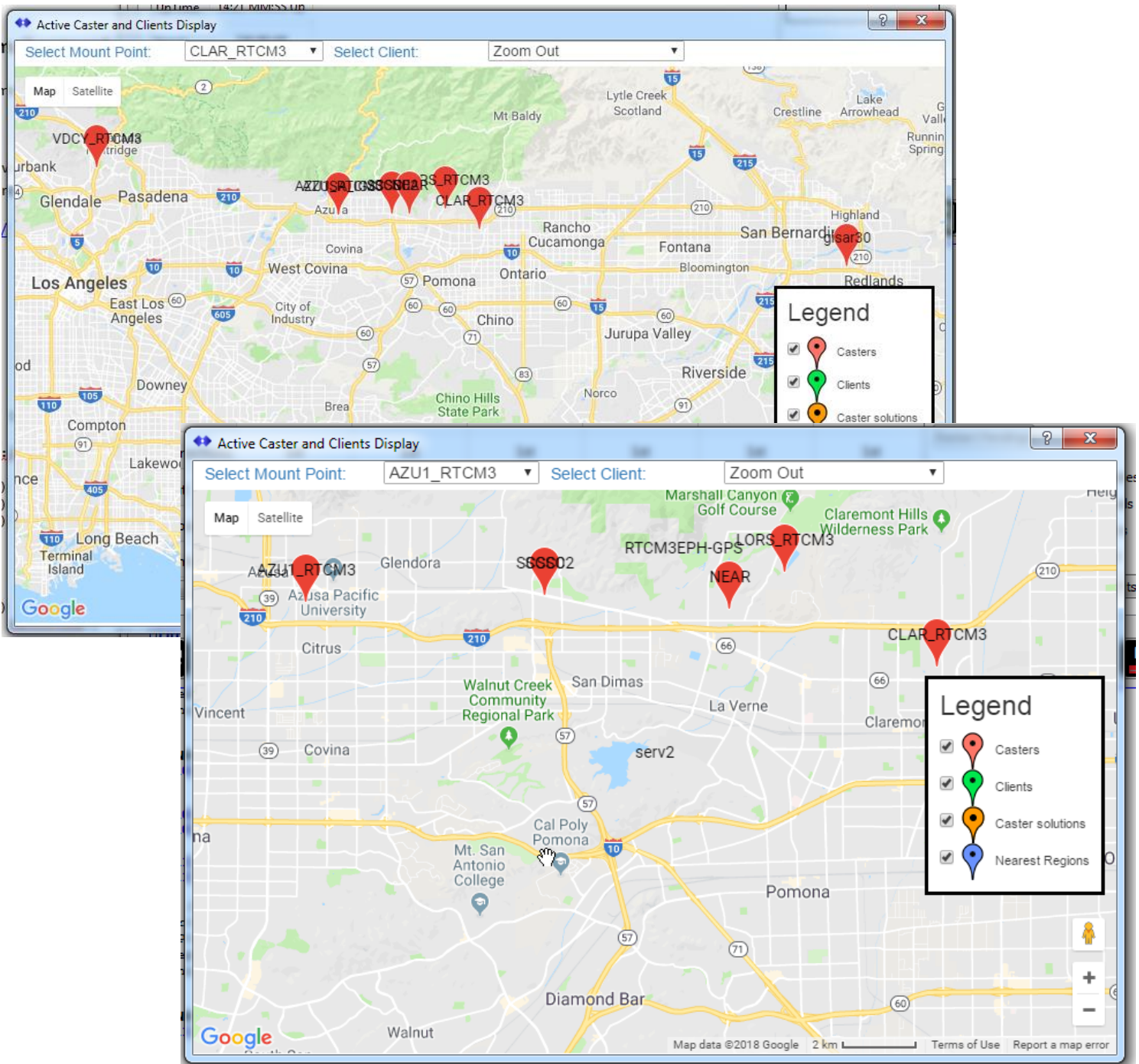
## Correcting to a common Datum in a small network

These stations are useful for ground vehicle freeway testing along the I-210 freeway near SCSC offices.

Master locations for: ASZU, SCSC, SCSC02, LORS, VDCY, CLAR and gisar30 are set to a common IGS08 datum provided by OPUS.

The **SNIP** Caster PFAT Translation ability is then used to ensure these stations use the below values, regardless of what they send (which happens to be using three different frames of reference in the source data).

See for further details: <https://www.use-snip.com/kb/article-categories/advanced-topics/>



## Part 1: - The “truth” for Base Station locations in IGS08 as reported by OPUS

### AZUSA

FILE: AZU1\_RTCM3\_180208.obs OP1518565592025

RINEX FILE: azu10390.18o

TIME: 23:48:17 UTC

REF FRAME: NAD\_83 (2011) (EPOCH:2010.0000)

IGS08 (EPOCH:2018.1055)

X:	-2472978.778 (m)	0.006 (m)	-2472979.766 (m)	0.006 (m)
Y:	-4671339.292 (m)	0.004 (m)	-4671337.784 (m)	0.004 (m)
Z:	3558107.916 (m)	0.014 (m)	3558107.936 (m)	0.014 (m)
LAT:	34 7 33.65465	0.012 (m)	34 7 33.67103	0.012 (m)
E LON:	242 6 12.69378	0.007 (m)	242 6 12.63218	0.007 (m)
W LON:	117 53 47.30622	0.007 (m)	117 53 47.36782	0.007 (m)
EL HGT:	145.505 (m)	0.007 (m)	144.796 (m)	0.007 (m)
ORTHO HGT:	179.139 (m)	0.025 (m)	[NAVD88 (Computed using GEOID12B)]	

### Clarmont (CLAR)

FILE: CLAR\_RTCM3\_180218.obs OP1519066782319

RINEX FILE: clar0490.18o

TIME: 19:01:18 UTC

REF FRAME: NAD\_83 (2011) (EPOCH:2010.0000)

IGS08 (EPOCH:2018.1329)

X:	-2458217.795 (m)	0.006 (m)	-2458218.777 (m)	0.006 (m)
Y:	-4680468.810 (m)	0.009 (m)	-4680467.307 (m)	0.009 (m)
Z:	3556758.646 (m)	0.010 (m)	3556758.663 (m)	0.010 (m)
LAT:	34 6 35.72932	0.006 (m)	34 6 35.74566	0.006 (m)
E LON:	242 17 28.33231	0.007 (m)	242 17 28.27111	0.007 (m)
W LON:	117 42 31.66769	0.007 (m)	117 42 31.72889	0.007 (m)
EL HGT:	374.445 (m)	0.011 (m)	373.731 (m)	0.011 (m)
ORTHO HGT:	407.634 (m)	0.029 (m)	[NAVD88 (Computed using GEOID12B)]	

### LORS

Not available, coverage now has poor up time since last equipment failure.

### SCSC

FILE: SCSC\_180208.obs OP1518209045586

RINEX FILE: scsc0390.18o

TIME: 20:46:02 UTC

REF FRAME: NAD\_83 (2011) (EPOCH:2010.0000)

IGS08 (EPOCH:2018.1055)

X:	-2467177.348 (m)	0.003 (m)	-2467178.334 (m)	0.003 (m)
Y:	-4674385.750 (m)	0.005 (m)	-4674384.244 (m)	0.005 (m)
Z:	3558322.769 (m)	0.014 (m)	3558322.788 (m)	0.014 (m)
LAT:	34 7 39.75150	0.011 (m)	34 7 39.76788	0.011 (m)
E LON:	242 10 28.40660	0.005 (m)	242 10 28.34515	0.005 (m)
W LON:	117 49 31.59340	0.005 (m)	117 49 31.65485	0.005 (m)
EL HGT:	251.274 (m)	0.009 (m)	250.563 (m)	0.009 (m)
ORTHO HGT:	284.643 (m)	0.016 (m)	[ H = h-N (N = GEOID12B HGT) ]	

### SCSC02

FILE: SCSC02\_180208.obs OP1518209119659

RINEX FILE: scsc0390.18o

TIME: 20:47:13 UTC

REF FRAME: NAD\_83 (2011) (EPOCH:2010.0000)

IGS08 (EPOCH:2018.1054)

X:	-2467177.675 (m)	0.006 (m)	-2467178.661 (m)	0.006 (m)
Y:	-4674386.372 (m)	0.003 (m)	-4674384.866 (m)	0.003 (m)
Z:	3558321.674 (m)	0.015 (m)	3558321.693 (m)	0.015 (m)
LAT:	34 7 39.70927	0.011 (m)	34 7 39.72565	0.011 (m)
E LON:	242 10 28.40664	0.006 (m)	242 10 28.34519	0.006 (m)

W LON: 117 49 31.59336 0.006(m) 117 49 31.65481 0.006(m)  
 EL HGT: 251.241(m) 0.009(m) 250.531(m) 0.009(m)  
 ORTHO HGT: 284.610(m) 0.016(m) [ H = h-N (N = GEOID12B HGT) ]

### gisar30

FILE: gisar30\_180208.obs OP1518208963750  
 RINEX FILE: gisa0390.18o

TIME: 20:45:11 UTC

REF FRAME: NAD\_83(2011) (EPOCH:2010.0000)

IGS08 (EPOCH:2018.1055)

X: -2419200.246(m) 0.007(m) -2419201.201(m) 0.007(m)  
 Y: -4703567.059(m) 0.007(m) -4703565.589(m) 0.007(m)  
 Z: 3553009.457(m) 0.010(m) 3553009.447(m) 0.010(m)

LAT: 34 4 9.47467 0.006(m) 34 4 9.49022 0.006(m)  
 E LON: 242 46 54.26825 0.005(m) 242 46 54.20892 0.005(m)  
 W LON: 117 13 5.73175 0.005(m) 117 13 5.79108 0.005(m)  
 EL HGT: 344.251(m) 0.010(m) 343.524(m) 0.010(m)  
 ORTHO HGT: 376.983(m) 0.018(m) [ H = h-N (N = GEOID12B HGT) ]

### VDCY

FILE: VDCY\_RTCM3\_180208.obs OP1518209172300  
 RINEX FILE: vdcy0390.18o

TIME: 20:48:06 UTC

REF FRAME: NAD\_83(2011) (EPOCH:2010.0000)

IGS08 (EPOCH:2018.1055)

X: -2497835.771(m) 0.020(m) -2497836.771(m) 0.020(m)  
 Y: -4654544.590(m) 0.011(m) -4654543.073(m) 0.011(m)  
 Z: 3563029.005(m) 0.013(m) 3563029.032(m) 0.013(m)

LAT: 34 10 42.82320 0.012(m) 34 10 42.83969 0.012(m)  
 E LON: 241 46 48.04806 0.015(m) 241 46 47.98567 0.015(m)  
 W LON: 118 13 11.95194 0.015(m) 118 13 12.01433 0.015(m)  
 EL HGT: 318.876(m) 0.017(m) 318.176(m) 0.017(m)  
 ORTHO HGT: 352.720(m) 0.028(m) [ H = h-N (N = GEOID12B HGT) ]

## Part 2: -

The uncorrected Base Station MT1005 and MT1006 locations reported by **SNIP** at power up:

[**AZU1\_RTCM3**]: Station location loaded from ECEF msg:

In ECEF X:**-2472979.4215**, Y:**-4671338.1096**, Z:**3558107.8057**  
 In DD.ddd Lat: **+34.12601811°**, Long: **-117.89648611°**, Height: **144.828m**,  
 In DMS.ss Lat: **+34° 07' 33.66521"**, Long: **-117° 53' 47.34999"**, Height: **144.828m**,

[**CLAR\_RTCM3**]: Station location loaded from ECEF msg:

In ECEF X:**-2458218.6625**, Y:**-4680467.2887**, Z:**3556758.5570**  
 In DD.ddd Lat: **+34.10992891°**, Long: **-117.70881257°**, Height: **373.614m**,  
 In DMS.ss Lat: **+34° 06' 35.74409"**, Long: **-117° 42' 31.72527"**, Height: **373.614m**,

[**LORS\_RTCM3**]: Station location loaded from ECEF msg:

In ECEF X:**-2461265.9037**, Y:**-4677290.8714**, Z:**3558949.4603**  
 In DD.ddd Lat: **+34.13332600°**, Long: **-117.75406900°**, Height: **448.913m**,  
 In DMS.ss Lat: **+34° 07' 59.97360"**, Long: **-117° 45' 14.64840"**, Height: **448.913m**,

[**SCSC**]: Station location loaded from ECEF msg:

In ECEF X:**-2467177.8359**, Y:**-4674383.2292**, Z:**3558322.6879**

In DD.ddd Lat: +**34.12771826**°, Long: **-117.82546004**°, Height: **249.572m**,  
In DMS.ss Lat: +**34° 07' 39.78575"**, Long: **-117° 49' 31.65615"**, Height: **249.572m**,

[**SCSC02**]: Station location loaded from ECEF msg:

In ECEF X: **-2467178.0745**, Y: **-4674383.9283**, Z: **3558321.4600**  
In DD.ddd Lat: +**34.12770541**°, Long: **-117.82545879**°, Height: **249.487m**,  
In DMS.ss Lat: +**34° 07' 39.73948"**, Long: **-117° 49' 31.65165"**, Height: **249.487m**,

[**gisar30**]: Station location loaded from ECEF msg:

In ECEF X: **-2419200.2550**, Y: **-4703567.0880**, Z: **3553009.4753** AHt: 0.0854m  
In DD.ddd Lat: +**34.06929851**°, Long: **-117.21825876**°, Height: **344.285m**, AHt: 0.0854m  
In DMS.ss Lat: +**34° 04' 09.47463"**, Long: **-117° 13' 05.73153"**, Height: **344.285m**, AHt: 0.0854m

[**VDCY\_RTCM3**]: Station location loaded from ECEF msg:

In ECEF X: **-2497836.4237**, Y: **-4654543.3978**, Z: **3563028.9037**  
In DD.ddd Lat: +**34.17856500**°, Long: **-118.21999900**°, Height: **318.205m**,  
In DMS.ss Lat: +**34° 10' 42.83400"**, Long: **-118° 13' 11.99640"**, Height: **318.205m**,

Each set of values for a Base Station Translation is entered in turn (none of these stations was aligned to the desired datum), here one is shown being aligned. Insert image for use on web page.

### Part 3: -

**The corrected Base Station MT1005 and MT1006 locations reported by **SNIP** in power up after Translations are entered**

[**AZU1\_RTCM3**]: Station location loaded from ECEF msg:

In ECEF X: **-2472979.7660**, Y: **-4671337.7840**, Z: **3558107.9360**  
In DD.ddd Lat: +**34.12601973**°, Long: **-117.89649106**°, Height: **144.796m**,  
In DMS.ss Lat: +**34° 07' 33.67102"**, Long: **-117° 53' 47.36782"**, Height: **144.796m**,

[**CLAR\_RTCM3**]: Station location loaded from ECEF msg:

In ECEF X: **-2458218.7770**, Y: **-4680467.3070**, Z: **3556758.6630**  
In DD.ddd Lat: +**34.10992935**°, Long: **-117.70881358**°, Height: **373.731m**,  
In DMS.ss Lat: +**34° 06' 35.74567"**, Long: **-117° 42' 31.72889"**, Height: **373.731m**,

[**LORS\_RTCM3**]: Station location loaded from ECEF msg:

In ECEF X: **-2461265.9037**, Y: **-4677290.8714**, Z: **3558949.4603**  
In DD.ddd Lat: +**34.13332600**°, Long: **-117.75406900**°, Height: **448.913m**,  
In DMS.ss Lat: +**34° 07' 59.97360"**, Long: **-117° 45' 14.64840"**, Height: **448.913m**,

[**SCSC**]: Station location loaded from ECEF msg:

In ECEF X: **-2467177.8359**, Y: **-4674383.2292**, Z: **3558322.6879**  
In DD.ddd Lat: +**34.12771826**°, Long: **-117.82546004**°, Height: **249.572m**,  
In DMS.ss Lat: +**34° 07' 39.78575"**, Long: **-117° 49' 31.65615"**, Height: **249.572m**,

[**SCSC02**]: Station location loaded from ECEF msg:

In ECEF	X:- <b>2467178.6610</b> ,	Y:- <b>4674384.8660</b> ,	Z: <b>3558321.6930</b>
In DD.ddd	Lat: <b>+34.12770157°</b> ,	Long: <b>-117.82545967°</b> ,	Height: <b>250.531m</b> ,
In DMS.ss	Lat: <b>+34° 07' 39.72566"</b> ,	Long: <b>-117° 49' 31.65481"</b> ,	Height: <b>250.531m</b> ,

[**gisar30**]: Station location loaded from ECEF msg:

In ECEF	X:- <b>2419201.2010</b> ,	Y:- <b>4703565.5890</b> ,	Z: <b>3553009.4470</b>
In DD.ddd	Lat: <b>+34.06930284°</b> ,	Long: <b>-117.21827530°</b> ,	Height: <b>343.524m</b> ,
In DMS.ss	Lat: <b>+34° 04' 09.49024"</b> ,	Long: <b>-117° 13' 05.79108"</b> ,	Height: <b>343.524m</b> ,

[**VDCY\_RTCM3**]: Station location loaded from ECEF msg:

In ECEF	X:- <b>2497836.7710</b> ,	Y:- <b>4654543.0730</b> ,	Z: <b>3563029.0320</b>
In DD.ddd	Lat: <b>+34.17856657°</b> ,	Long: <b>-118.22000398°</b> ,	Height: <b>318.176m</b> ,
In DMS.ss	Lat: <b>+34° 10' 42.83967"</b> ,	Long: <b>-118° 13' 12.01434"</b> ,	Height: <b>318.176m</b> ,

The above are now aligned to less than a cm to the common datum.

#### Part 4: - A few comparisons.

[**AZU1\_RTCM3**]: Translate the ECEC **Active**, Base Station has been offset by **49.1603 cm**

[**CLAR\_RTCM3**]: Translate the ECEC **Active**, Base Station has been offset by **15.7102 cm**

[**SCSC**]: Translate the ECEC **Active**, Base Station has been offset by **1.1349 m**

[**SCSC02**]: Translate the ECEC **Active**, Base Station has been offset by **1.1303 m**

[**gisar30**]: Translate the ECEC **Active**, Base Station has been offset by **1.7728 m**

[**VDCY\_RTCM3**]: Translate the ECEC **Active**, Base Station has been offset by **49.2517 cm**

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