

Please forward this memo to your organization's GPS field users/managers. The following outlines changes to the reference framework coordinates that may impact field operations.

Updated Realization of NAD83-2011 Coordinates

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Summary: Multi-Year CORS Solution 3 "The Mini-Shift"

In 2025, the National Geodetic Survey updated the NAD83-2011 Epoch 2010.00 coordinates for all NGS CORS. This came about from a new multi-year CORS solution:

<https://geodesy.noaa.gov/CORS/news/mycs3/mycs3.shtml>

LSRC constrains all reference stations to current realizations of the National Spatial Reference System (NSRS). The C4Gnet.XYZ real-time network will also implement these updated coordinates.

Since the NATRF2022 datum shift has been delayed several years, this interim "shift" is necessary to align NAD83-2011 (epoch 2010.00) to the ITRF2020(epoch 2020) global frame in preparation for the NGS publication of the new datum and to take advantage of the improved data used while reprocessing the MYCS3 adjustment.

Note that this is not a "new datum", but a new realization of the same NAD83-2011 Epoch 2010.00 of the NSRS and replaces the previous multi-year CORS solution (MYCS2).

Coordinate changes are necessary because the Earth is dynamic, so we need to keep up with them over time. The LSRC has always updated coordinates for reference stations that drift out of acceptable tolerances due to subsidence, anthropogenic forces, and other factors can affect plate velocities, making them unpredictable in some areas of Louisiana. Also note that NGS updates CORS coordinates if the currently realized coordinates differ from the published coordinates by more than the acceptable tolerances. In this case, though, they have updated all NGS CORS coordinates simultaneously. These changes should be subtle, and users may not notice any differences. Users can avoid issues with these incremental changes by applying best practices to maintain accurate control by localizing to previously established project control.

What is a Multi-year CORS solution?

When the NGS executes a MYCS, it uses a minimum of 2.5 years of CORS data to compute new coordinates for the antenna reference point (ARP) of a CORS. More on this at: <https://geodesy.noaa.gov/CORS/news/mycs3/mycs3.shtml>. There was an MYCS1, then MYCS2 (in early 2012, when the NAD83-CORS96 to NAD83-2011 update was implemented).

MYCS3 values were published for NGS CORS in April-June of 2025. The LSRC did not apply these new coordinates in order to check them first, to avoid undiscovered problems in the publication.

The adoption of MYCS3 coordinates by the NGS for all CORS presented a conundrum. For example, if an OPUS user submitted observations a year ago, they will get slightly different results than if they submit observations now. The NGS CORS datasheets reflect the new values. However, Bluebooked positions (for LSRC stations) do not yet reflect MYCS3. To stay consistent with the NGS CORS, the LSRC must update all non-NCN CORS reference station coordinates, a complex adjustment process that can take some time to complete.

What is the LSRC Approach to MYCS3?

On a development server, the LSRC imported the new MYCS3 CORS values supplied by the NGS. Then, we constrained all non-NCN CORS reference stations to the new NGS CORS coordinates. The LSRC applied multiple geodetic computation methods to generate MYCS3 coordinates for the ARP of all LSRC reference stations.

We then tested solutions in different regions of LA using CORS, with rovers logging into the development server to check the solutions they received and compare their positions with the published coordinates. Our survey team then ran test shots on published marks and our well-known test marks. They completed observations for VRS and single-base using the existing production caster (MYCS2) and the development caster (MYCS3). The results were consistent with the estimated differences across regions.

We also note that applying the MYCS3 coordinates improved relative spatial relationships across the network. More data yielded an improved realization of the reference framework.

The LSRC will update the coordinates for our production C4Gnet.XYZ servers in May of 2026.

How Much Difference?

Typically, across the state, the differences between MYCS2 and MYCS3 coordinates is less

than 0.39' (3D). We have developed a table of expected differences for different parts of the state (see attachment). For example, in the vicinity of Baton Rouge (based on computations for station "1LSU", and confirmed by local testing), you might see differences of:

ΔE (ft)	ΔN (ft)	ΔU (ft)	$\Delta 2D$ (ft)	$\Delta 3D$ (ft)
-0.02	-0.02	0.01	0.03	0.03

You can preview expected differences by looking at:

https://c4g.lsu.edu/wp-content/uploads/2026/05/MYCS2_MYCS3_Differences.pdf

The report shows expected differences in the vicinity of all LSRC stations in Louisiana, including those we share with NGS for the National CORS Network (NCN) and our non-NCN CORS stations.

Recommendations for Field Users

Users may not see any significant differences. However, it is recommended that you conduct some checks to determine whether and how much change there might be to your existing project control.

- Review the attached estimated difference lists for the nearest location to your project or projects. Estimated differences across the state range from 0.01' (3D) to 0.39' (3D).
- Once the new values have been applied by the LSRC, revisit legacy project control and do a few test observations.
- If the differences are significant enough, but you would prefer to continue working with the coordinates of existing project control, you can localize (in your field software) to legacy values (at the project level).

Users can still use the same standard NAD83-2011 SPC projections and current Geoid models. There are no changes to real-time services or static files (for post-processing). These changes are limited to the ARP coordinates for each reference station.

Looking Ahead to the NATRF2022 Datum Shift

As noted, the National Geodetic Survey has delayed the major datum update (to NATRF2022 and NAPGD2022) by several years. This MYCS3 mini-shift serves to keep reference coordinates up to date in the interim. There is no firm timeline for the big shift yet. Likely in late 2026 or early 2027. You could think of this MYCS3 mini-shift as a dress rehearsal for the pending big shift.

Once the NGS provides a date in advance for the adoption of NATRF2022 and NAPGD2022, the LSRC will notify users of the adoption date (likely the same date).

On the “big shift” day, the LSRC will launch dual casters, one for each datum. For NATRF2022, users will choose the NTRIP caster with the new port of “2022”. Beginning on the same day, and for as long as NGS supports access to NAD83-2011 (MYCS3), users will need to use a new port “2011”. The old “9000” port will be retired at that time.

While both reference frameworks will be available to the entire network, it is recommended that users transition to the NATRF2022 reference frame as soon as possible to avoid scrambling to make the change once NGS stops supporting NAD83-2011 and we shut down the NTRIP caster on port 2011.

If you have any questions, please contact us.

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