# *Champion Instruments*

## How-To Guide

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## Introduction:

**Welcome to Champion Instruments. This guide will show you how to set up the Champion TKO for static surveying, log the data, download the .ZHD file, convert it to RINEX and submit the RINEX file to the National Geodetic Survey (NGS) Online Positioning User Service (OPUS).**

## The items you will need are:

- ✓ **TKO**
- ✓ **Y-Cable**
- ✓ **Computer**
- ✓ **Rover Pole with Bi Pod**
- ✓ **Software**
    a. **Hi Target GPS-V Series GPS receiver management Software v1.3.0**
    b. **Hi-Target Geomatics Office (HGO)**
- ✓ **Internet connection.**

## Abbreviations and Symbols:

- 

**= Intelligent Voice**

- **NGS = National Geodetic Survey**

- **OPUS = Online Positioning User Service**
- **HGO = Hi Target Geomatics Office**
- **ARP = Antenna Reference Point**
- **APC = Antenna Phase Center**
- **HGMS = Hi Target GPS-V Series GPS receiver management Software v1.3.0**

# Chapter 1 Configuring TKO

**Steps:**

1. **Power on computer.**
2. **Power on TKO.** ***"Single Press"*** 


3. ***"Double Press"*** 


4. **Listen to**  **for "MODE"**

5. **Scroll rough the "Modes" by** ***"Single Press"*** 

**until** 

**states "Static".**

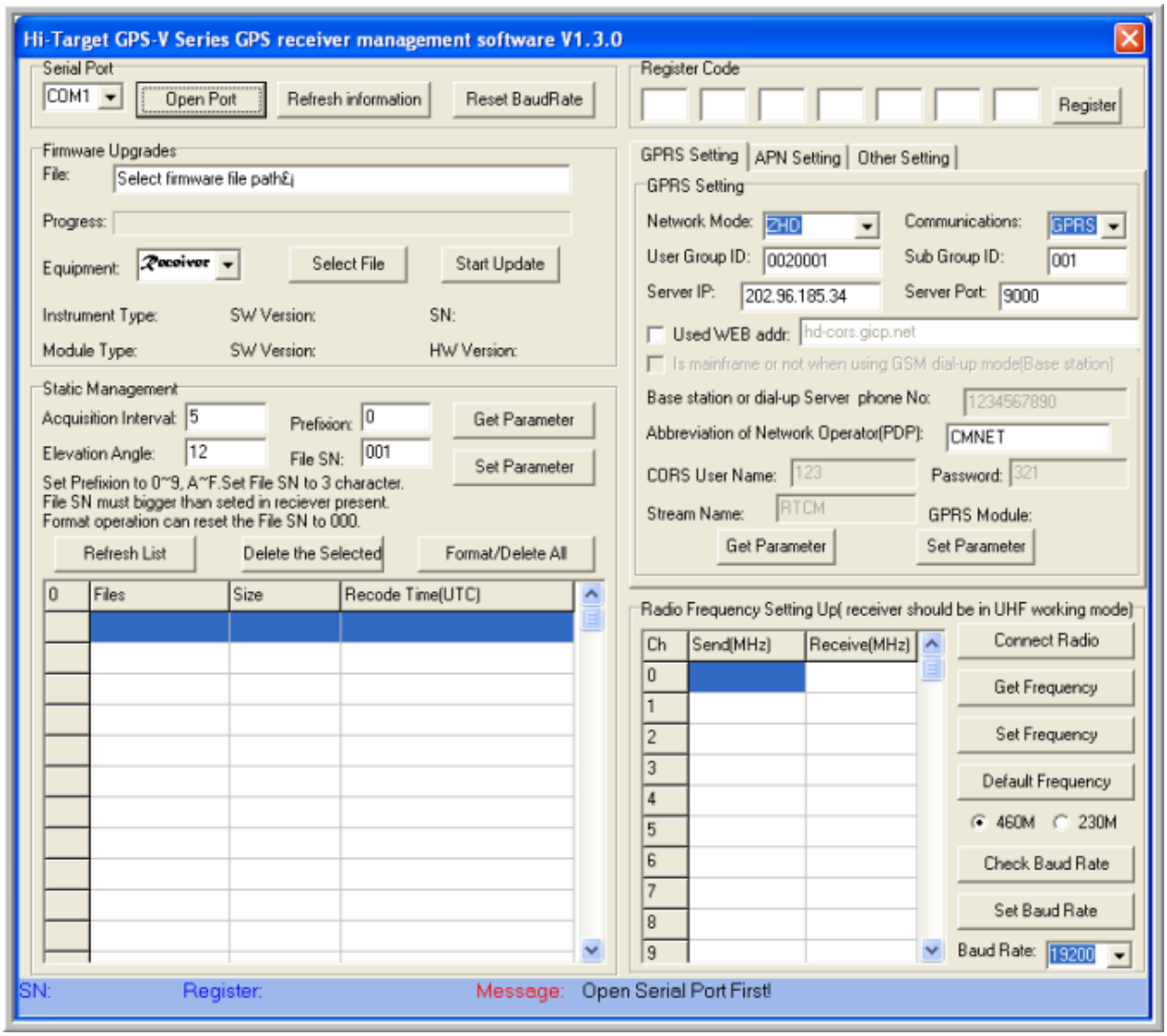
6. ***"Single Press"*** **.** 

7. **Plug in Y-Cable into bottom of TKO** ***"COM1/PW1"***

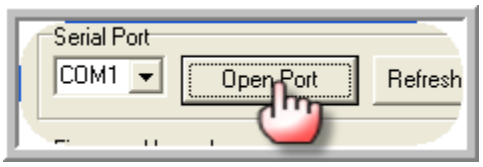
8. **Plug in** ***"COM"*** **end into** ***"COM 1"*** **on computer.**

9. *"Double Click"*: **"HGMS"**

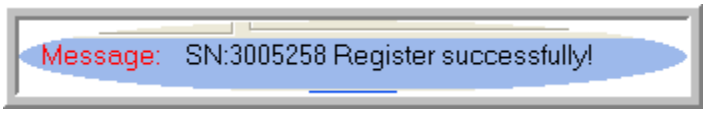
10. **This is what should appear:**



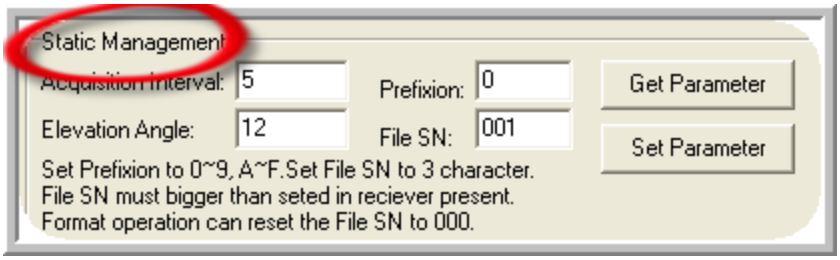

11. *"Single Click"* the **"Open Port"**.




12. **Check the message.**



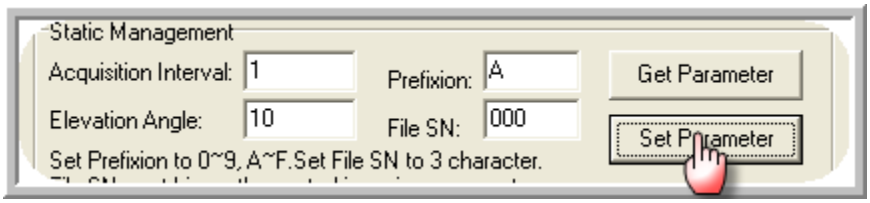
**13. Go to the "<u>STATIC MANAGEMENT"</u> area of the software.**



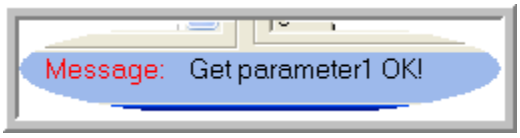

**14. Set the appropriate settings in the:**

a. **Acquistion interval = what epoch rate you desire to collect at.**
b. **Elelavation Angle = Elevation Mask (Usually set to 10°).**
c. **Prefixion = is the leading Character at the beginning of the file.**
d. **File SN = this will designate the session and naming convention.**

**15.** ***"Single Click"***




a. **<u>Check Message: If message states:</u>**




b. ***"Single Click"*** **<u>"Close Port":</u>**


**16. <u>Power Down TKO.</u>** ***"Single Press and Hold"***

# Chapter 2 Collecting Static Data

1. **<u>Head to the field and Set up over desired Point.</u>**

2. **Power on TKO.** ***"Single Press"*** . 

3. **Listen for**  **to say "TRACKING" then "Tracked".**

4. ***"Double Press"*** 


***You should hear!! 2 dings***

   a. **Then it will begin to Beep for every epoch of data the TKO is logging.**

5. **To Stop the Logging:**
   a. ***"Double Press"*** 


6. **Power Down the TKO:** ***"Single Press and Hold"*** 

# Chapter 3 Downloading/Converting to RINEX

1. **Return to office and Power on computer and verify Internet connection.**

2. **Power on TKO:** ***"Single Press"*** . 

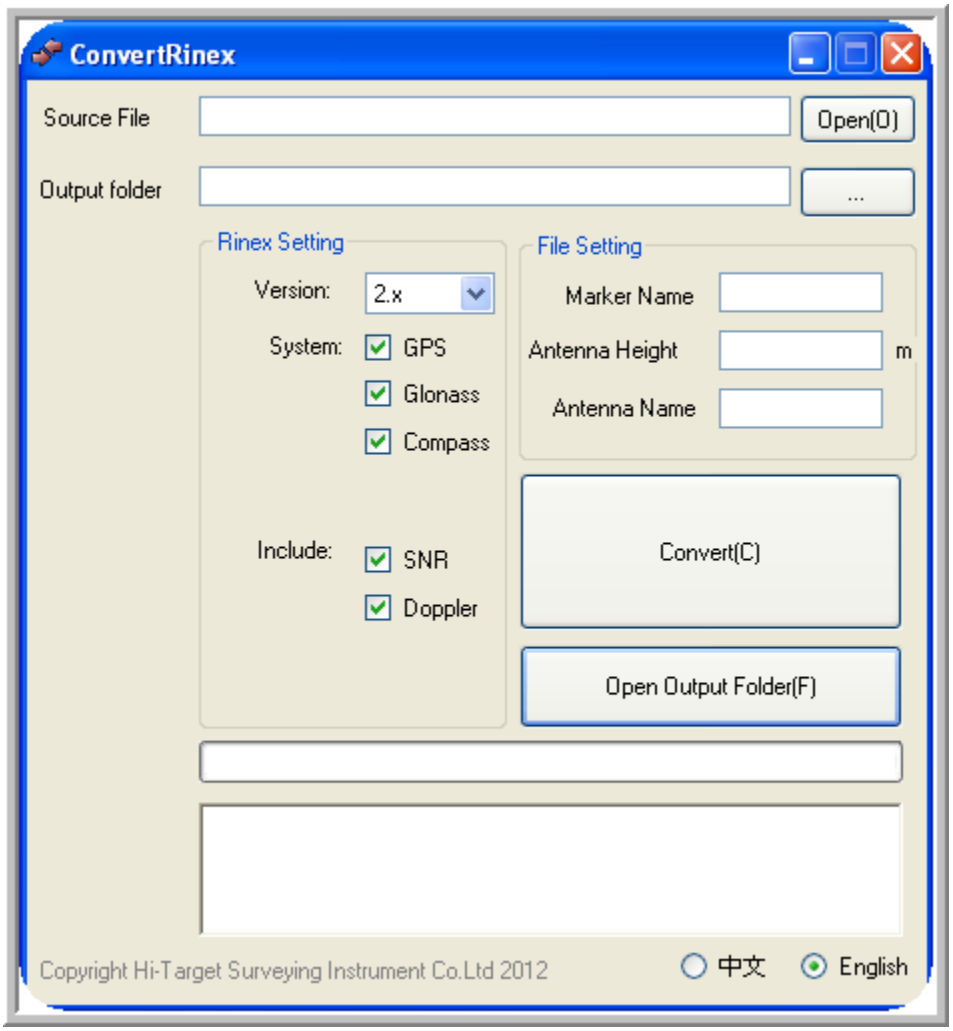
3. **Plug in the Y-cable to the bottom of TKO "*COM1/PW1*" and utilize the USB connection from the Y-Cable to connect to PC.**
4. **Once connected:**

a. **Navigate to the**

b. ***"Double Click" "GNSS Folder"*** **Select and copy your .ZHD file and place on your PC in desired location.**

5. **Navigate to the HGO Software and select ConvertRinex.exe through Start menu on your PC under all Programs.**

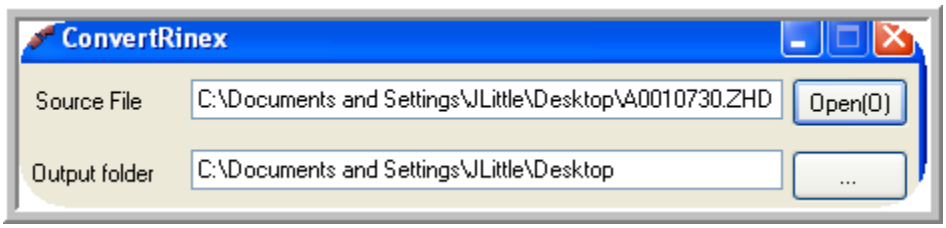
6. ***"Single Click"*** **the ConvertRinex.exe. This should appear:**



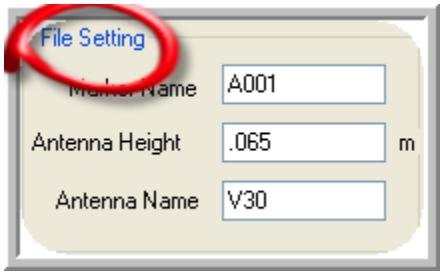
7. ***"Single Click"***:  **in the "Source File" section and Navigate to your .ZHD static file and select it.**

8. ***"Single Click"***:  **under the "Output Folder" section and Navigate to where you want the RINEX file stored.**

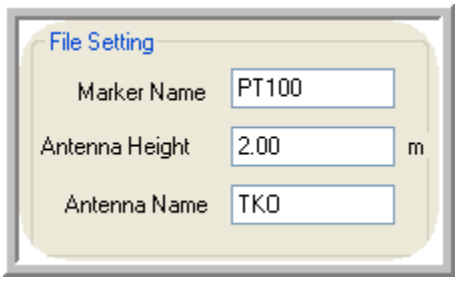
9. **You should now see the paths of the .ZHD file in the Source file section and the path of the file to be stored in the output folder section as shown below:**

10. **You** 

**can now move to the: File Settings section.**

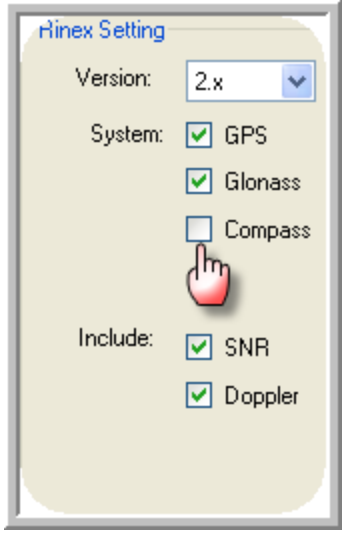



**11. Edit Settings:**




**Marker Name = what Point Number or Point Name you desire to have stored in the RINEX Header**

**Bottom**




**Antenna Height = what antenna height you used to the of antenna mount ARP in meters.**

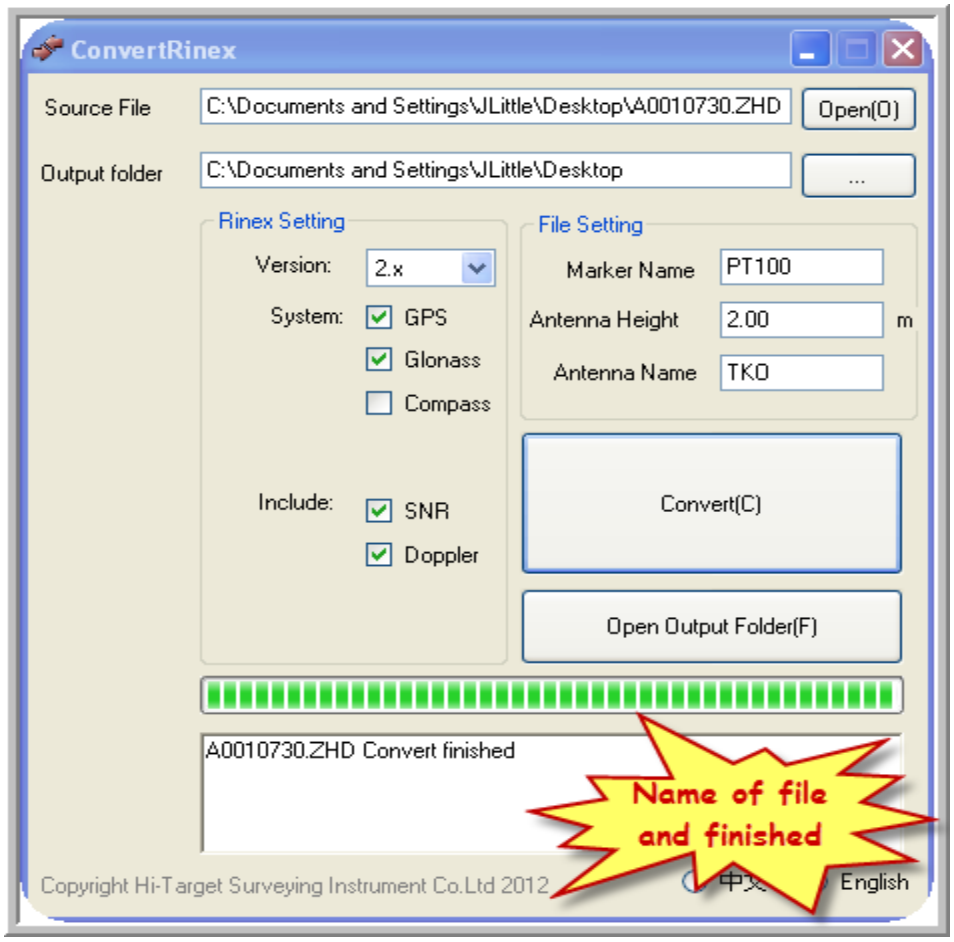
**Antenna Name = TKO so that it is correctly stored in RINEX header.**

**the**

**12. Go to the RINEX Settings section: and UN-CHECK Compass:**

**13. *"Single Click"*:**

**You should see this on your screen:**

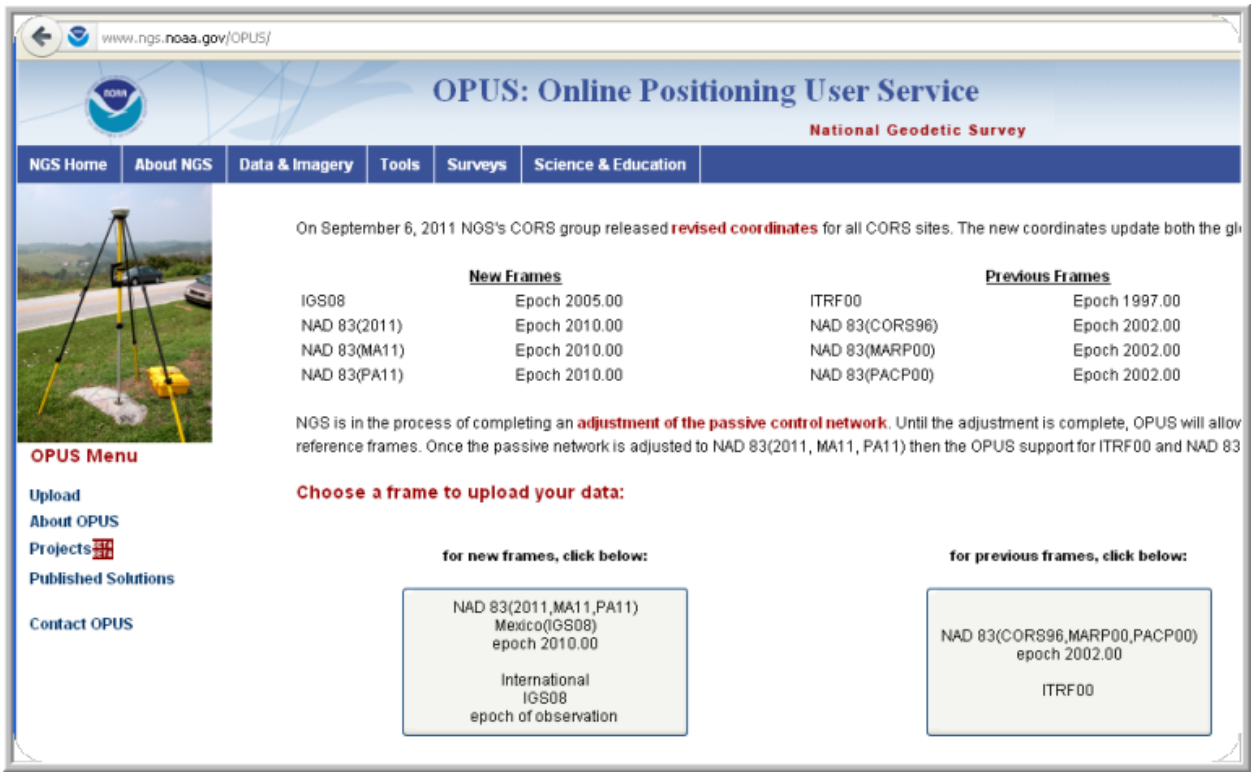



# Chapter 4 Submitting to OPUS

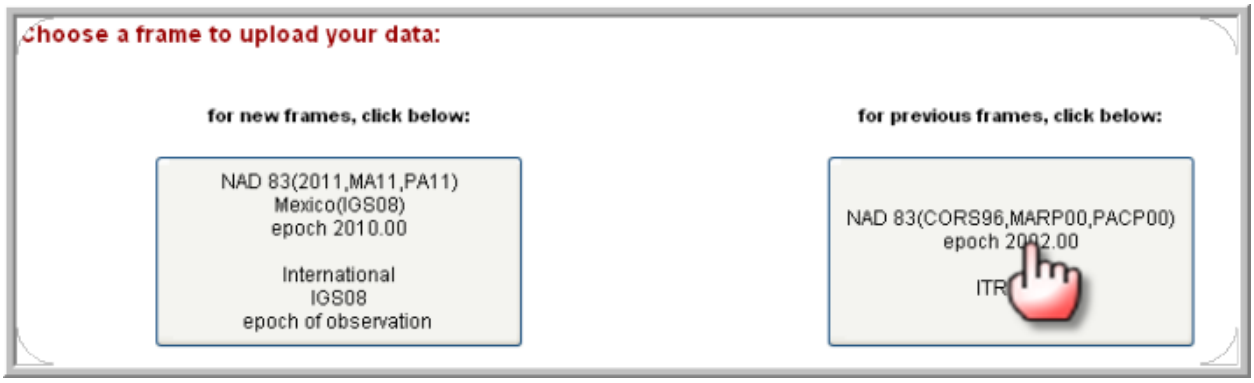
1. **We are now ready to send RINEX file to OPUS:**
    a. **Open internet browser**
    b. **Go to: http://www.ngs.noaa.gov/**
    c. ***"Single Click"*:**


www.ngs.noaa.gov
NOAA
NGS Home
About NGS
Data & Im
Most Popular
Contact Us
CORS
Survey Mark Datasheets
Geodetic Tool Kit
NA2011
OPUS
Storm Imagery
UFCORS

2. **You should be redirected to the OPUS Home Page.**

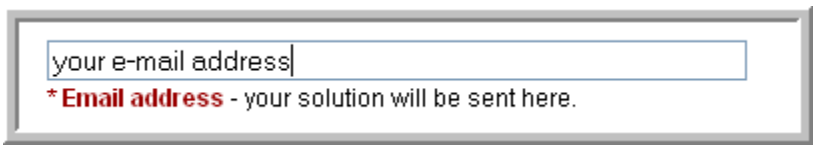



3. ***"Single Click"*** **which reference frame your data should be processed in.**




4. **Your page should look like the below:**


5. **Type in your e-mail address: This is what e-mail your results will be sent to.**

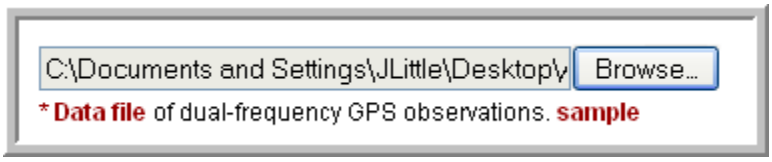


6. ***"Single Click"*** 

**and navigate to and select your RINEX file.**

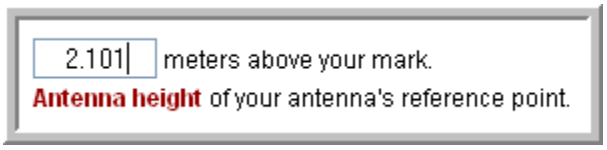
***It will have the 0 for observation in the end of the extension as shown here:*** 


7. **The file path should now be filled like this:**

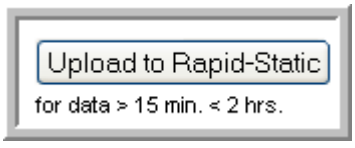



8. **Do not choose antenna type: At this time we are currently working to have our Champion Receivers placed into the NGS database. We will inform you once this is completed.**


9. **Enter Your Antenna Height from the bottom of antenna ARP + APC offset which is currently 101mm. For example 2 m rod + 101mm = 2.101m as shown below:**

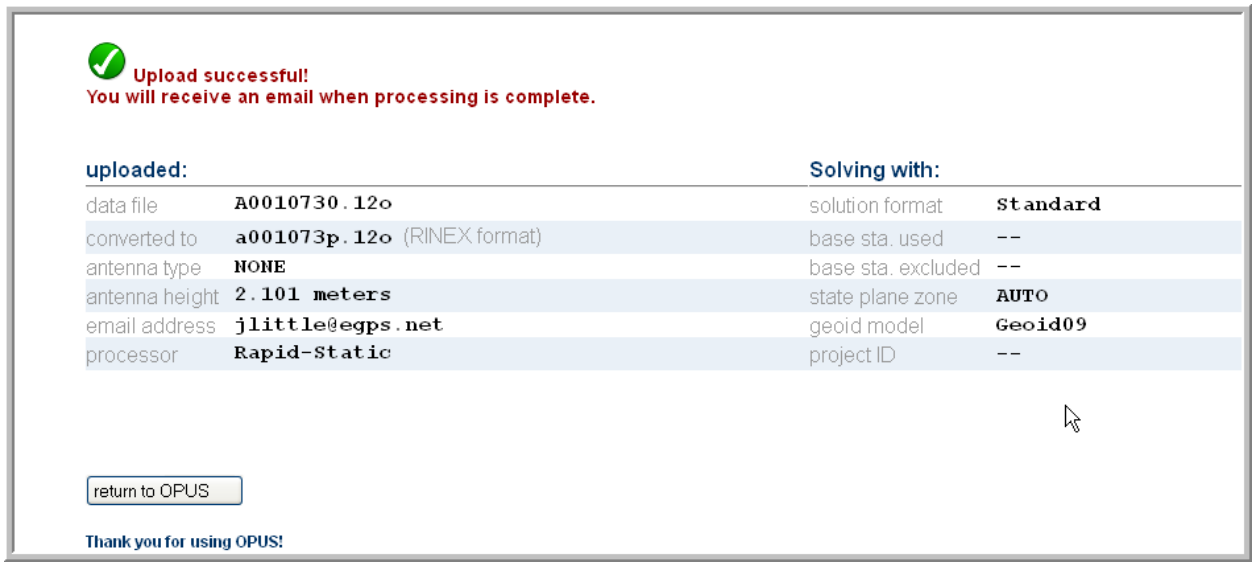



**This will get you to the correct position from APC to your mark on the ground correctly in the OPUS results.**

10. **Now select either** 

**OR** 

**depending on collection time and or desired precision. Please read the OPUS information to choose correctly.**
11. **Now you will receive conformation that your file has been sent:**



Upload successful!
You will receive an email when processing is complete.

| uploaded: | | Solving with: | |
|---|---|---|---|
| data file | A0010730.12o | solution format | Standard |
| converted to | a001073p.12o (RINEX format) | base sta. used | -- |
| antenna type | NONE | base sta. excluded | -- |
| antenna height | 2.101 meters | state plane zone | AUTO |
| email address | jlittle@egps.net | geoid model | Geoid09 |
| processor | Rapid-Static | project ID | -- |



**12. Check e-mail**

a. **Open and review results: As per the NGS guidelines.**
b. **Choose your coordinates from correct reference frame.**

***You are Finished!!!***