Sharing and Maintaining NGS software in third party applications

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2021 Industry Workshop

May 06, 2021

Current State – Software Downloads

- NGS has been providing source code for download on the geodesy.noaa.gov site for Geodetic software and toolkits.
  - HTDP
  - NCAT
  - Geoid interpolation (intg)
  - Adjust

HTDP – Horizontal Time-Dependent Positioning

HTDP is a utility that allows users to transform positional coordinates across time and between spatial reference frames.

*** HTDP should **NOT** be used to transform between NAD 83 realizations (2011, NSRS2007, HARN, etc.). It will not give correct results. To transform between NAD 83 realizations, use the **NGS Coordinate Conversion and Transformation Tool (NCAT)** instead. ***

Interactive Computations (using HTDP version 3.3.0):

1. **Estimate horizontal displacements between two dates.**
2. **Estimate horizontal velocities.**
3. **Transform observations to a specified reference frame and/or date. (Note)**
4. **Transform positions between reference frames and/or dates. (Note)**
5. **Transform velocities between reference frames.**

More Info:

- View **User Guide** [pdf] and/or **Revision Log** [pdf]
- Download a **zipped archive** of the HTDP PC executable, User Guide, Revision Log, sample data files, and Fortran-90 source code
- **Relevant publications**

Maps of Horizontal Velocities:

Current State - APIs

- We have also been providing application programming interfaces (API) so that you can programmatically call these services. https://geodesy.noaa.gov/web_services/

- APIs are great since you are assured of using the latest code but we only have limited computational resources and may not be able to service huge volumes of data. We currently throttle/limit requests if they exceed thresholds.

- Cons - Need internet access, API services could be down.

Web Services

Home

Geoid Height Service API

Gravity Predictor using GRAV-D API

NGS Data Explorer API

NGS Coordinate Conversion and Transformation Tool (NCAT) API

VDatum Tidal API

OPUS API

Tools & Software

PC Products
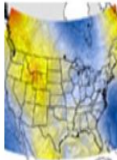
Geodetic Tool Kit

Web Services

User-Contributed Software

Web Services

Explore our publicly available Web services that provides users access to NGS APIs. The results of all NGS web services are in **JSON format**.

GEOID API - The Geoid Height Service

Web service that distributes the geoid height of the NGS geoid models in a concise and portable way. The web service provides the geoid height (of a model specified by its model ID) at any given latitude and longitude. Learn more
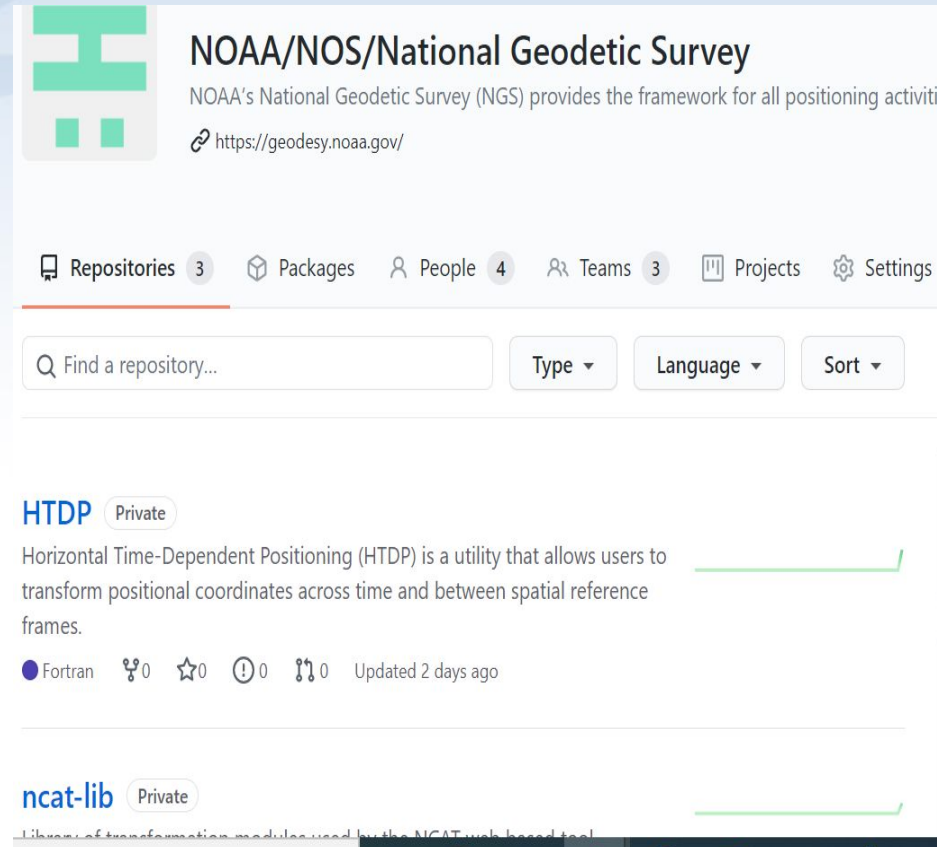
Related Content: GEOID Models

API for Gravity Predictor using GRAV-D (airborne gravity) Data

Web service that distributes gravity data collected from the GRAV-D project in a concise, portable, and expandable way. The web service allows a user the ability to provide any geodetic location (latitude, longitude, and ellipsoid height), and the

Future State – Source Code on GitHub

- NGS has approval from DOC to use GitHub (Cloud Software as a Service) for collaborating with partners on software development.

- NGS software code can be found under the Organization noaa-ngs on GitHub.

  https://github.com/noaa-ngs/

- There are rules that NGS needs to abide by when posting code on a publicly accessible repository to comply with IT Security policies.

NOAA/NOS/National Geodetic Survey

NOAA's National Geodetic Survey (NGS) provides the framework for all positioning activiti

🔗 https://geodesy.noaa.gov/

🖳 Repositories 3   📦 Packages   👤 People 4   👥 Teams 3   🗔 Projects   ⚙ Settings

🔍 Find a repository...   Type ▾   Language ▾   Sort ▾

HTDP Private

Horizontal Time-Dependent Positioning (HTDP) is a utility that allows users to transform positional coordinates across time and between spatial reference frames.

● Fortran   🍴 0   ⭐ 0   ⊙ 0   ⇡⇣ 0   Updated 2 days ago

ncat-lib Private

Library of transformation modules used by the NCAT web based tool

Future State – What does this mean to you?

- NGS will be adding more code repositories to GitHub as we roll this out.

- NGS will provide inputs and outputs for specific use cases along with the code that you can use for testing and verifying the results are consistent..

- You can easily clone the code and integrate it into your software development process.

- You can see all the revisions and previous releases on GitHub.

- *You can fork the code, modify it to extend the functionality and submit it back to NGS via pull requests. NGS will review and if approved will merge the pull requests into the master branch.

🔒 noaa-ngs / **HTDP** Private   ⊙ Watch ▾ 0   ☆ Star 0   ⑂ Fork 0

‹› Code   ⊙ Issues   ⑈ Pull requests   ▶ Actions   ▦ Projects   ⊙ Security   ...

⑂ main ▾   Go to file   Add file ▾   ⬇ Code ▾

About ⚙

SriReddy-NOAA Update README.md ...   2 days ago ⏱ 12

📁 input   version 3.3.0   2 days ago

📁 output   version 3.3.0   2 days ago

📄 HTDP-log.pdf   version 3.3.0   2 days ago

📄 HTDP-user-guide... version 3.3.0   2 days ago

📄 License.txt   version 3.3.0   2 days ago

📄 Makefile   version 3.2.9   2 days ago

Horizontal Time-Dependent Positioning (HTDP) is a utility that allows users to transform positional coordinates across time and between spatial reference frames.
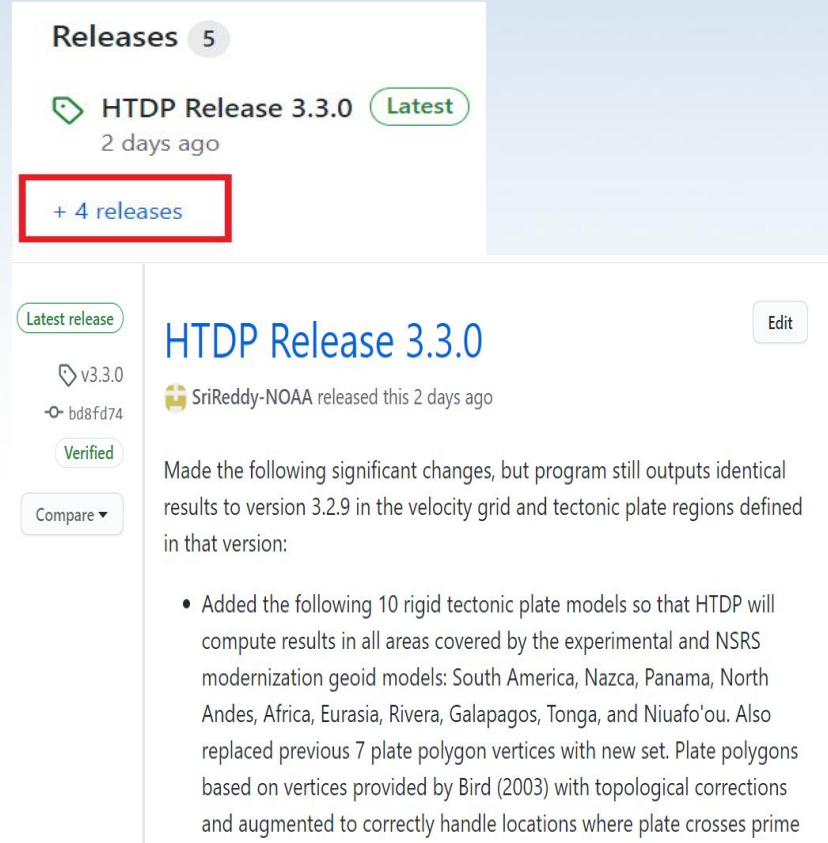
📖 Readme

⚖ View license

Software Releases

- We will maintain releases of the software we publish in GitHub.

- You can check GitHub for the latest release either manually or by a simple script.

  You can also be a watcher on the repository which should alert you by email on any changes.

- You can report any issues you find using GitHub.

Releases 5

🏷 HTDP Release 3.3.0 (Latest)
2 days ago

+ 4 releases

Latest release

🏷 v3.3.0
-o- bd8fd74
Verified

Compare ▾

HTDP Release 3.3.0   Edit

👤 SriReddy-NOAA released this 2 days ago

Made the following significant changes, but program still outputs identical results to version 3.2.9 in the velocity grid and tectonic plate regions defined in that version:

- Added the following 10 rigid tectonic plate models so that HTDP will compute results in all areas covered by the experimental and NSRS modernization geoid models: South America, Nazca, Panama, North Andes, Africa, Eurasia, Rivera, Galapagos, Tonga, and Niuafo'ou. Also replaced previous 7 plate polygon vertices with new set. Plate polygons based on vertices provided by Bird (2003) with topological corrections and augmented to correctly handle locations where plate crosses prime

Disclaimer

- Please be aware of the below disclaimer.

NOAA Open Source Disclaimer

This repository is a scientific product and is not official communication of the National Oceanic and Atmospheric Administration, or the United States Department of Commerce. All NOAA GitHub project code is provided on an ?as is? basis and the user assumes responsibility for its use. Any claims against the Department of Commerce or Department of Commerce bureaus stemming from the use of this GitHub project will be governed by all applicable Federal law. Any reference to specific commercial products, processes, or services by service mark, trademark, manufacturer, or otherwise, does not constitute or imply their endorsement, recommendation or favoring by the Department of Commerce. The Department of Commerce seal and logo, or the seal and logo of a DOC bureau, shall not be used in any manner to imply endorsement of any commercial product or activity by DOC or the United States Government.

Please note that there is no confidentiality on any code submitted through pull requests to NOAA National Geodetic Survey. If the pull requests are accepted and merged into the master branch then they become part of publicly accessible code.

NOAA Big Data Project

- NOAA has partnered with the big Cloud Service Providers (CSPs) (Amazon, Google, Microsoft and others) to provide access to large data sets to the public.

- NGS is making available CORS data in a S3 bucket in Amazon Cloud. Data is refreshed hourly.

  https://noaa-cors-pds.s3.amazonaws.com/index.html

- Data in S3 has 99.9% availability.

- Please let us know if you need any other datasets in the Cloud to enable easy access and processing.

Registry of Open Data on AWS   aws

NOAA Continuously Operating Reference Stations (CORS) Network (NCN)

broadcast ephemeris | Continuously Operating Reference Station (CORS) | earth observation | geospatial | GNSS | GPS
mapping | NOAA CORS Network (NCN) | post-processing | RINEX | survey

Description

The NOAA Continuously Operating Reference Stations (CORS) Network (NCN), managed by NOAA/National Geodetic Survey (NGS), provide Global Navigation Satellite System (GNSS) data, supporting three dimensional positioning, meteorology, space weather, and geophysical applications throughout the United States. The NCN is a multi-purpose, multi-agency cooperative endeavor, combining the efforts of hundreds of government, academic, and private organizations. The stations are independently owned and operated. Each agency shares their GNSS/GPS carrier phase and code range measurements and station metadata with NGS, which are analyzed and distributed free of charge. NGS provides access to all NCN data collected since 9 February (040) 1994.

- **Access to NCN Data and Products**
  - NOAA-NCN on AWS

Looking Forward - OPUS

- "OPUS 6" – Will be the Modernized data processing and submission tool and will have three integrated sub-products:

  – **Mark Recovery**: New mark reporting / Old mark recovery - Will take in a simple geo-located photo from a smartphone (and possibly more) to report a new mark or mark recovery

  – **"-S"** module (we need a new name for this) which works like OPUS-S

    - Input: RINEX2, RINEX3, BINEX (maybe)

  – **"-Projects"** module (also needs a new name) which works like OPUS-Projects

    - Input: RINEX2, RINEX3, BINEX(maybe), GVX, CVX, LVX and RGX

Looking Forward - OPUS

- NCAT will be expanded to include
    - More NADCON and VERTCON grids
    - Historic Hybrid geoid models
    - 14 parameter Helmert transformation
    - Data format inputs will be what they are today, and perhaps we can discuss a standardized "points file" input

Looking Forward - IFVM

- The IFVM2022 model will exist, including its data and software for taking input as lat/lon/time1/time2 and giving as output dlat/dlon/deht between time1 and time2.