The New

a web Odyssey

Well with and introduction like that I better have a very good presentation.

(CLICK)

Contents

- Registration
- Real-Time Products
- Downloading Rinex 3 files
- Downloading Rinex 2 files
- Creating and downloading Virtual Rinex files
- Using the Computation Service
- Other Services
- Direction of the FPRN

Here are the items I hope to discuss before the end of our time together.

(CLICK)

Registration

First lets go over the registration steps for the FPRN.

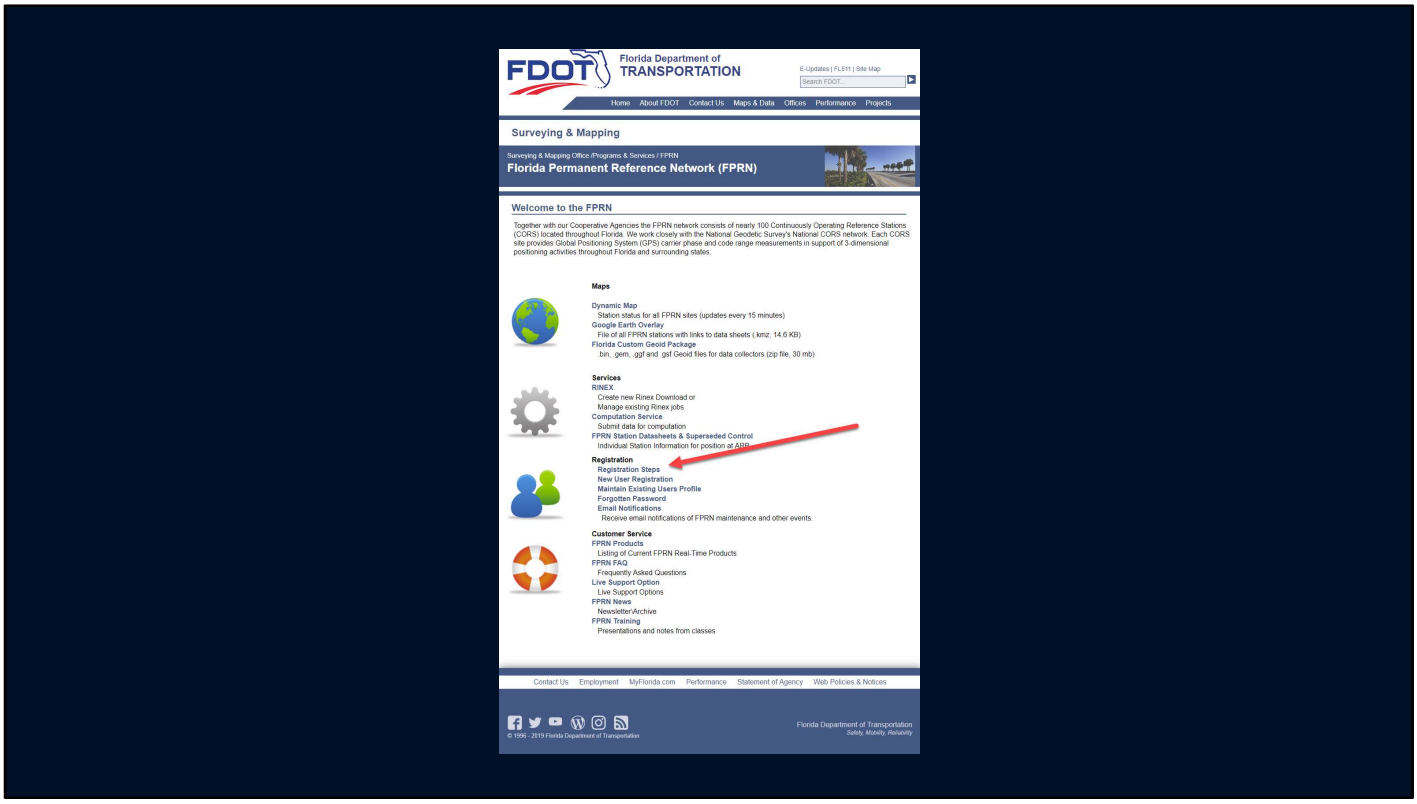
Start by navigating to our home page

(CLICK)

The FPRN Home page can be located here:

https://www.fdot.gov/geospatial/fprn.shtm

(CLICK)



Begin by reviewing the Registration Steps

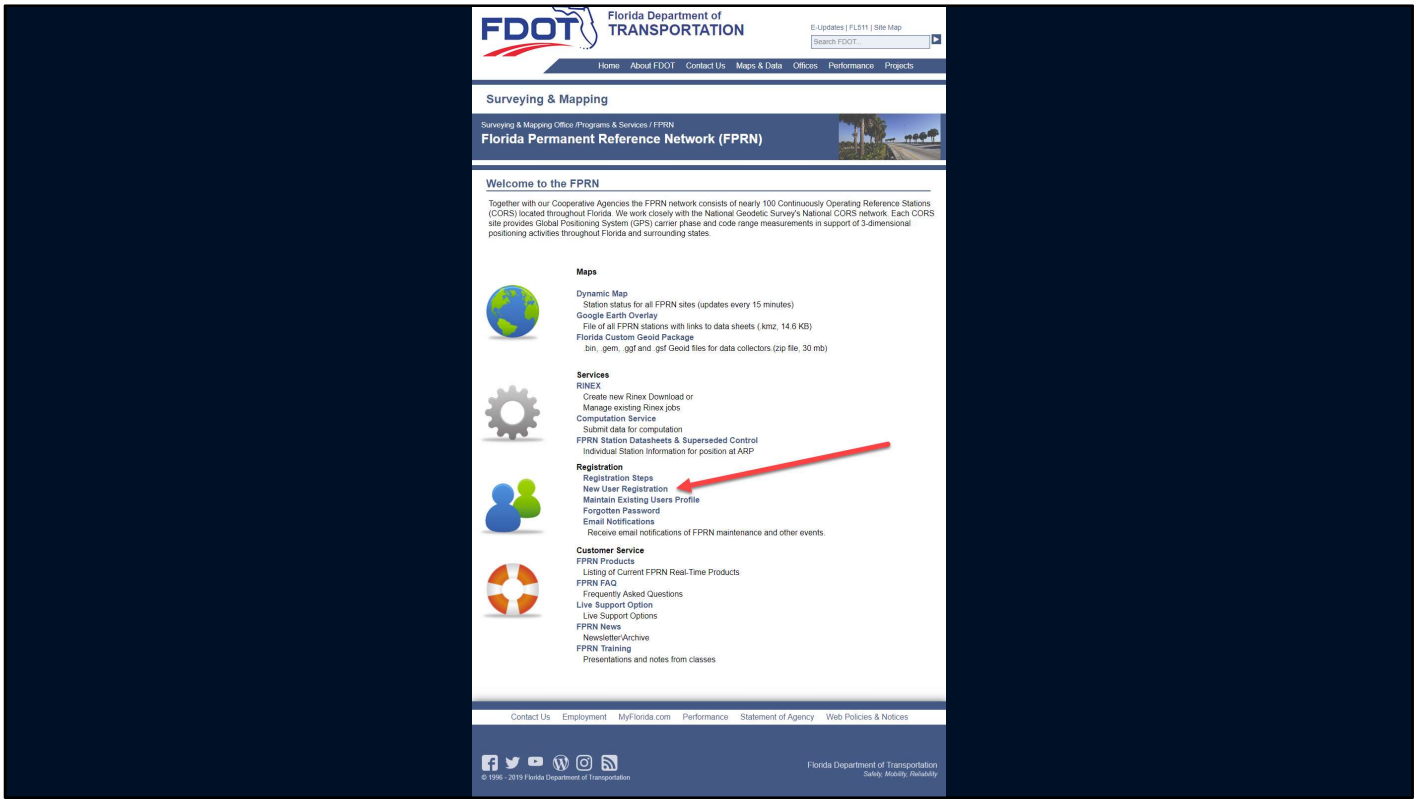
Please review **ALL** pages in the instructions paying particular attention to the required Demographic Groups

(CLICK)

DEMOGRAPHIC GROUP NAME	DEFINITION
Academic	Colleges and Universities
Agriculture	Agriculture (Farms, Golf Course, etc)
City	City Government Agencies and Departments
Construction	Contruction related Companies
County	County Government Agencies and Departments
Federal	Federal Government Agencies and Departments
Mapping	Mapping Organizations (Engineering, GIS & Surveying Companies)
Mining	Mining Operations
Private	Private accounts (for personal use by individuals)
State	State Government Agencies and Departments
Utilities	Utility Companies
Vehicles	Vehicular Navigation (autonomous vehicles)
Vendors	Mapping Equipment Vendors

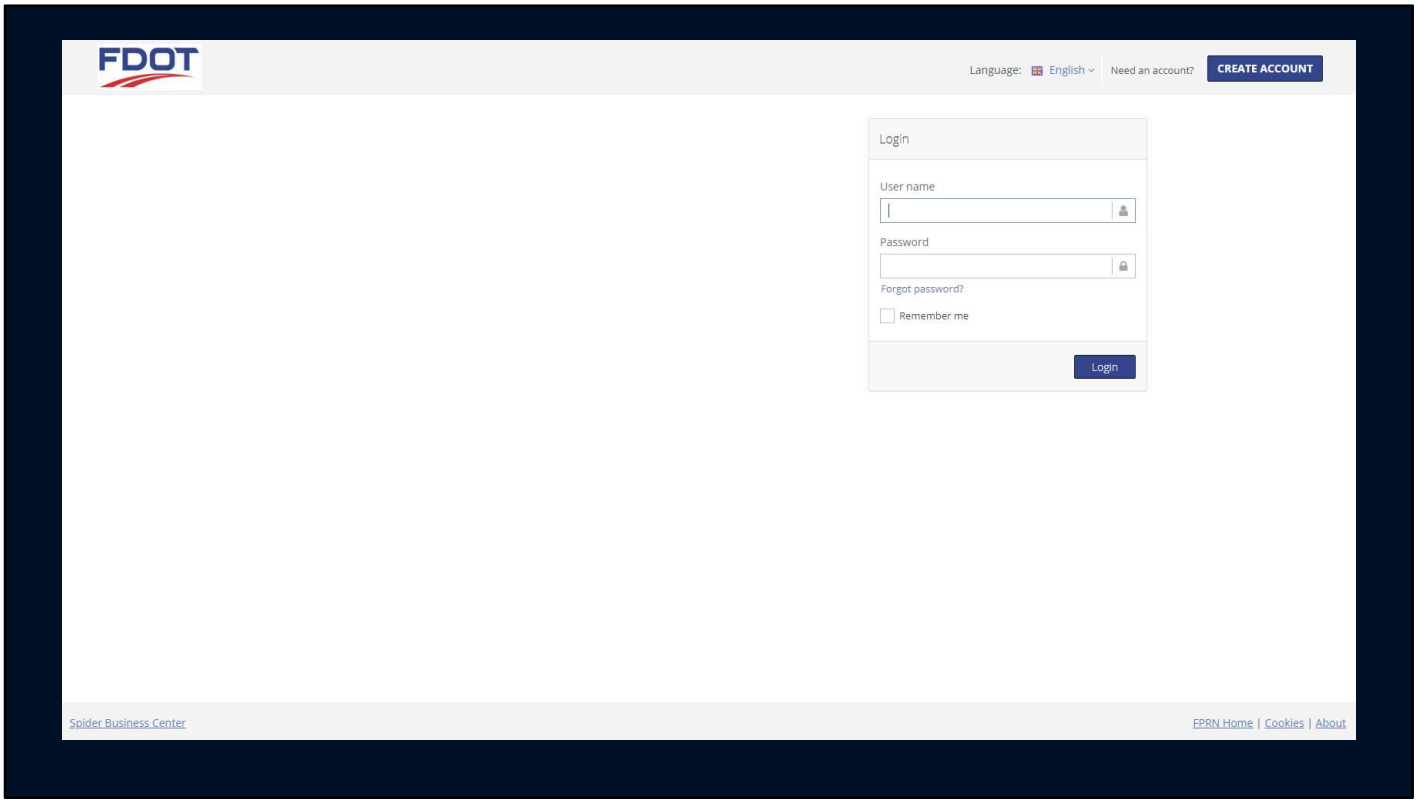
The Demographic Groups allow us to gather usage data for reporting purposes.

(CLICK)



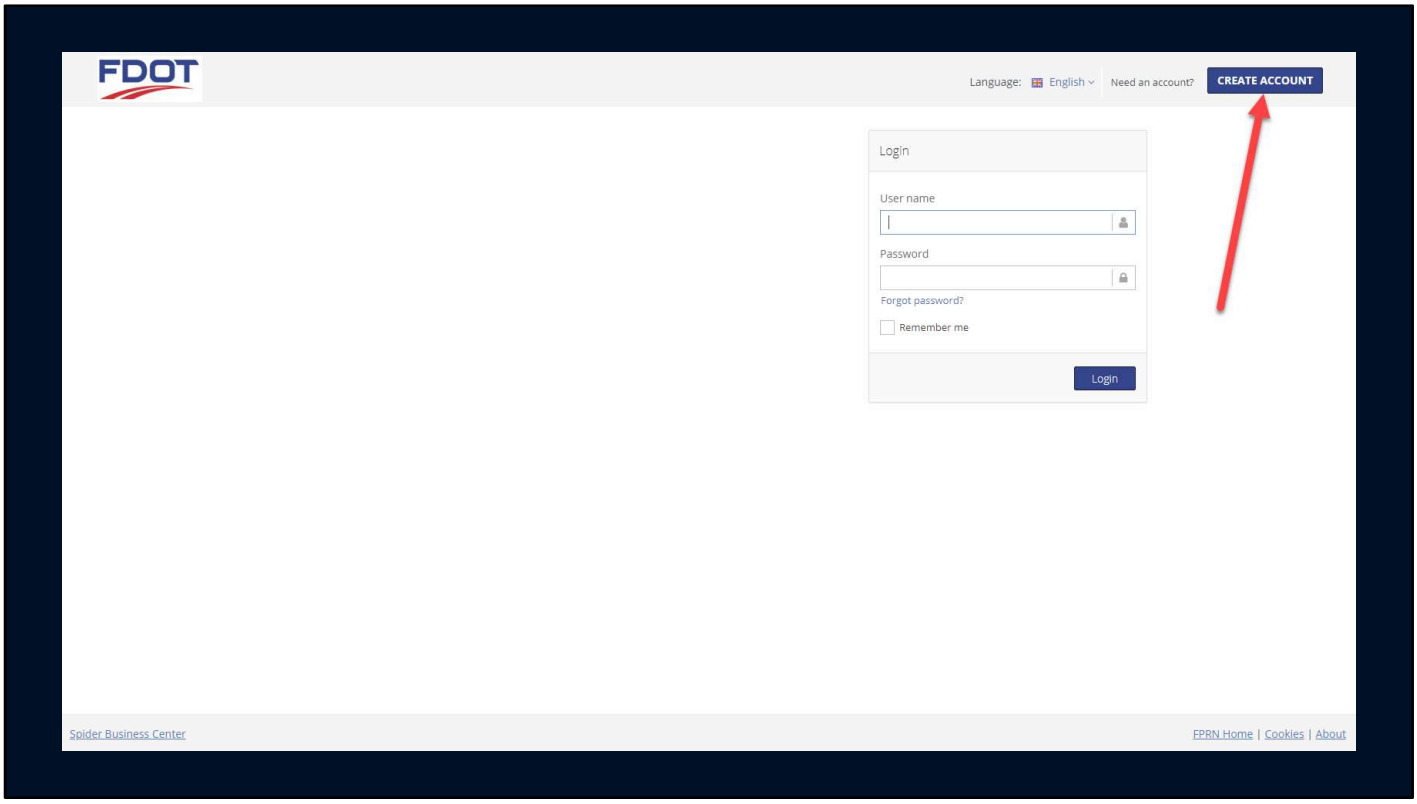
Next let's click on the New User Registration link

(CLICK)



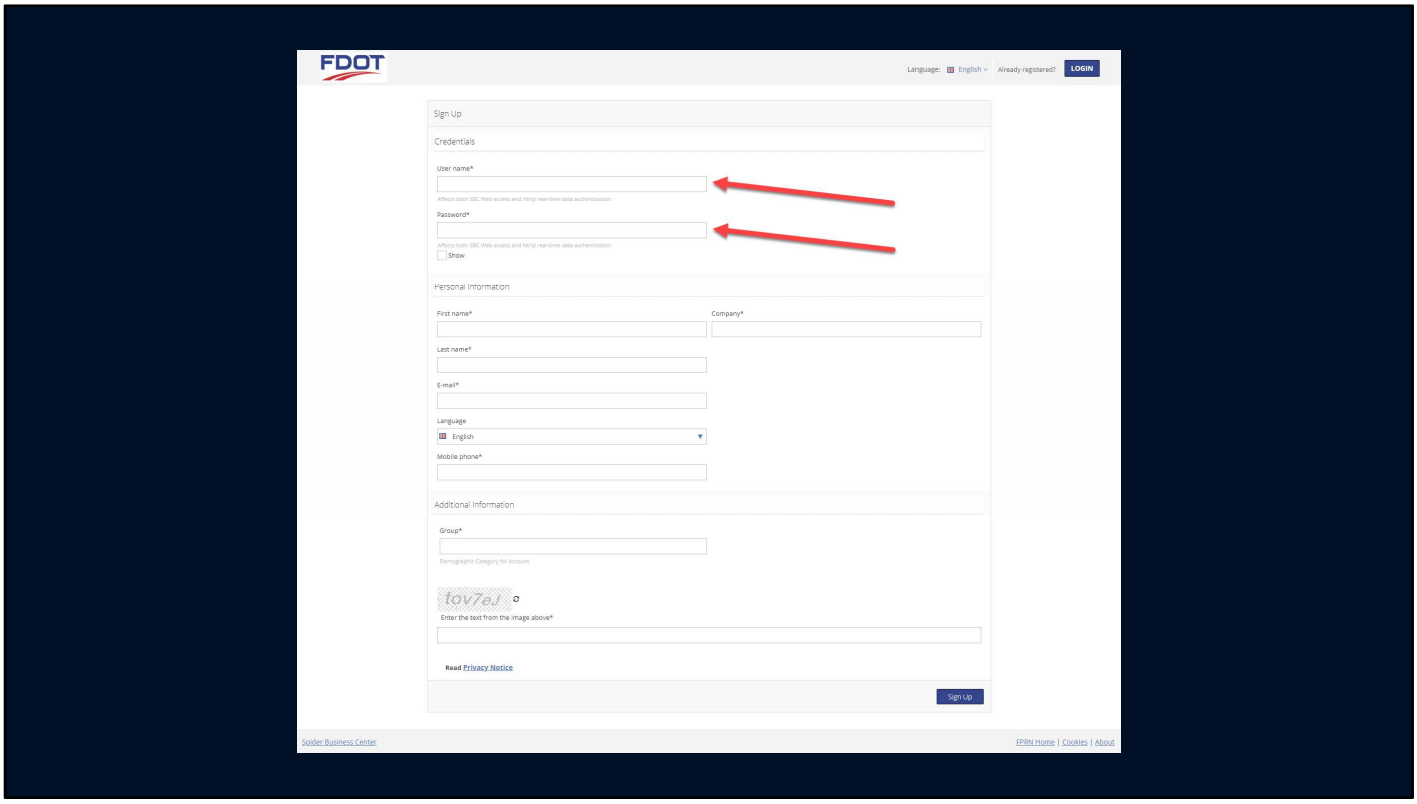
This will take you the User Portal Login Page

(CLICK)



Click on the Create Account button

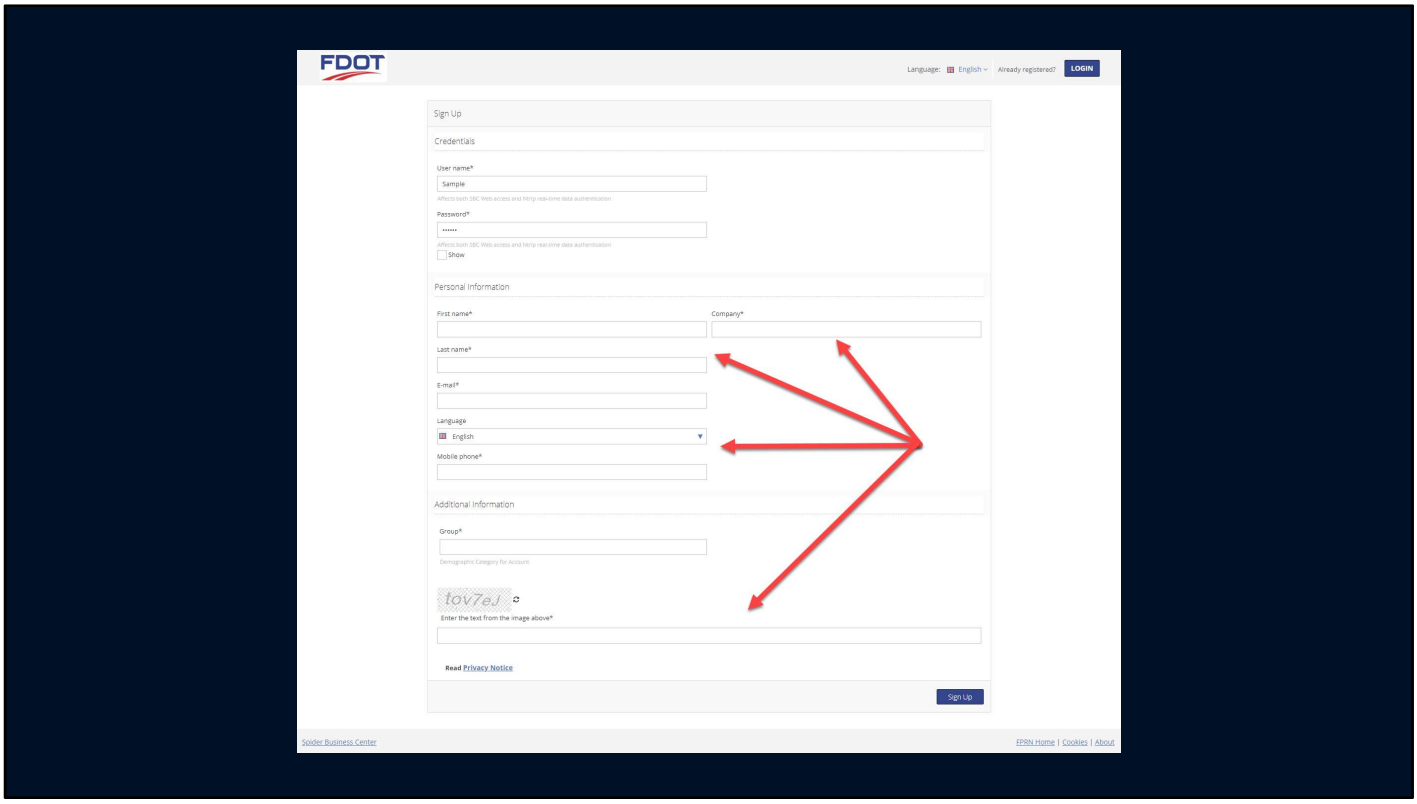
(CLICK)



Once on the new user registration page you should begin by picking a user name and password.

As a note, if you are creating multiple account, each rover requires its own account, you can use the same password but you will need a unique user name.

(CLICK)



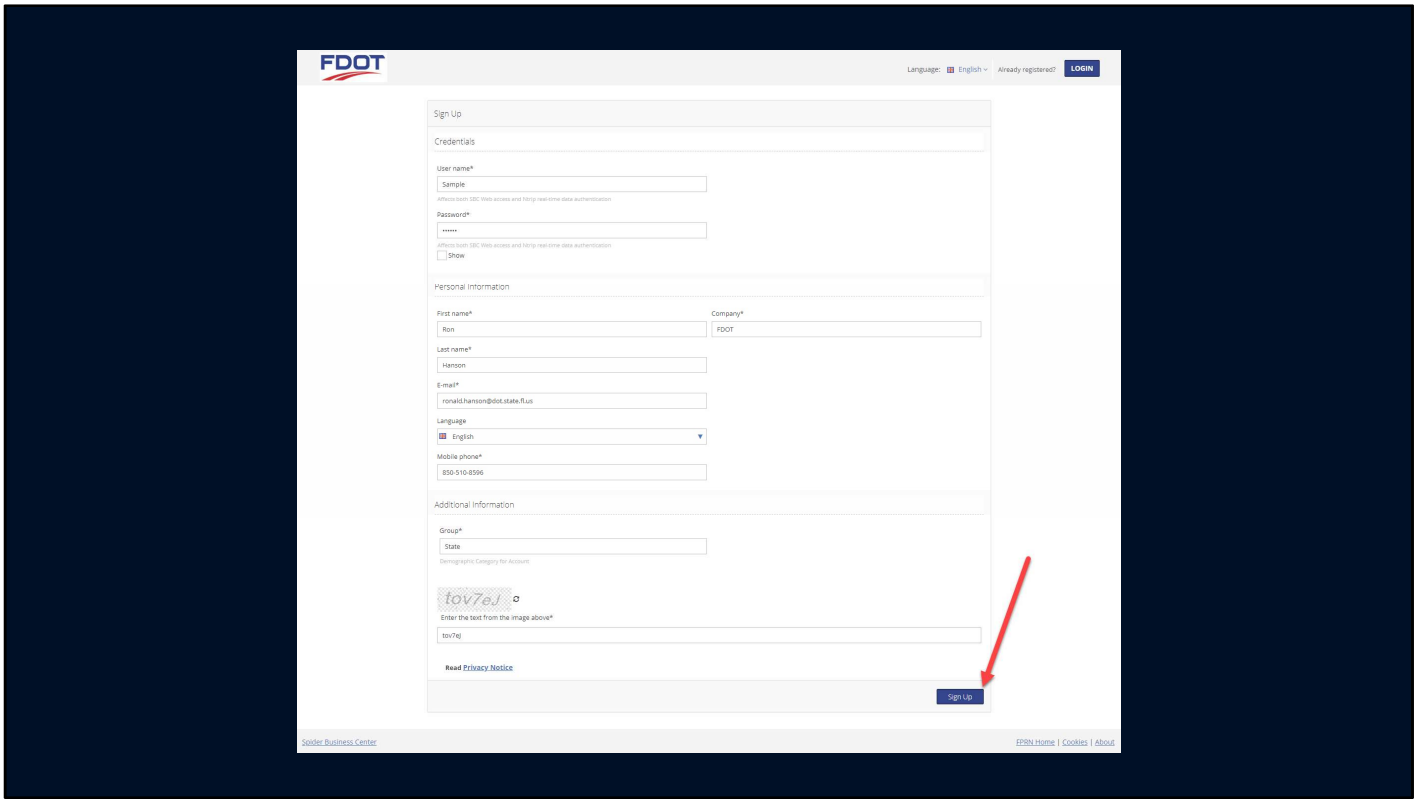
Fill out the rest of the required information.

Make sure your email is spelled correctly because it is used in following steps of the registration process

Remembering to associated your company to one of the Demographic Groups.

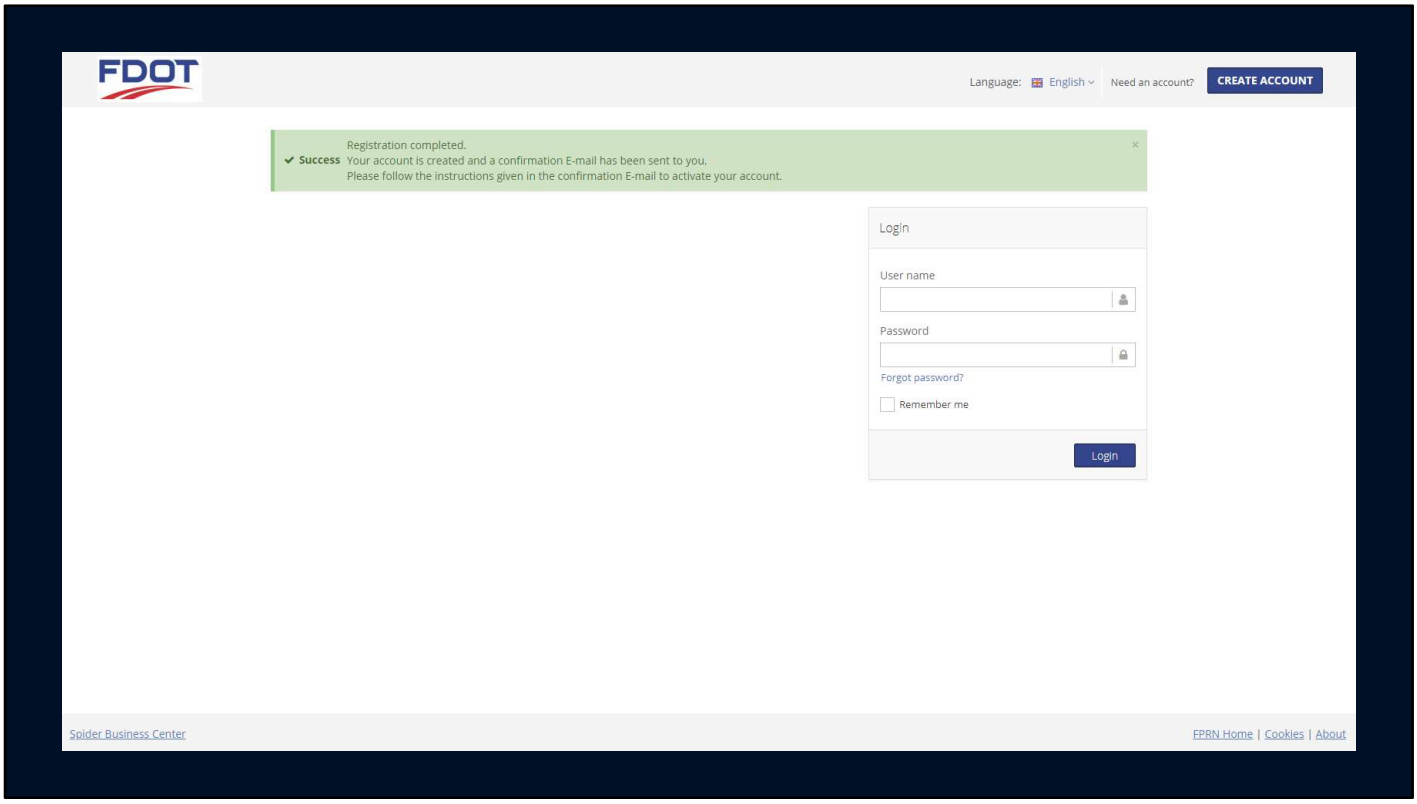
Also, the mobile phone should be for the operator of the equipment. From time to time if we notice problems with your Rover login, time permitting, we will call to try and resolve the issue.

(CLICK)



Finally, click the Sign Up button

(CLICK)

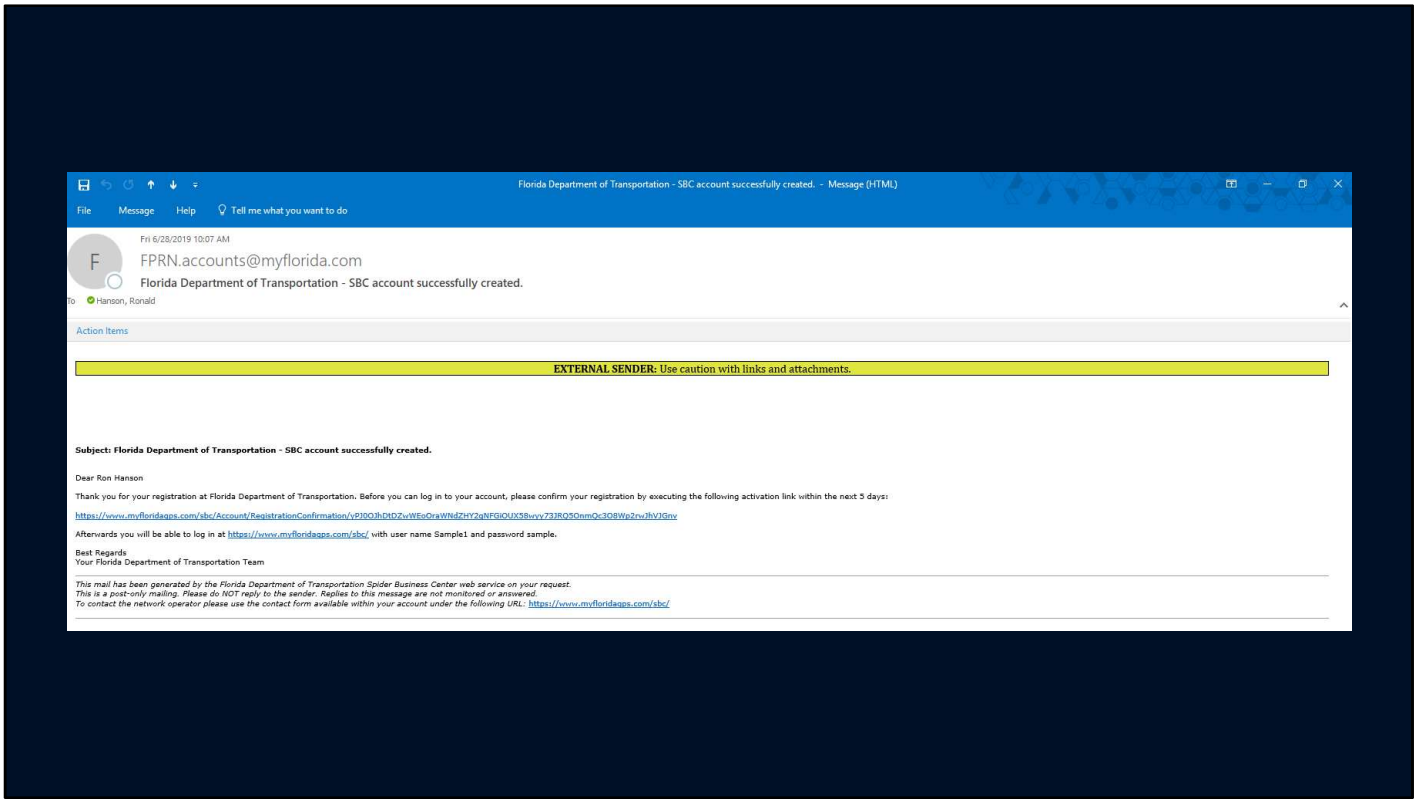


You will be brought back to the User Portal Login Page.

You should get the following message

"Registration Completed
Your account is created and a confirmation E-mail has been sent to you.
Please follow the instructions given in the confirmation E-mail to activate your account."

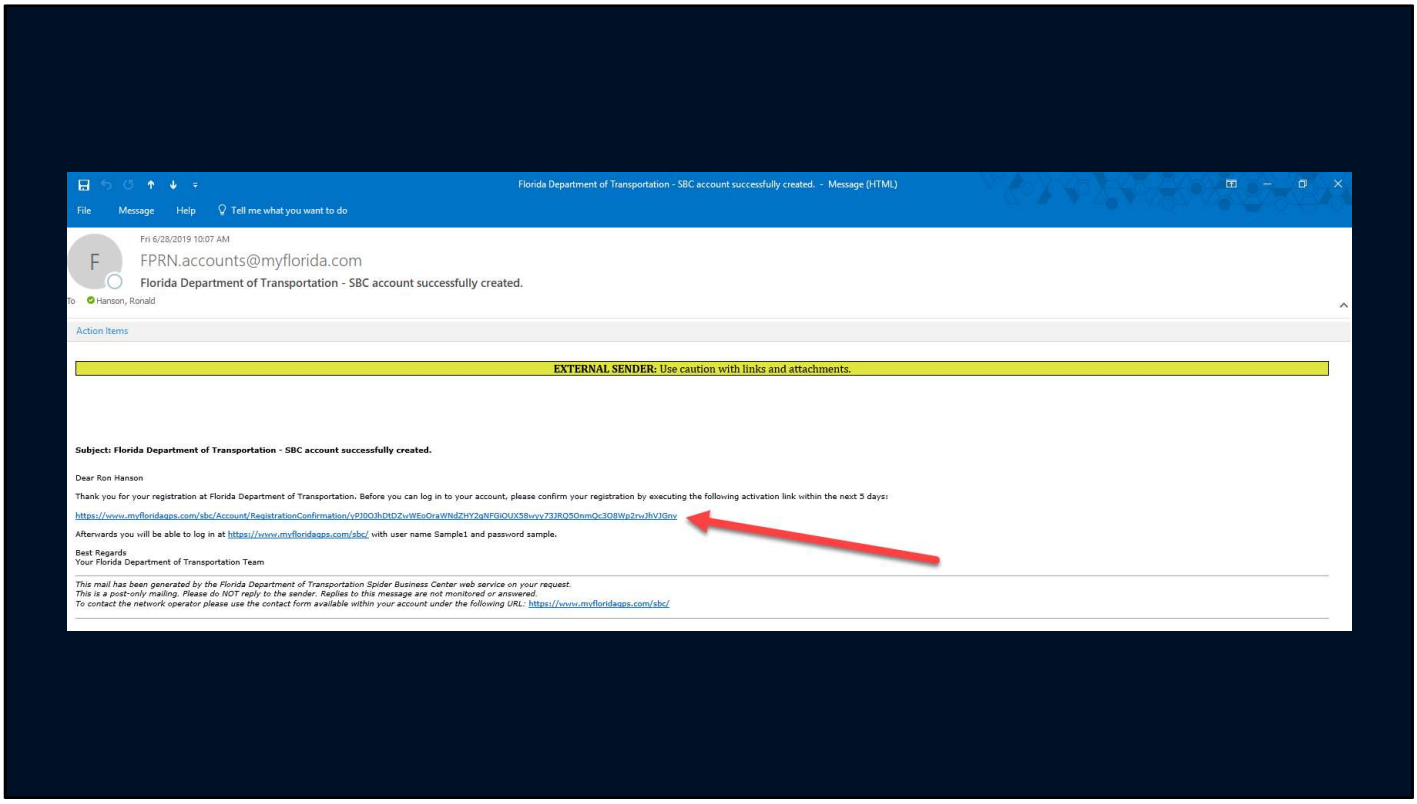
(CLICK)



Navigate to your E-mail

You should notice an E-mail from FPRN.accounts@myflorida.com that looks something like this

(CLICK)

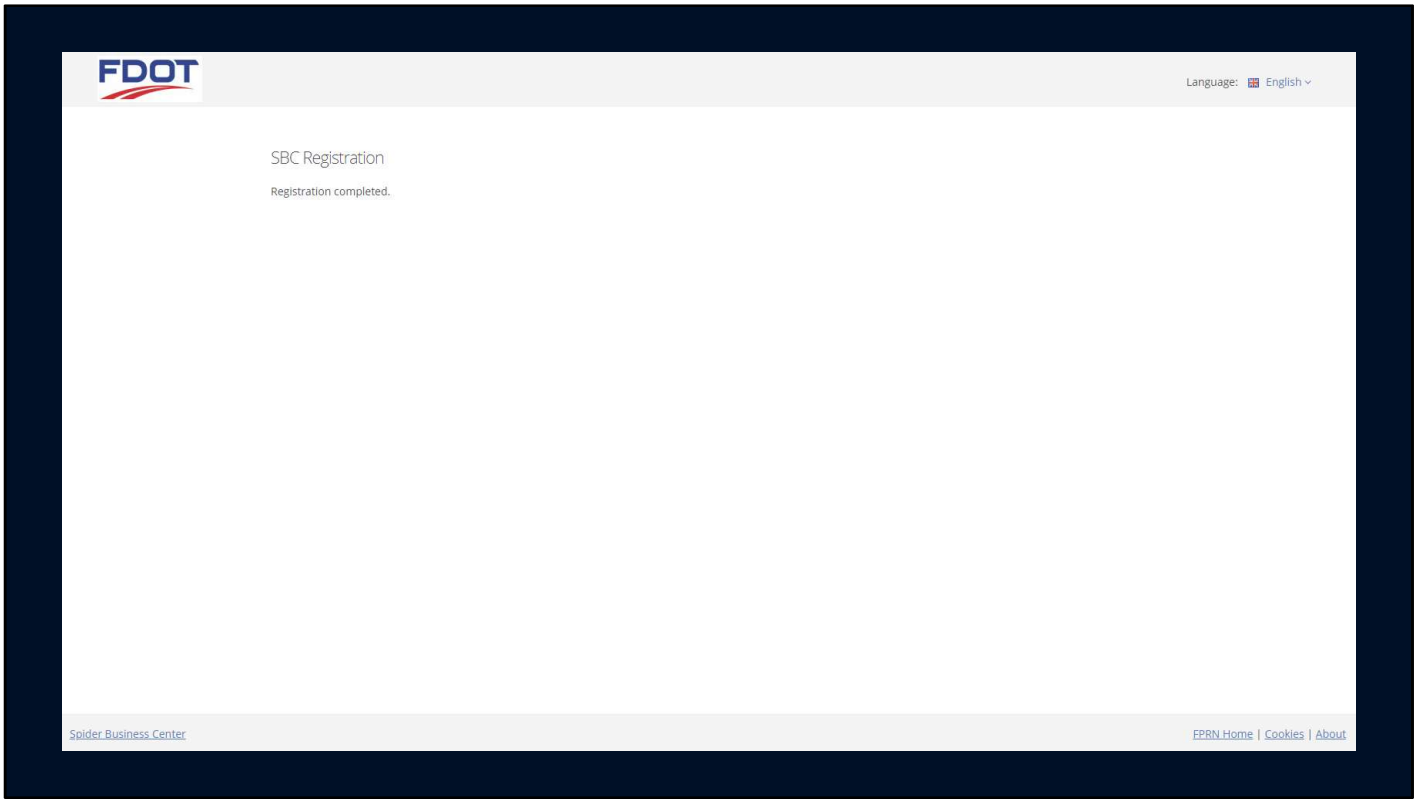


Navigate to your E-mail

You should notice an E-mail from FPRN.accounts@myflorida.com that looks something like this.

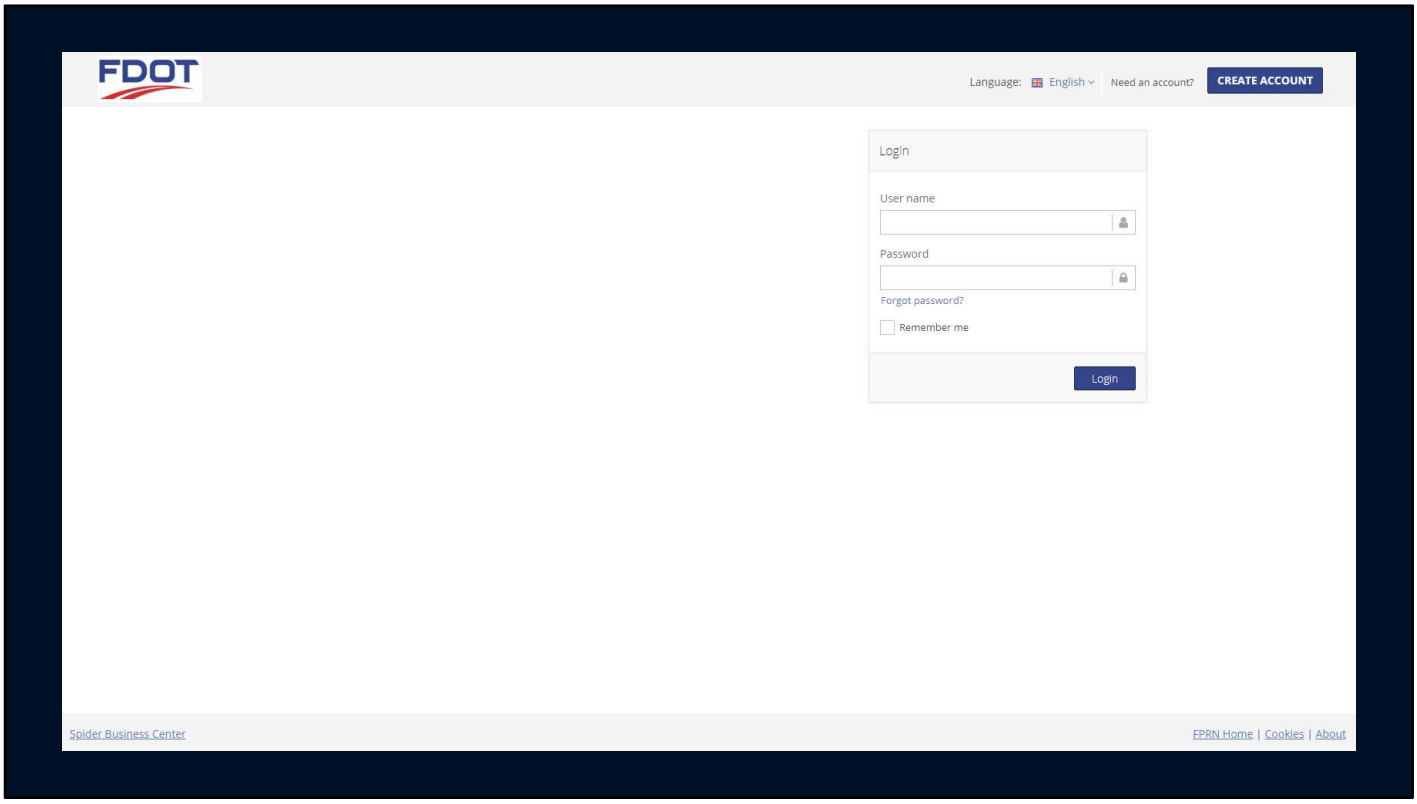
Click on the link in the E-mail to verify your account with the FPRN.

(CLICK)



You will be sent to a web page that says your registration is complete.

(CLICK)

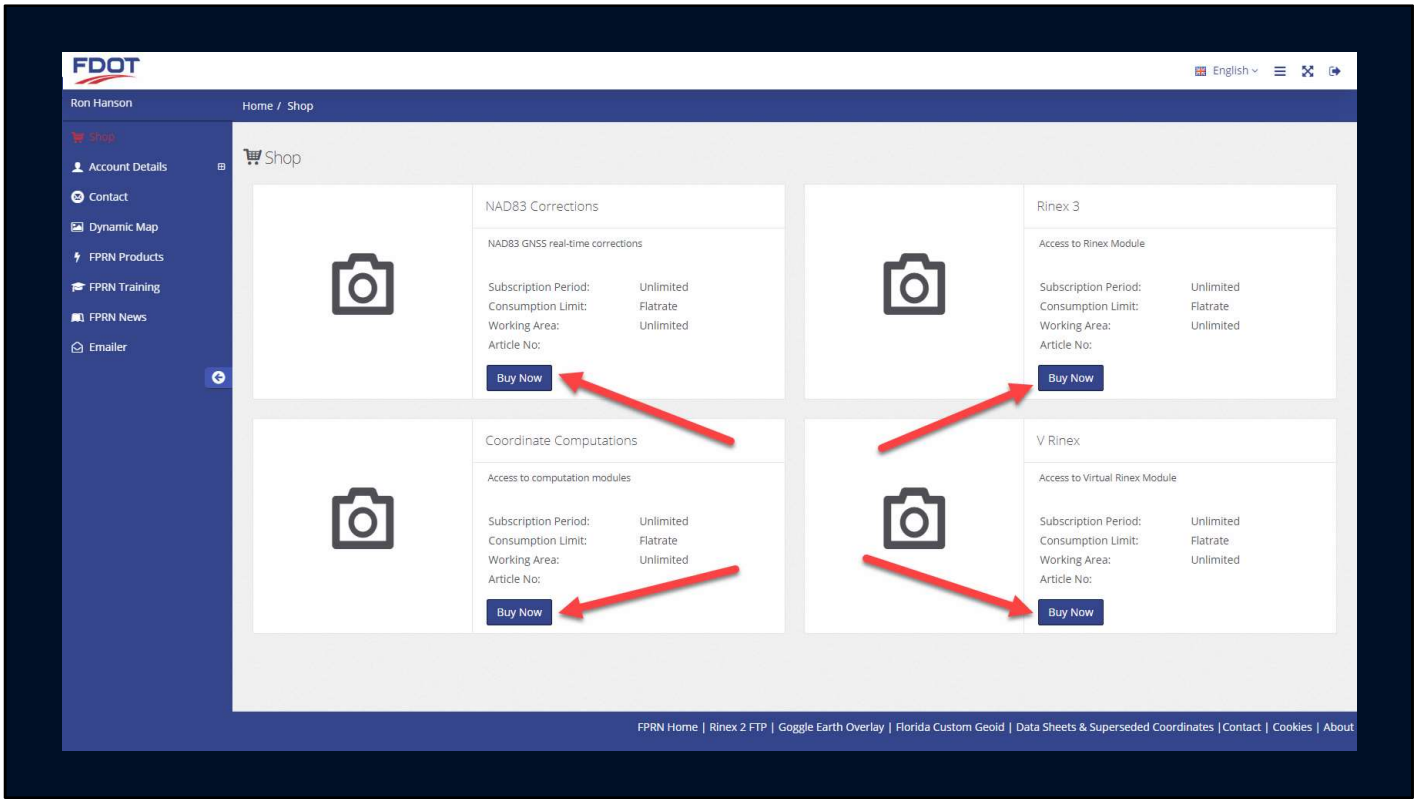


Navigate back to the Customer Portal

https://www.myfloridagps.com/sbc

Login using your new Username and Password

(CLICK)



Go "shopping" to pick the services you wish to use with this account.

(CLICK)

If the account will be strictly used in the field you may want to limit the account to just NAD 83 Corrections

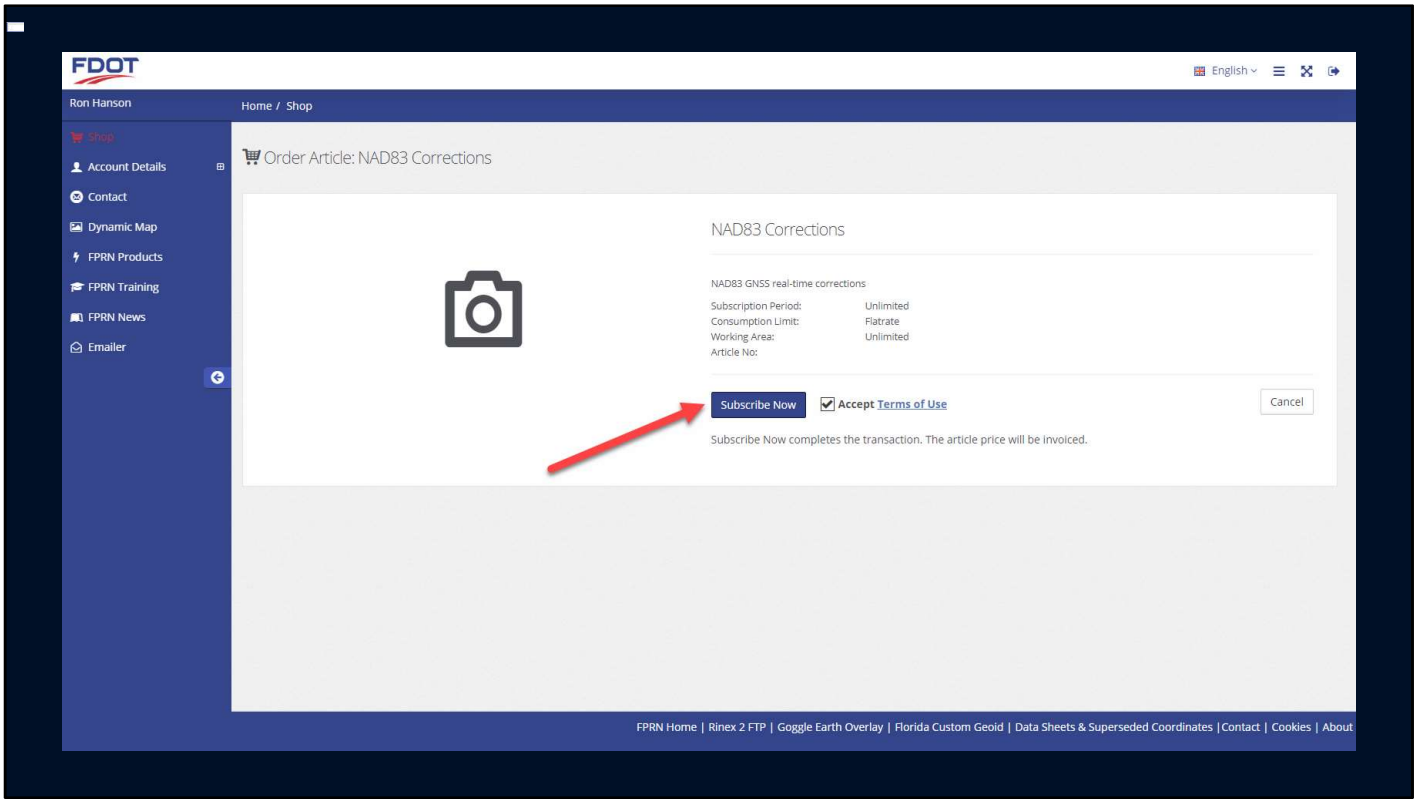
(CLICK)

If an Office account you could pick Rinex 3, Coordinate Computations, & V Rinex.

(CLICK)

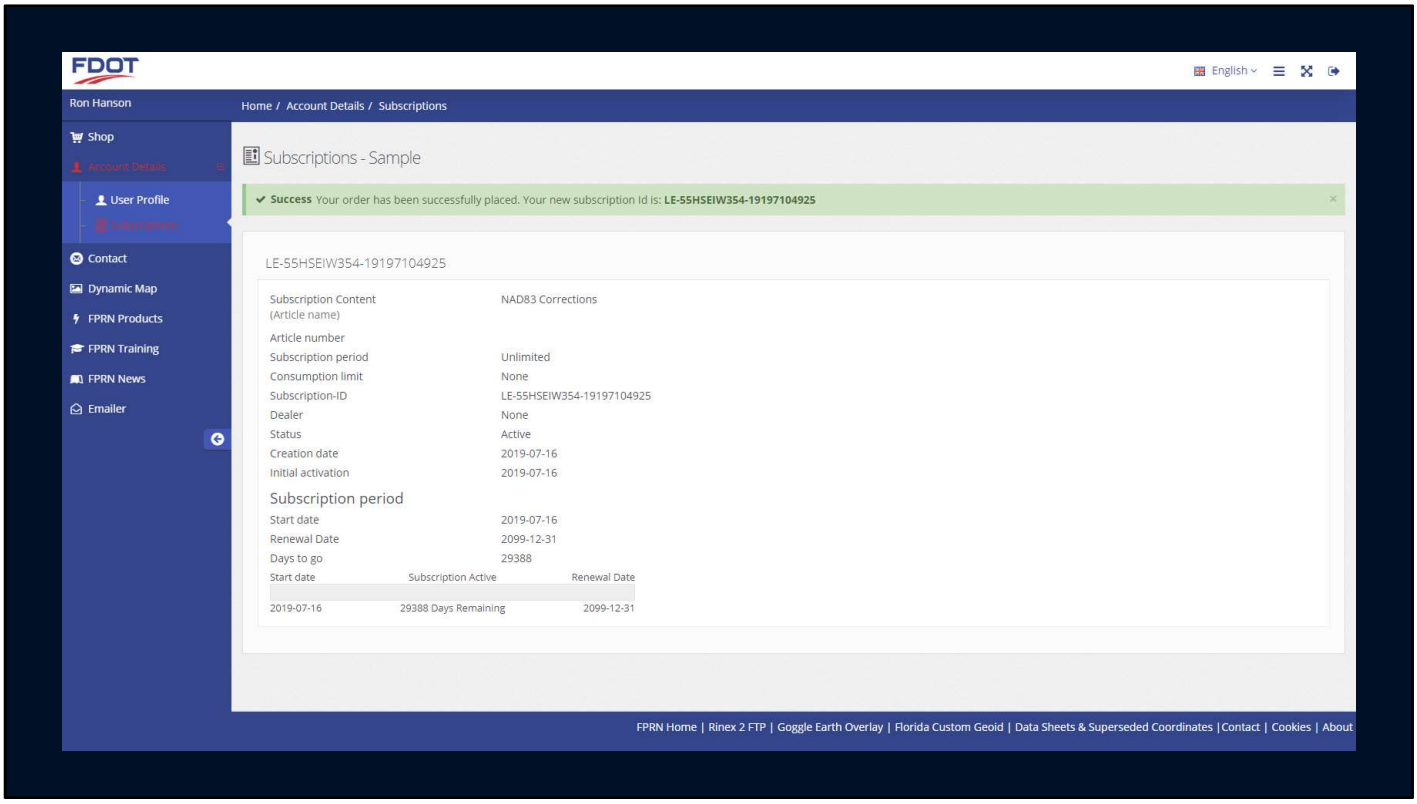
Or, you can pick everything

(CLICK)



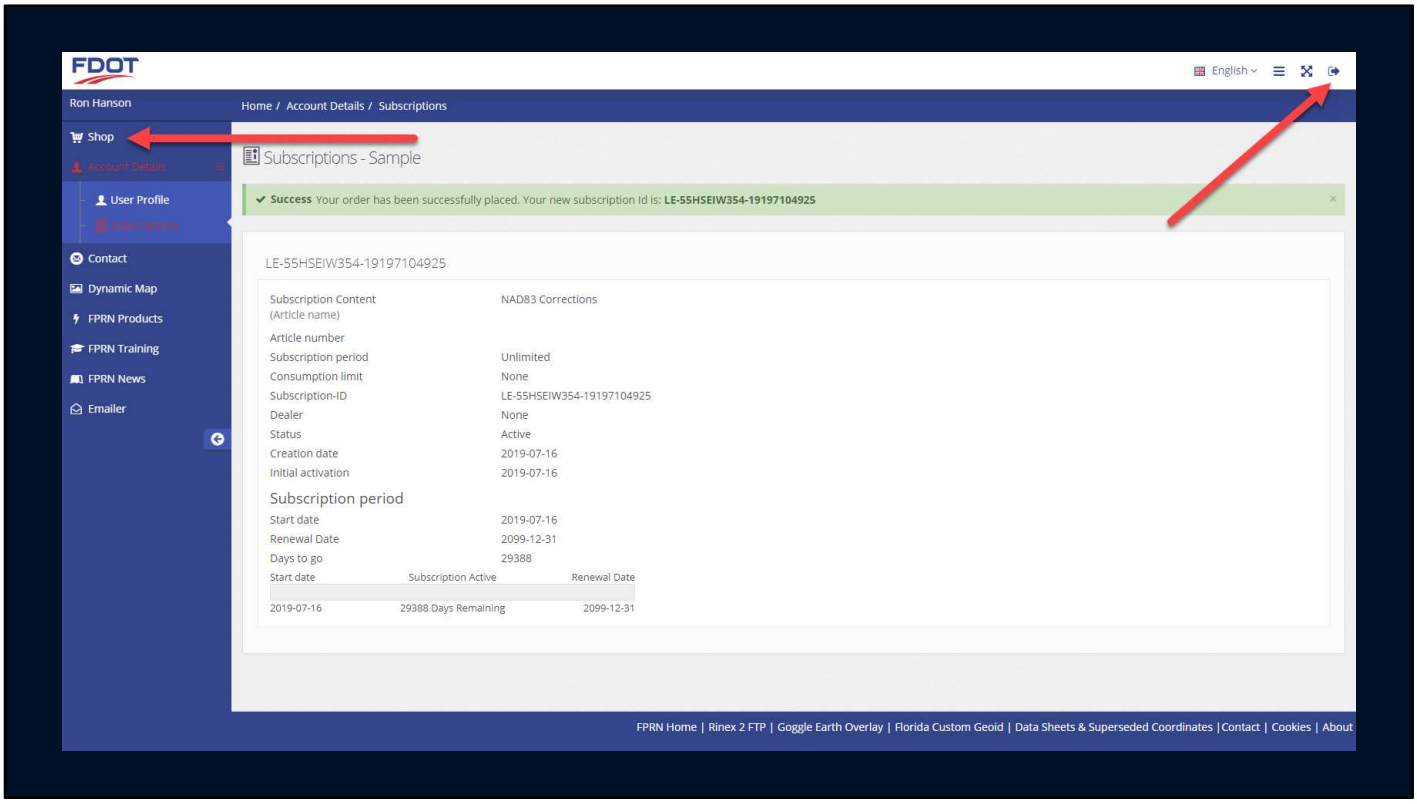
You will have to accept the Terms of Use and "Subscribe now" for each product you wish to use.

(CLICK)



You will see the subscription information for each product on the next page

(CLICK)



Log out

Or

Continue Shopping

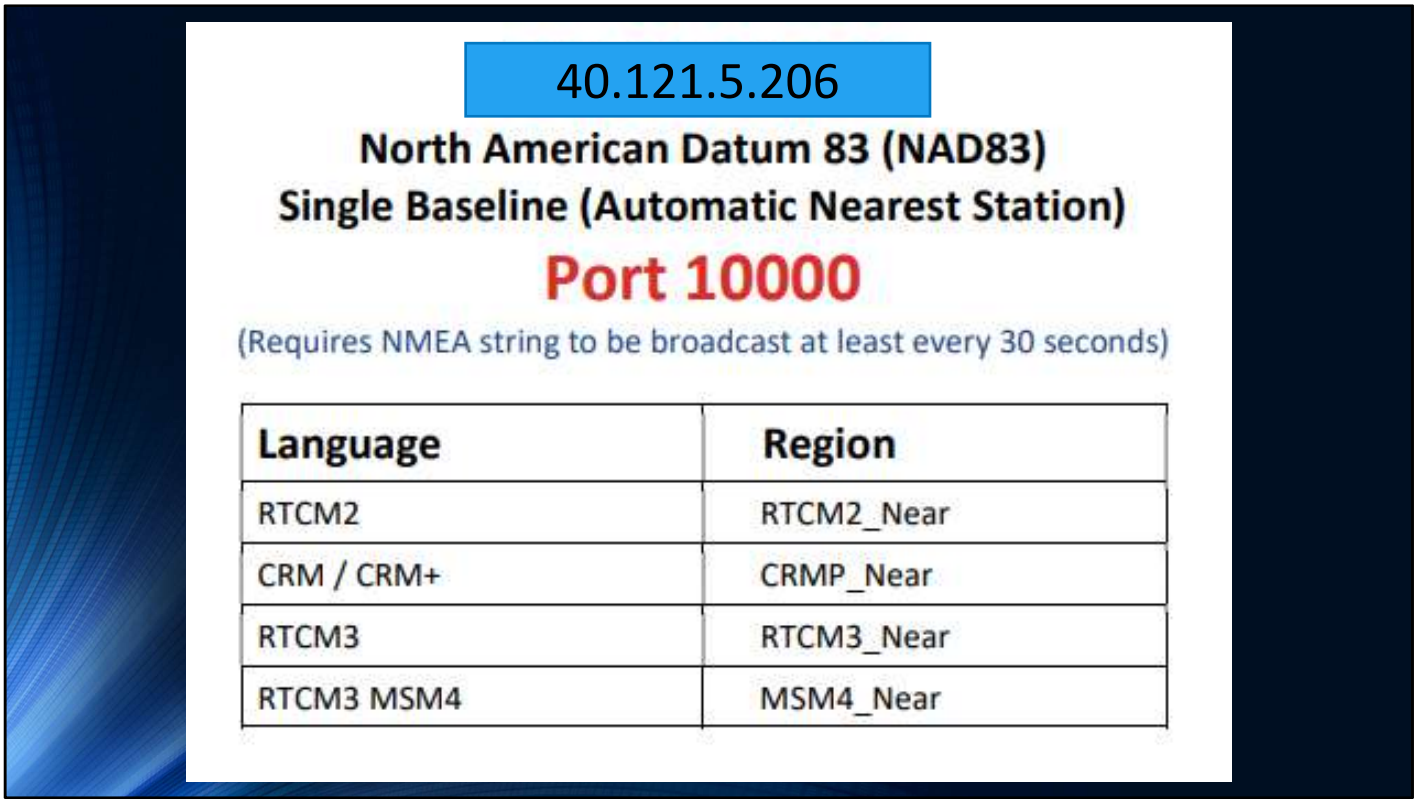
(CLICK)

Once you have completed "shopping" and logged out, your account will now be complete.

(CLICK)

The FPRN offers numerous Real-Time Products in each of Four different languages

(CLICK)



The IP address for all Real-time transmissions from the FPRN is 40.121.5.206

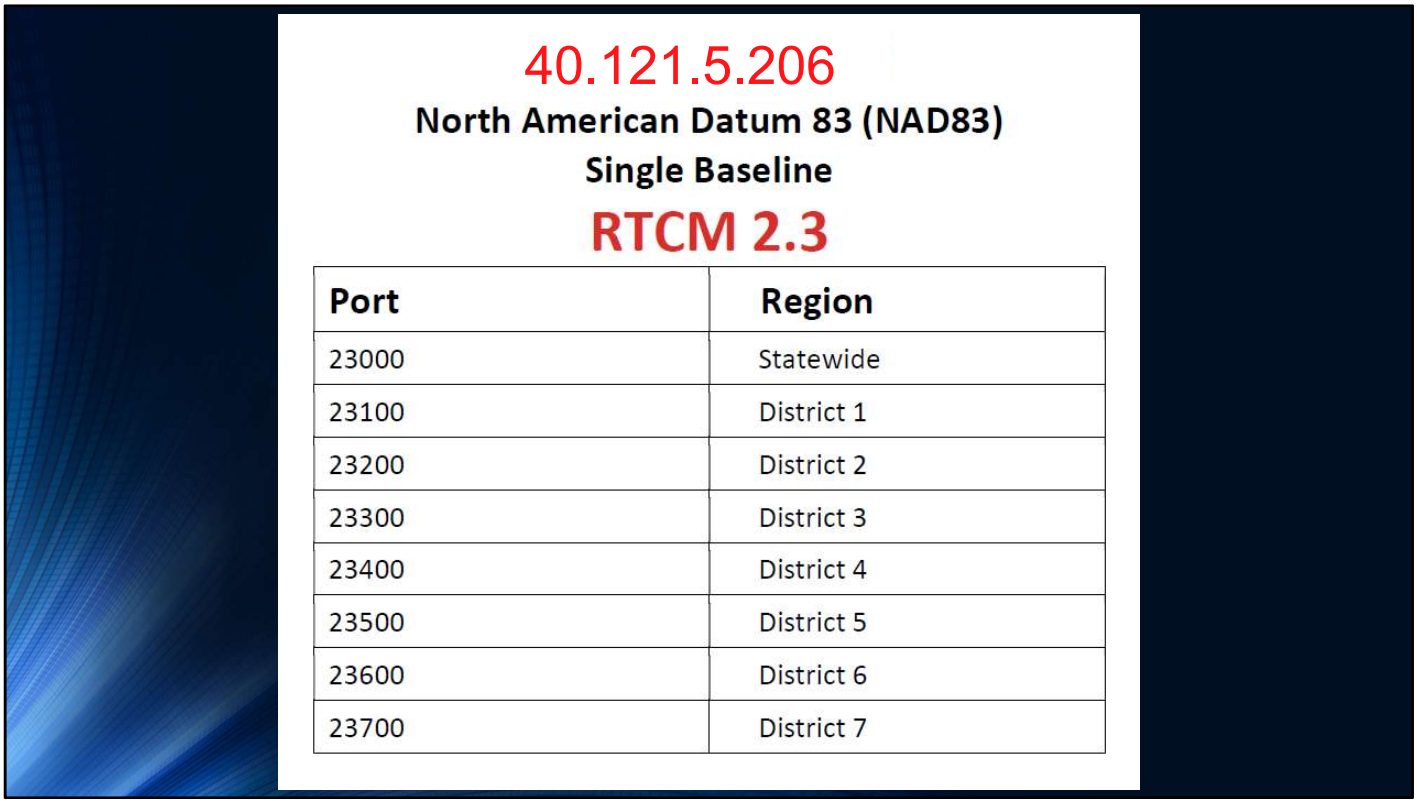
The most popular product is Automatic Nearest.

This product transmits single baseline corrections from the closest FPRN station.

In order for the software to determine the closest station it requires your location. This information is transmitted via the NMEA string. Because of mobile work products the system requires the NMEA string to be updated at least every 30 seconds.

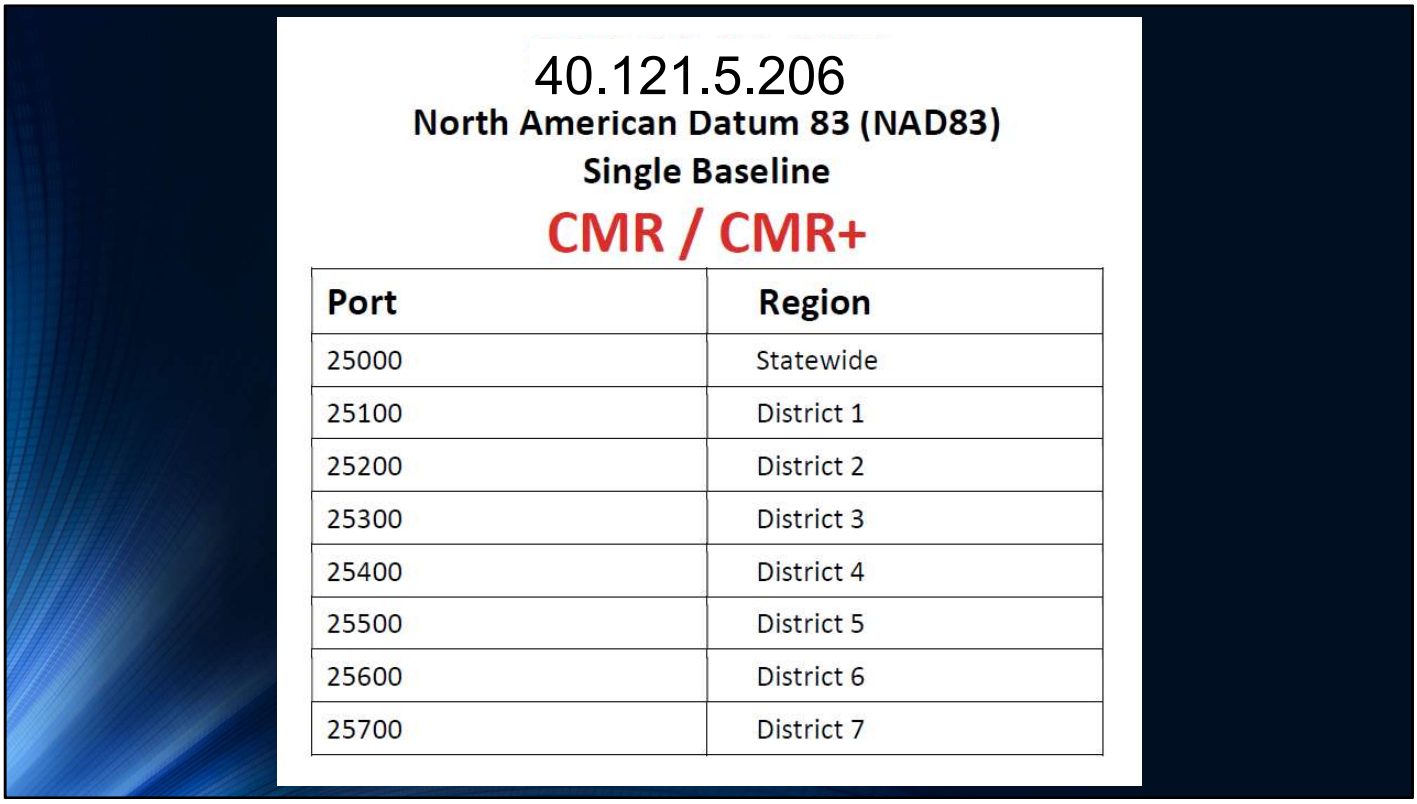
All of the Automatic Nearest products are offered on port 10000

(CLICK)



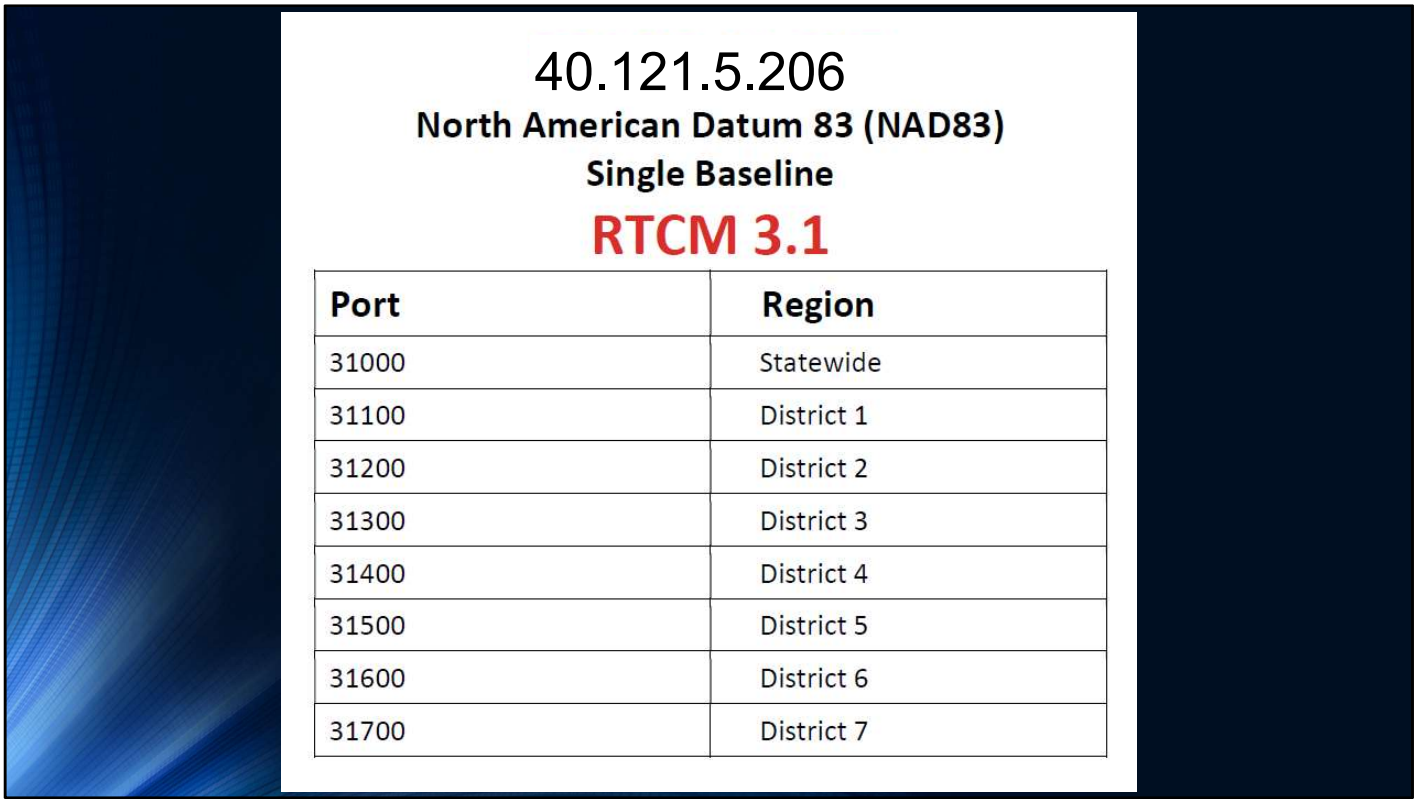
The RTCM2.3 language is broadcast on the following ports for single baseline solutions

(CLICK)



The CMR / CMR+ language is broadcast on the following ports for single baseline solutions

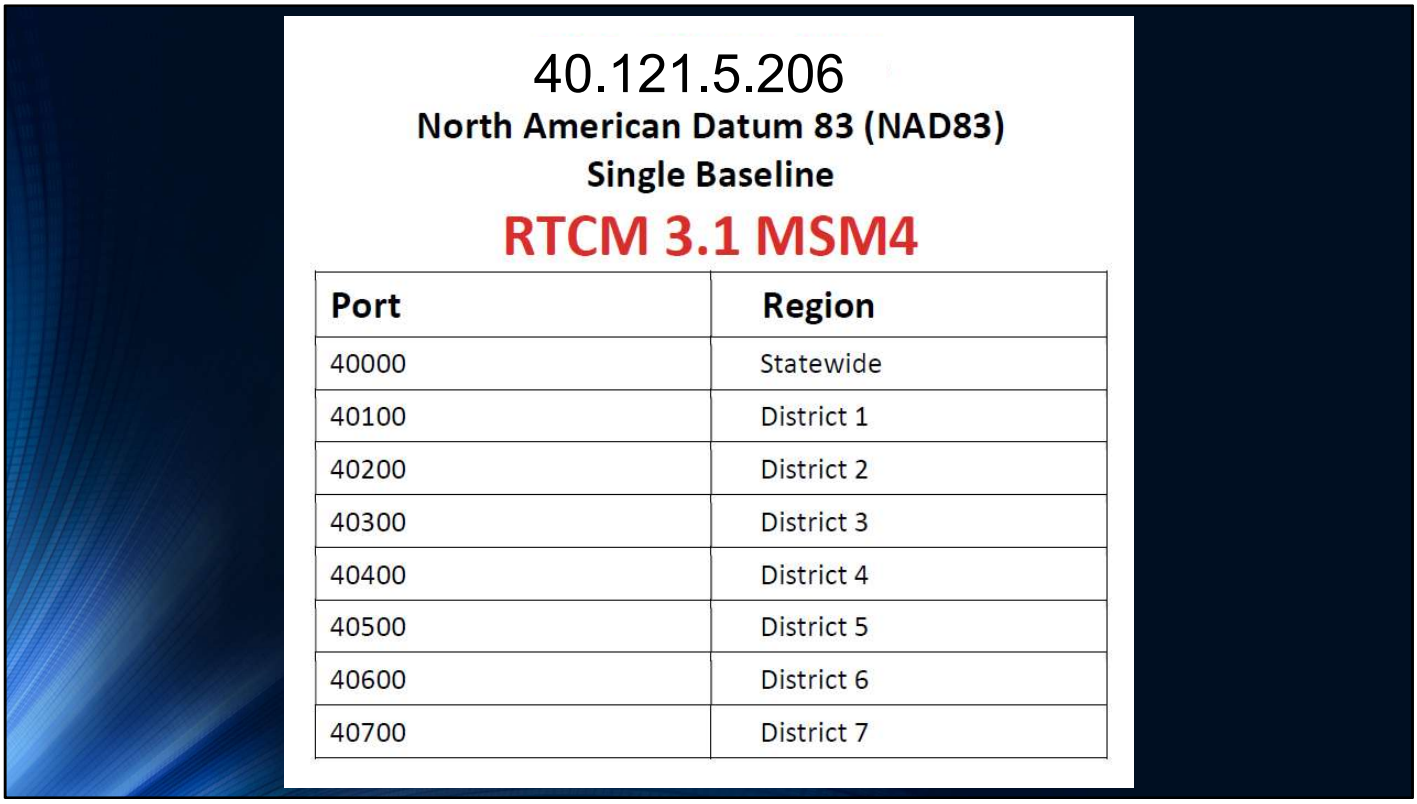
(CLICK)



Port	Region
31000	Statewide
31100	District 1
31200	District 2
31300	District 3
31400	District 4
31500	District 5
31600	District 6
31700	District 7

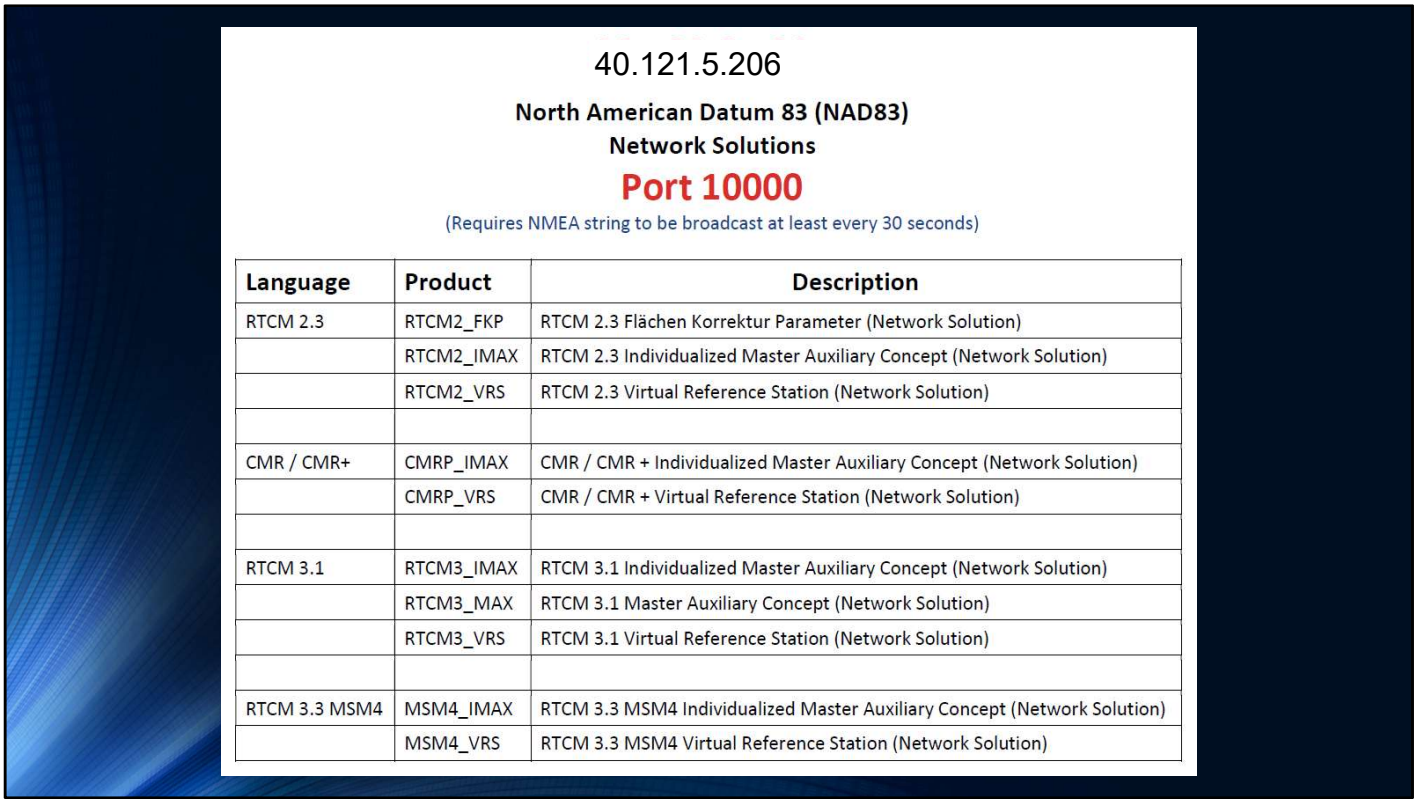
The RTCM 3.1 language is broadcast on the following ports for single baseline solutions

(CLICK)



The RTCM 3.1 MSM4 language is broadcast on the following ports for single baseline solutions

(CLICK)



Language	Product	Description
RTCM 2.3	RTCM2_FKP	RTCM 2.3 Flächen Korrektur Parameter (Network Solution)
	RTCM2_IMAX	RTCM 2.3 Individualized Master Auxiliary Concept (Network Solution)
	RTCM2_VRS	RTCM 2.3 Virtual Reference Station (Network Solution)
CMR / CMR+	CMRP_IMAX	CMR / CMR + Individualized Master Auxiliary Concept (Network Solution)
	CMRP_VRS	CMR / CMR + Virtual Reference Station (Network Solution)
RTCM 3.1	RTCM3_IMAX	RTCM 3.1 Individualized Master Auxiliary Concept (Network Solution)
	RTCM3_MAX	RTCM 3.1 Master Auxiliary Concept (Network Solution)
	RTCM3_VRS	RTCM 3.1 Virtual Reference Station (Network Solution)
RTCM 3.3 MSM4	MSM4_IMAX	RTCM 3.3 MSM4 Individualized Master Auxiliary Concept (Network Solution)
	MSM4_VRS	RTCM 3.3 MSM4 Virtual Reference Station (Network Solution)

All network solutions (including Automatic Nearest) (discussed earlier) are broadcast on port 10000

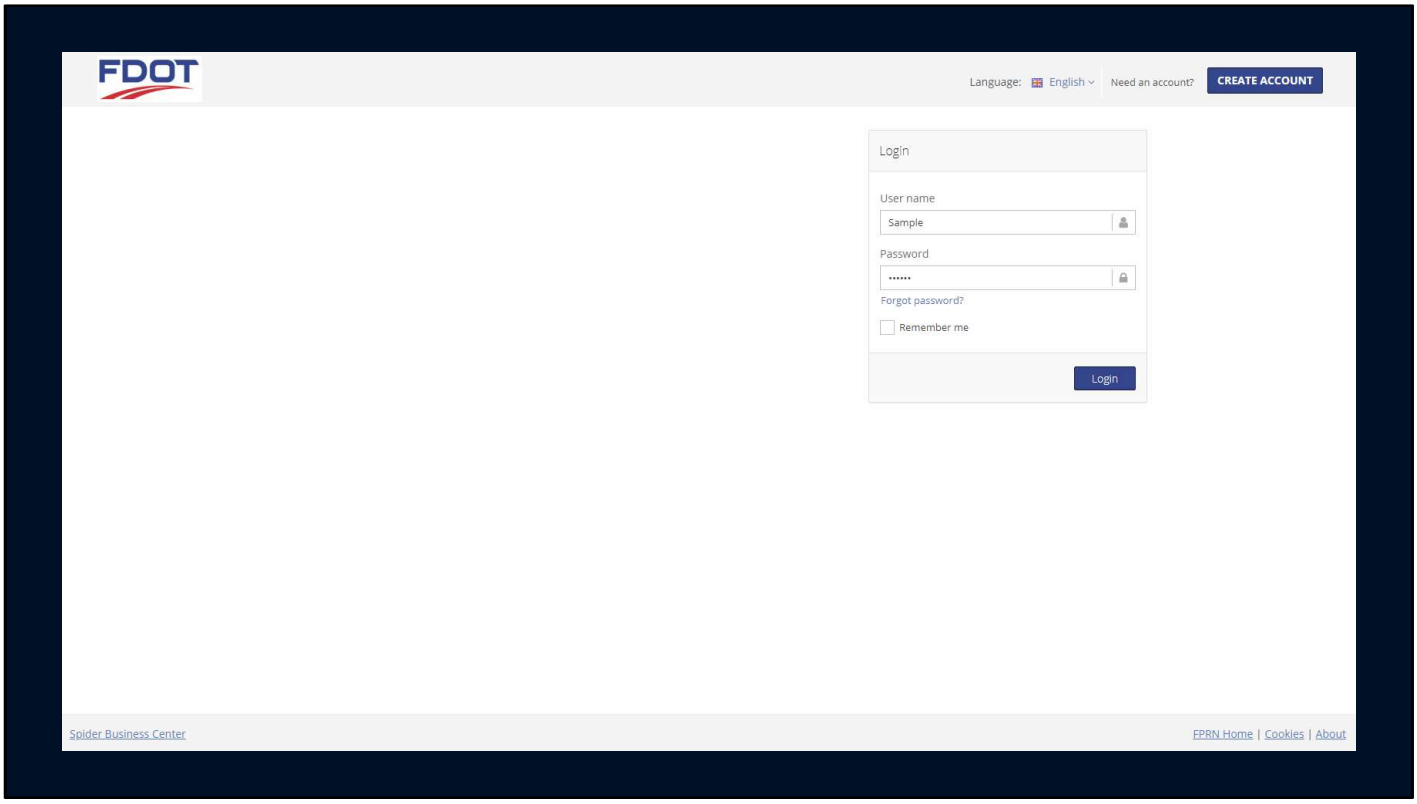
In order for the software to determine the stations required to develop your network it requires your location. This information is transmitted via the NMEA string. Because of mobile work products the system requires the NMEA string to be updated at least every 30 seconds.

(CLICK)

Let's talk about downloading Rinex 3 data

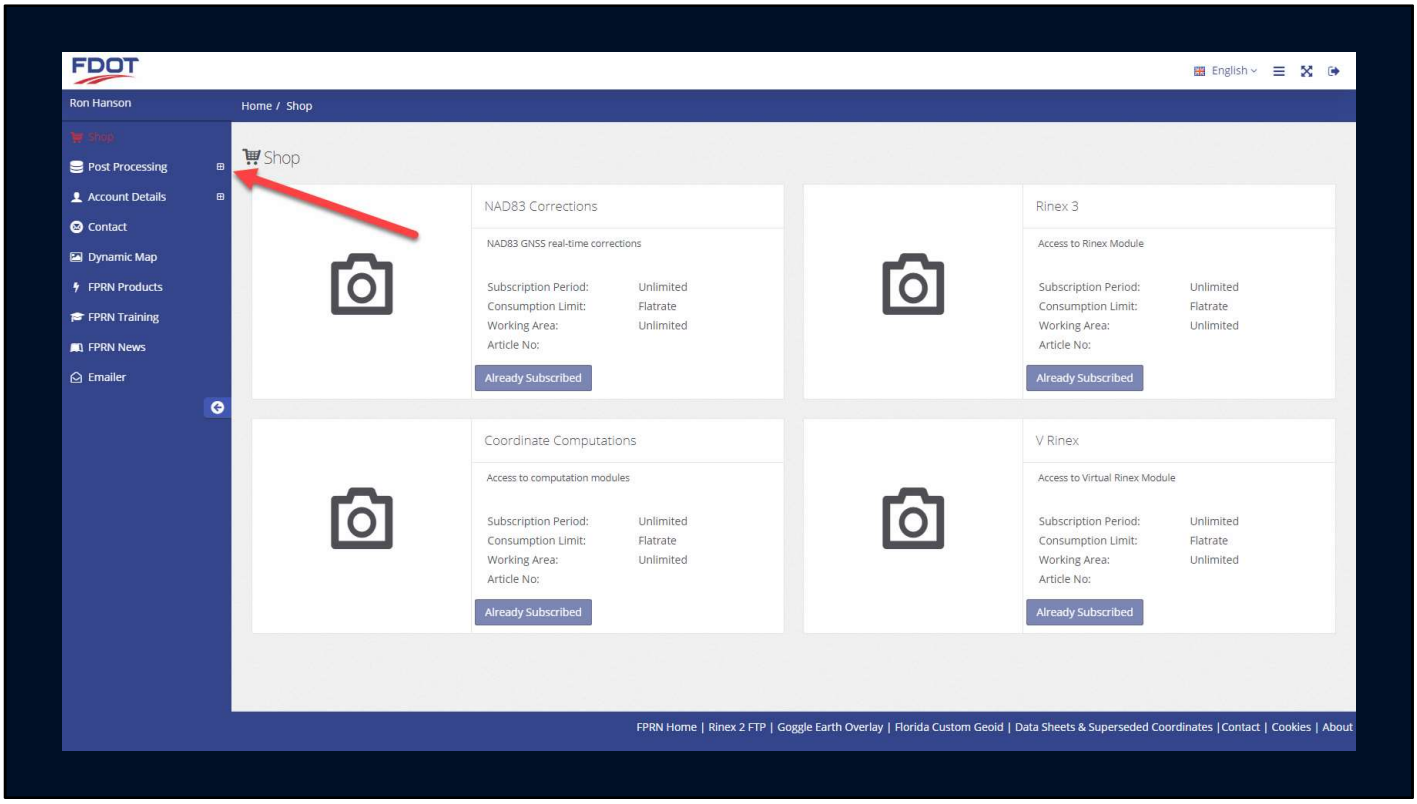
Navigate to the Customer Portal

(CLICK)



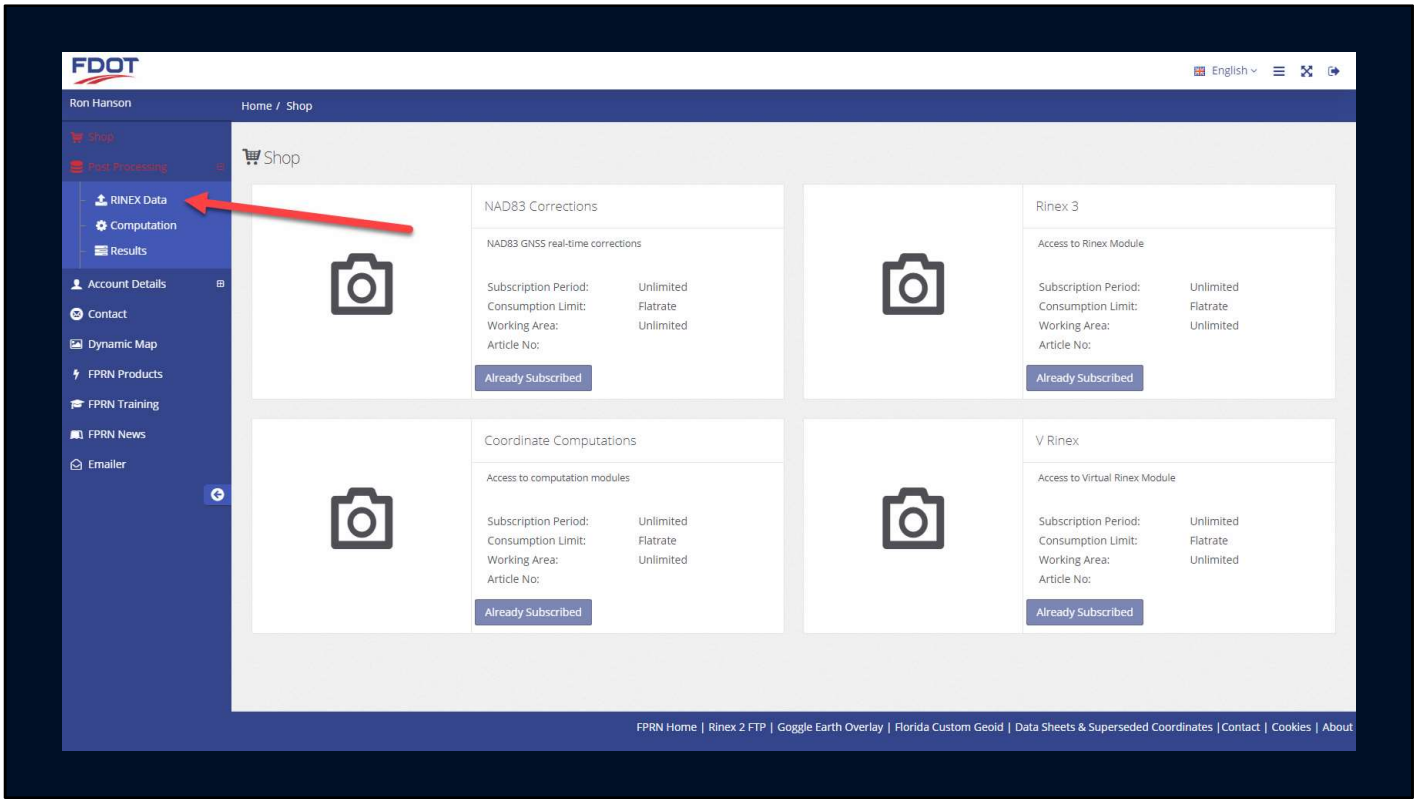
Login using your User Name and Password

(CLICK)



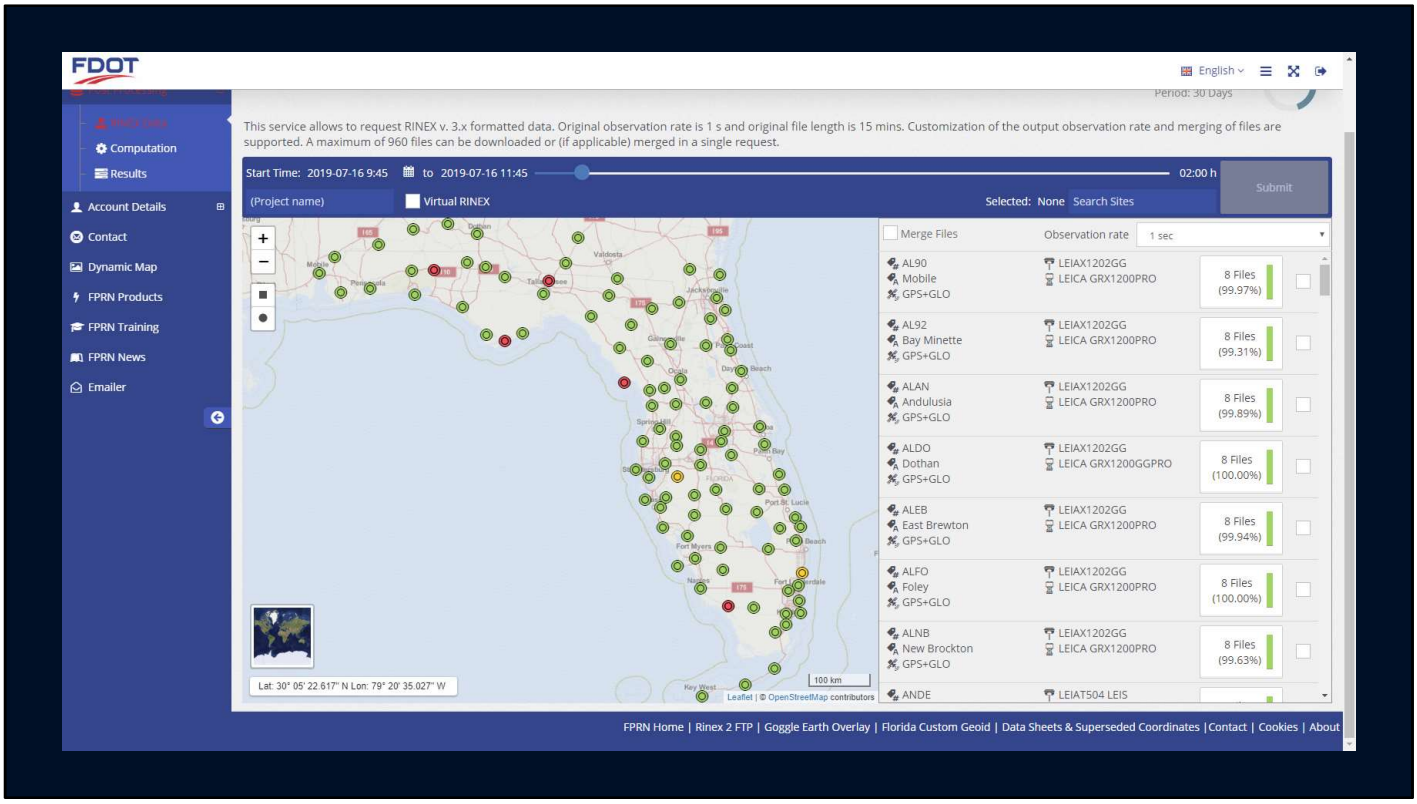
Select Post Processing from the left hand menu

(CLICK)



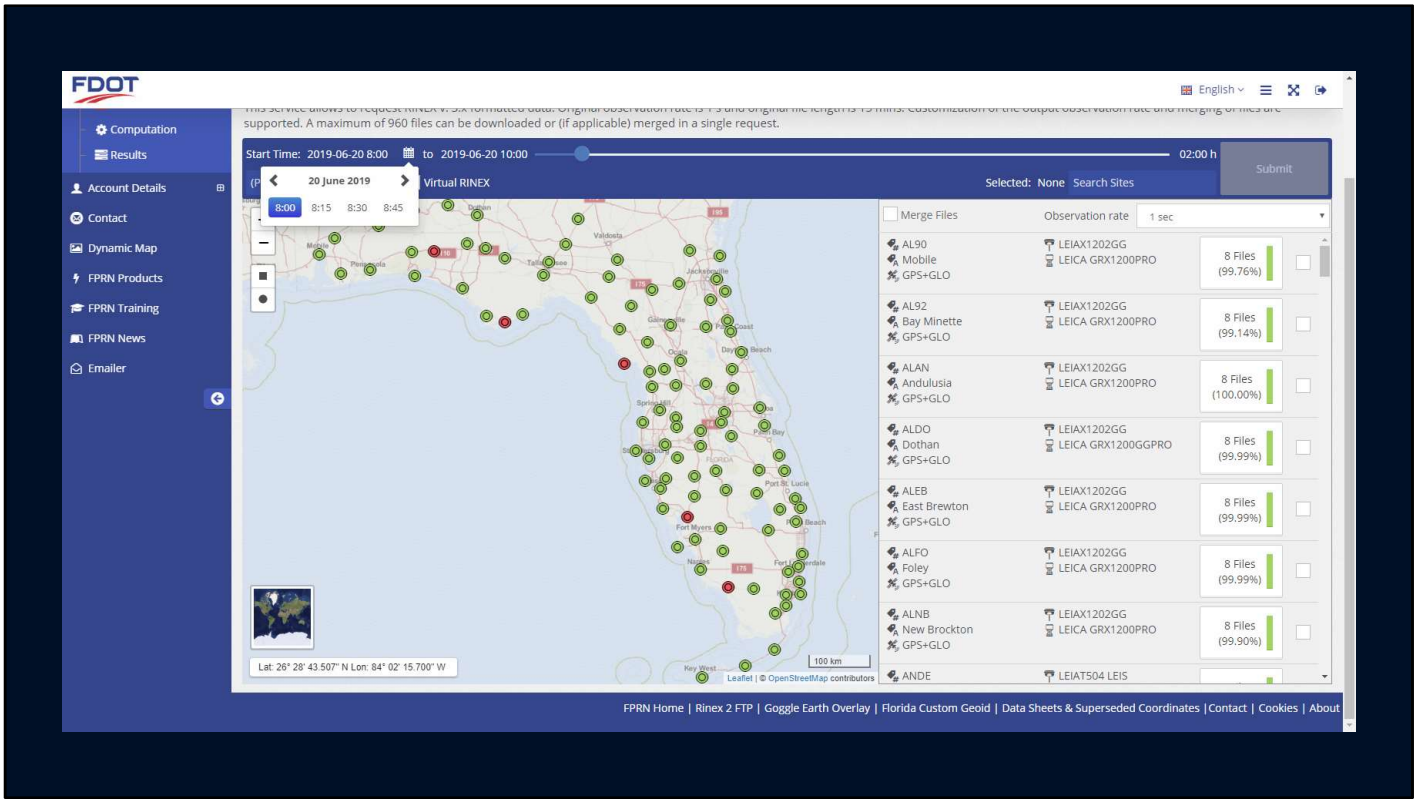
Select Rinex Data

(CLICK)



The Rinex 3 application will load

(CLICK)



Start by clicking on the Calendar icon

(CLICK)

Select the beginning date

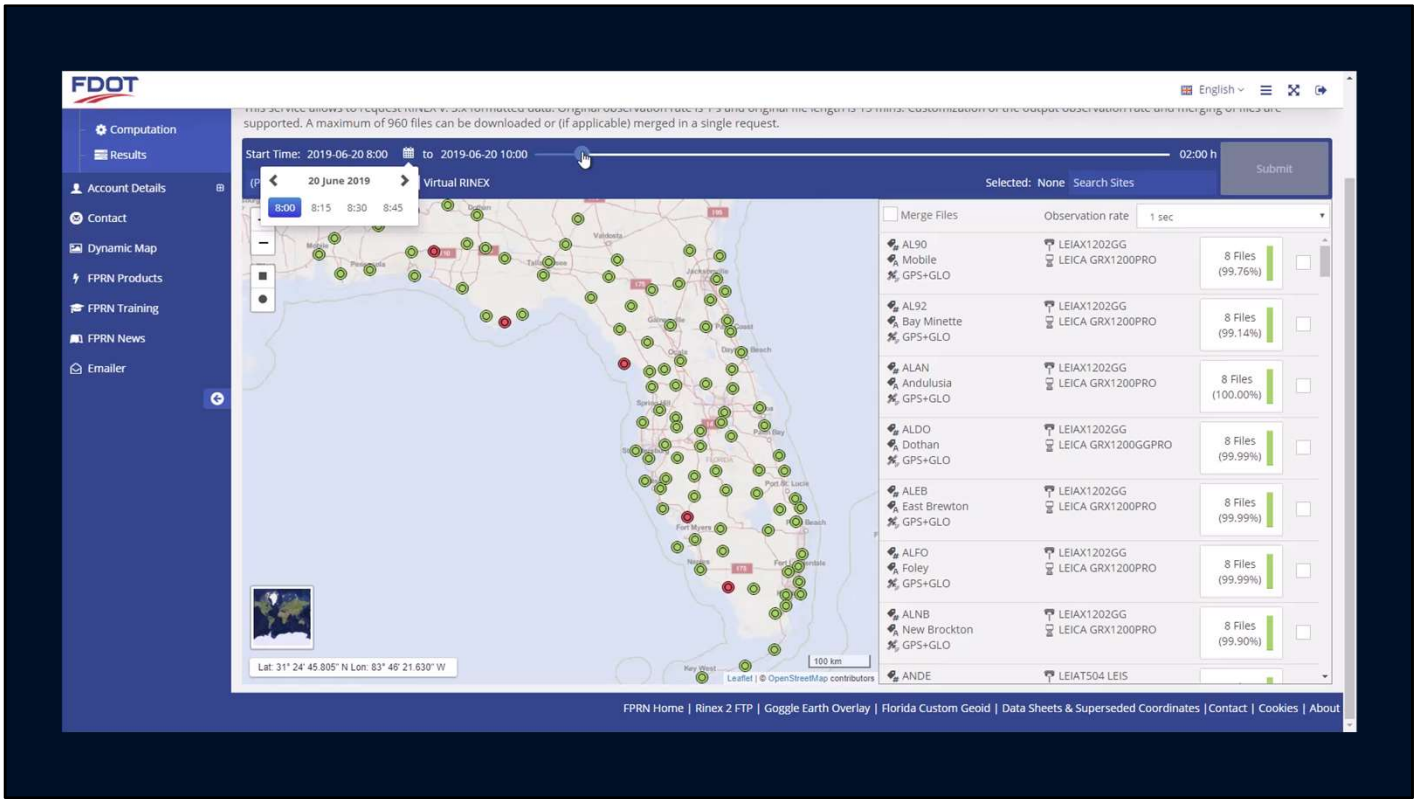
(CLICK)

Select the beginning hour

(Click)

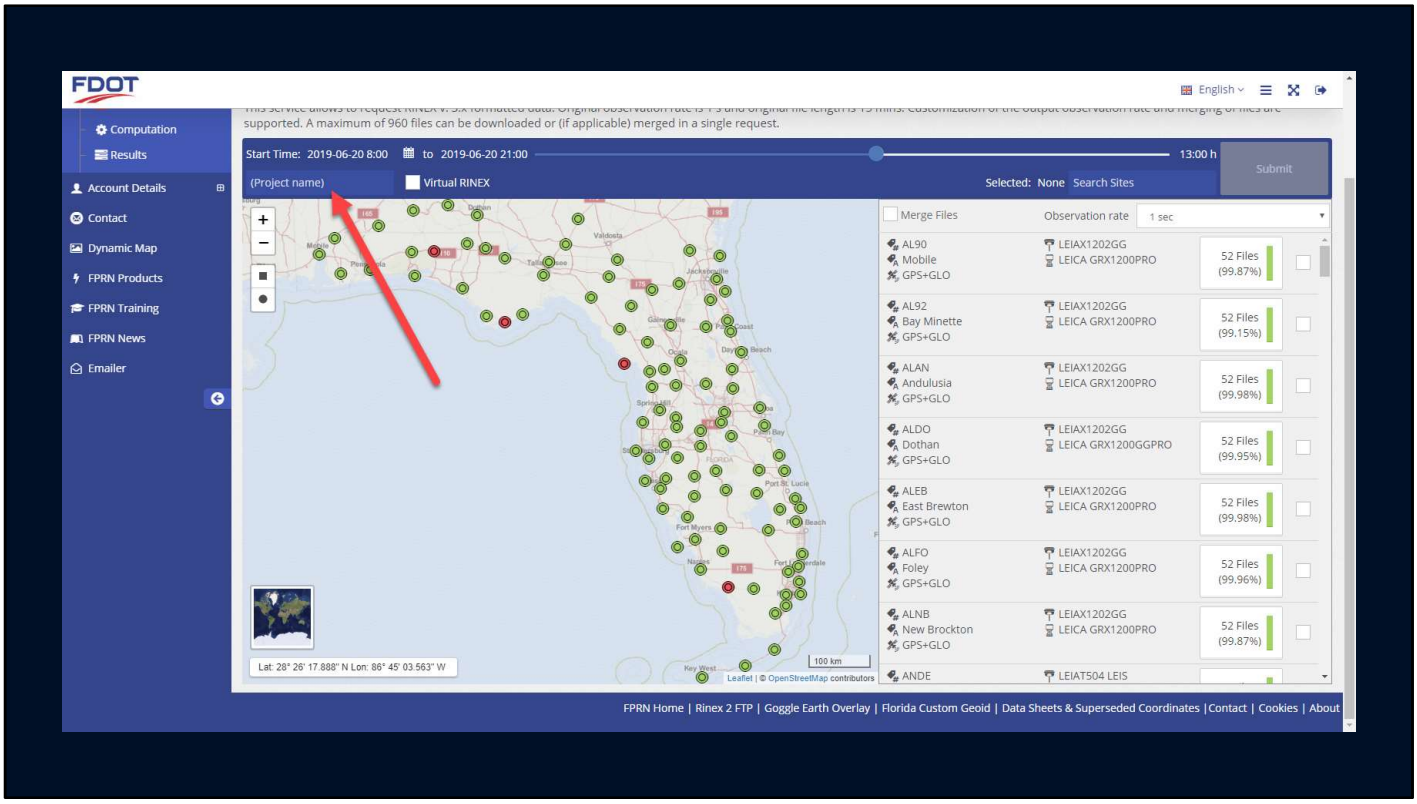
Select the closest starting minute

(CLICK)



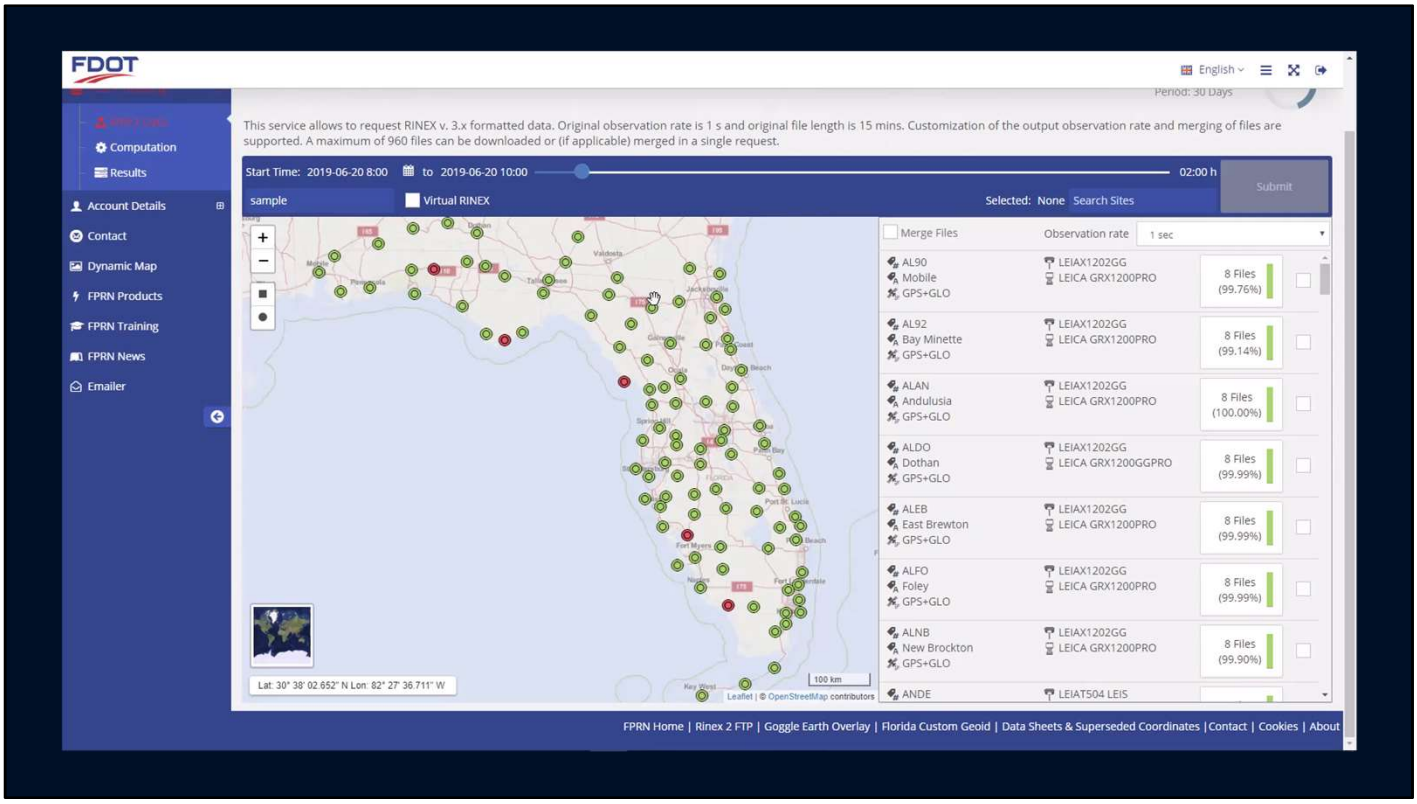
Slide the bar for the duration of the file needed

(CLICK)



Assign a Project Name

(CLICK)



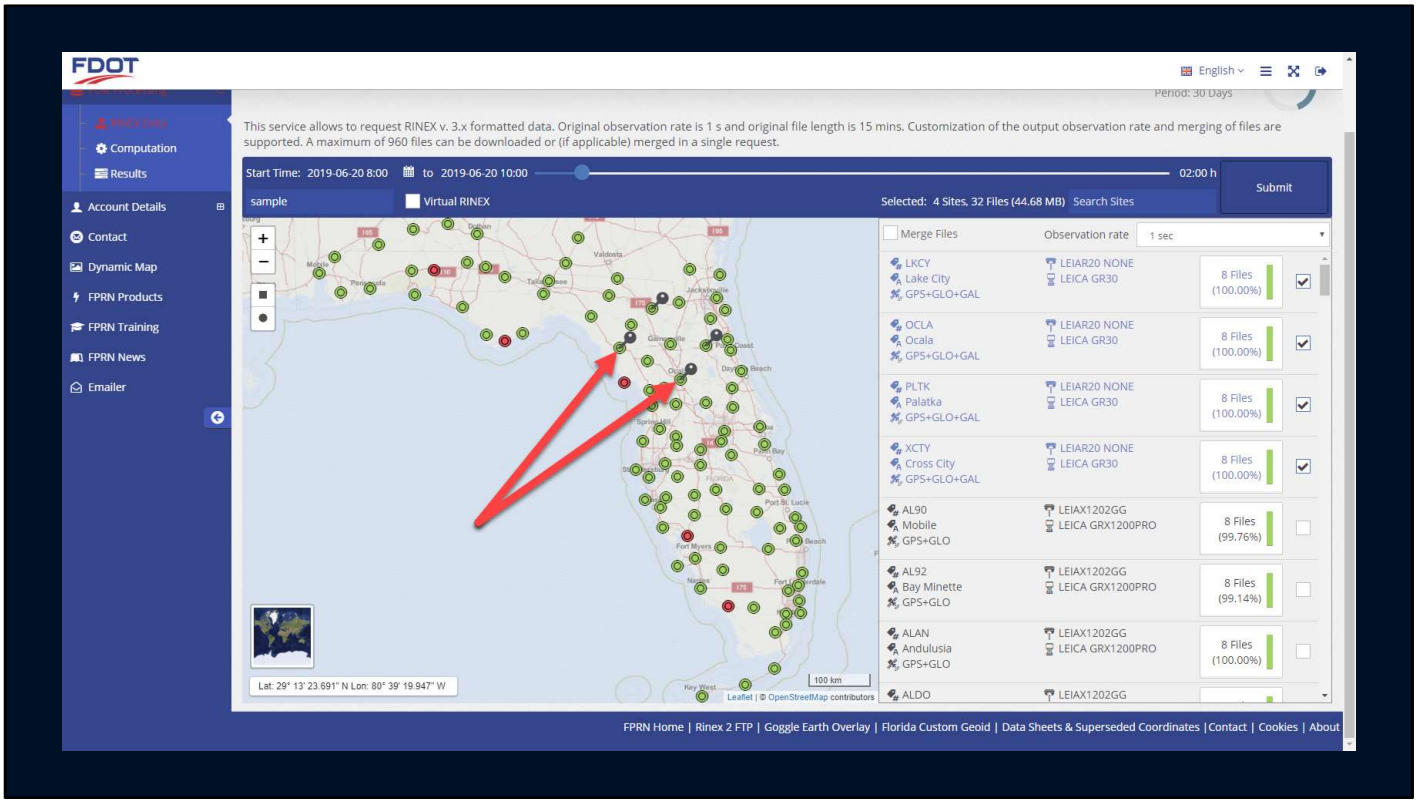
Pick the site or sites you need either on the map or on the list at the right.

Sites with 100% available data are shown in green

Sites with partial data are shown in yellow

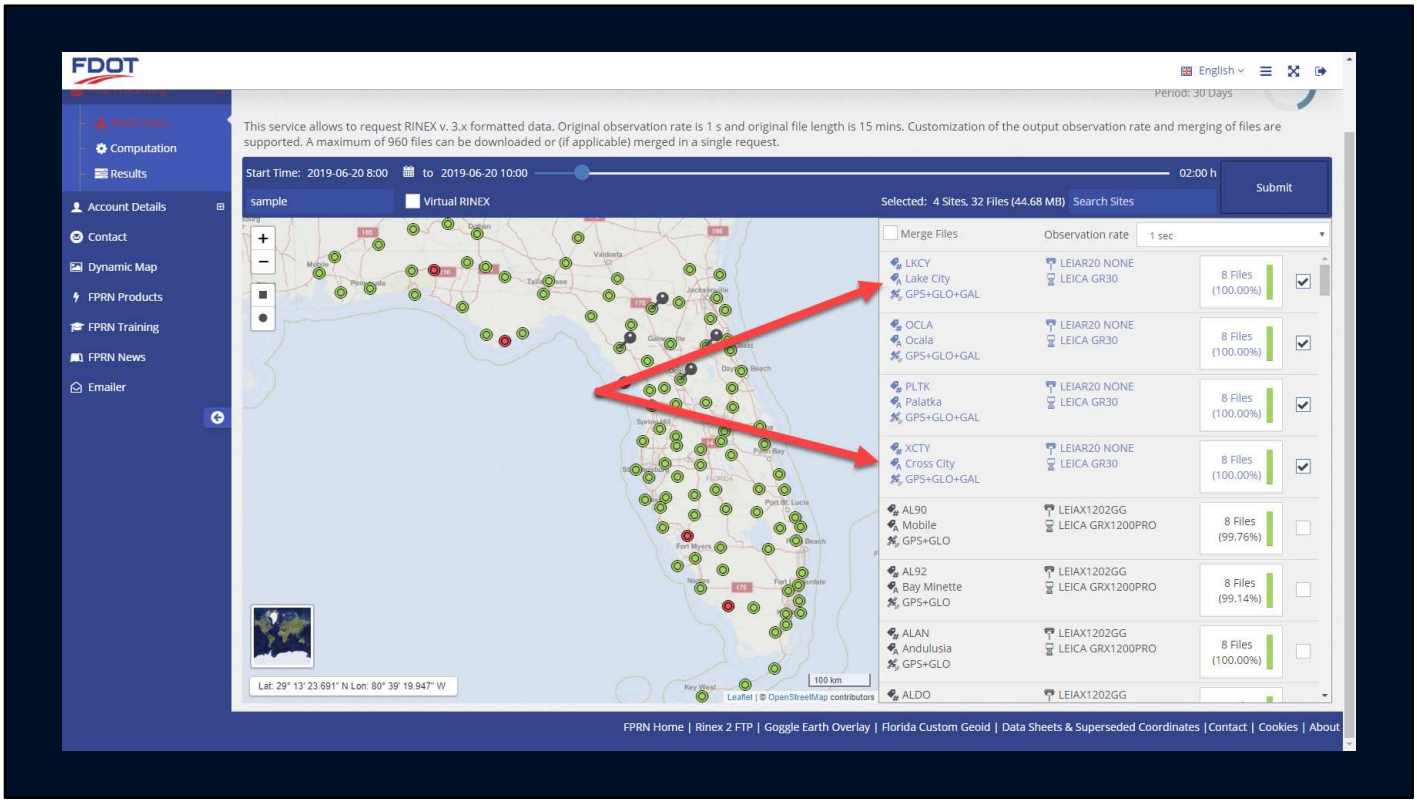
Sites with no data are shown in red

(CLICK)



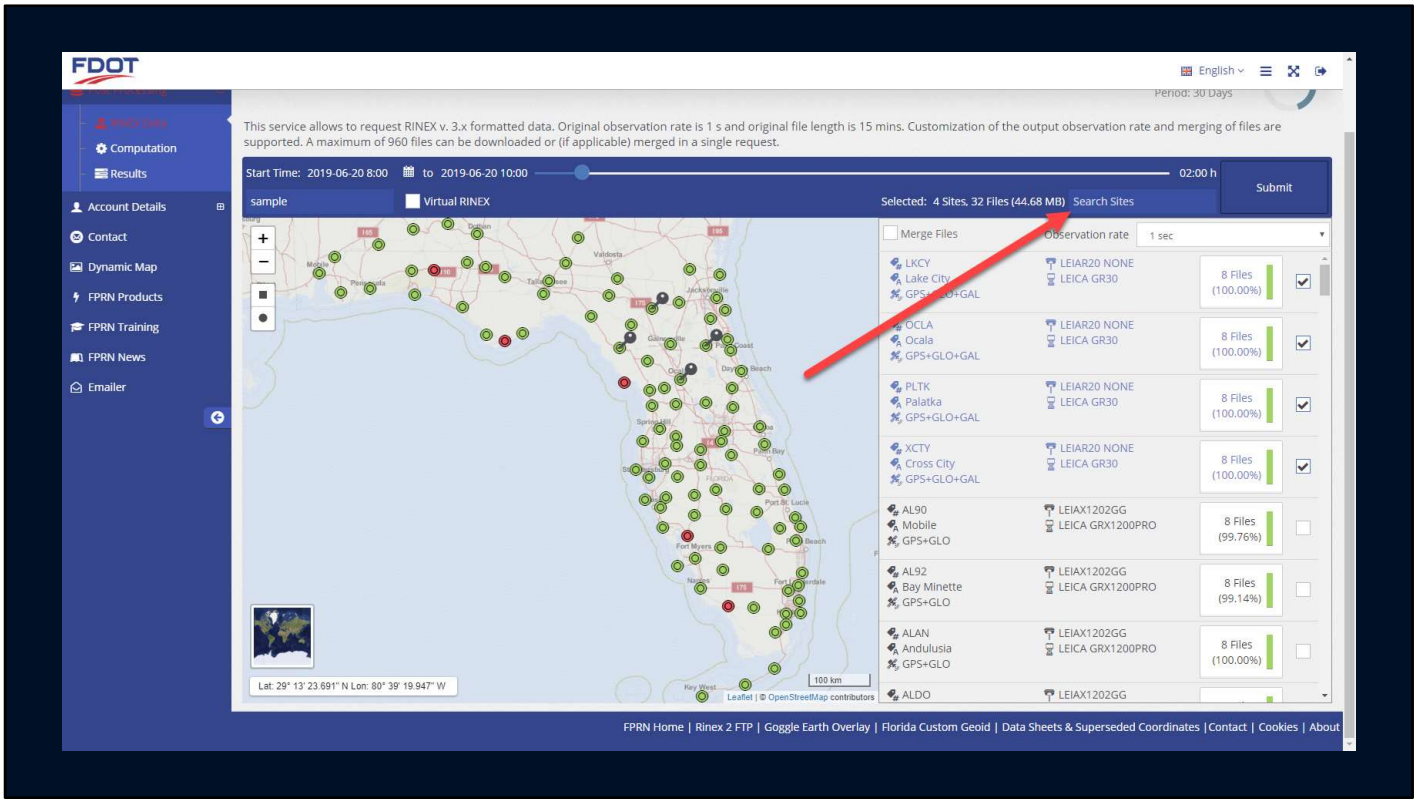
The sites you pick are shown with "push pin"

(CLICK)



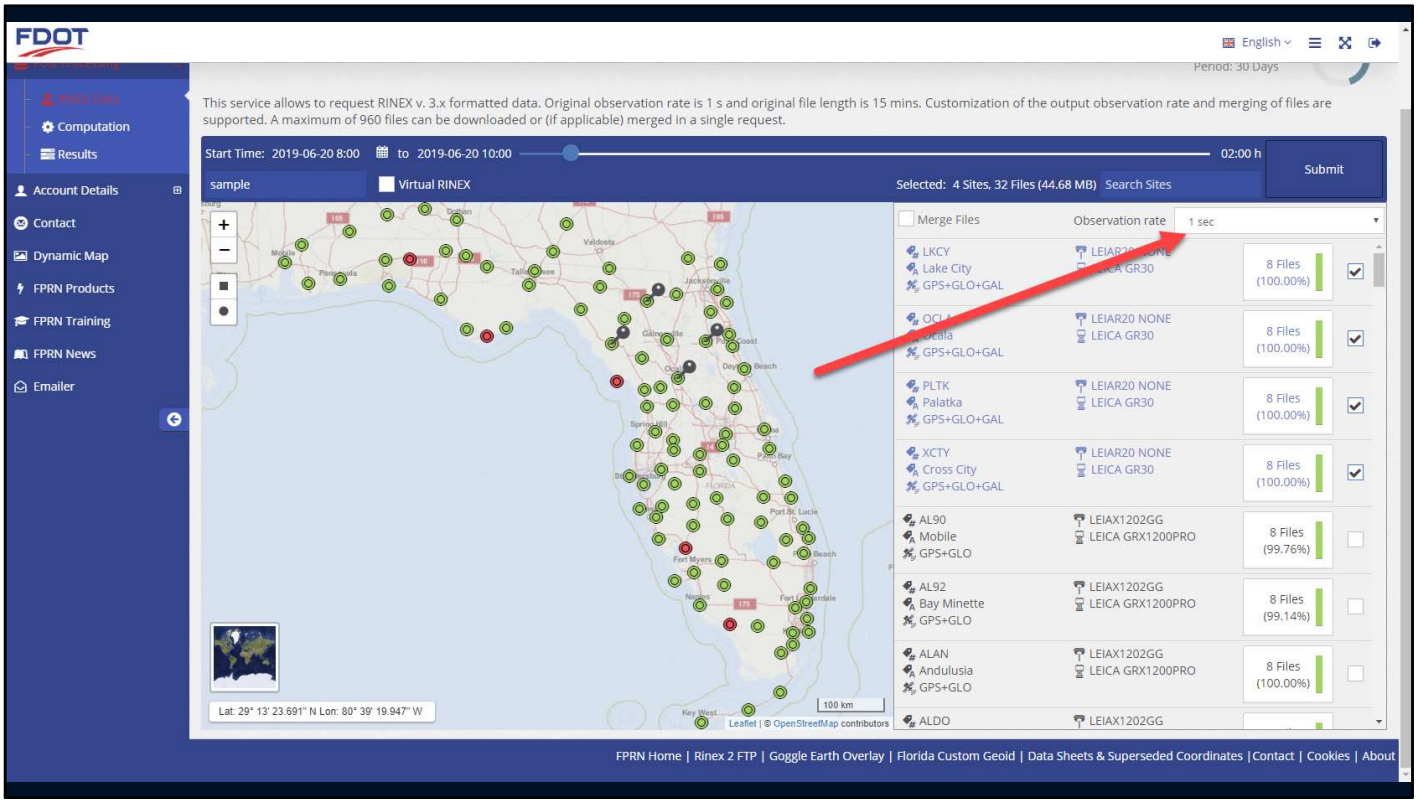
They are also automatically moved to the top of the list and shown in alphabetical order.

(CLICK)



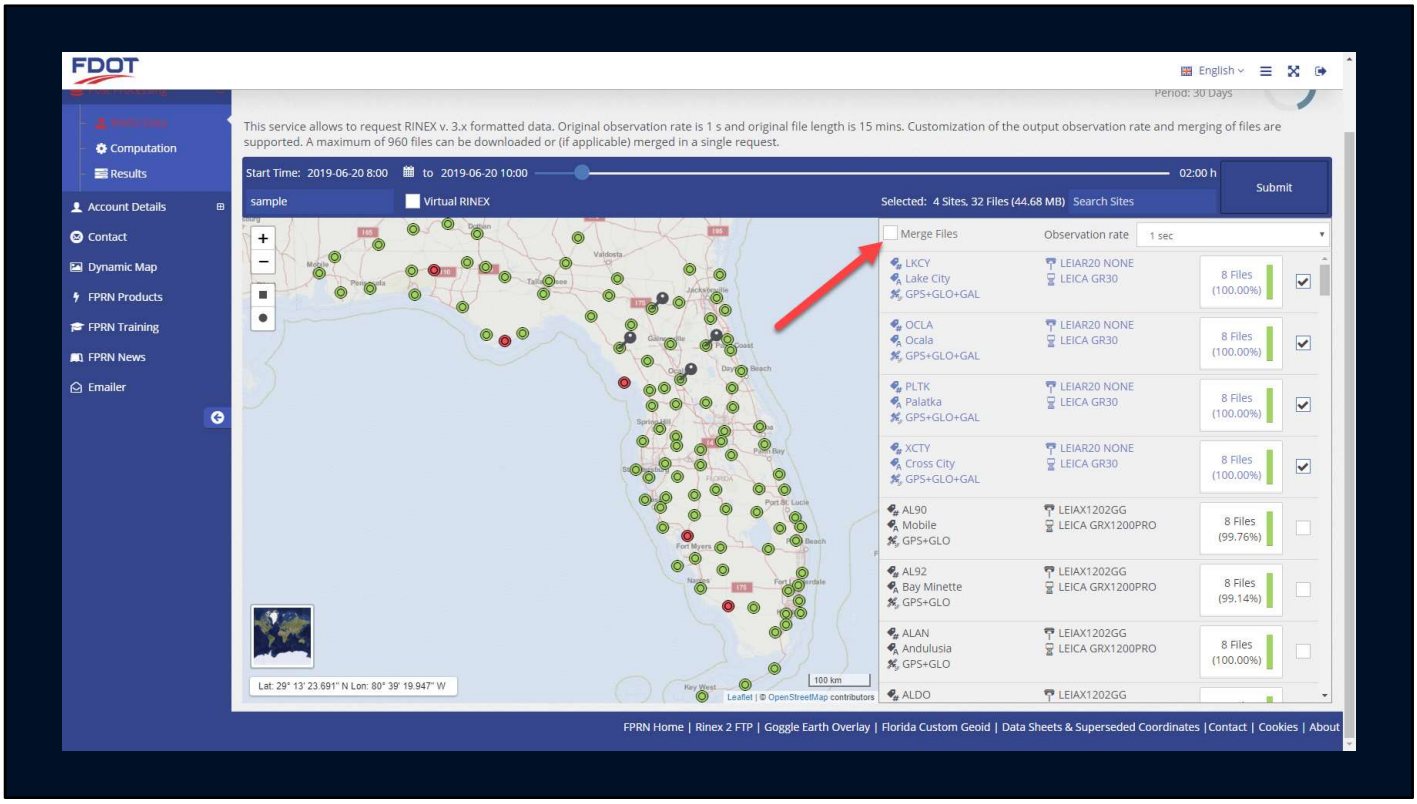
You can also search the sites

(CLICK)



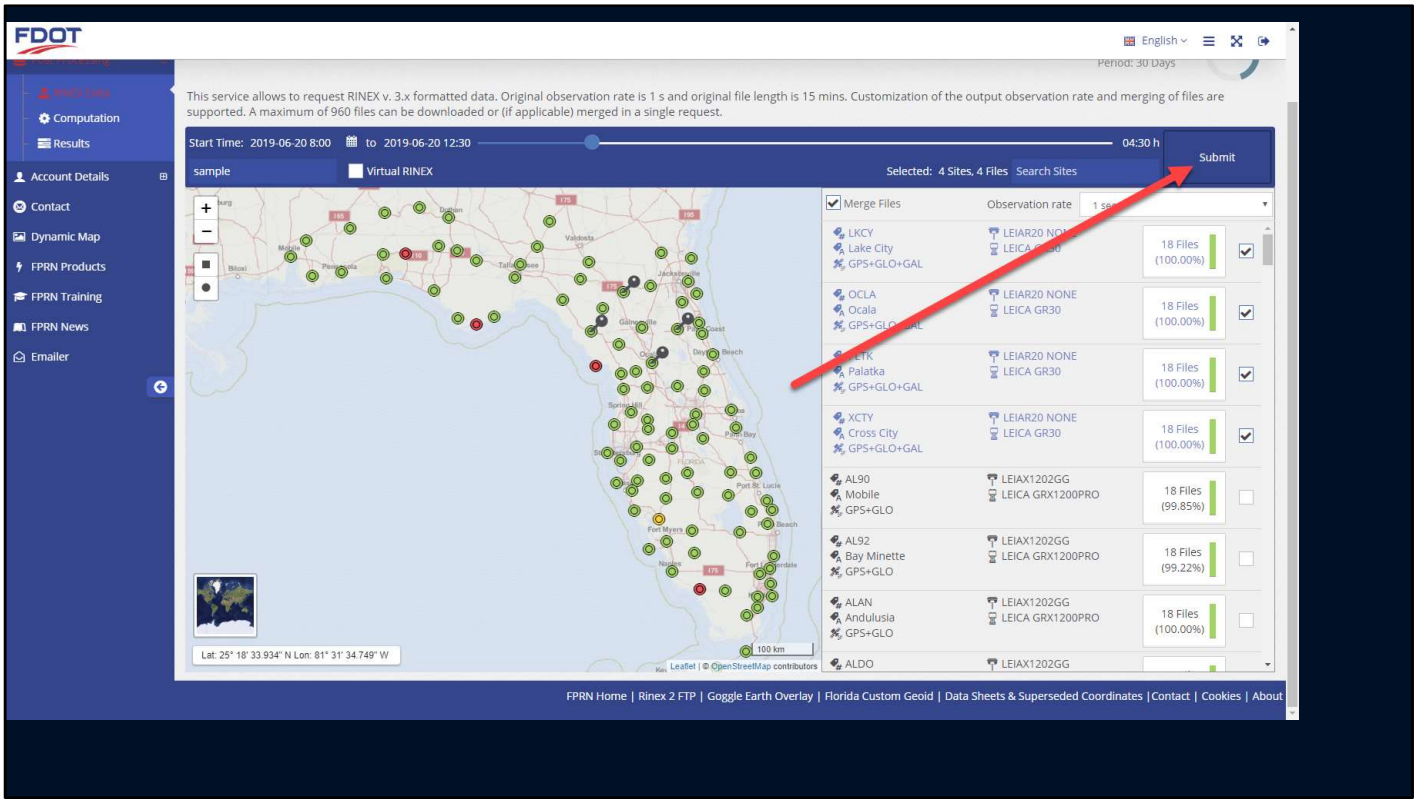
Once you have finished selecting the sites needed, you can pick the epoch interval

(CLICK)



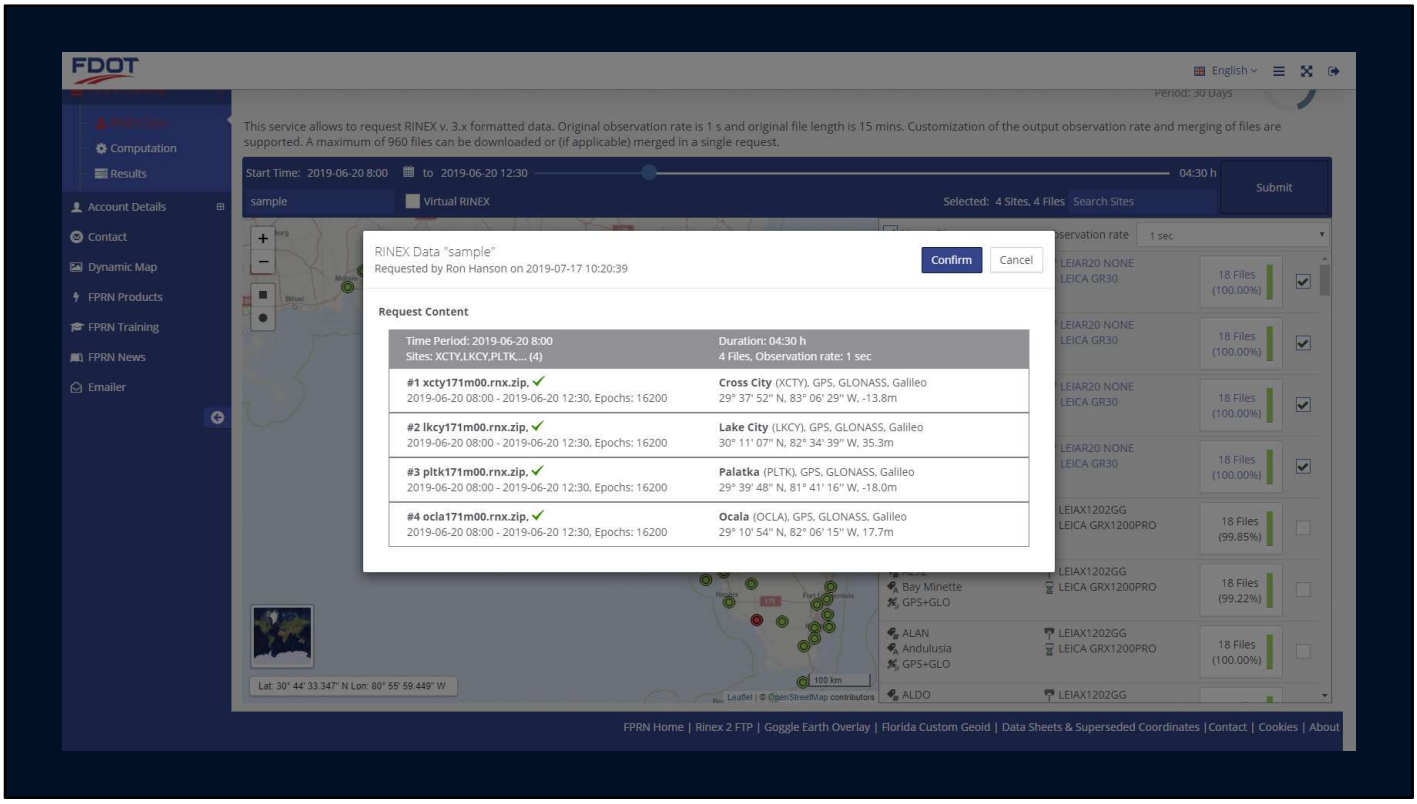
And whether or not to merge the site files into one each.

(CLICK)



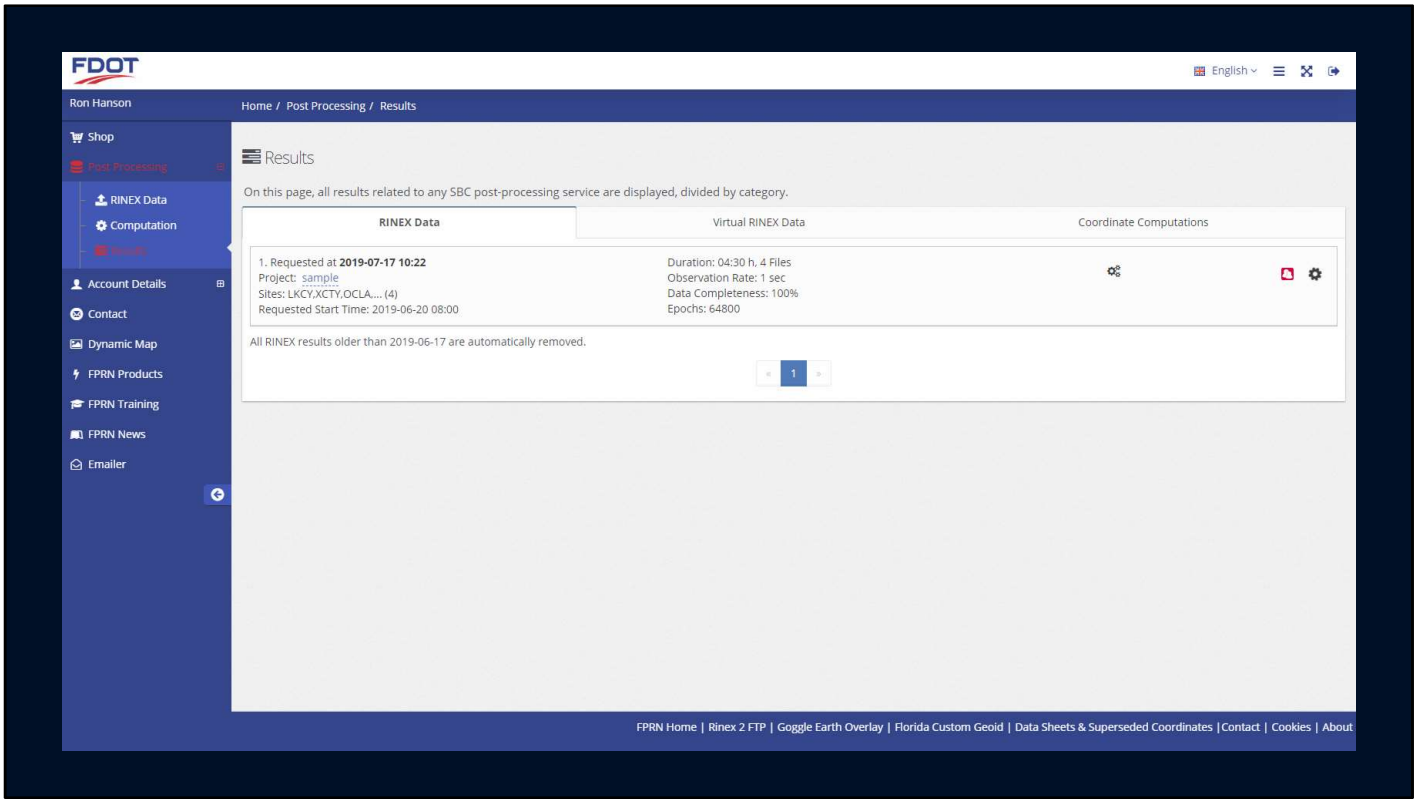
Click on the Submit button to start processing your request

(CLICK)



A confirmation screen will appear, click the confirm button to continue.

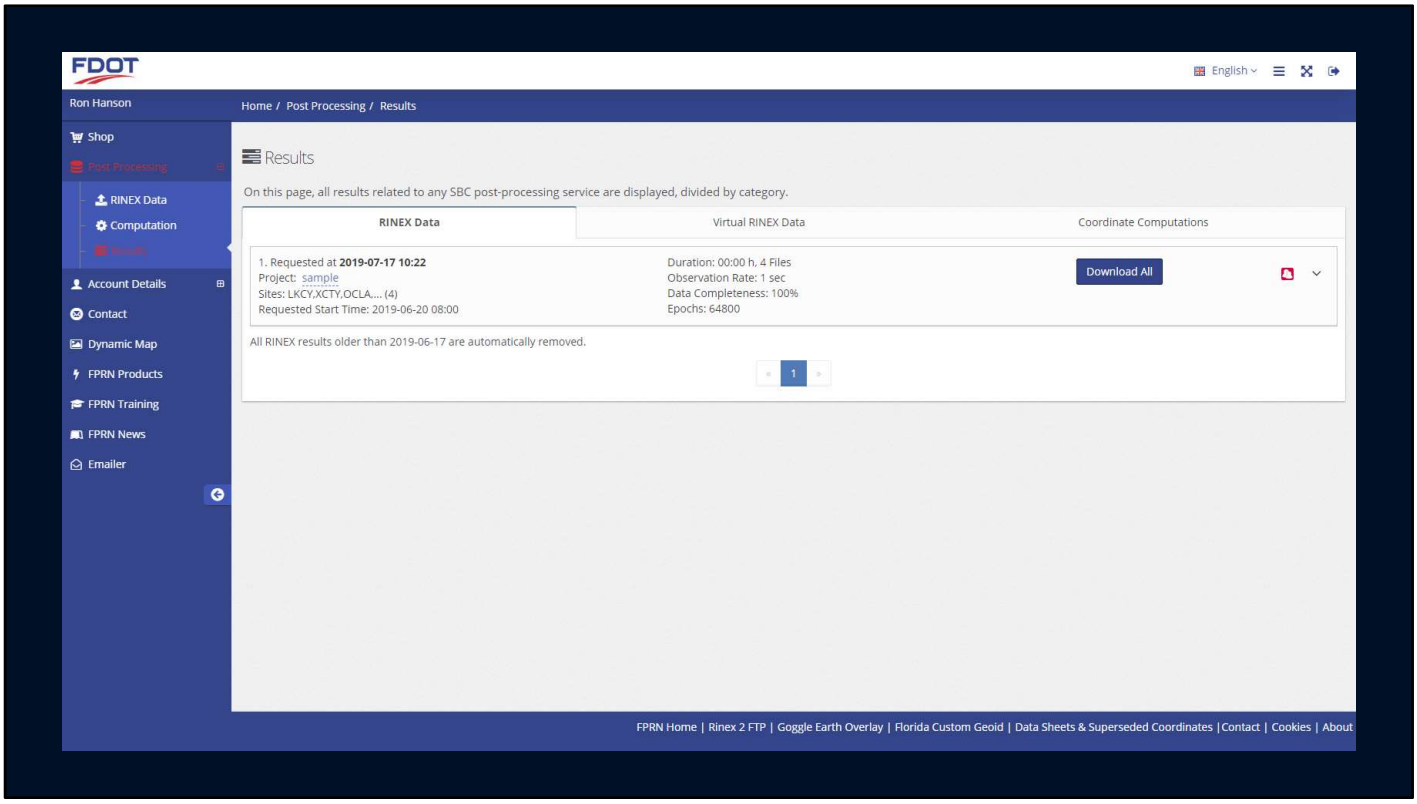
(CLICK)



You will be redirected to the results page

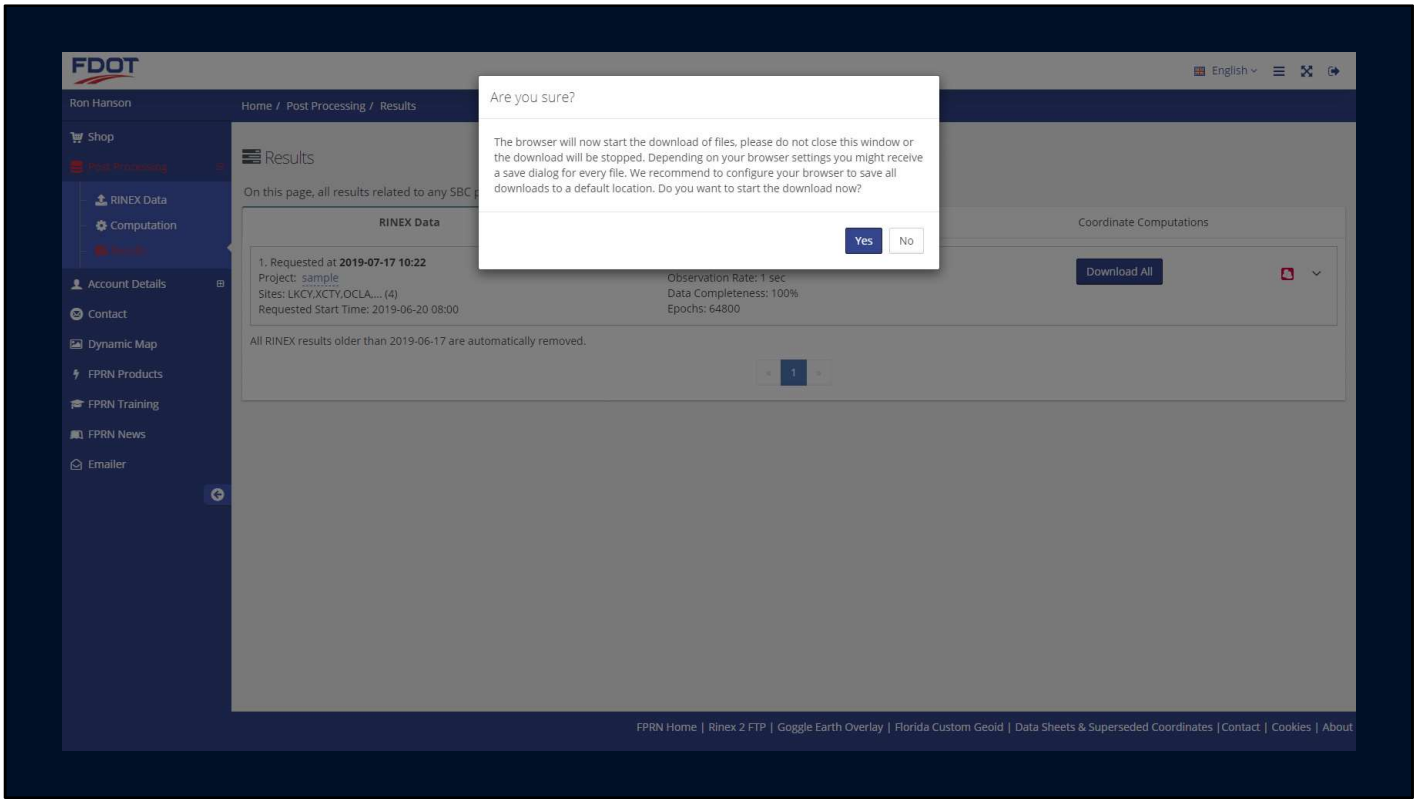
The results page shows any request you have made in the last 30 days, whether it be Rinex, Virtual Rinex or Computations

(CLICK)



Once the request has been finalized, the download all button will appear.

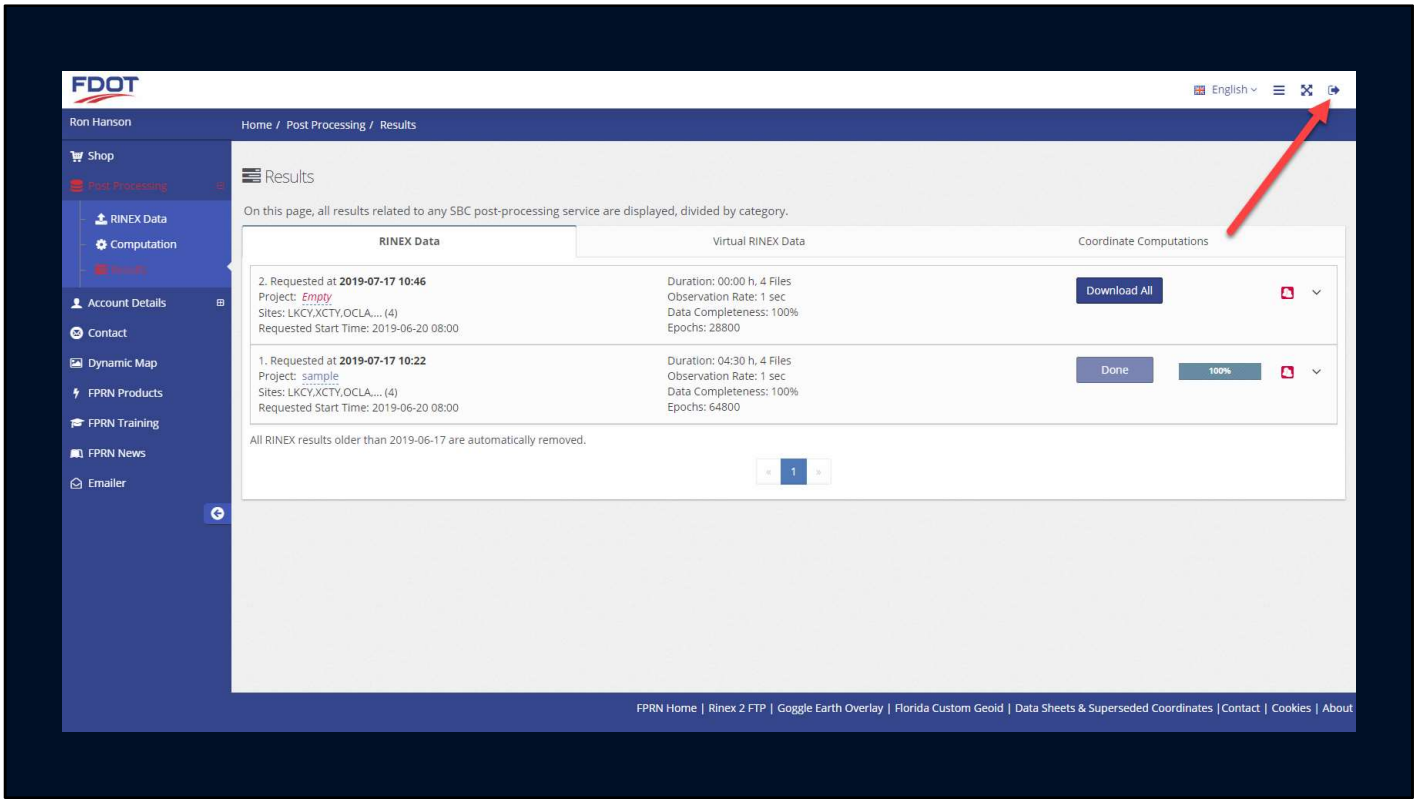
(CLICK)



Clicking will cause the confirmation window to appear, click yes to continue.

The files will be downloaded to your default download directory established in your browser.

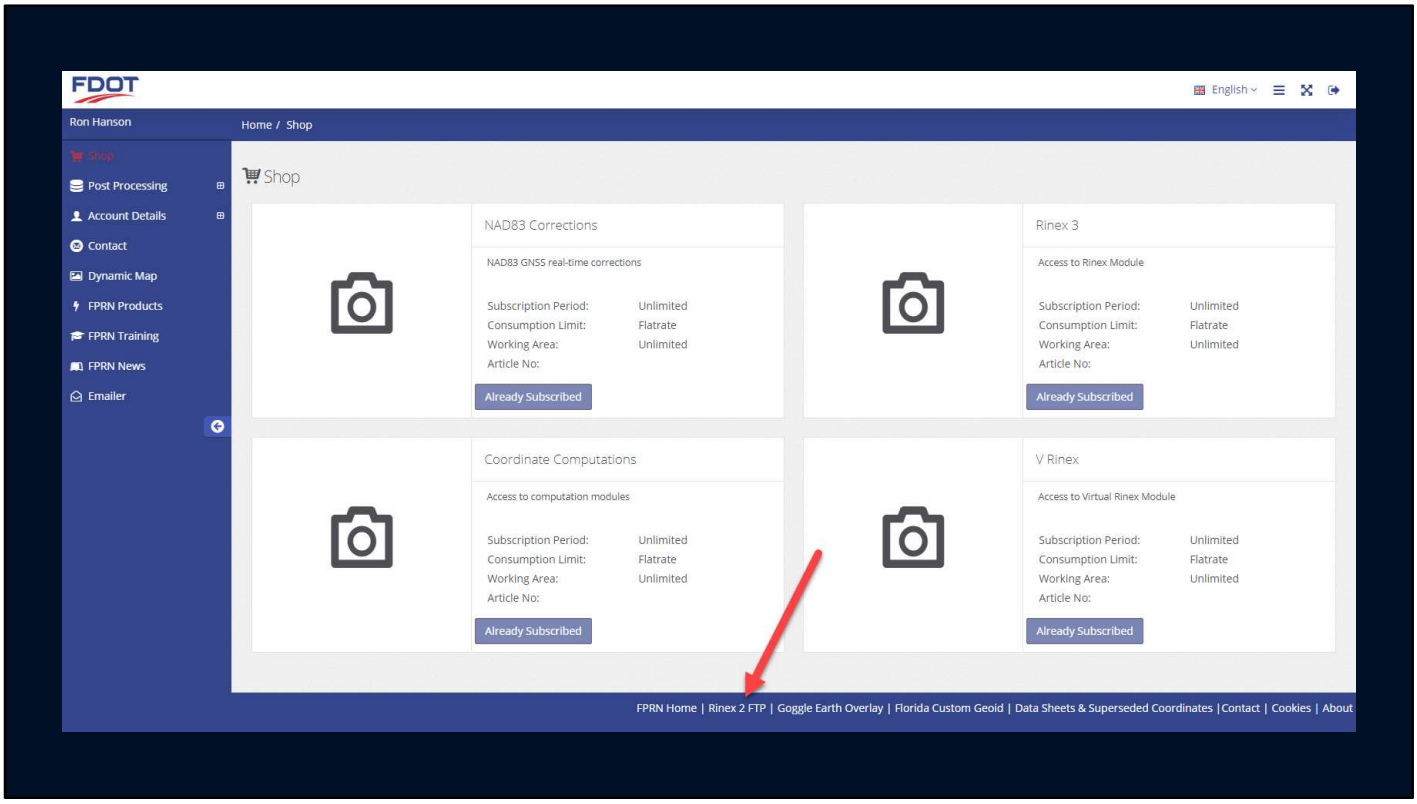
(CLICK)



Once download has completed, you can log off the site if you choose.

(CLICK)

Rinex 2 Files



Starting on the Customer Portal Home screen, click on the Rinex 2 FTP link on the bottom of the screen.

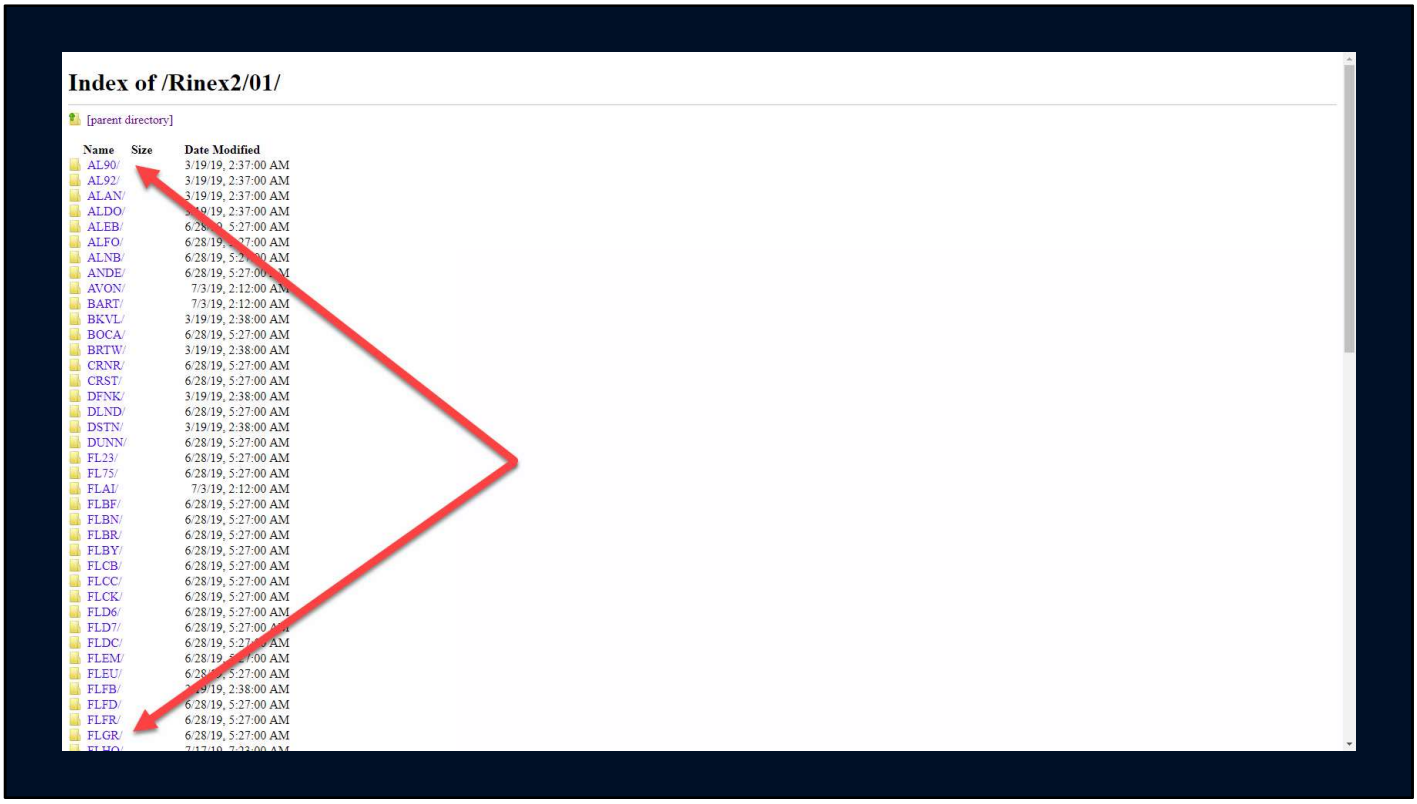
(CLICK)

Select either 1 hour file or 24 hour file

1 Hour files are 1 second epochs

24 Hour files are 30 second epochs

(CLICK)



Select the station desired

(CLICK)

Select year

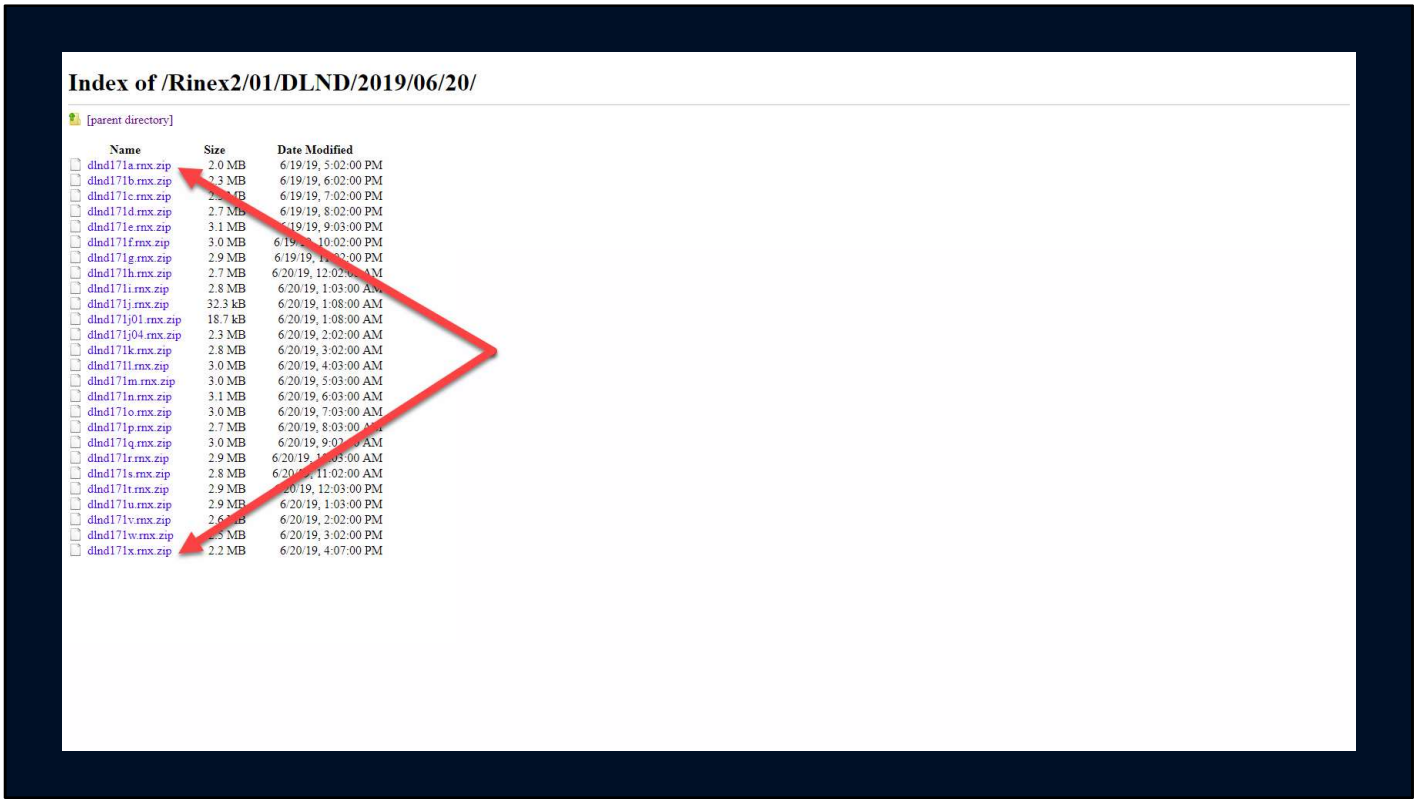
(CLICK)

Select month

(CLICK)

Select day

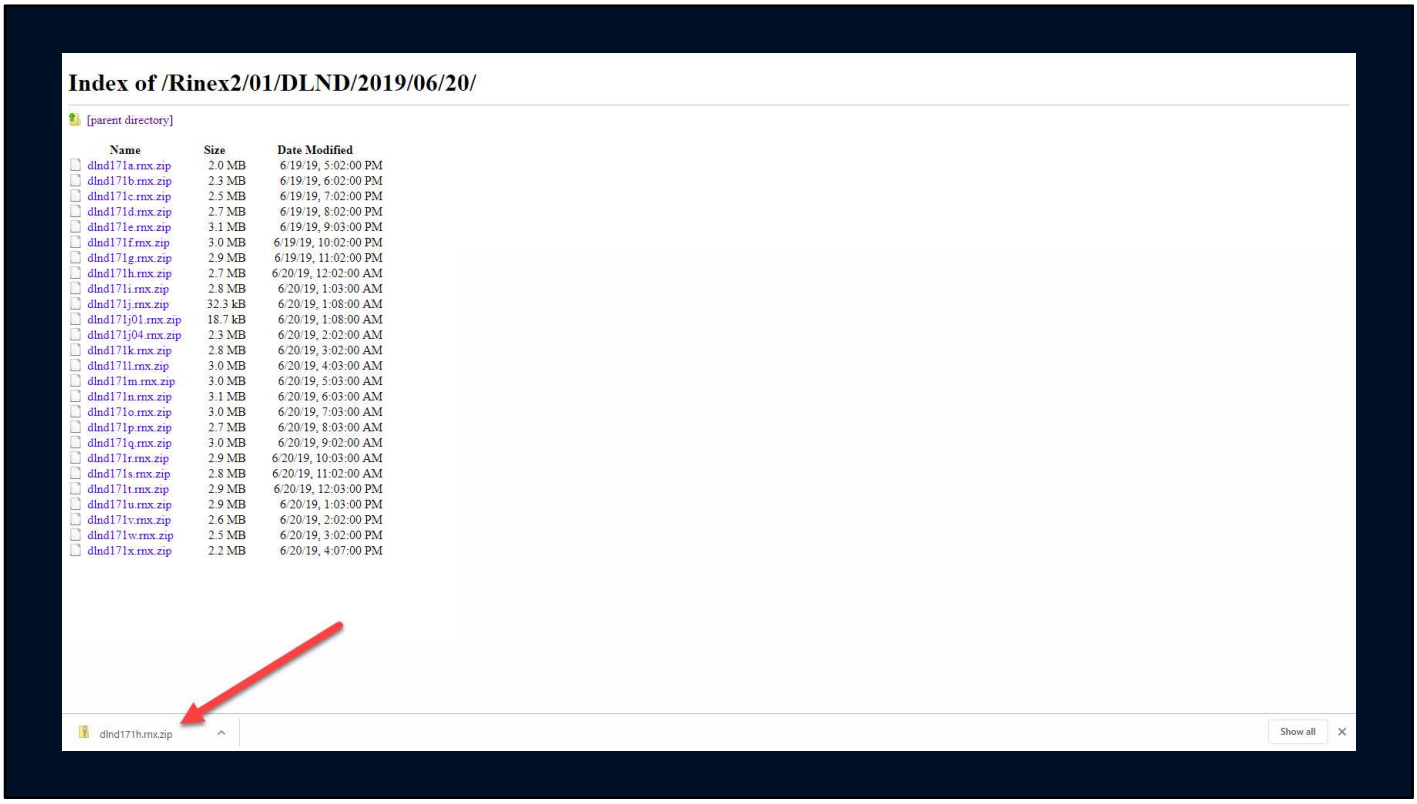
(CLICK)



Select file

Remembering that there is a time shift

(CLICK)



The file will automatically download to your default directory

Repeat as necessary

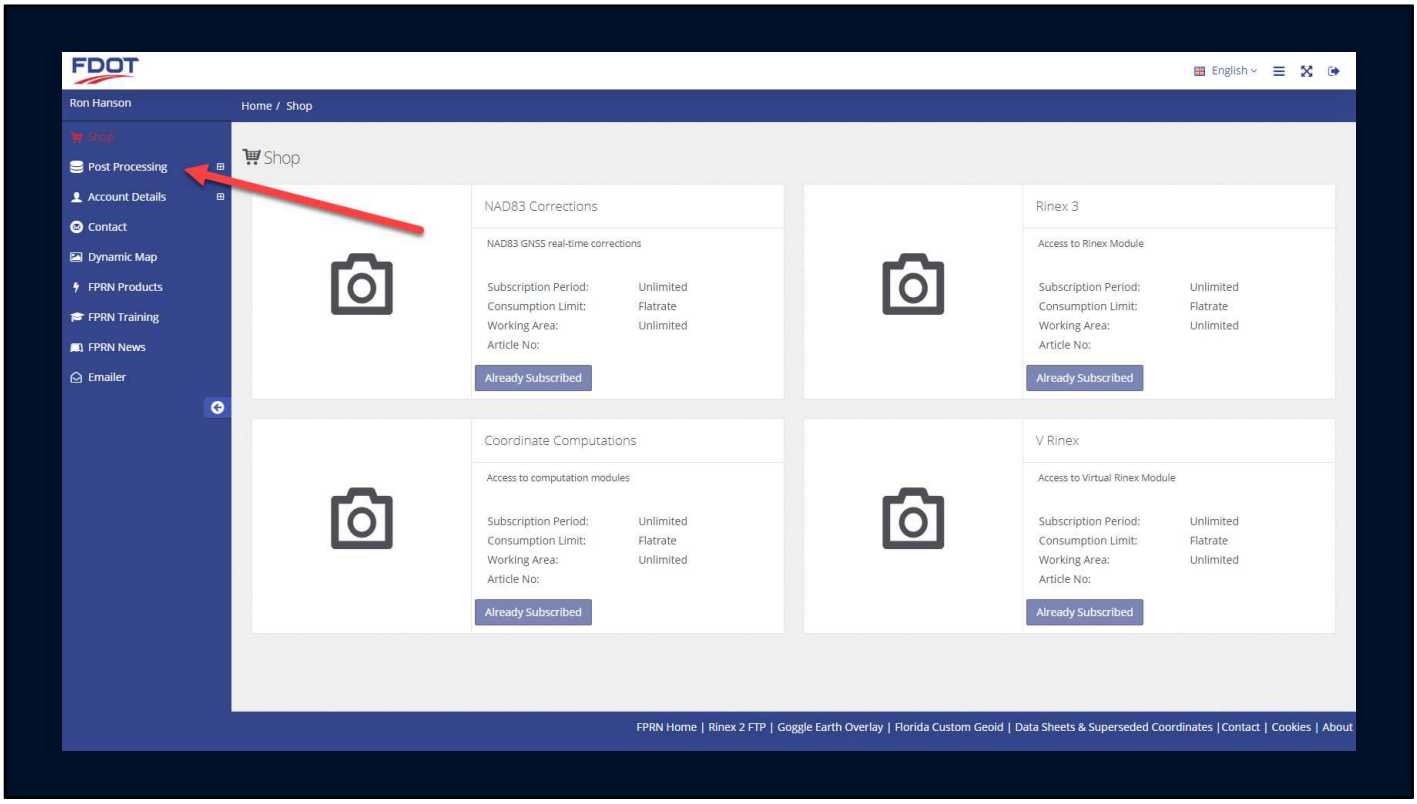
(CLICK)

10 Minute Break

Now let talk about Virtual Rinex

Virtual Rinex allows you to create a network adjusted Rinex file

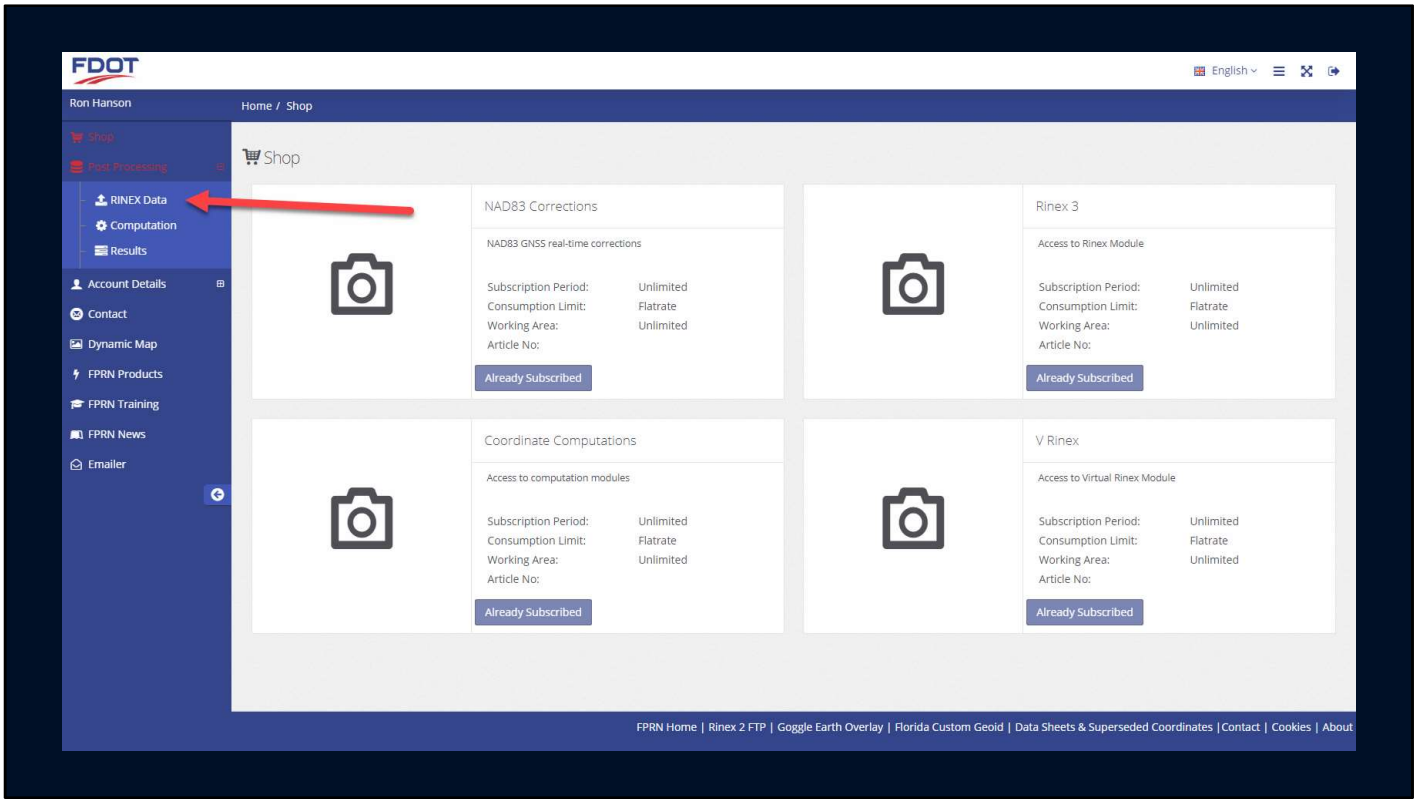
(CLICK)



Starting at the Customer Portal home screen

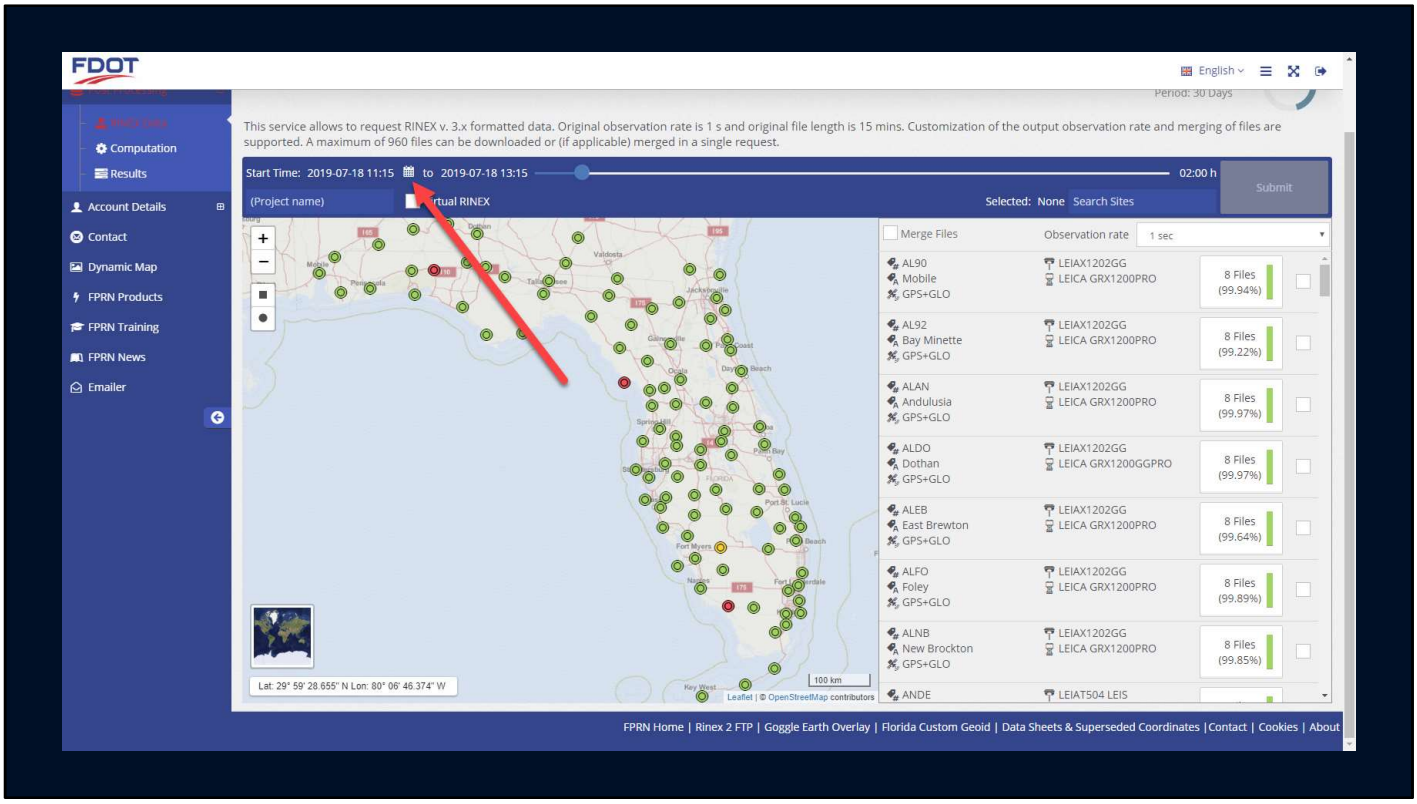
Click on Post Processing

(CLICK)



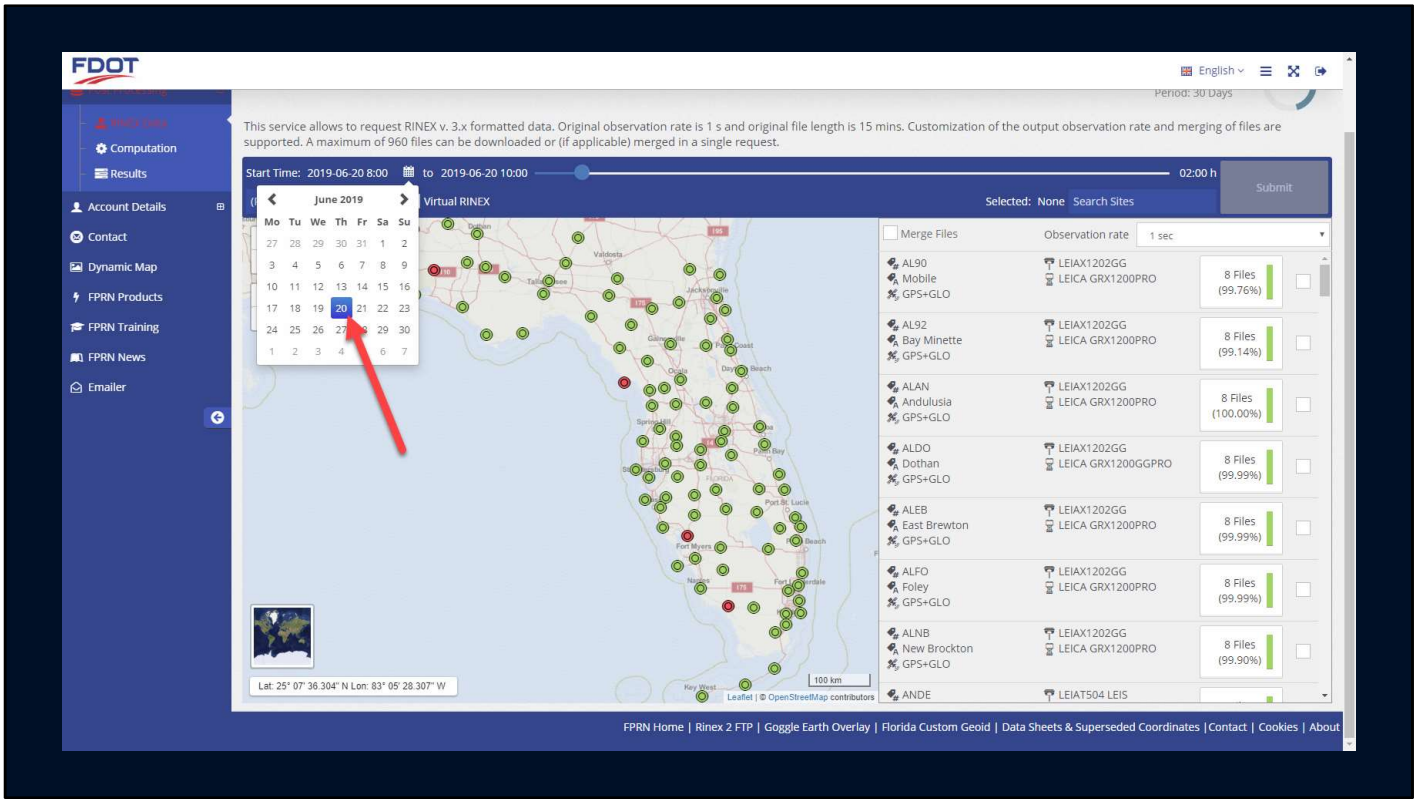
Click on RINEX Data

(CLICK)



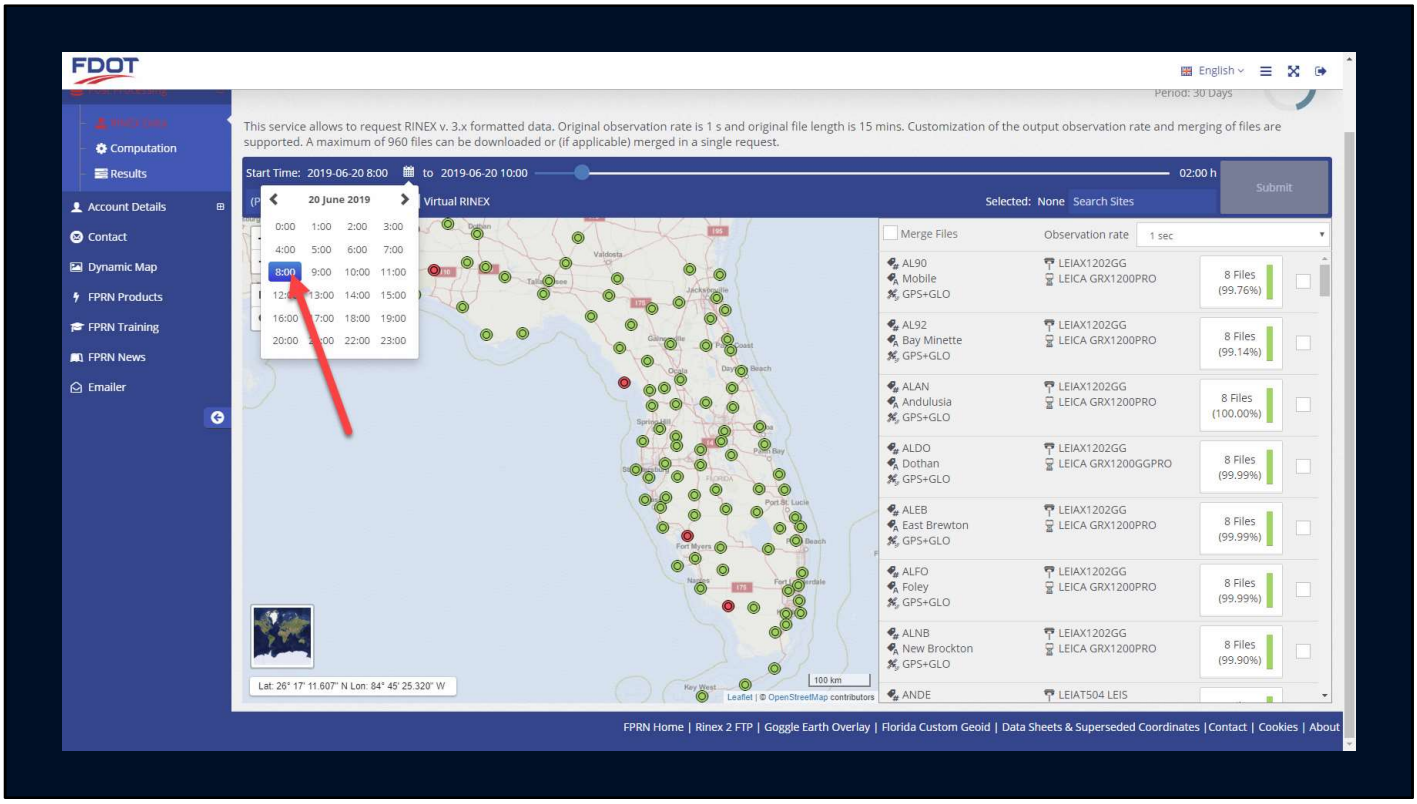
Click on the calendar icon to begin selecting your date

(CLICK)



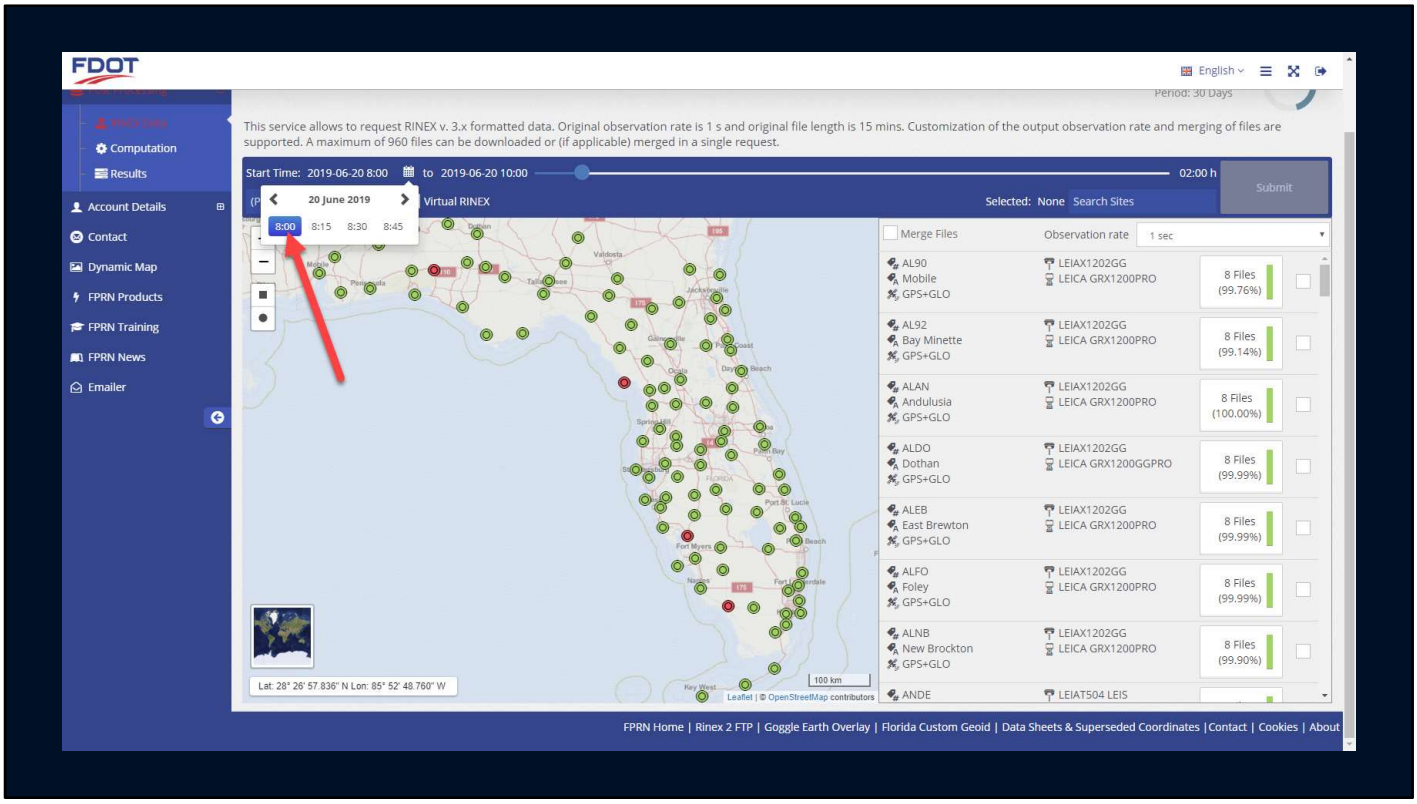
Select the day

(CLICK)



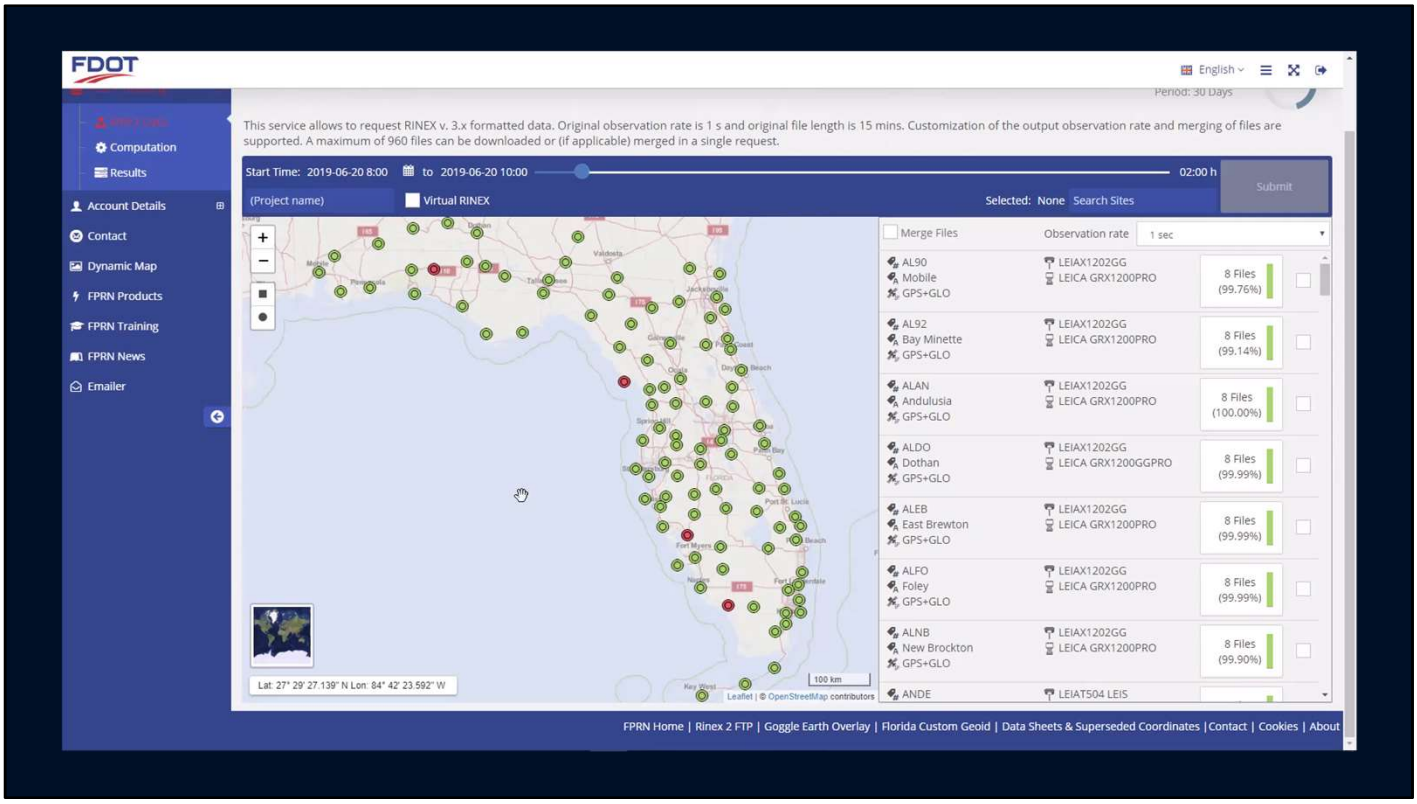
The starting hour

(CLICK)



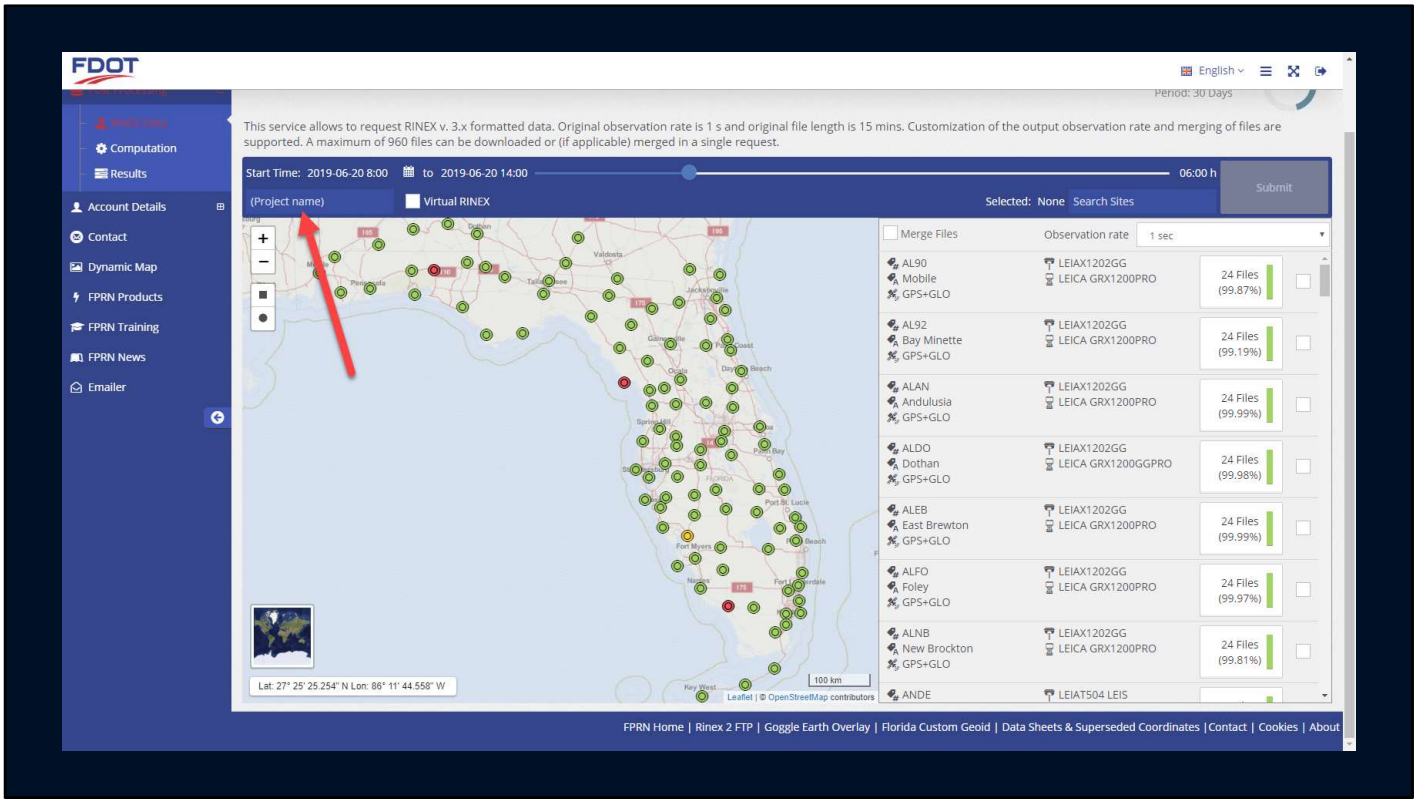
And starting minute

(CLICK)



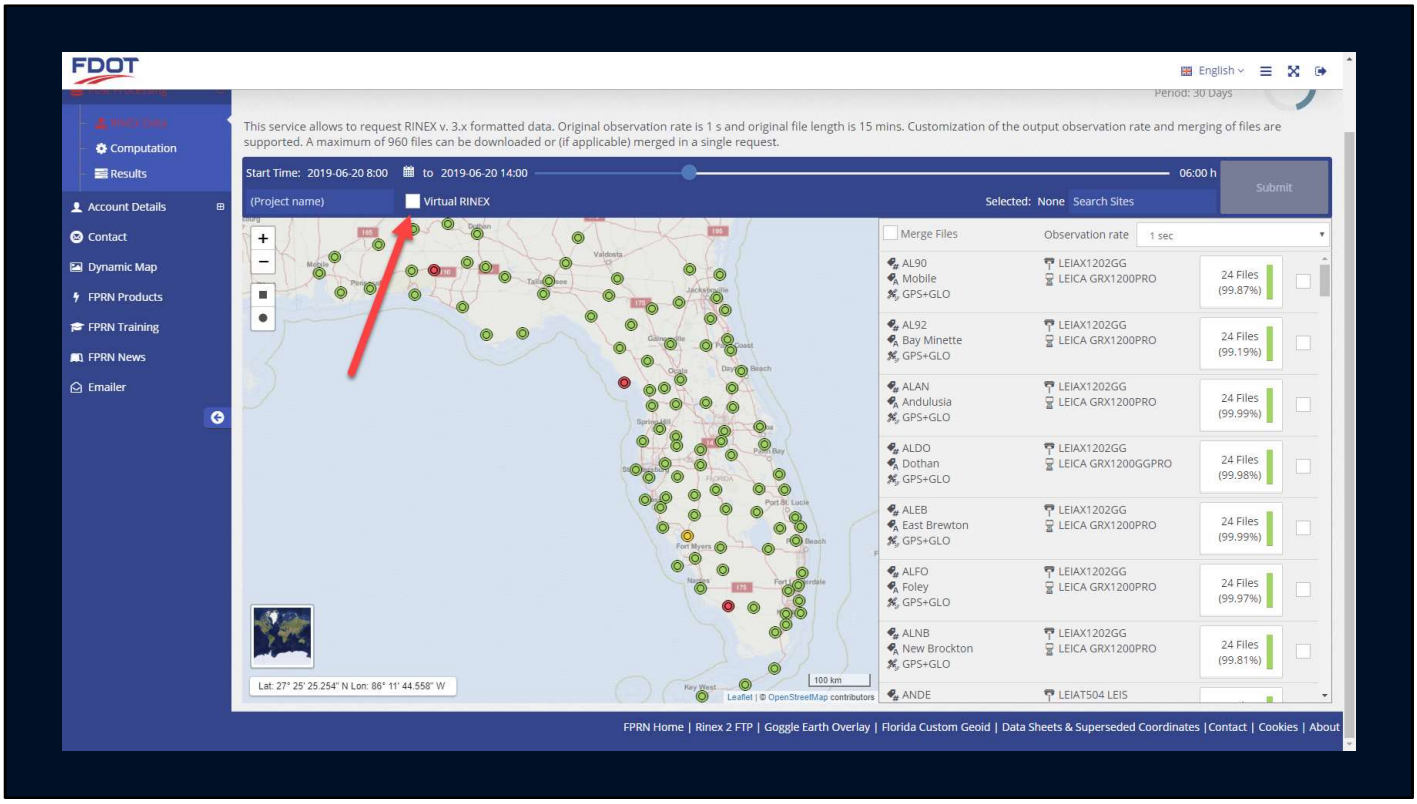
Slide the duration bar back and forth to pick the length of your file

(CLICK)



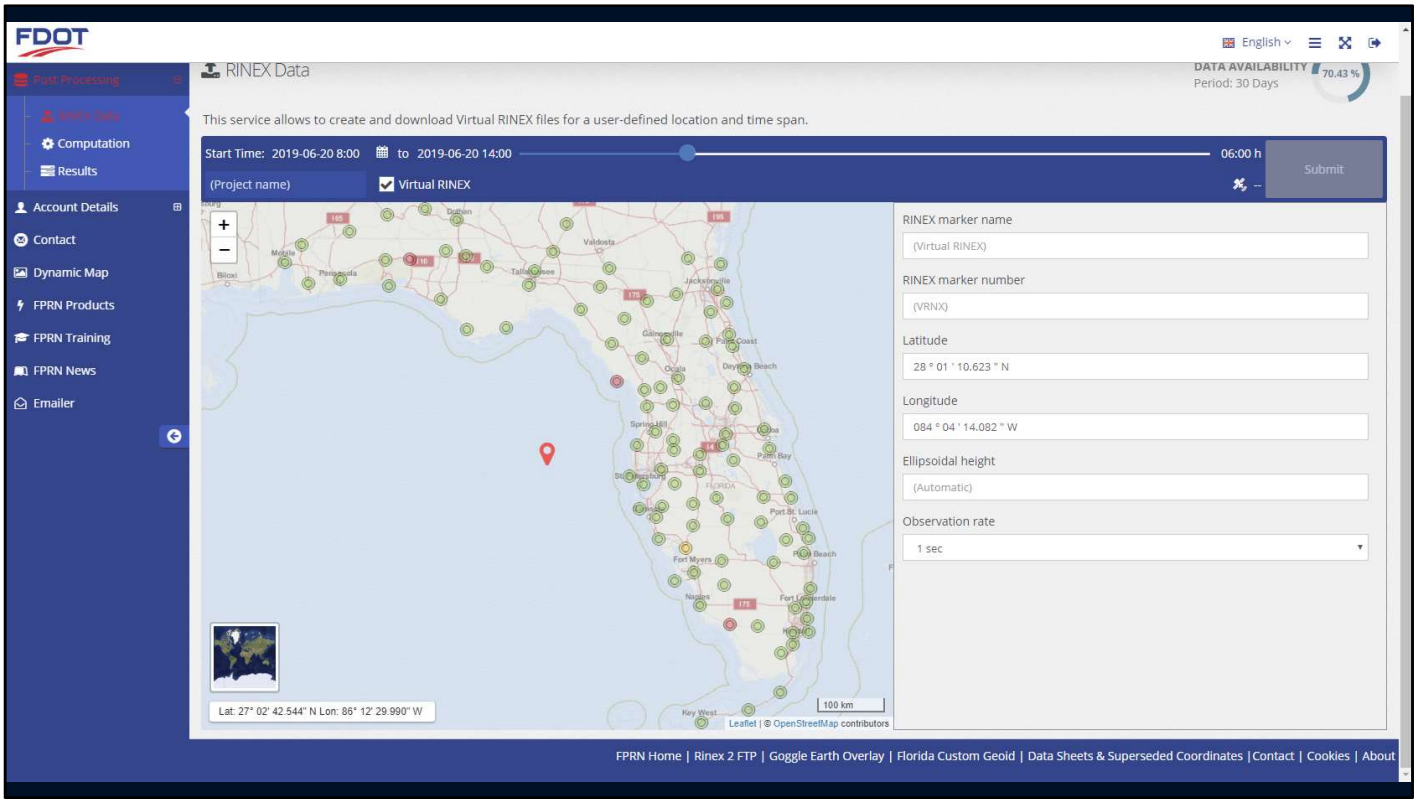
Enter a Project Name

(CLICK)



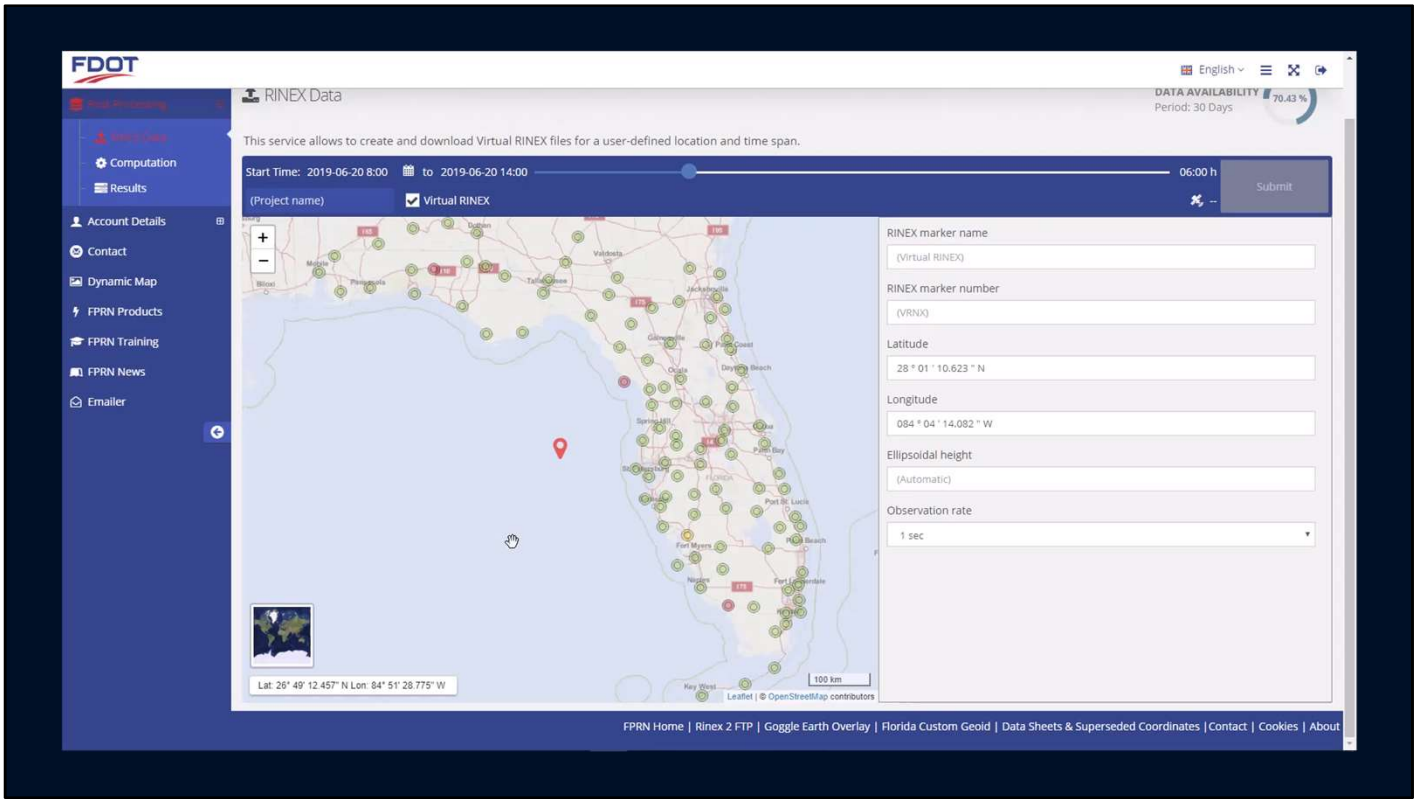
Select the Virtual RINEX checkbox

(CLICK)



A location pin will appear on the map

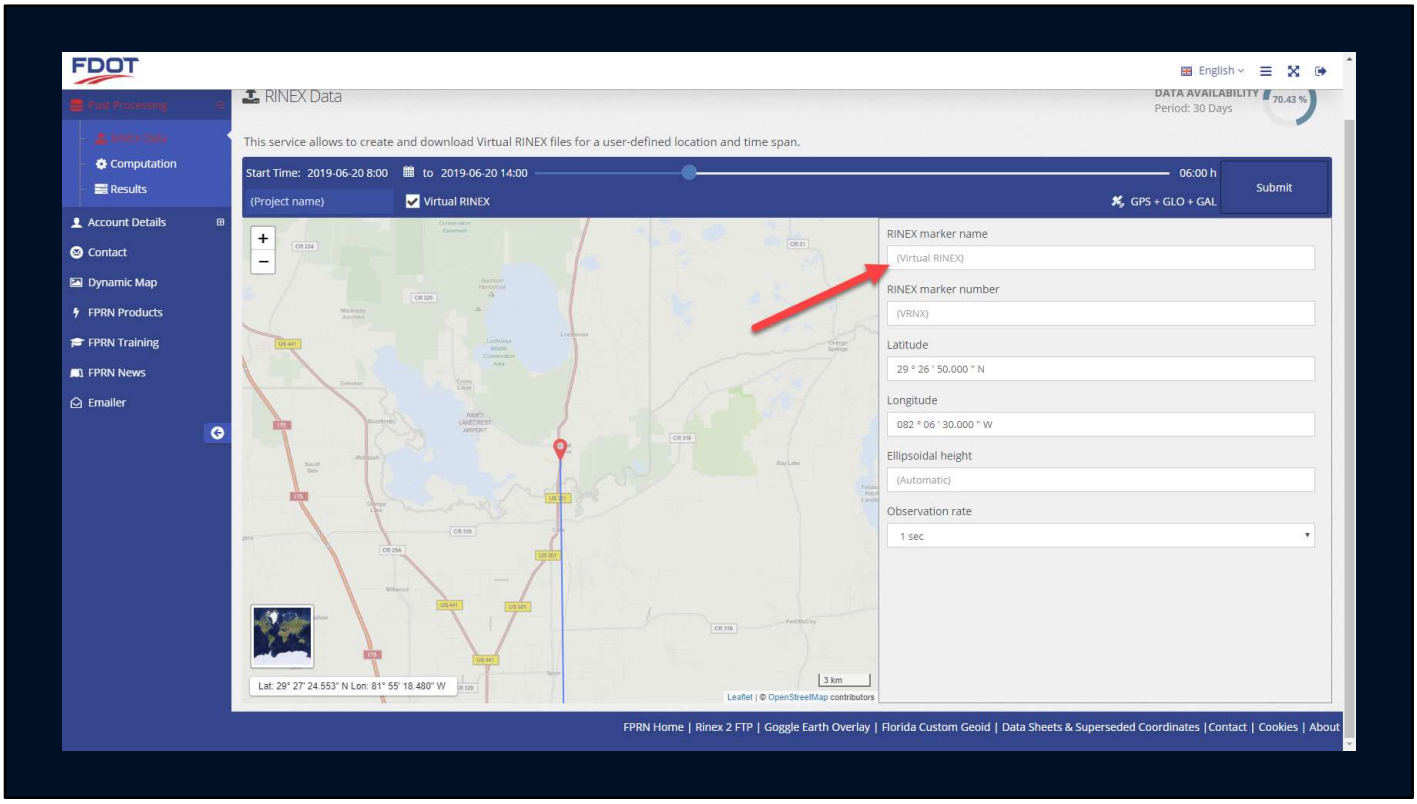
(CLICK)



You can drag the pin around and using your mouse wheel zoom in and out to finalize your position.

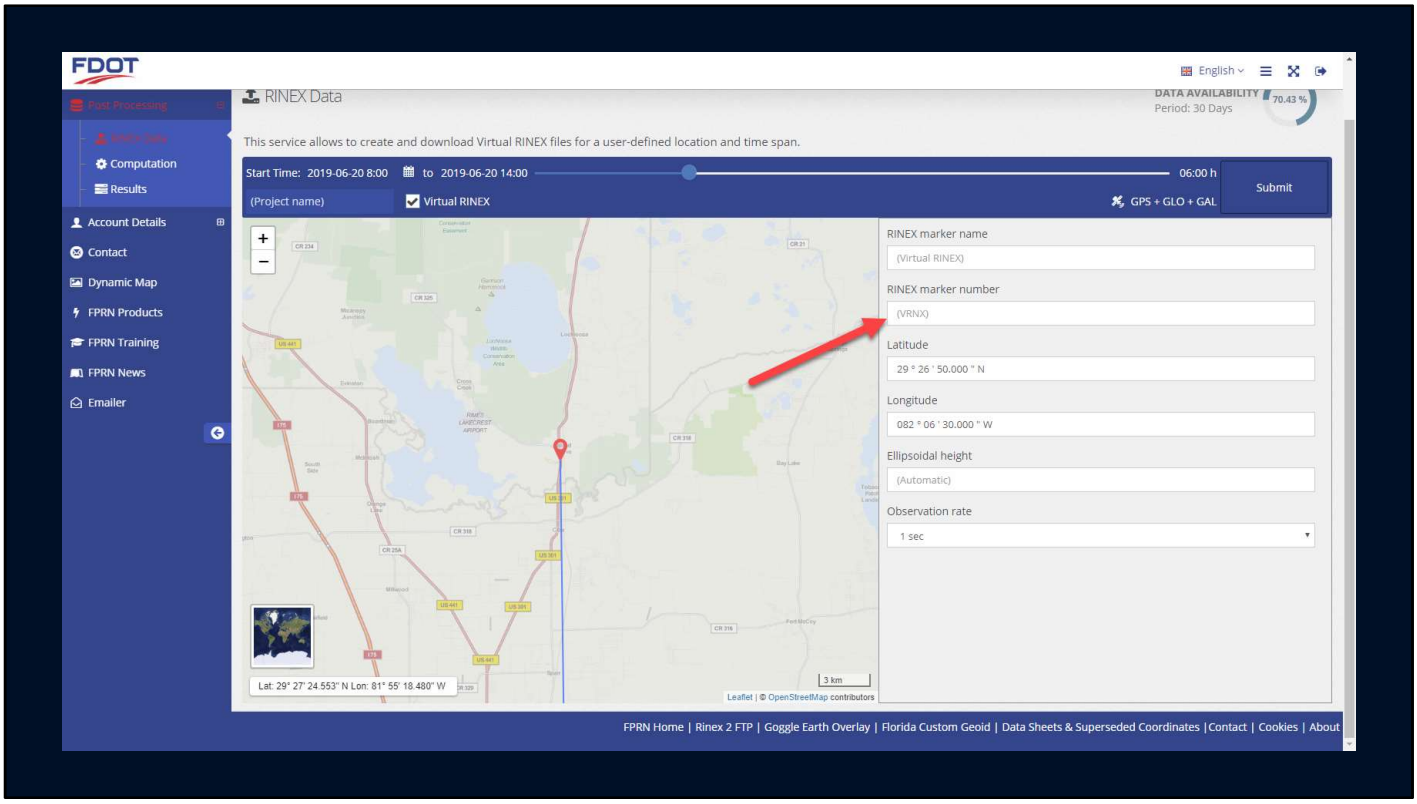
Also, you can type the latitude and longitude location in the are on the right of the screen.

(CLICK)



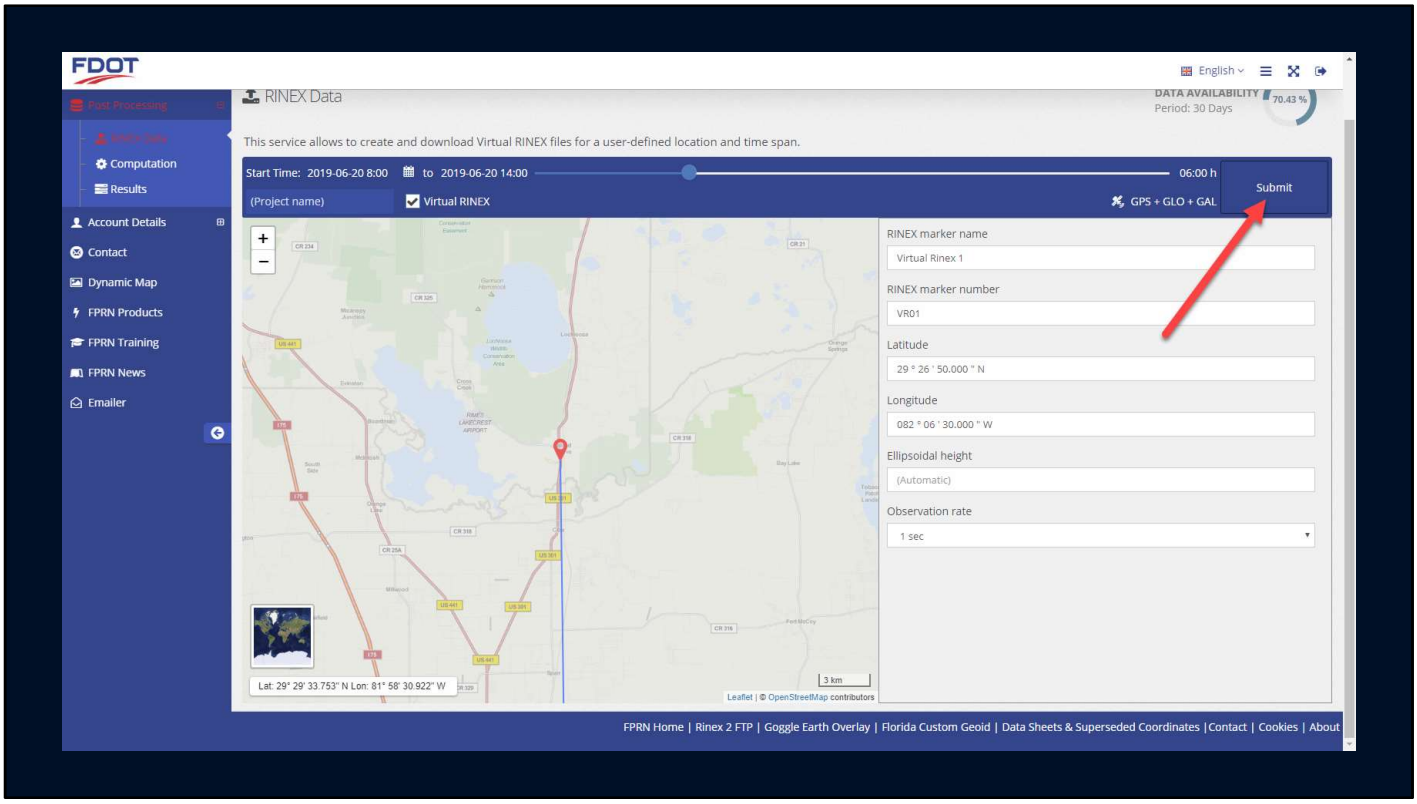
Assign a marker name

(CLICK)



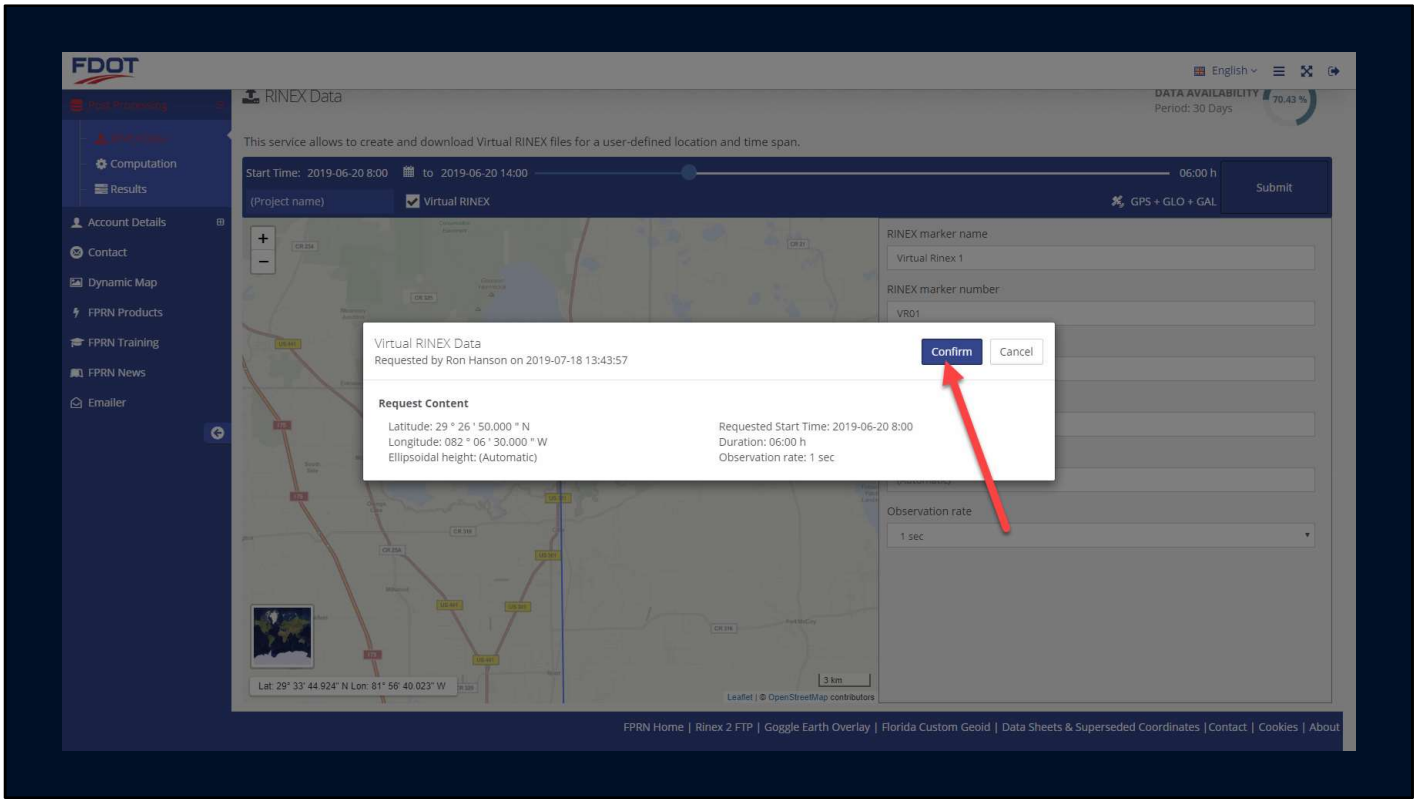
And a marker number

(CLICK)



Once satisfied with the location and name click the submit button

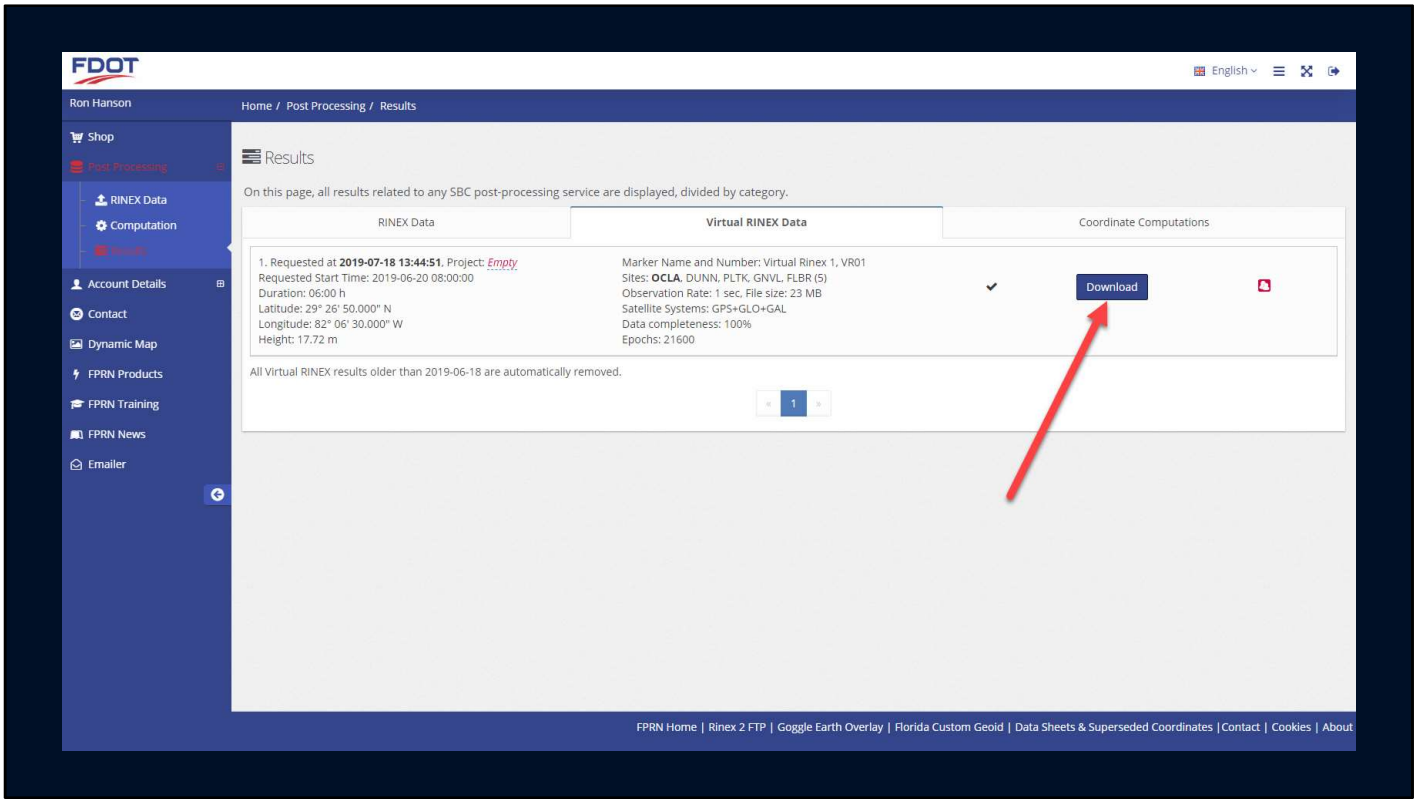
(CLICK)



A confirmation window will appear

Click confirm to continue

(CLICK)

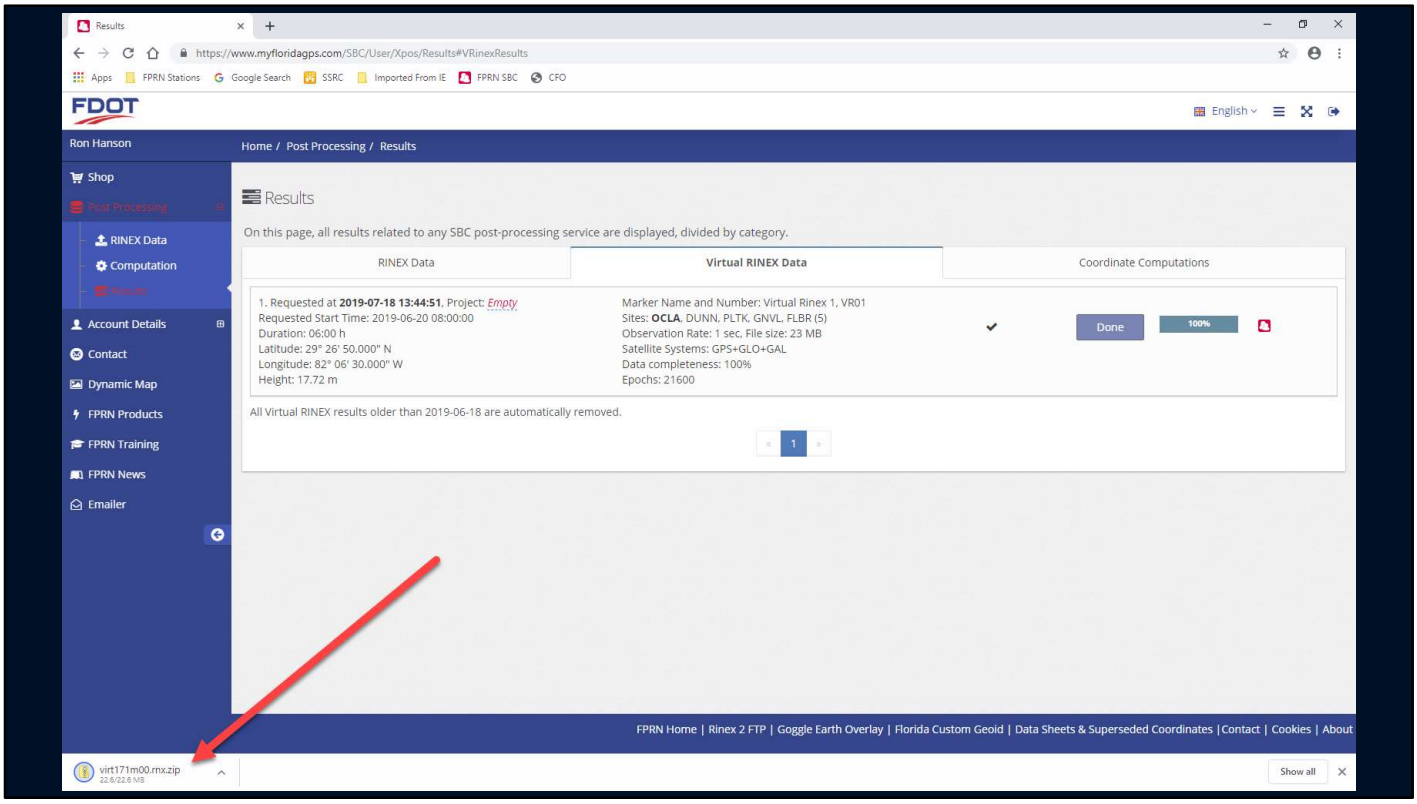


You will be taken to the results page.

When the processing of your file is complete the download button will appear.

Click the download button to receive your file

(CLICK)



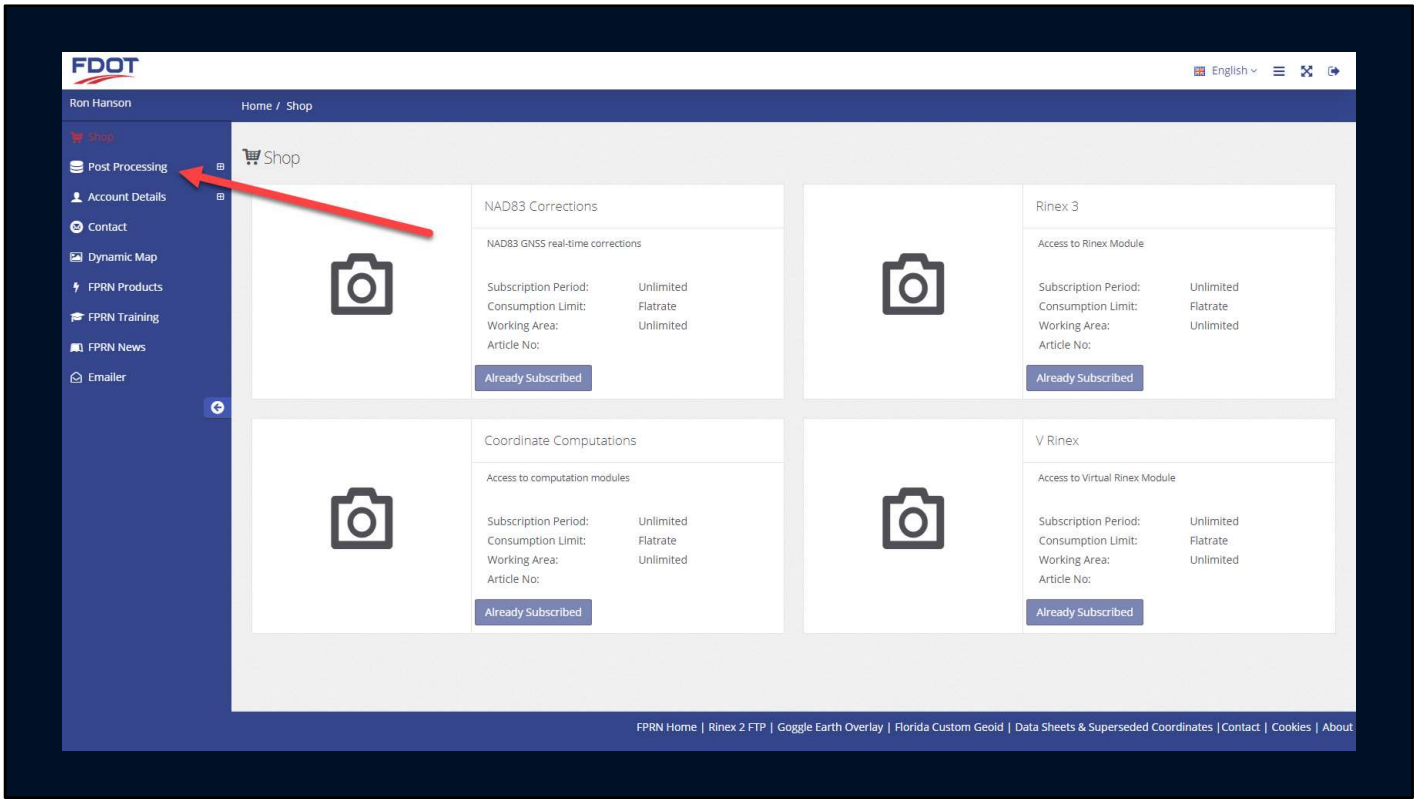
Once the download process starts you will see your file name in the download area

(CLICK)

Computation Service

The computation Service is our next topic

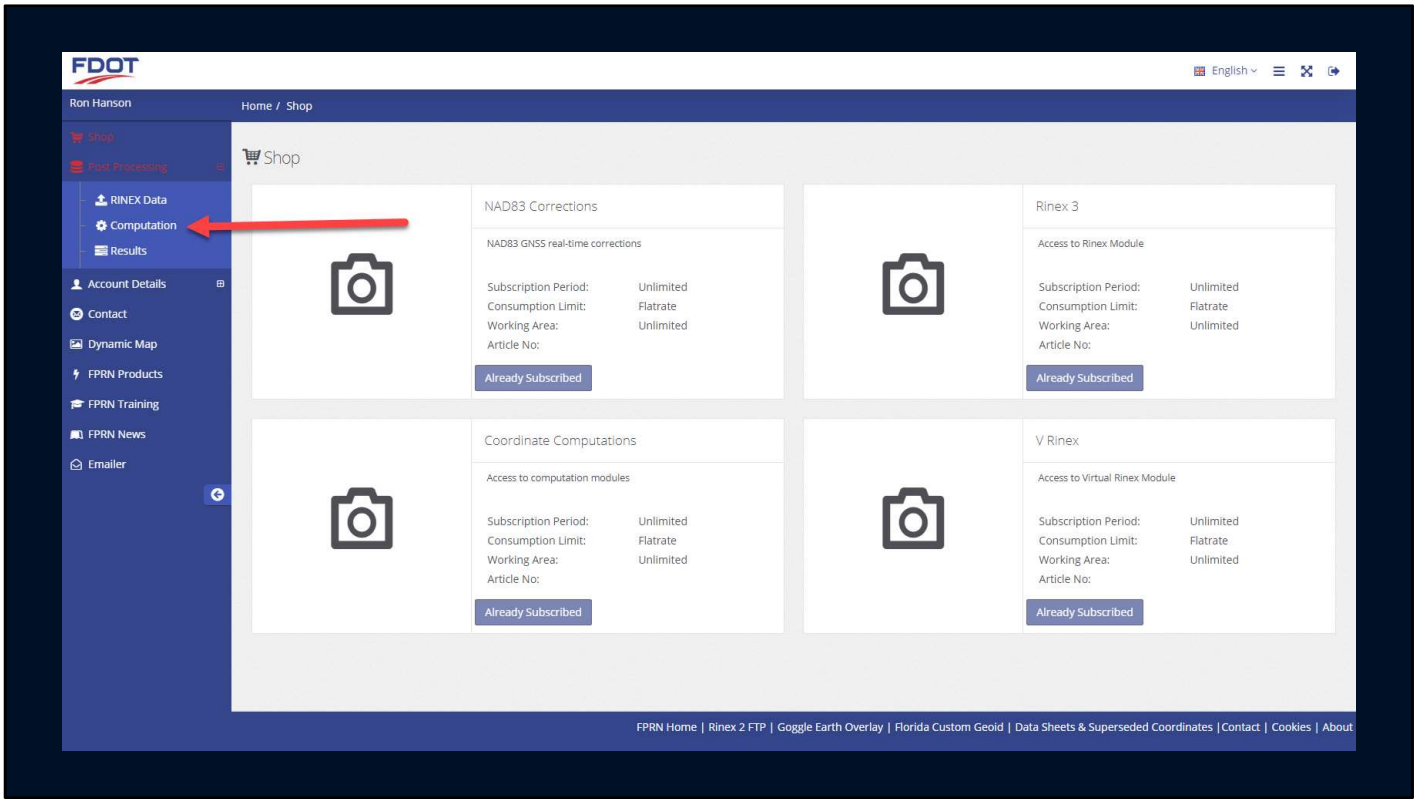
(CLICK)



Once again, starting at the Customer Portal Home screen

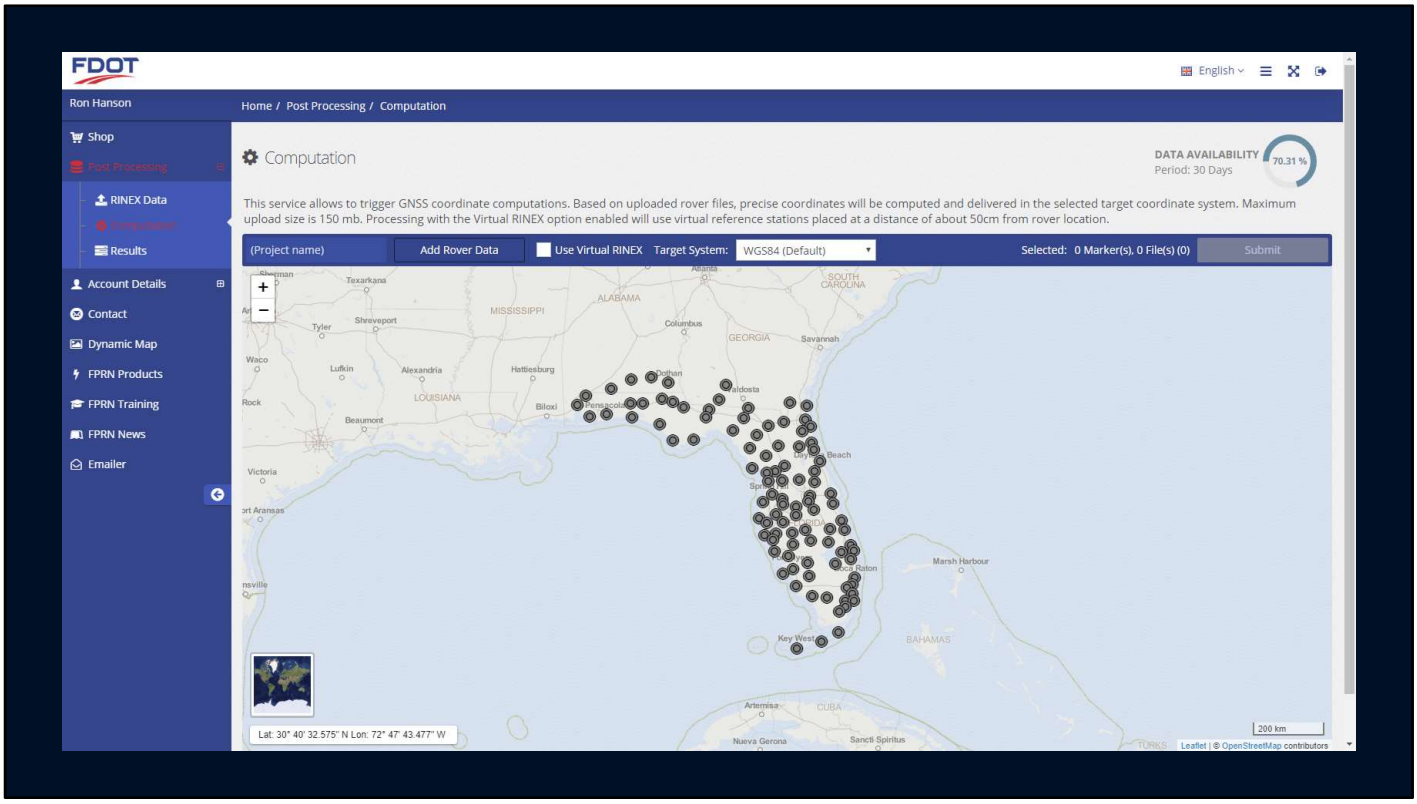
Click on Post Processing in the left menu bar

(CLICK)



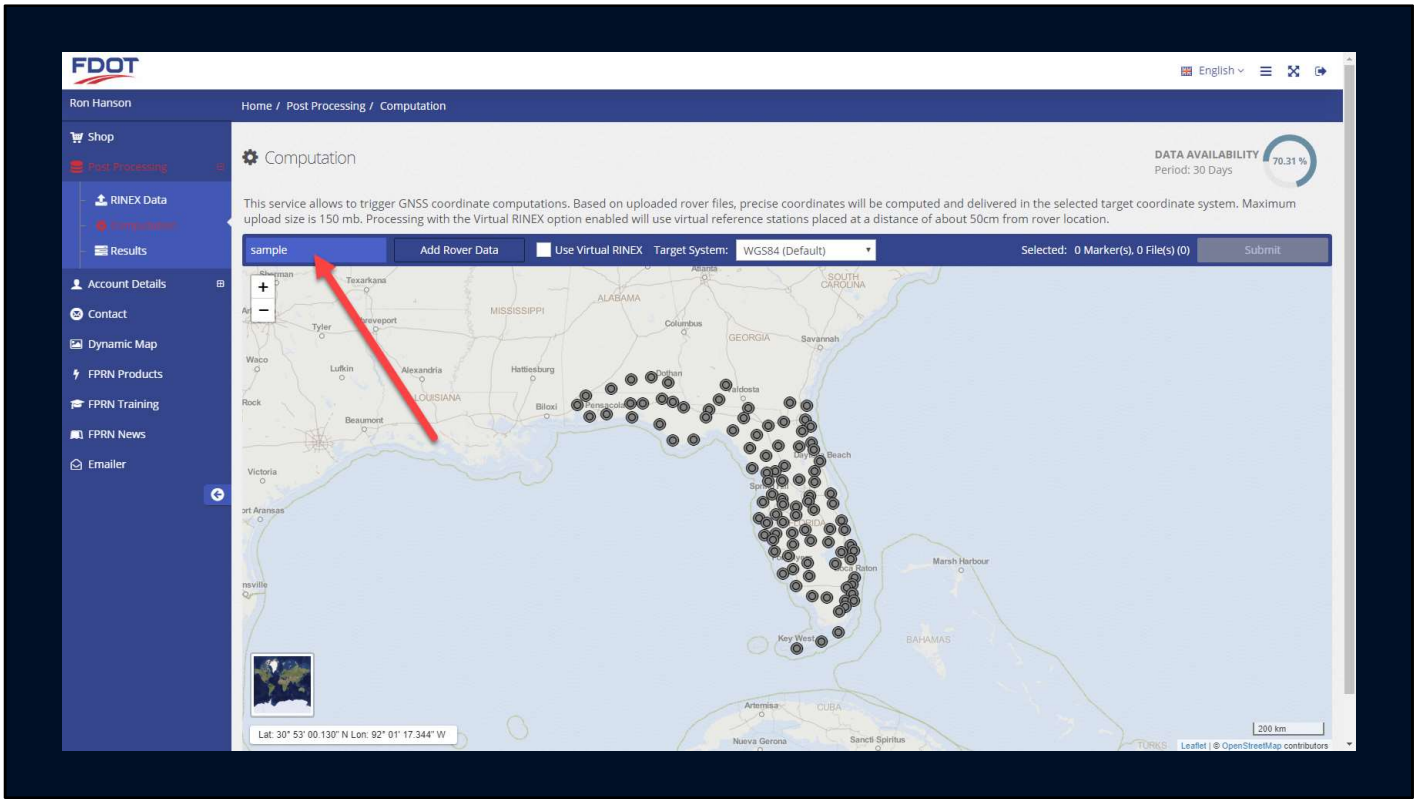
Click on Computation

(CLICK)



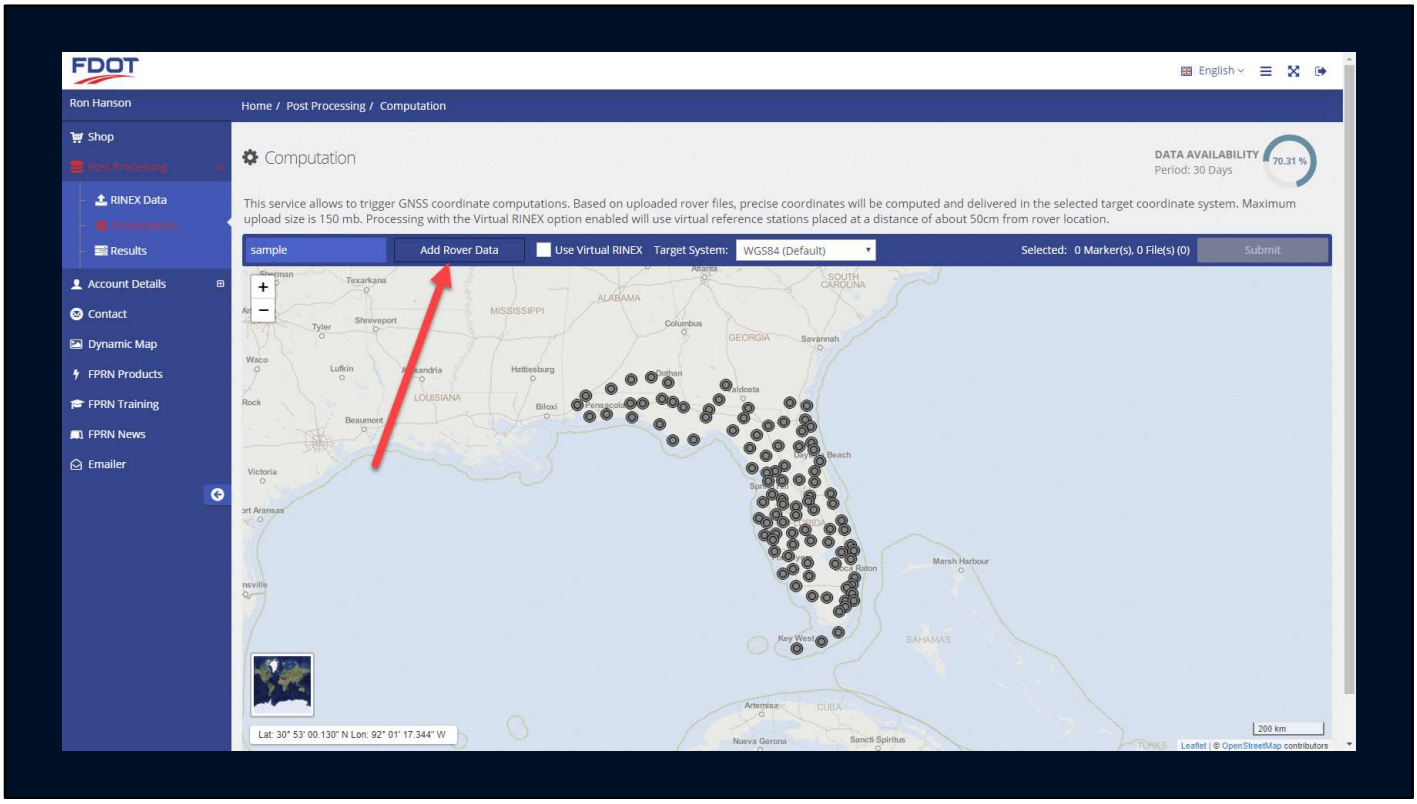
The Computation application will open

(CLICK)



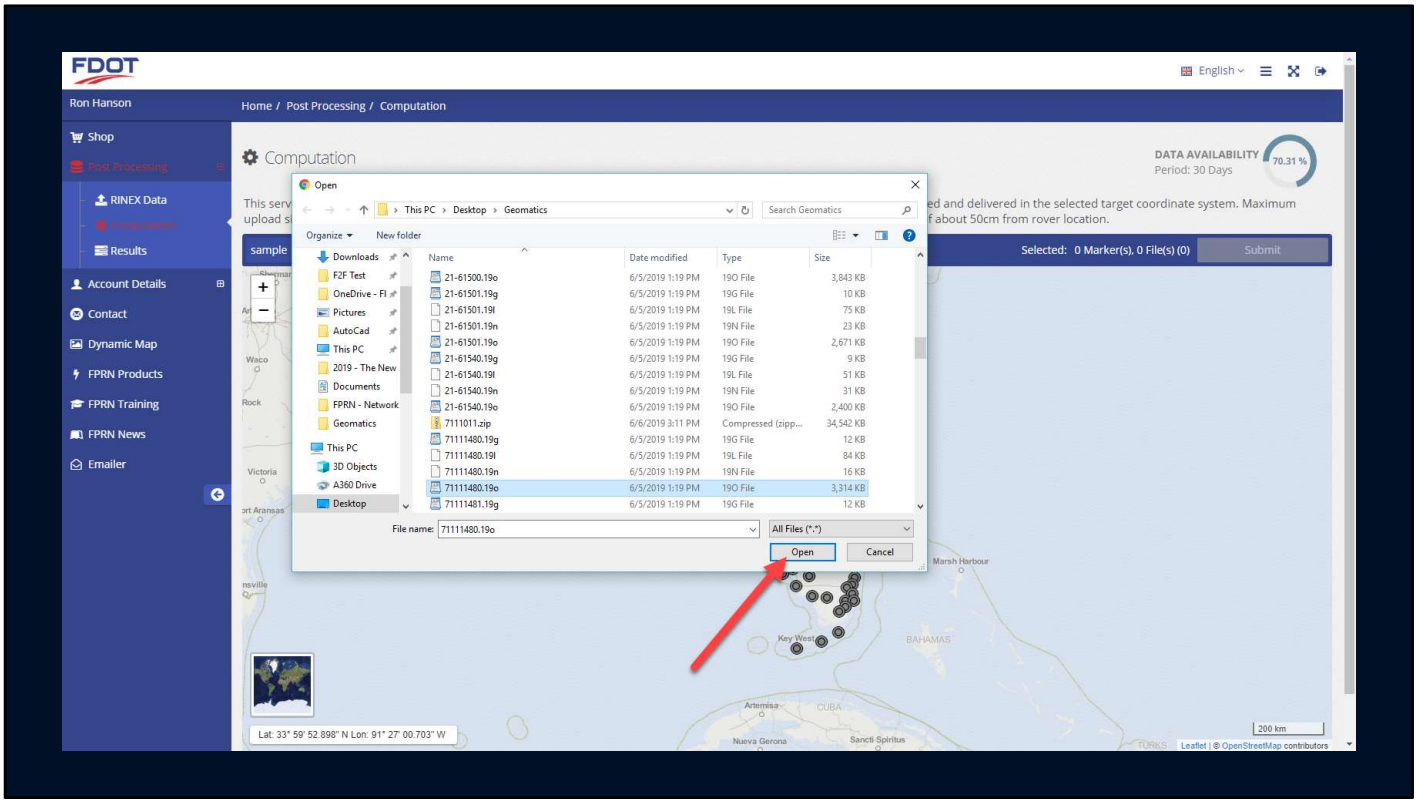
Start off by giving the project a name

(CLICK)



Next, click on the Add Rover Data button to begin selecting observation file(s)

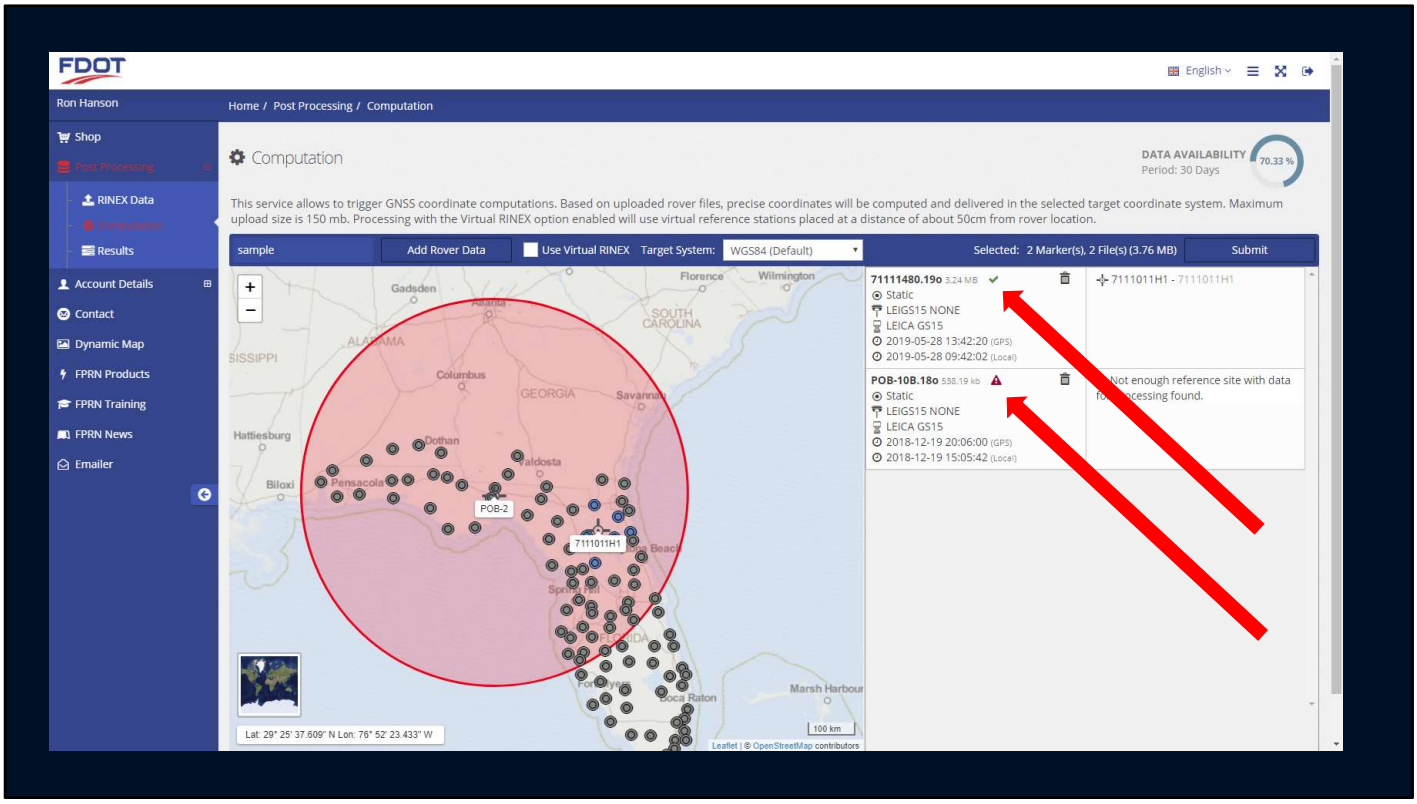
(CLICK)



An explorer window will appear allowing you to browse to your data.

Select the file or files you wish to use and click the open button.

(CLICK)



At this point the system will validate your data.

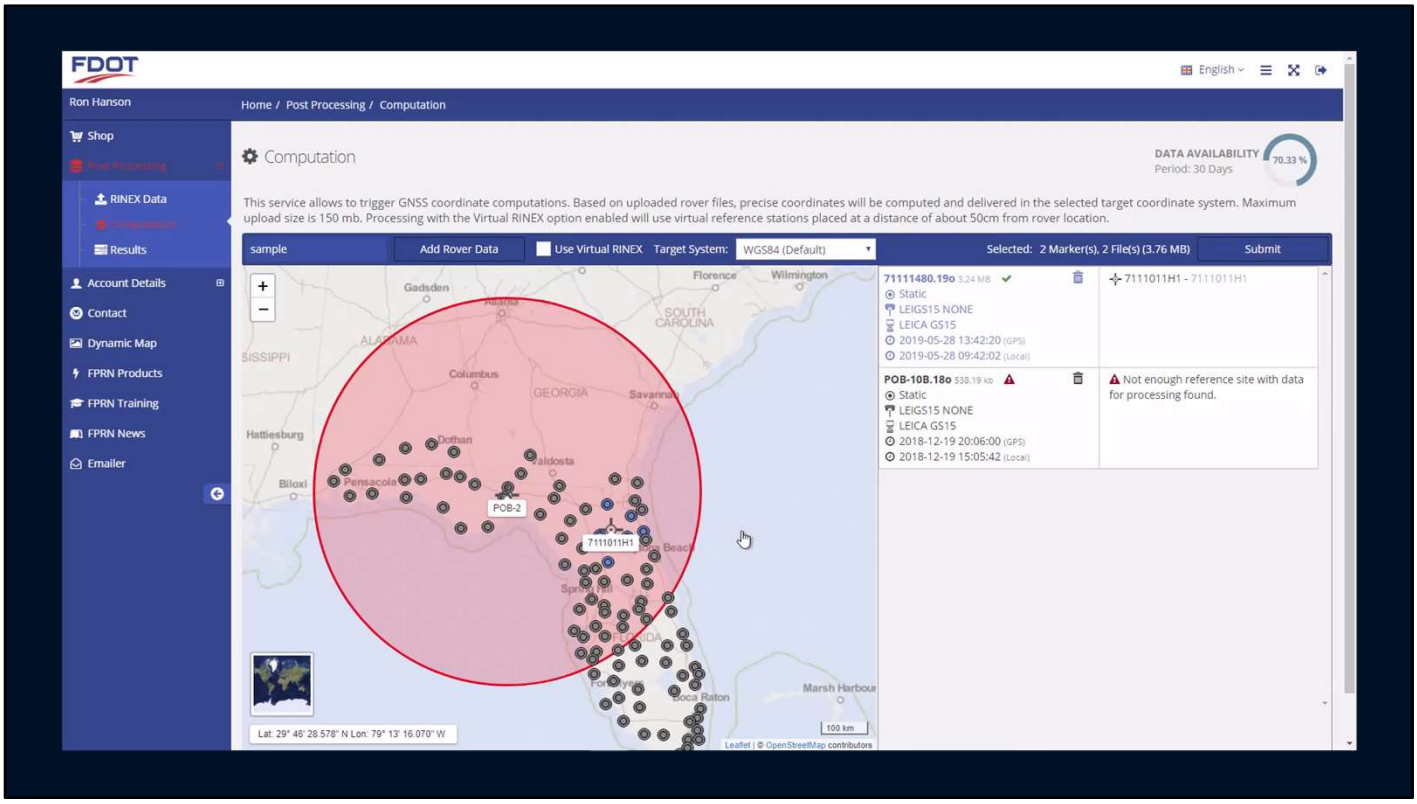
(CLICK)

If your data is good it will be indicated by a green checkmark

(CLICK)

If there is a problem a yellow or red exclamation will be shown

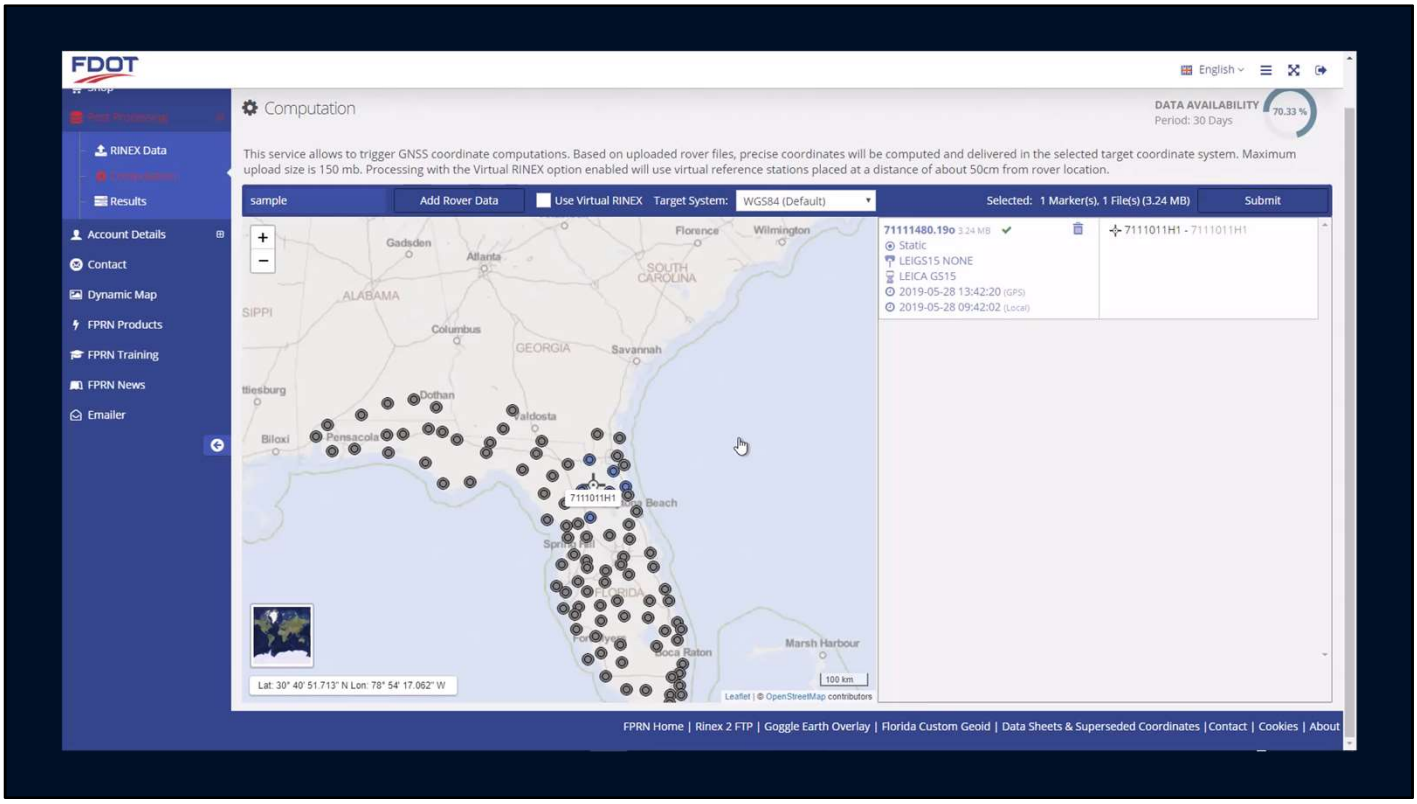
(CLICK)



You can remove data from the project by simply clicking on the appropriate trashcan

(CLICK)

(CLICK)



(CLICK)

In the Computation Application you can pan & zoom around the map just like in the Rinex 3 Data application

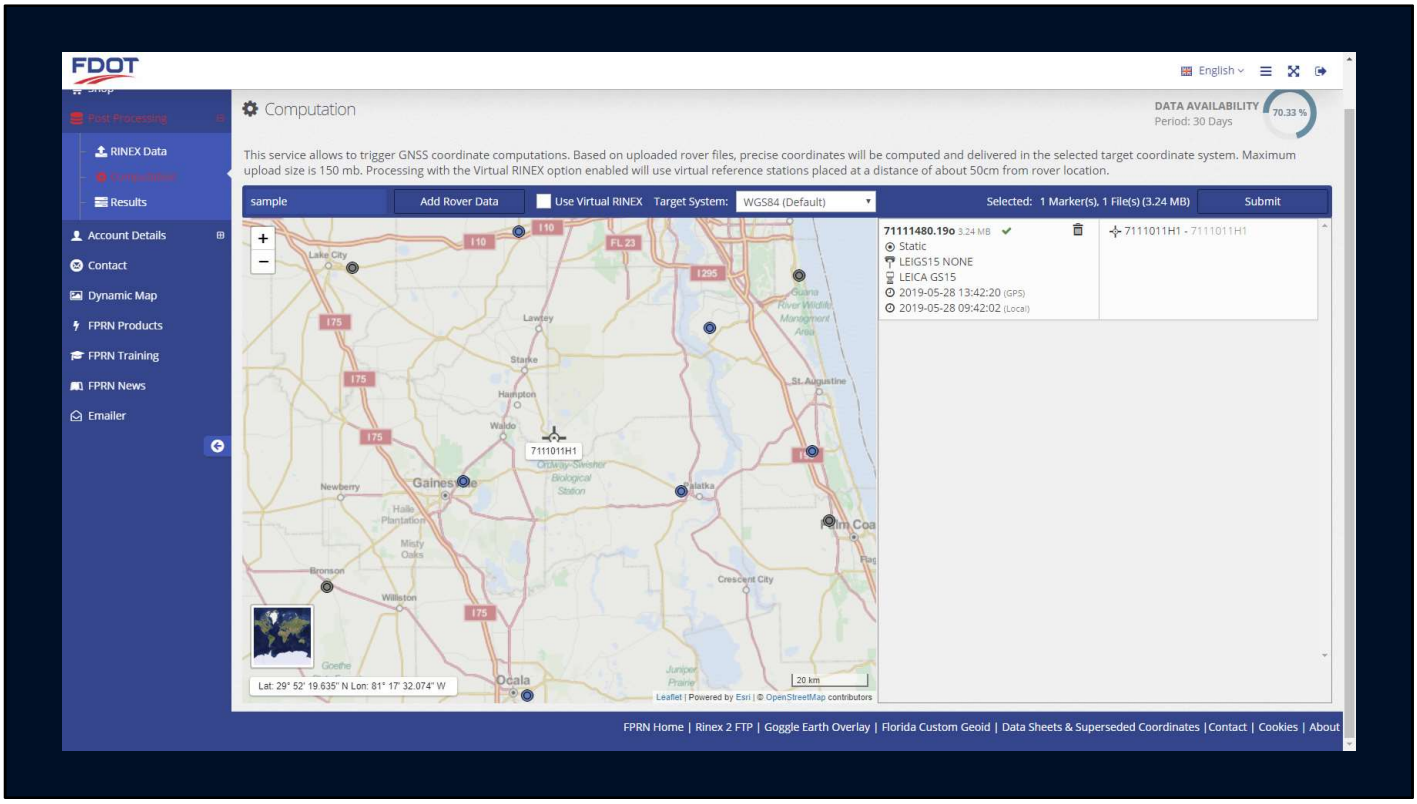
You can also switch between map and satellite view.

You can also see information about your data file submitted.

Such as the data type, Antenna type, and start time in local and GMT.

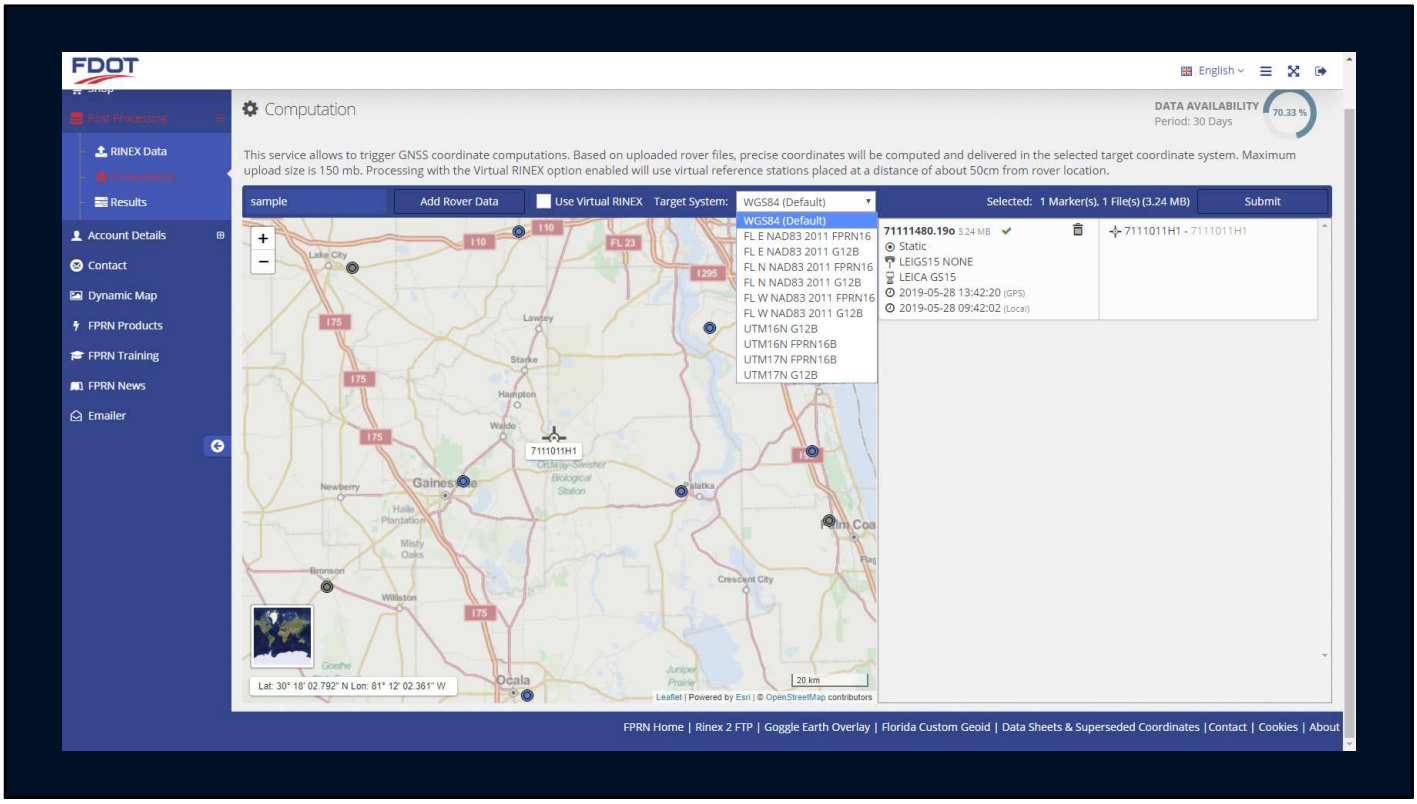
The point name is displayed in the far right area

(CLICK)



From here you should pick your output Coordinate datum

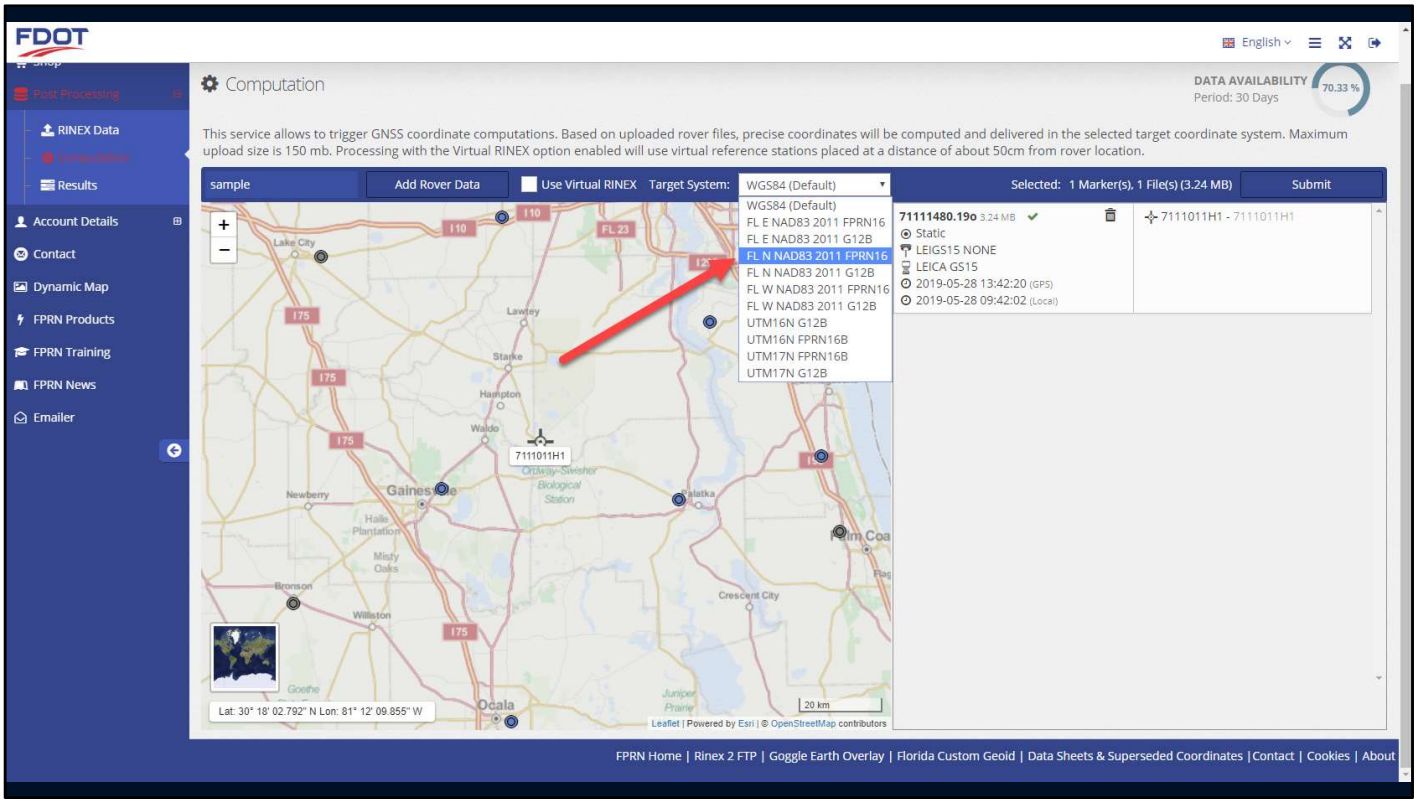
(CLICK)



You can see that there are several option available including State Plane, UTM, and WGS84.

We also offer elevations using Geoid 12B and the Florida Custom Geoid (FPRN16)

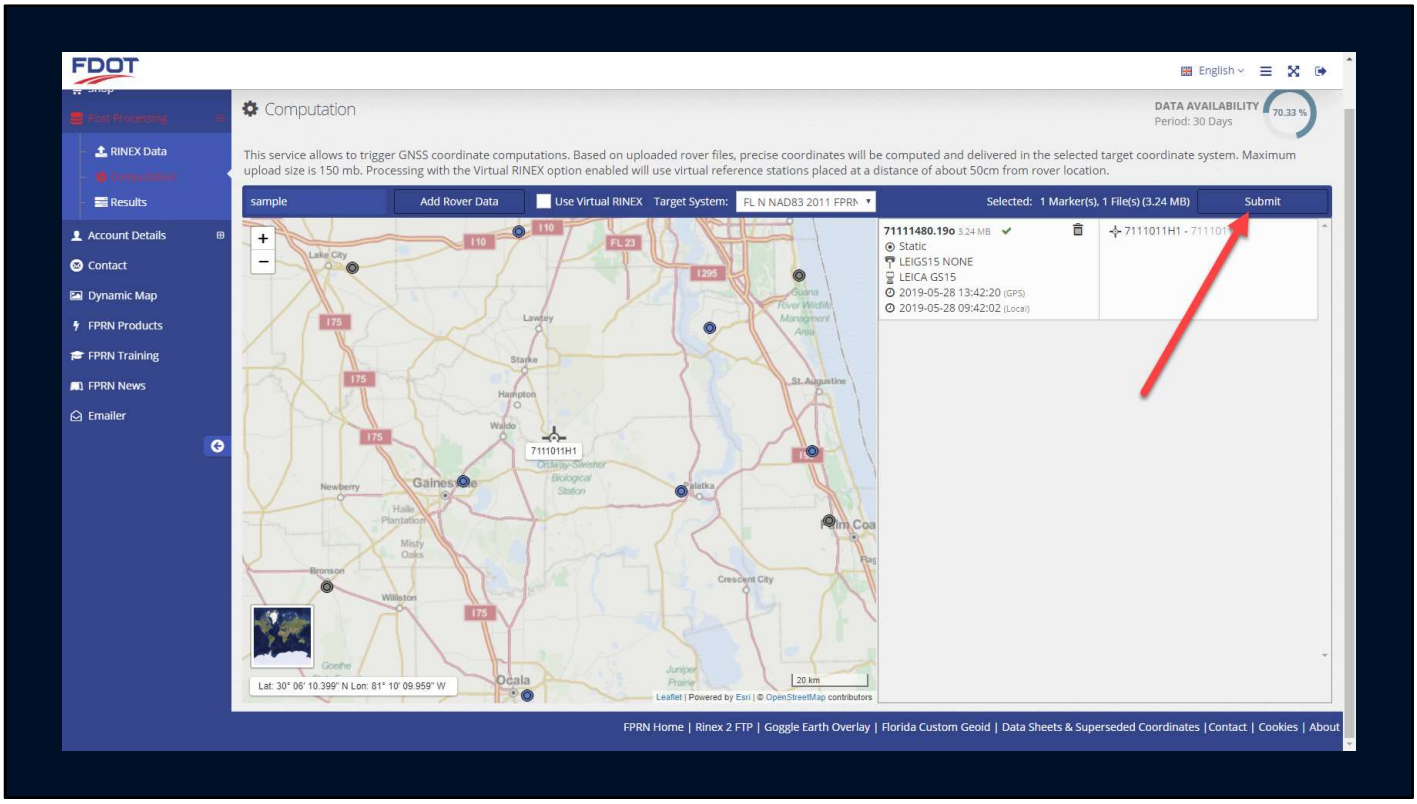
(CLICK)



For the purpose of this presentation I'll use Florida North NAD 83 2011 epoch 2010 and The Florida Custom Geoid FPRN16.

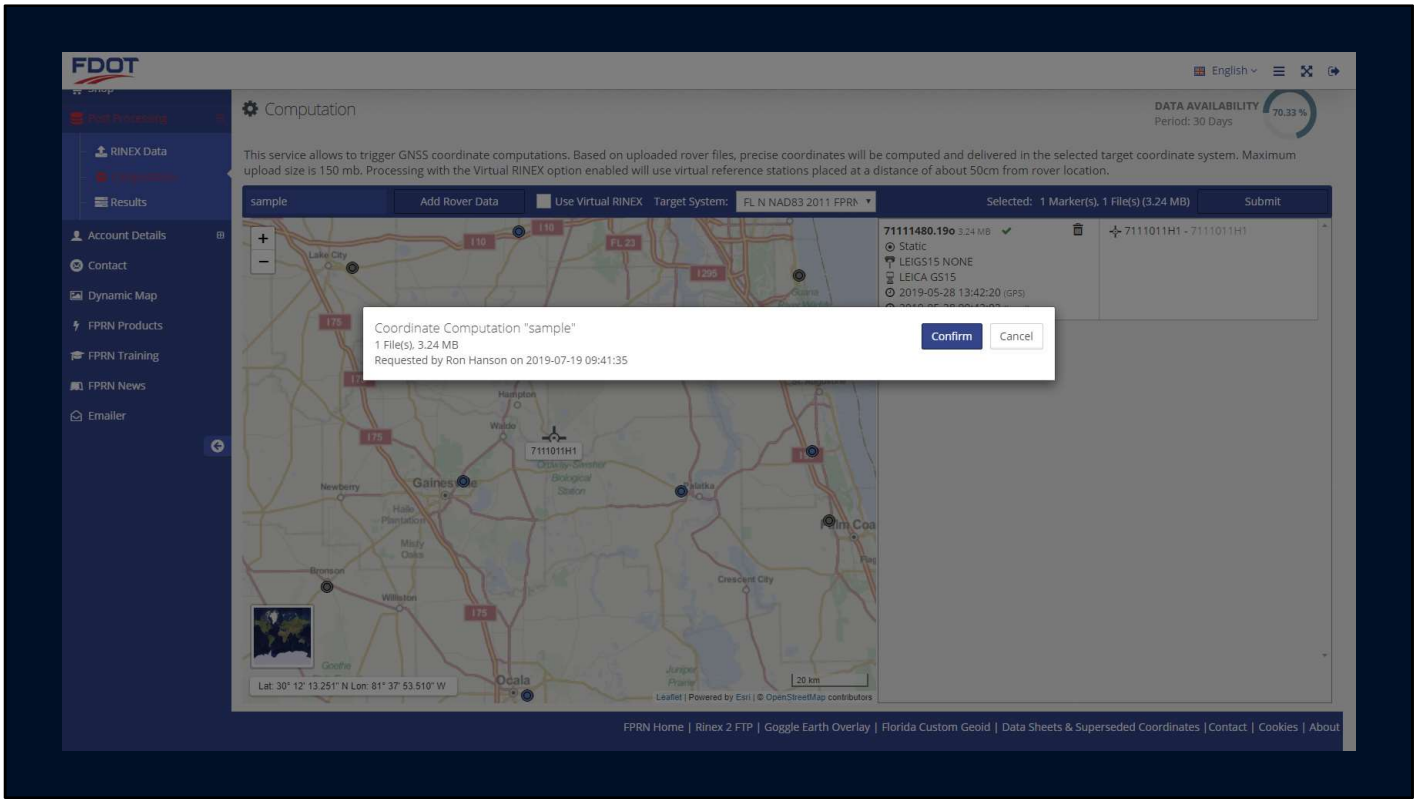
All coordinates are output in meters so you will have to do any unit conversions yourself.

(CLICK)



Once you are finished submitting data and have picked your output coordinate system, click the Submit button.

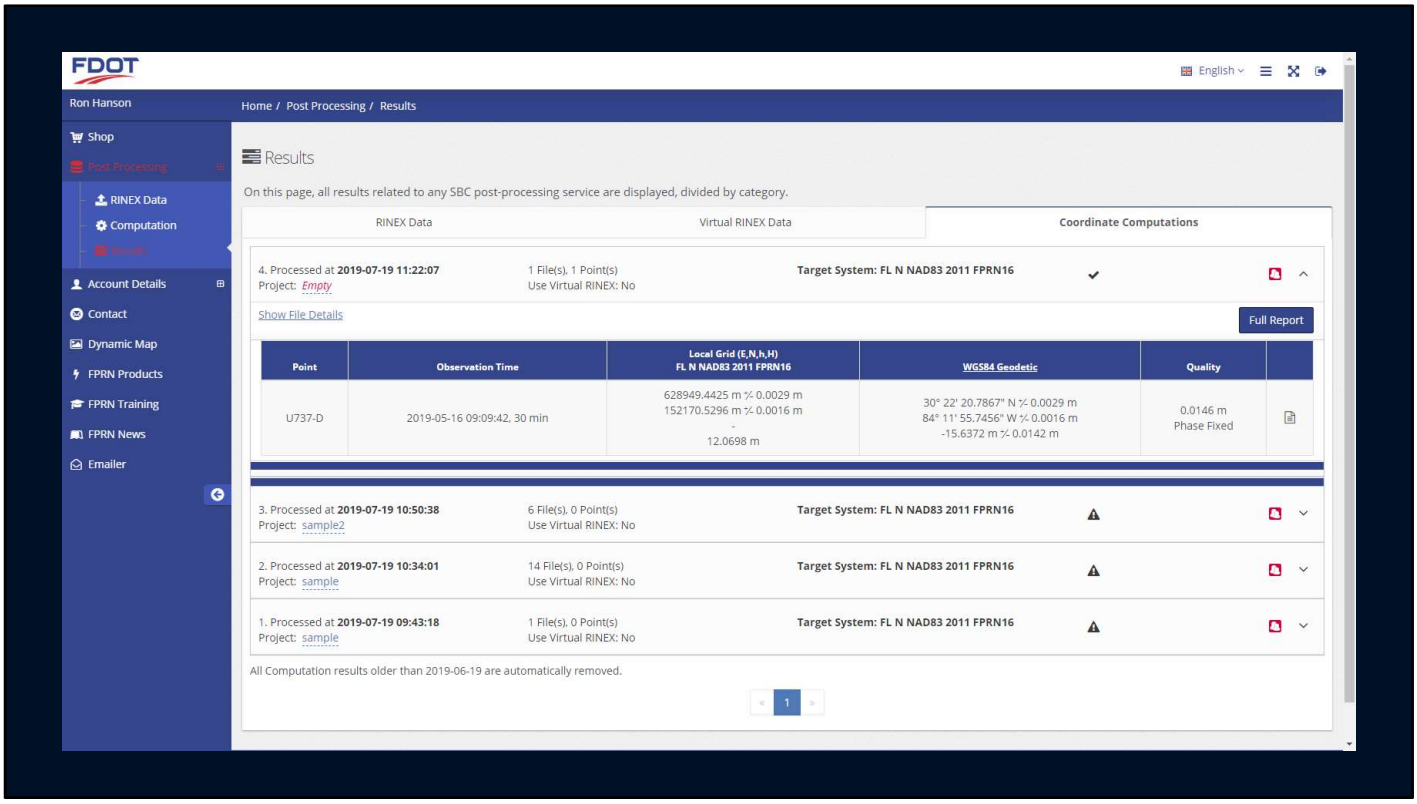
(CLICK)



A confirmation screen will appear.

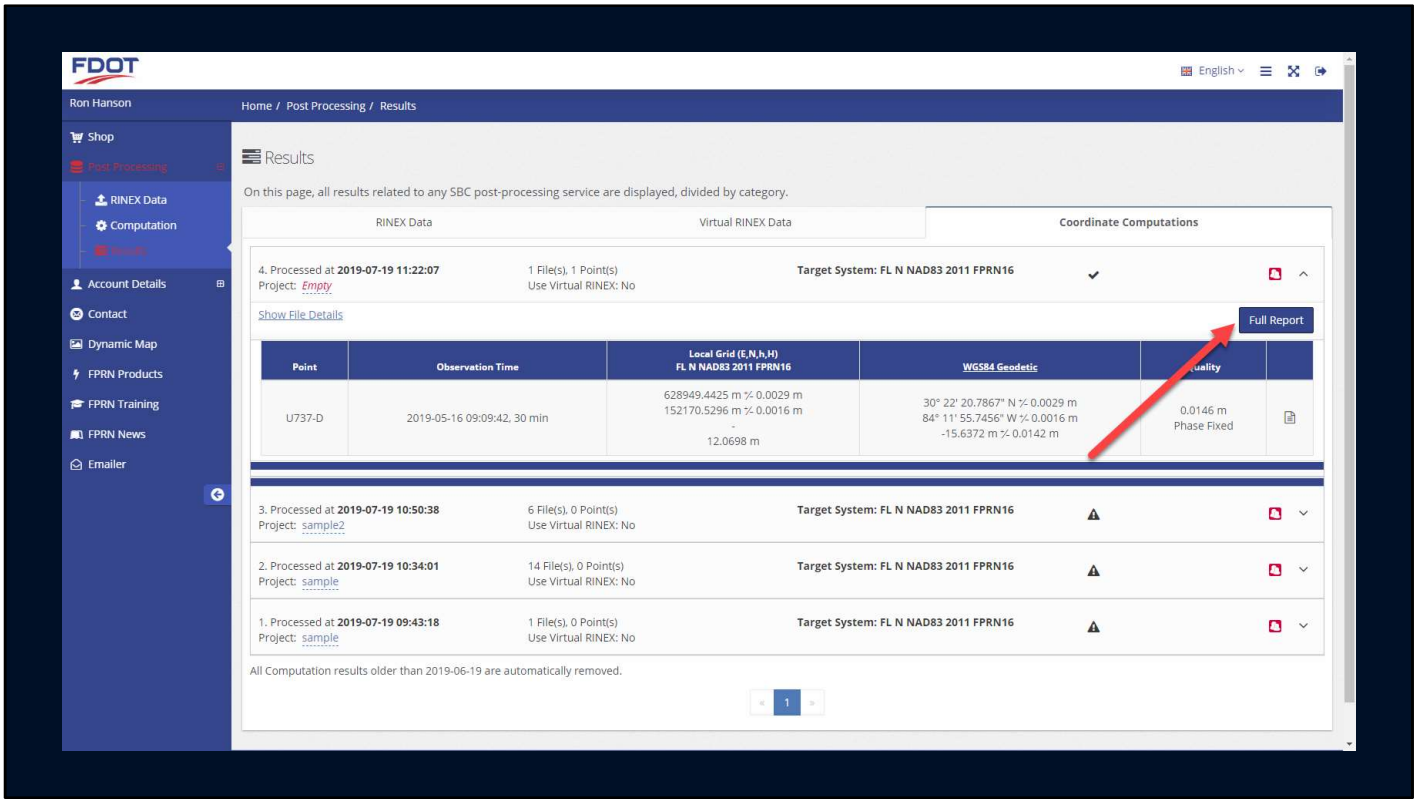
Click confirm to continue.

(CLICK)



You will be taken to the results page.

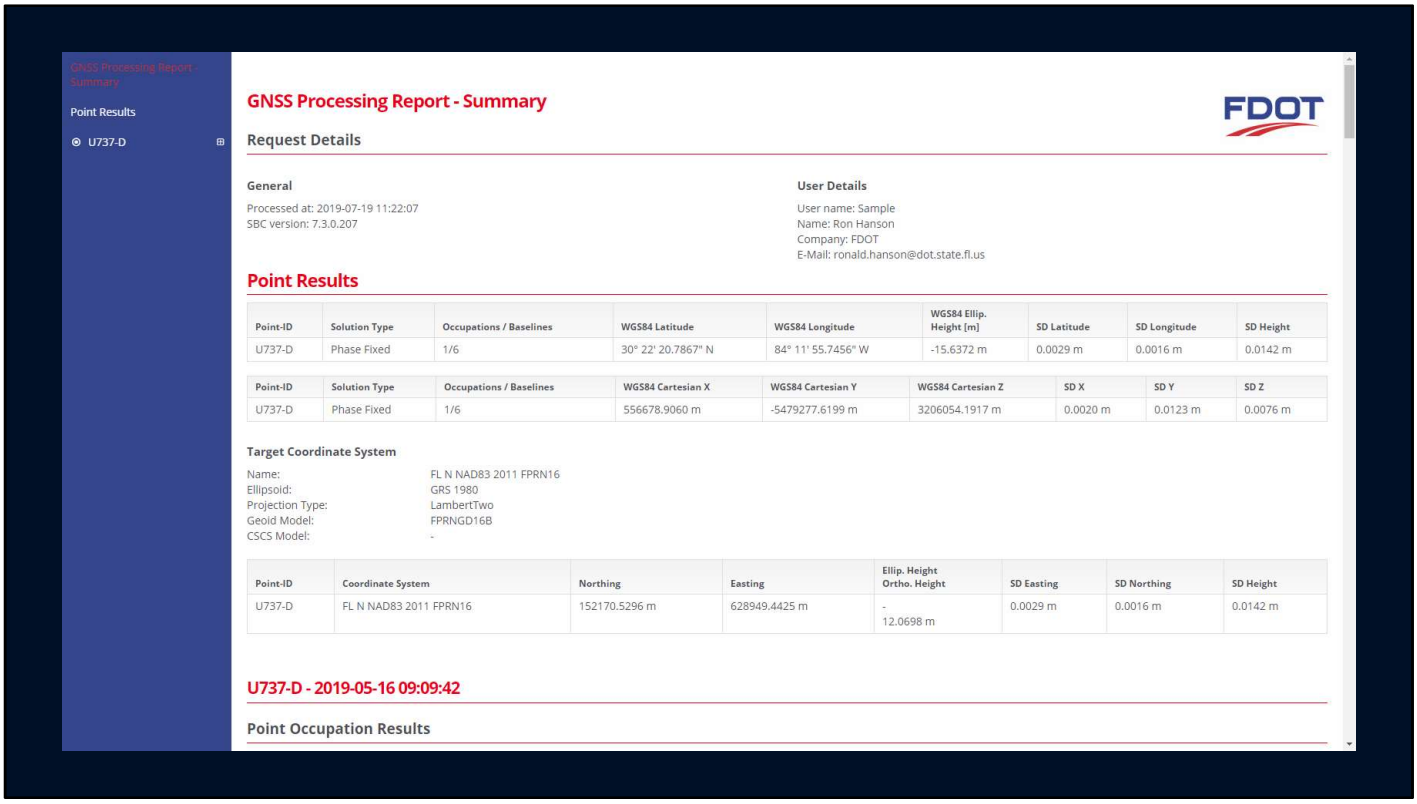
(CLICK)



When the computation is complete you will see information about your project.

Click on the Full Report button to see project details

(CLICK)



The Full Report in come up in a separate window.

On the report page you can see the point occupation results which are a weighted average from each of the baselines (up to 6) per point submitted.

The individual baseline results for each of the baselines used is also shown.

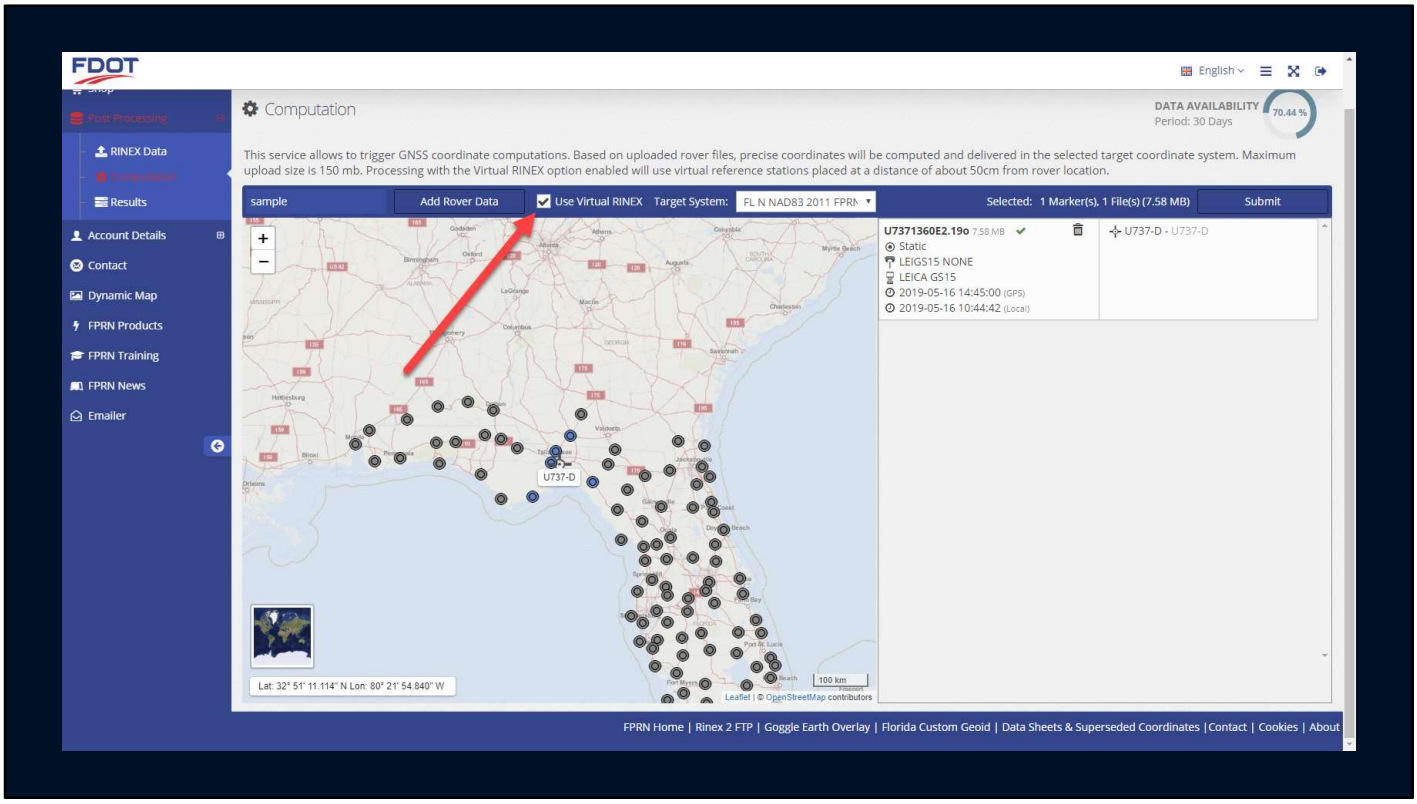
The report can be printed or saved to your local computer.

(CLICK)

Computation Service Using VRS

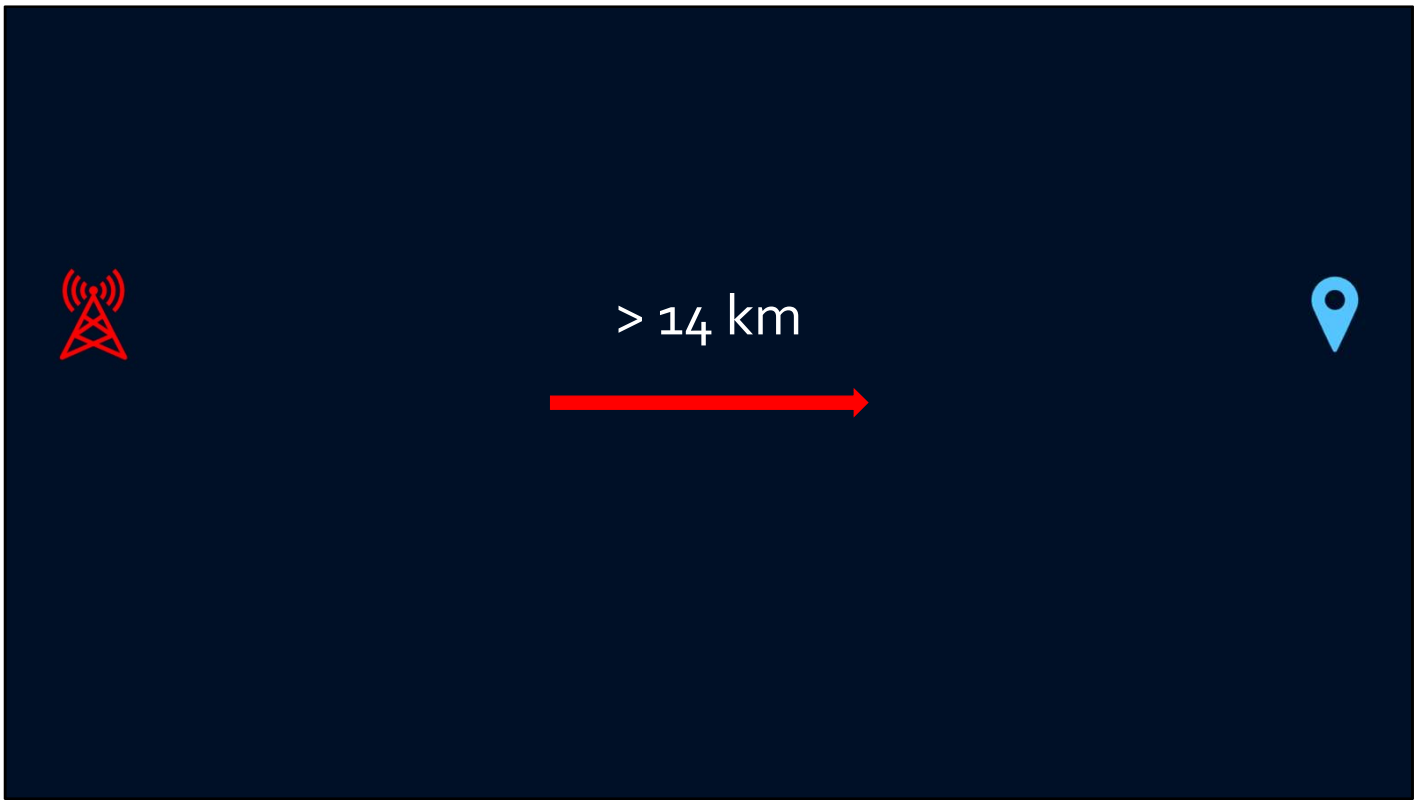
If you wish to use Virtual Rinex during the computation you will need to specify it on the computation screen.

(CLICK)



By clicking on the Use Virtual Rinex Checkbox

(CLICK)

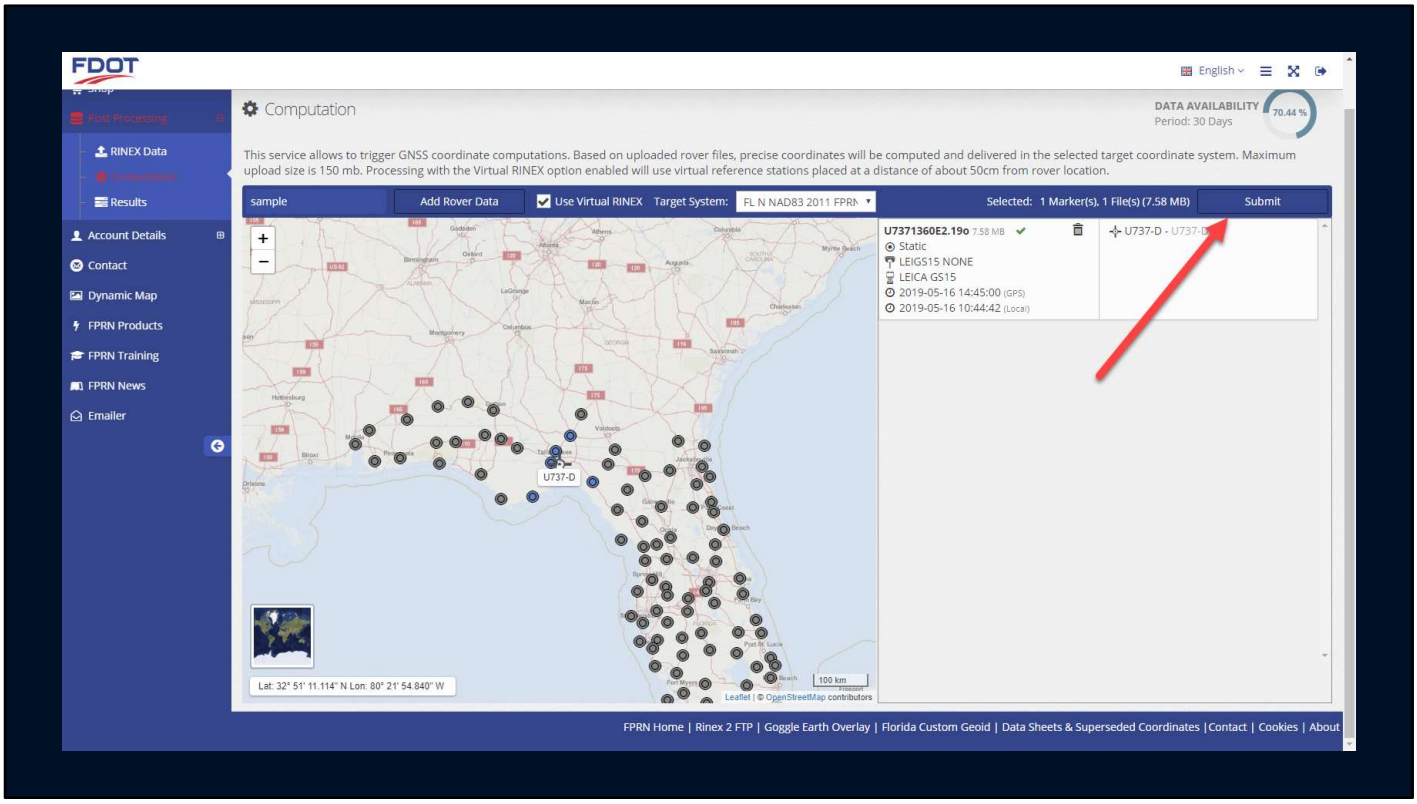


So the question is when should I was Virtual Rinex?

(CLICK)

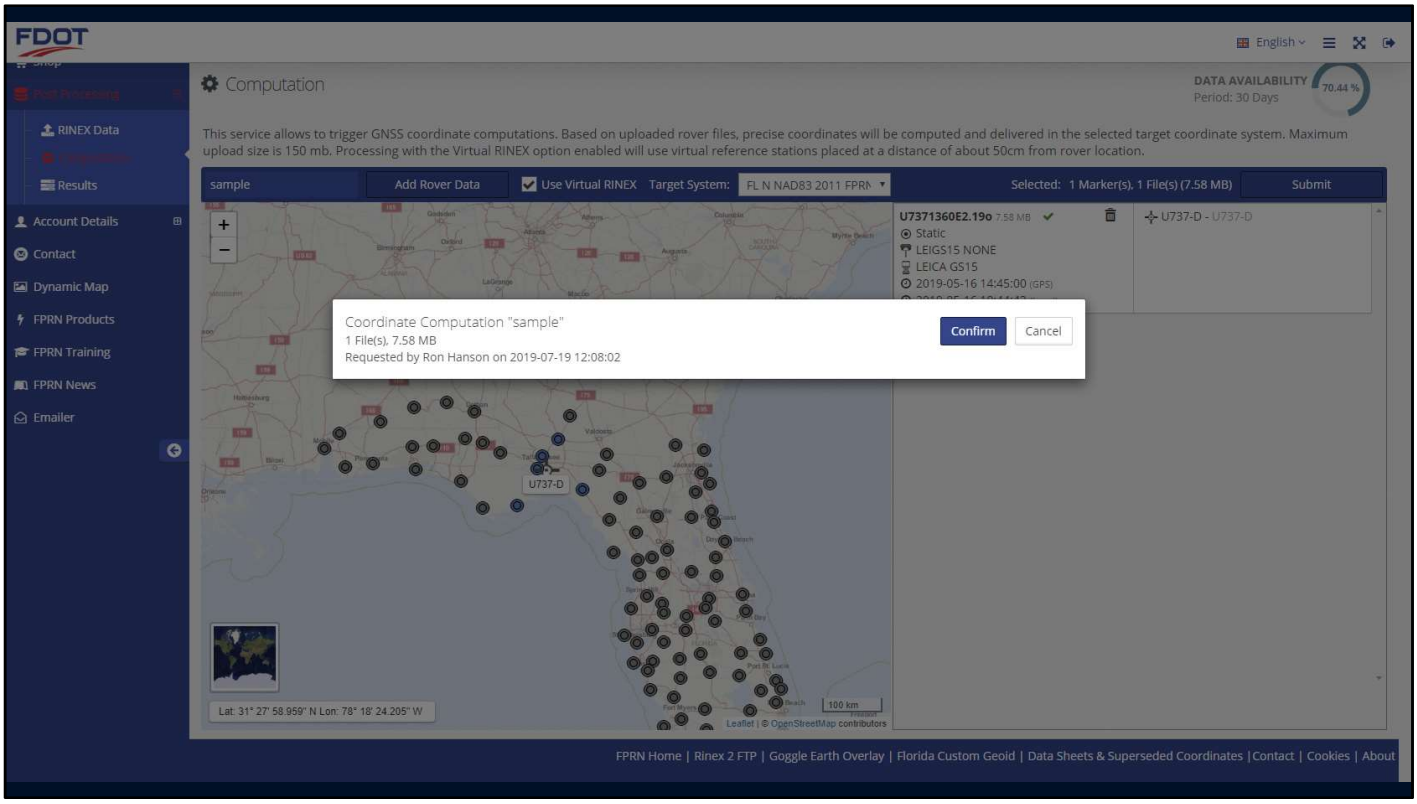
As a basic guide, If your point is greater than 14 km from any base station.

(CLICK)



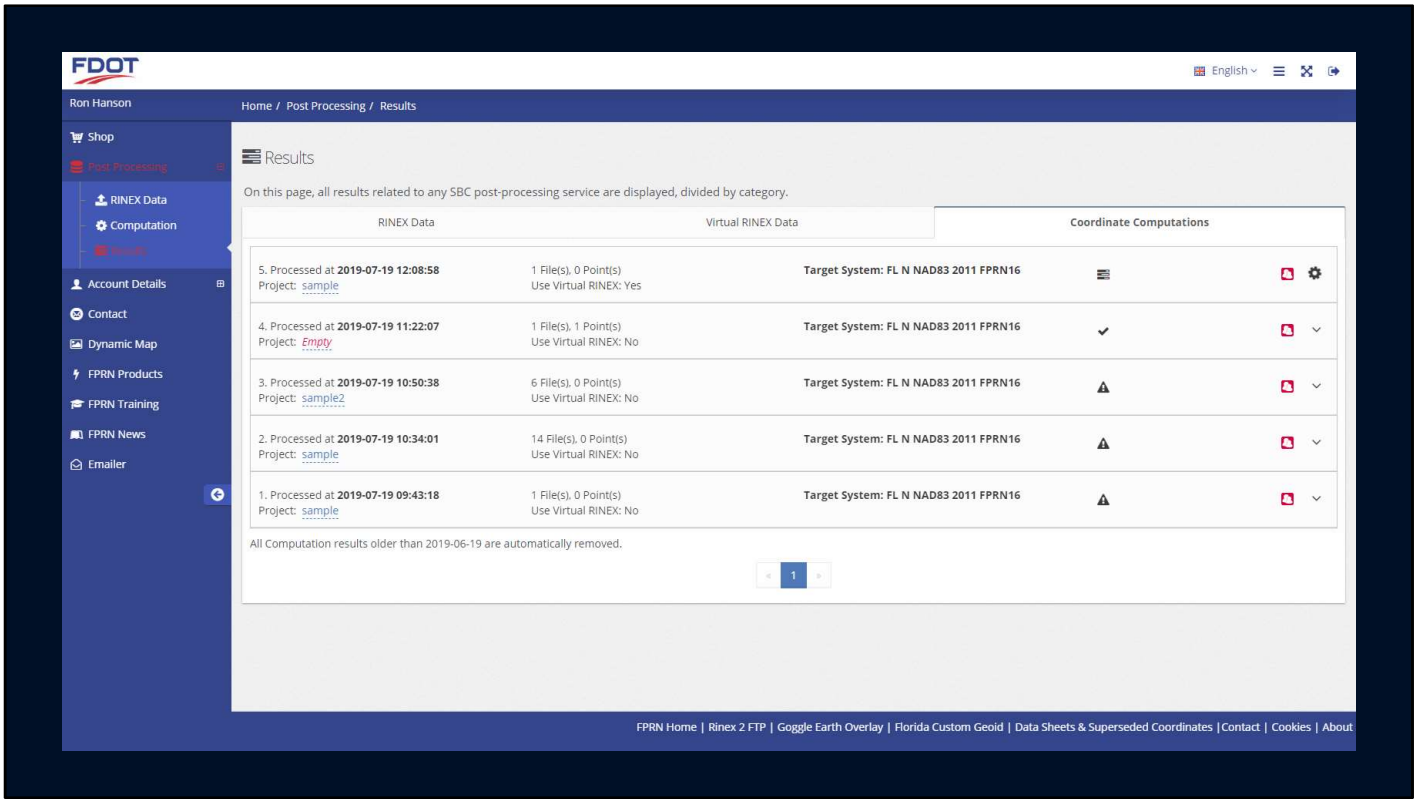
Click the submit button when you are ready to start the computation.

(CLICK)



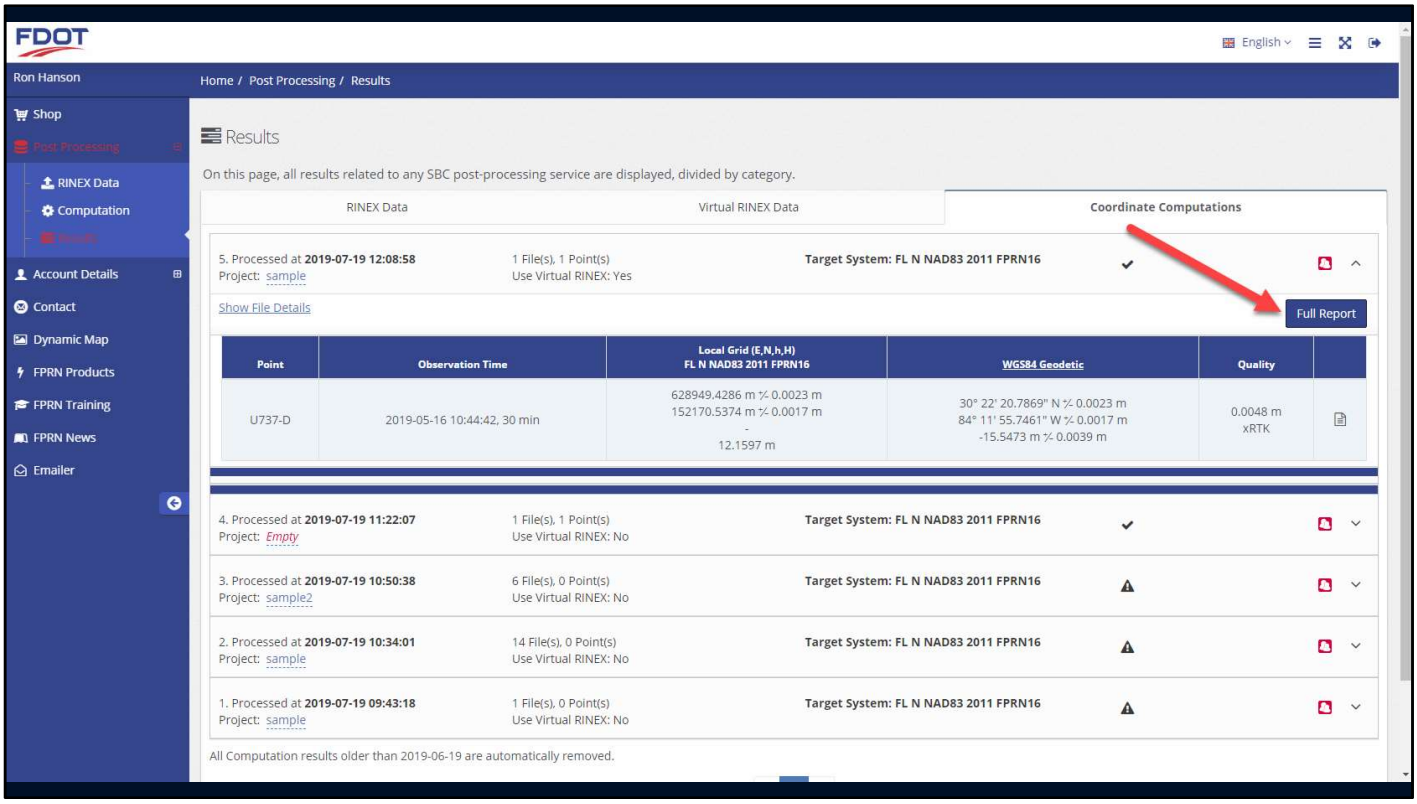
Again, a confirmation screen will appear. Click confirm to continue.

(CLICK)



You will again be taken to the Results page.

(CLICK)

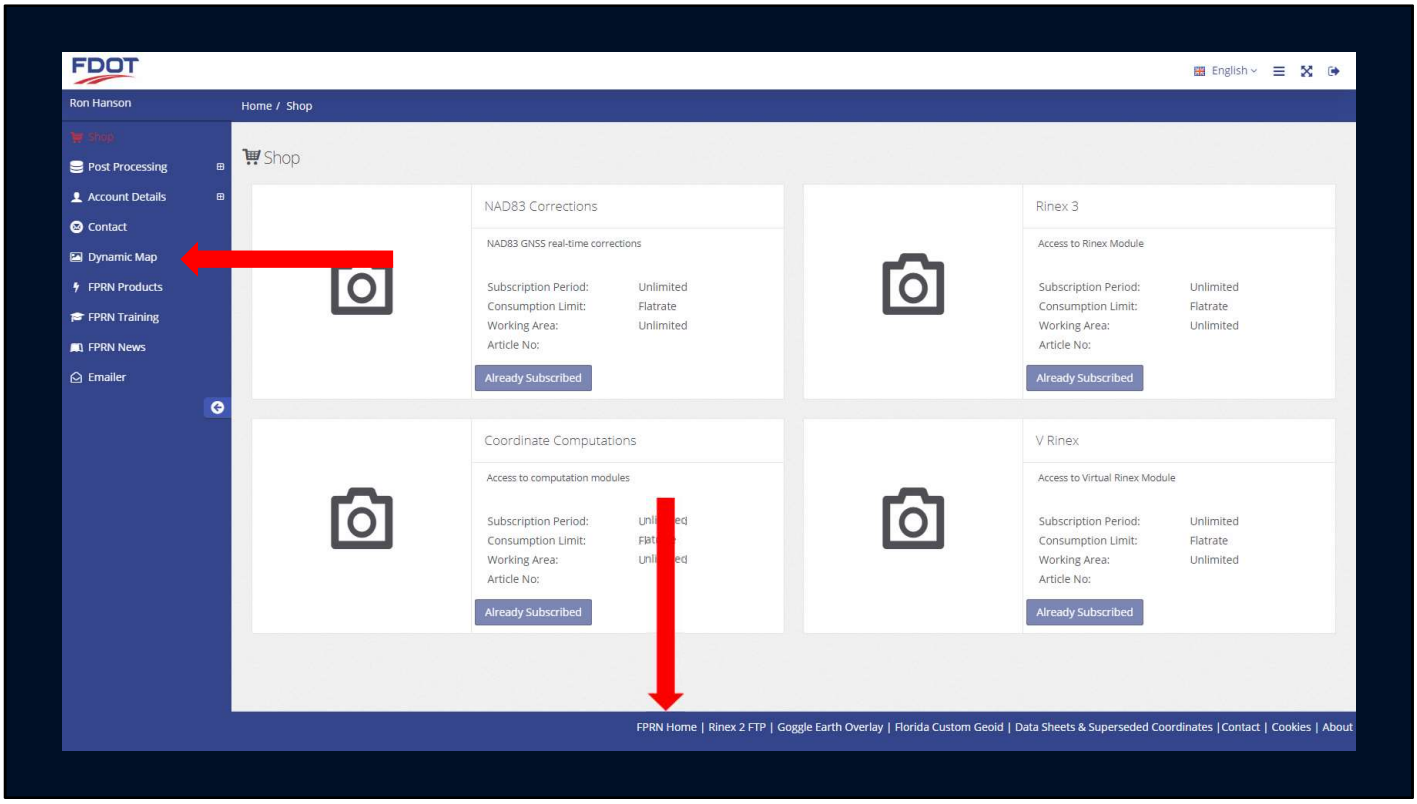


Click on the Full Report button to view, print, or save the document.

(CLICK)

Other Services

What else is available on the Customer Portal?



We offer many of the same links on the Customer Portal that are on the FPRN Home Page.

(CLICK)

A link to our dynamic station map that is updated every fifteen seconds.

(CLICK)

You can pull up a list of our Real-Time Products with IP addresses and Ports

(CLICK)

We keep a library of different training presented by myself and others that is free to download

(CLICK)

We have an archive of all the Newsletters that have been sent out to the end users.

(CLICK)

We also have a link to our alternate emailer. We use this email option when we don't have access to the Customer Portal.

If you sign up it will allow you to receive an email when the system is down.

(CLICK)

The links across the bottom of the screen will take you to our homepage

(CLICK)

Download our Google Earth overlay

(CLICK)

Download the Florida Custom Geiod

(CLICK)

And finally view and download our FDOT data sheets and superseded Control sheets

(CLICK)

The NGS has proposed a new set of datums that will go into effect in 2022.

The FDOT will follow the NGS into the new National Spatial Refence System.

Actually, We will jump in front of the NGS.

We are going to start broadcasting the ITRF 2014 solution in the near future.

Why?

There will be upcoming projects that will require transformation to the new NSRS of 2022.

Data Sheets

CORS Stations

Points included in Geoid (2470 monuments)

Monuments adjusted to NAD 83 (2011)

New data sheets will not include previous datums

Positive Longitudes

Florida lies between

80° W (West Palm Beach)

and

88°W (Pensacola)

Positive East Longitudes

280° E (West Palm Beach

and

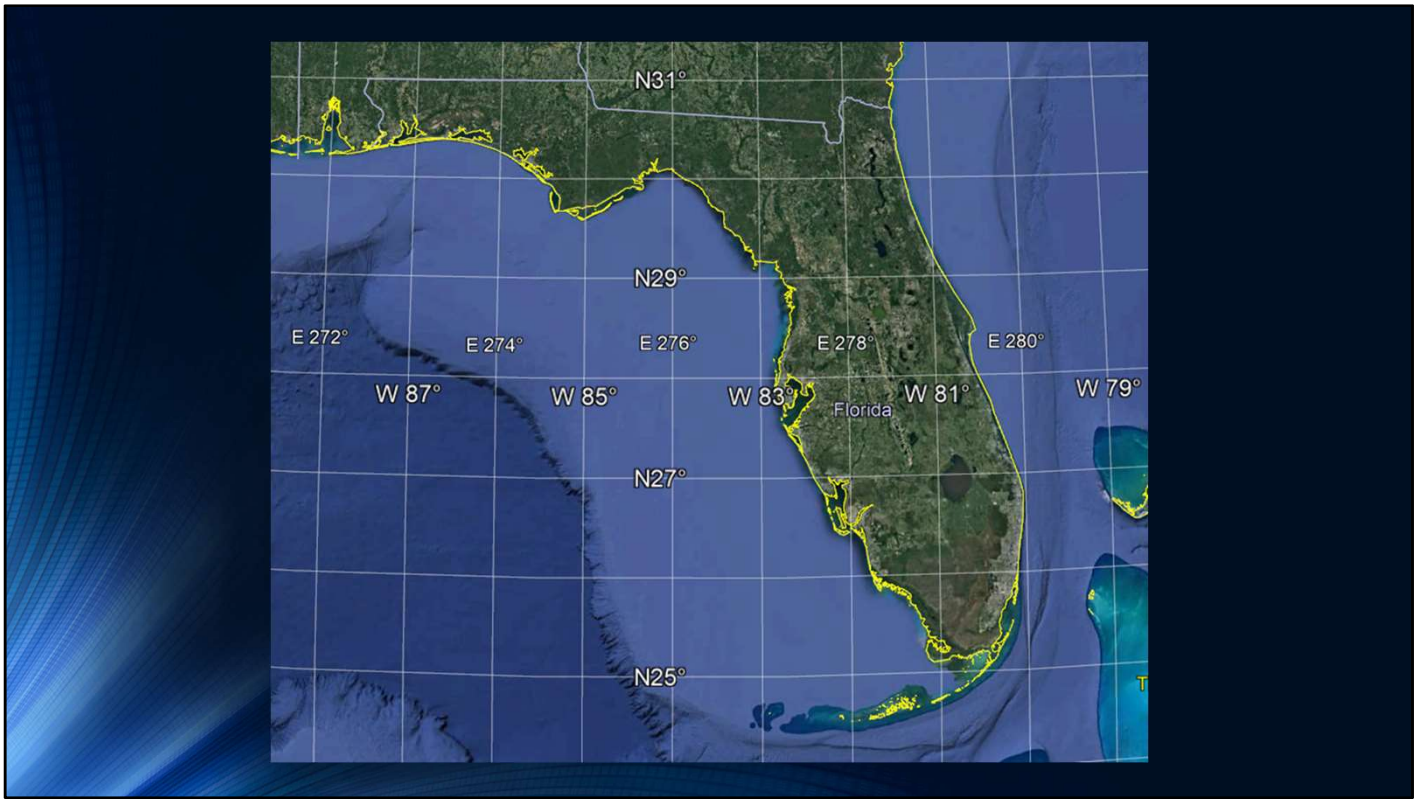
272° E (Pensacola)

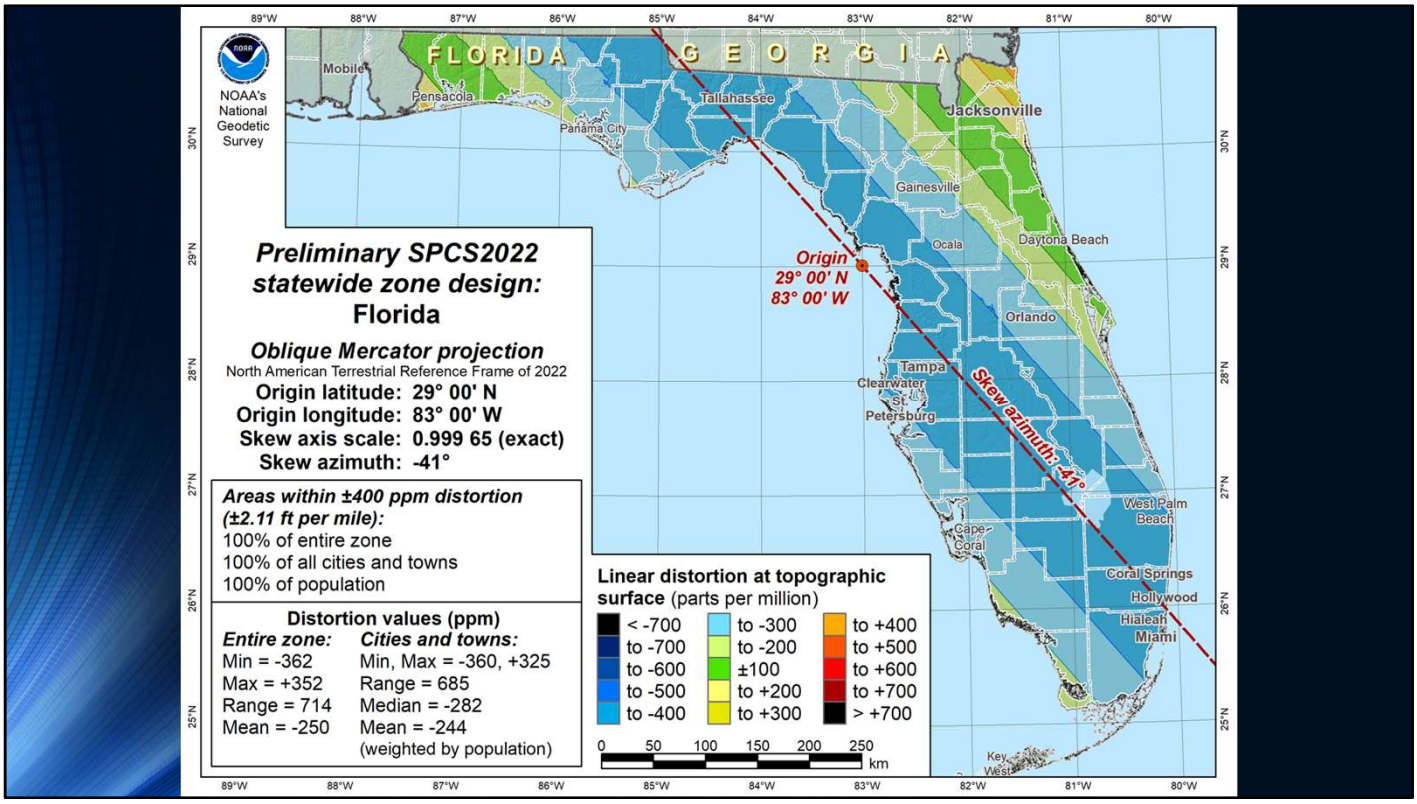
- Historically used west longitudes at NGS
  - Both negative and positive west longitudes
  - Sometimes ±180° at anti-prime meridian (Guam 145°E)
  - Sometimes keep increasing west (Guam 215°W)
- Advantages of positive east longitudes
  - NSRS spans anti-prime but ***NOT*** prime meridian
    - From +140° → +300° (vs. +140° → –60°)
    - No ±180° "switch" at anti-prime meridian
  - GEOID2022 grid from +170° → +350° (vs. +10° → – 10°)
  - Longitude increases east (just like SPCS eastings)
- ***It just makes sense***
  - ***Default*** positive east (but west longitude still available)

Another major impact will be switching over to positive longitudes

Currently Florida lies between 80° W and 88° W

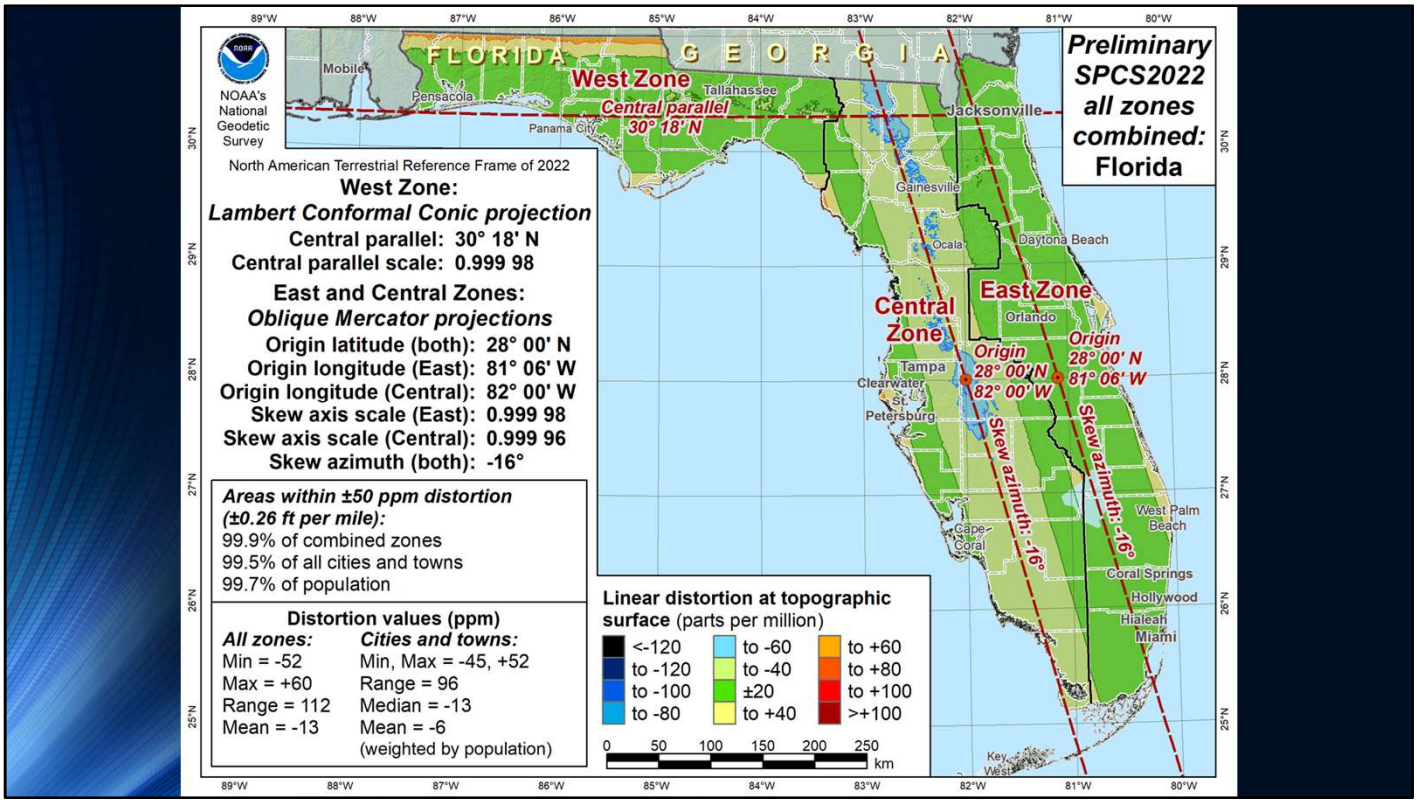
In the new system it will lie between 280° E and 272° E


N31°
N29°
N27°
N25°
E 272°
E 274°
E 276°
E 278°
E 280°
W 87°
W 85°
W 83°
W 81°
W 79°
Florida



Since we are changing things around why not change our State Plane Coordinate System

- Statewide design for Florida, using an OM projection
- Design criterion of ±400 ppm has all percentages of 100%
    - Next lower criterion of ±300 ppm did not meet all three (90%, 75%, 50%) minimum requirements, so ±400 ppm is smallest available criterion value
    - ±400 ppm corresponds to the distortion limits of a UTM zone (with respect to the ellipsoid)



- Replaces the existing 3 SPCS 83 zones (shown on the next slide)
- Note that following characteristics:
    - Uses 2 OM projections to replace existing 2 TM projections for the peninsula
    - Uses 1-parallel LCC to replace existing 2-parallel LCC for panhandle
    - Uses ±40 ppm design criterion (less than minimum of ±50 ppm) because existing areas are too narrow for a ±50 ppm criterion

What are we doing to keep up with NGS?

- FPRN will broadcast ITRF 2014 and NAD83 (2011) coordinates (soon)
- New State Plane coordinate systems will be supported in computations
- Data sheets will include both ITRF 2014 and NAD 83 (2011)
- Hybrid Geoids will be customized until 2022 Gravity based Geoid is released

What are we doing to keep up with NGS?

By the end of the year the FPRN will be broadcasting ITRF2014 coordinates in addition to NAD 83 (2011) coordinates.

Along with the ITRF Broadcast we will be adding the New coordinates systems into the computation service.

The datasheets will be updated to include both NAD 83 (2011) and ITRF 2014.

We will be customizing Geoid models as they are released.

Compliance

- As an Agency we may be "coerced" to comply with the new standard.
- Strings may be attached to any Federally Funded Projects
- Due to the symbiotic relationship between the FPRN and Foundation CORS (NGS) the Statewide Reference Network WILL migrate to the new datum.