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From: **Michael Dennis (NGS)** <[michael.dennis@noaa.gov](mailto:michael.dennis@noaa.gov)>

Date: Wed, Jun 15, 2022, 11:57 AM

Subject: Updated status of SPCS2022 project

To: Undisclosed recipients <[michael.dennis@noaa.gov](mailto:michael.dennis@noaa.gov)>

Hello all,

This email is a follow up to one that I sent on June 4, 2021, giving the status of the State Plane Coordinate System of 2022 (SPCS2022) project. As before, this email is intended to reach everyone who has participated in ongoing development of SPCS2022, but please feel free to share it with any others who you think should know.

In the email sent last year, I said that NGS planned to complete reviews of stakeholder designs of SPCS2022 zones in late 2021 and provide preliminary designs of all SPCS2022 zones by early this year. However, that same email concluded with the caveat that there may be further delays, and if that happened I would let you know. It turns out that delays have occurred, due mainly to other competing priorities associated with NSRS modernization and the challenges of allocating limited resources.

The good news is that it appears the delay will be relatively minor, that review of stakeholder designs has so far shown that a large majority need no (or only very minor) revisions, and that we are nearly done with all of the NGS-designed zones. All stakeholders who submitted designs that have not yet received approvals should hear from us no later than this September.

After completing review of stakeholder designs, we intend to provide complete preliminary designs for all SPCS2022 zones before the end of this year, which will give stakeholders and others an opportunity to review the designs. Based on feedback received, we will correct any errors and make minor adjustments to finalize the designs. The final designs should be completed in early 2023.

NGS plans to implement NSRS modernization sometime in 2025. So completion of SPCS2022 zone designs in 2023 will still be well ahead of the overall modernization rollout.

Below are some additional details on SPCS2022 project status for those who are interested. This consists of tasks that have been completed or are currently underway:

1. Currently there are 968 SPCS2022 zones for 56 U.S. states and territories (the total number will likely decrease slightly before designs are finalized). This consists of 162 zones designed by NGS (including 54 statewide zones and 3 special use zones) and 806 zones designed by stakeholders in 28 states.
2. Gave an SPCS2022 webinar on December 9, 2021, available at [https://geodesy.noaa.gov/web/science\\_edu/webinar\\_series/state-plane-december-2021.shtml](https://geodesy.noaa.gov/web/science_edu/webinar_series/state-plane-december-2021.shtml). Slides 21-46 are maps showing linear distortion of all SPCS2022 zones in the conterminous U.S. and Alaska as they existed at that time (along with SPCS 83 zones for comparison). In these slides you can readily see the performance of both NGS- and stakeholder-designed zones (which includes aggregate statistics). Creation of the distortion rasters used in these maps is an important part of the review process, and it shows that very good performance (i.e., low distortion) was achieved in the zones designed by stakeholders.
3. Will soon post updated versions of the aggregated distortion maps from the webinar on the NGS website (the linear distortion raster datasets used to make the maps will also be available). Although there have been some changes in designs since the webinar, for the most part the changes are very minor.
4. Evaluated, corrected, and augmented existing NGS projection algorithms to ensure they give results correct to the precision that they will be provided. The new algorithms now also include two new versions of existing projections: the 1-parallel Lambert Conformal Conic and centered Hotine Oblique Mercator.
5. Computed SPCS 83, SPCS 27, and UTM coordinates at every location where those zones overlap SPCS2022 zones to ensure coordinate uniqueness with respect to existing systems.
6. Determined geodetic coordinates (latitude, longitude, and ellipsoid height) for a test point in every SPCCS2022 zone. These will be used to compute SPCS2022 coordinates (and distortion) so that stakeholders, software vendors, and others can check their SPCS2022 computations.
7. Creating a database of (preliminary) zone parameters for all SPCS2022 zones and algorithms for automatically performing comprehensive checks on submitted designs, comparisons to existing SPCS 83/27 and UTM coordinates (and SPCS2022 coordinates where zone layers overlap), and calculation of SPCS2022 test points for every zone, among other computational tasks.

Although we intend to release fine zone definitions in early 2023, the SPCS2022 project report will likely not be completed by that time. However, we will strive to get the report done as quickly as possible, certainly before the NSRS modernization rollout in 2025.

As before, there is a possibility that the SPCS2022 project will again be delayed. But there is a renewed and committed effort to meet the timeline given in this email. We at NGS want to get SPCS2022 completed as soon as possible!

Best regards to all,

Michael

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