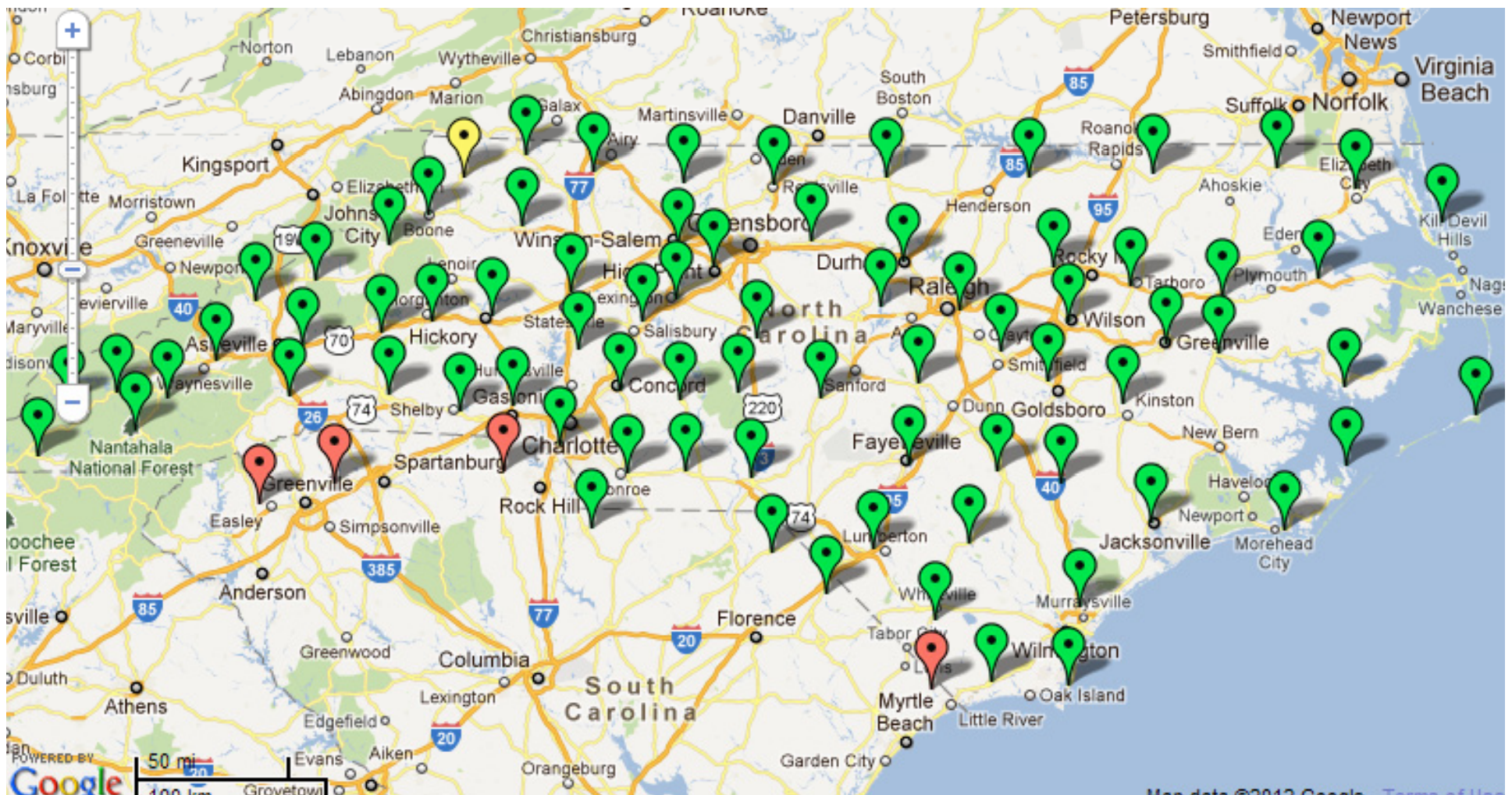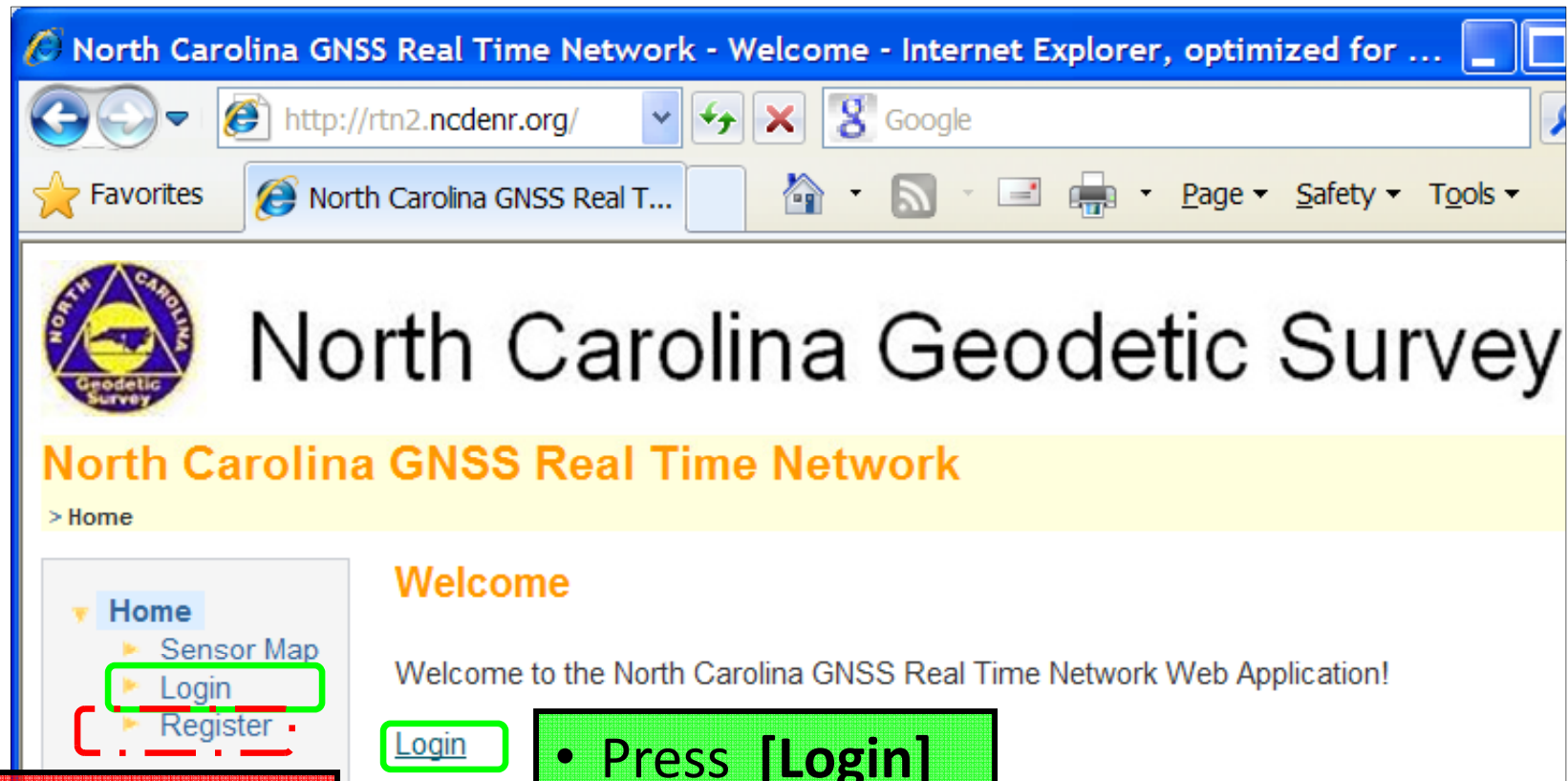# How to download GNSS base station data from the NCRTN
for multiple time periods
and
from multiple base stations

Register or Login

- Visit the NCRTN website (http://rtn2.ncdenr.org/)

- Press **[Register]** if you have **not** yet registered

- Press **[Login]** if you have already registered

Register: Create an account

1. Fill-in your contact info
2. Press the **[Next]** button

Register: Create an account

1. ## Fill-in your login data
   - Please use your email address as your **User Name**

2. ## Type in the **Security code**
   - The **Security code** does <u>not</u> display when using the Google Chrome Internet browser, but does display in MS Internet Explorer.
   - If you are <u>not</u> able to correctly type the contorted **Security code**, you will be granted a chance with another contorted security code.

3. ## Press the **[Register]** button

Login Data

Organization:
User Name:
Password:
Confirm Password:

1. **Fill-in your login data. Please use your email address as your User Name**

g42wR

Security code shown above:

2. **Enter the Security code (e.g. g42wR)**

Previo   **3. Press**   Register

Register: Confirmation emails

- After you register, you will receive two emails:

    1. Account activated

    2. Subscription created

- Upon receiving the **Subscription created** email, you can now login with your respective login info:

    – **Login** (your email address as your user name)

    – **Password**

    – **Organization**

From: NC RTN System [ncrtn@ncdenr.gov]
To: Latrans, Rufus
Cc:
Subject: Subscription created

Hello Rufus Latrans

following subscription has been created.

Login: rufus.latrans@acme.com

Password: t7LJ44_r3

Organization: Acme Surveying

Subscription: NCGS CORS Data Download

Purchased date (UTC): 4/26/2012 3:59:35 PM

Effective date (UTC): 4/26/2012 4:00:00 AM

Expiration date (UTC): 4/26/2017 4:00:00 AM

This e-mail was sent automatically by the T App system.

Login

1. Enter your login info:
   - Organization
   - User Name
   - Password

2. Press the **[Login]** button
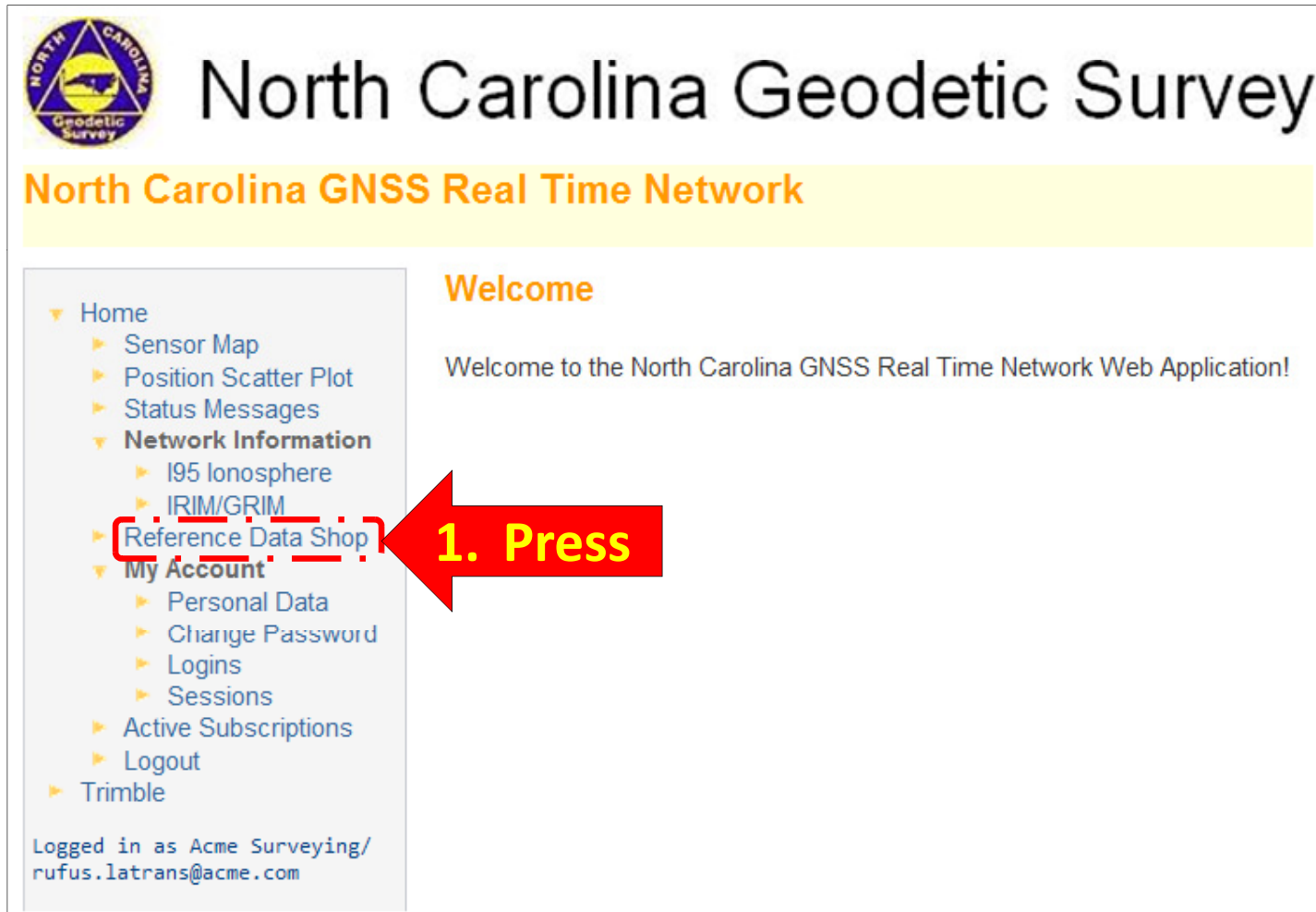
Welcome to the NC GNSS Real Time Network

1. Press the **[Reference Data Shop]** link

Reference Data Shop - Overview

1. Press the **[Start new order]** button

Reference Data Shop – Station Type

1. Select the **[Continuously Operating Reference Station (CORS)]** link

Reference Data Shop – Reference Stations

1. Select your desired base station [listed by CORS ID (e.g. NC77)]

2. Press the **[Next: Time Selection>>]** button

Reference Data Shop – Date & Time Selection

1. Enter the following information about your GPS data collection period:

Reference Data Shop - Date & Time Selection

You have selected the following reference station(s):

NC77

Please enter your desired observation period:

Observation Period

Date:	4/30/2012
Start time:	15 h 0 m 0 s
Duration:	0 h 30 m
Interval:	15 s
Time system:	GPS

<< Back: Reference Stations   Next: Add to order >>

Parameter	Format or note
Date:	The default date is the current date
Start time:	24-hour format in the GPS Time system, which is equivalent to GMT or UTC
Duration:	Hours and minutes
Interval:	1, 2, 5, 10, 15, 20, 30, or 60 seconds

2. If you are unsure about how to determine the **Start time** in the GPS time system, then please review the next set of slides before pressing the **[Next: Add to Order>>]** button.

How to determine your field collection's start time in the GPS time system

Question: Which RINEX files would you need if you collected GPS data on?:

- Friday, 9 March 2012, from 6:15 am – 11:37 am EST
- Mon, 12 March 2012, from 6:07 am – 11:54 am EDT

Note: Daylight Savings Time started on Sunday, 11 March 2012, at 2 am

The answer can be found in the Eastern time to GPS time table, which is on the next two pages and is organized by:

Time zone	Columns
Eastern Standard (EST):	First two columns (blue highlighted for the dark of winter)
GPS time system (UTC or GMT):	Center column
Eastern Day (EDT):	Last two columns (yellow highlighted for the sunshine of summer)

How to determine your field collection's start time in the GPS time system

12 hour Eastern Standard (EST)	24 hour Eastern Standard (EST) (minus 5 hrs)	GPS time system (UTC or GMT)	12 hour Eastern Daylight (EDT)	24 hour Eastern Daylight (EDT) (minus 4 hours)
7 pm*	19*	00	8 pm*	20*
8 pm*	20*	01	9 pm*	21*
9 pm*	21*	02	10 pm*	22*
10 pm*	22*	03	11 pm*	23*
11 pm*	23*	04	12 am (midnight)	00 (midnight)
12 am (midnight)	00 (midnight)	05	1 am	01
1 am	01	06	2 am	02
2 am	02	07	3 am	03
3 am	03	08	4 am	04
4 am	04	09	5 am	05
5 am	05	10	6 am	06
6 am	06	11	7 am	07

Ex. starts @ 6 am

Ex. starts @ 6 am

* = The previous day

How to determine your field collection's start time in the GPS time system

12 hour Eastern Standard (EST)	24 hour Eastern Standard (EST) (minus 5 hrs)	GPS time system (UTC or GMT)	12 hour Eastern Daylight (EDT)	24 hour Eastern Daylight (EDT) (minus 4 hours)
7 am	07	12	8 am	08
8 am	08	13	9 am	09
9 am	09	14	10 am	10
10 am	10	15	11 am	11
11 am	11	16	12 pm (noon)	12
12 pm (noon)	12	17	1 pm	13
1 pm	13	18	2 pm	14
2 pm	14	19	3 pm	15
3 pm	15	20	4 pm	16
4 pm	16	21	5 pm	17
5 pm	17	22	6 pm	18
6 pm	18	23	7 pm	19

How to determine your field collection's start time in the GPS time system

- Which RINEX files would you need if you collected GPS data on?:
    - Friday, 9 March 2012, from 6:15 am – 11:37 am
    - Monday, 12 March 2012, from 6:07 am – 11:54 am

Note:

Daylight Savings Time started on Sunday, 11 March 2012, at 2 am

Field collection	UTC hours	UTC start time	Duration
Fri, 9 March 2012, from 6:15 am – 11:37 am	11 – 16	11	6 hours
Mon, 12 March 2012, from 6:07 am – 11:54 am	10 – 15	10	6 hours

Reference Data Shop – Date & Time Selection

1. Enter the following information about your 1st GPS data collection period (example uses: Friday, 03-09-2012, from 6:15 am – 11:37 am EST)

Parameter	Example value
Date:	3/9/2012
Start time:	11 h, 0 m, 0 s (Since the data is free, then start at the top of the hour.)
Duration:	6 h, 0 m
Interval:	1 second (depends on your data needs)

2. Press the **[Next: Add to Order>>]** button.

Reference Data Shop – Your current Order

1. To get data for a 2nd period, press the order item's radio button circle to select it (green dot appears when selected).

2. Press the **[More data for station]** button.

Reference Data Shop – Date & Time Selection

1. Enter the following information about your 2nd GPS data collection period (example uses: Monday, 03-12-2012, from 6:07 am – 11:54 am EDT)

Parameter	Example value
Date:	3/12/2012
Start time:	10 h, 0 m, 0 s (Due to Daylight Savings, the example data collection started 1 hour earlier in GPS time.)
Duration:	6 h
Interval:	1 second (depends on your data needs)

2. Press the **[Next: Add to Order>>]** button.

Reference Data Shop – Your current Order

1. To get data from a 2nd station, press the 1st station's 1st collection period's radio button circle

2. Press the **[More data for time period]** button

Reference Data Shop – Station Type

1. Select the **[Continuously Operating Reference Station (CORS)]** link

Reference Data Shop – Reference Stations

1. Select your 2nd desired base station (e.g. NCMR)

2. Press the **[Next: Time Selection>>]** button

Reference Data Shop – Date & Time Selection

1. Confirm the following:
   a. Desired 2nd station is listed (e.g. NCMR)
   b. Your GPS data collection period parameters are correct.

Parameter	Example value
Date:	3/9/2012
Start time:	11 h, 0 m, 0 s (Since the data is free, then start at the top of the hour.)
Duration:	6 h, 0 m
Interval:	1 second (depends on your data needs)

2. Press the **[Next: Add to Order>>]** button.

Reference Data Shop – Your current Order

1. To get the 2nd period's data from a 2nd station, press the 1st station's 2nd collection period's radio button circle

2. Press the **[More data for time period]** button

Reference Data Shop – Station Type

1. Select the **[Continuously Operating Reference Station (CORS)]** link

Reference Data Shop – Reference Stations

1. Select your 2nd desired base station (e.g. NCMR)

2. Press the **[Next: Time Selection>>]** button

Reference Data Shop – Date & Time Selection

1. Confirm the following:
   a. Desired 2nd station is listed (e.g. NCMR)
   b. Your GPS data collection period parameters are correct.

Parameter	Example value
Date:	3/12/2012
Start time:	10 h, 0 m, 0 s (Due to Daylight Savings, the example data collection started 1 hour earlier in GPS time.)
Duration:	6 h
Interval:	1 second (depends on your data needs)

2. Press the **[Next: Add to Order>>]** button.

Reference Data Shop – Your current Order

1. Confirm your order

2. Press the **[Next: Delivery Options >>]** button

Reference Data Shop - Your current Order

The following items are currently in your order. You may add further items, remove items or proceed with delivery options and data generation.

1. Confirm

	Station	Start time	End time	Duration (min.)	Interval (sec.)	Epochs	Est. Price*
○	NC77	3/9/2012 11:00 AM	5:00 PM	360	1	21600	0.00
○	NC77	3/12/2012 10:00 AM	4:00 PM	360	1	21600	0.00
○	NCMR	3/9/2012 11:00 AM	5:00 PM	360	1	21600	0.00
○	NCMR	3/12/2012 10:00 AM	4:00 PM	360	1	21600	0.00
	Total:			1440		86400	0.00

Applying to selected item: [More data for station] [More data for time period] [Remove]

Choose the login on which to book the order: rufus.latrans@acme.com

[^ Back to Overview] [Cancel order] [Add more stations]
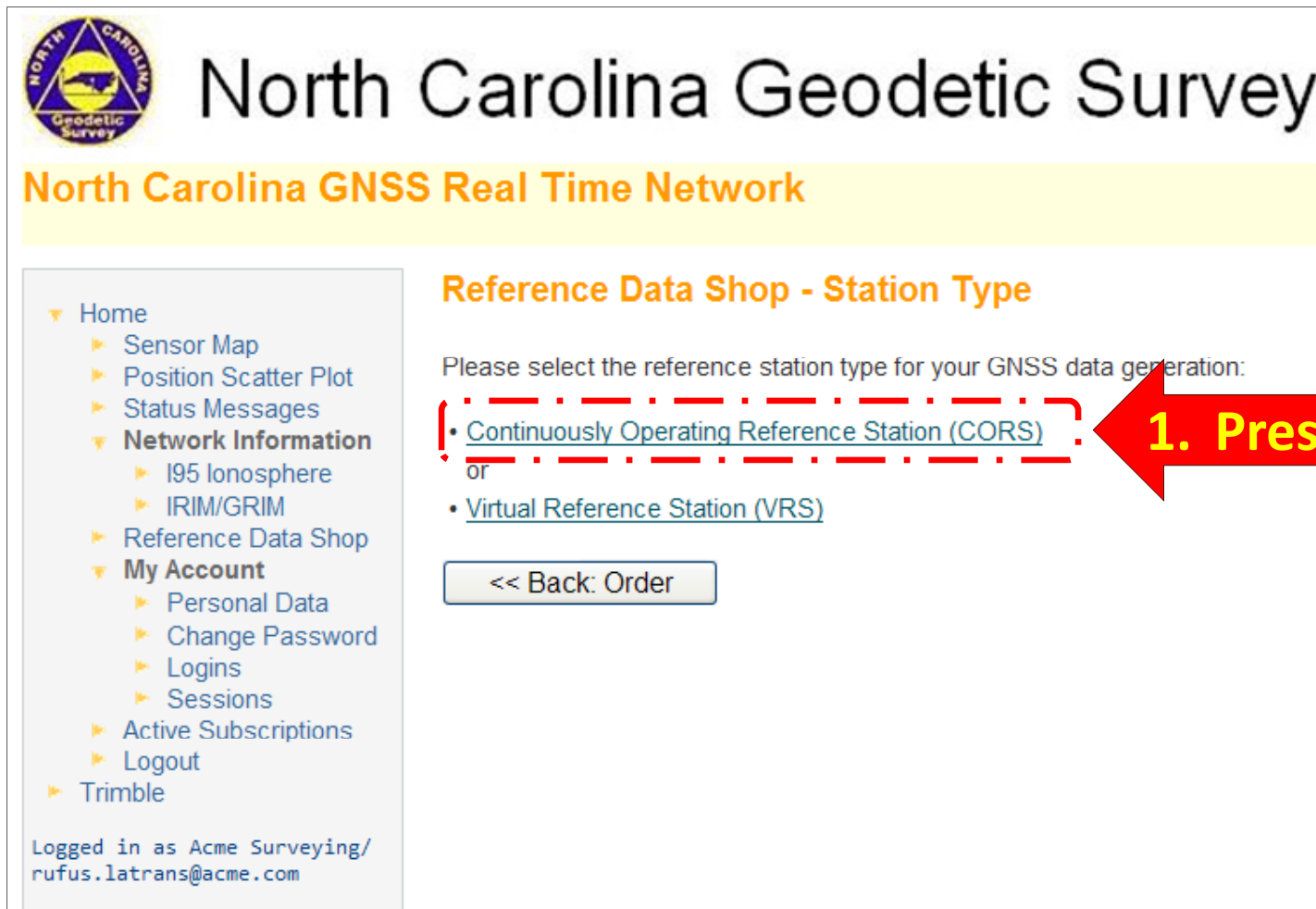
2. Press [Next: Delivery Options >>]

Note: The displayed price is just an estimate. The true price may be lower due to missing epochs and cannot be determined until the final GNSS data files are generated.

All times are in the GPS time system.

Reference Data Shop – Delivery Options

1. Select either delivery option:

Download the data   ~ or ~   **Send me the data by email**

o Notify me by email

o One single email **(Avoid this option on large orders!)**

~ or ~

o Multiple emails, one for each order item

Reference Data Shop – Delivery Options

2. Select the desired file format (e.g. RINEX 2. 10, 2.11, or 3.0; DAT; TGD; or T01 or T02).

3. Press the **[Next Generate Data >>]** button.

Reference Data Shop - Delivery Options

You can choose to either download the generated reference data files or to send them to you by e-mail.
In the latter case you don't have to wait until the files are generated, which may take some time, depending on the amount of requested data.

◉ Download the data

☑ Notify me by e-mail when the data is generated

or

◯ Send me the data by e-mail

Choose the file format (all files will be packed into a single ZIP archive):

RINEX 2.11 ▾

<< Back: Current Order   Next: Generate Data >>

1. Select either delivery option

2. Select the desired file format

3. Press

Reference Data Shop - Delivery Options

You can choose to either download the generated reference data files or to send them to you by e-mail.
In the latter case you don't have to wait until the files are generated, which may take some time, depending on the amount of requested data.

◯ Download the data

or

◉ Send me the data by e-mail
  ◯ One single e-mail containing all order items
  ◉ Multiple e-mails, one for each order item

Please provide your e-mail address:
rufus.latrans@acme.com

Choose the file format (all files will be packed into a single ZIP archive):

RINEX 2.11 ▾

Next: Generate Data >>

File types:
- RINEX 2.11
- RINEX 2.10
- RINEX 3.0
- DAT
- TGD
- T01
- T02

Reference Data Shop – Data Generation:
Delivery option: Download the data

1. If you selected the **"Download the data"** option, selected the desired file type, and pressed the **[Next Generate Data>>]** button as depicted below, then:

Reference Data Shop - Delivery Options

You can choose to either download the generated reference data files or to send them to you by e-mail.
In the latter case you don't have to wait until the files are generated, which may take some time, depending on the amount of requested data.

◉ Download the data

    ☑ Notify me by e-mail when the data is generated   **1a. Select**

    or

○ Send me the data by e-mail

Choose the file format (all files will be packed into a single ZIP archive):

RINEX 2.11 ▾   **1b. Select the file format**

[<< Back: Current Order]   [Next: Generate Data >>] **1c. Press**

File types:
- RINEX 2.11
- RINEX 2.10
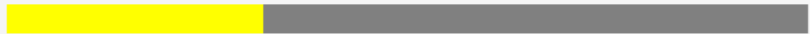- RINEX 3.0
- DAT
- TGD
- T01
- T02

Reference Data Shop – Data Generation:
Delivery option: Download the data

2. Watch the data generation progress on the "Processing Status" bars

Reference Data Shop - Data Generation

Your requested reference data files are being generated.
Please wait...

Processing Status	
Files generated:	2 / 4
Current file progress:	32 %
Total progress:	52 %

Note that you don't have to remain on this page for the entire file generation process. You can go back to the overview or any other page and return later to the download data.

[<< Back: Overview]   [Cancel generation]

Reference Data Shop – Data Generation:
Delivery option: Download the data

3. Once the data has been generated:

   a. Read the "Order N generated" email to inform you that your order is ready for download

   b. Press the **[Next: Order Details >>]** button in the "Data Generation" announcement box.

From: NC RTN System [ncrtn@ncdenr.gov]   Sent: Tue 5/1/2012 3:32 PM
To: Latrans, Rufus
Cc:
Subject: Reference Data Shop: Order 3 generated

Hello Rufus Latrans

on 5/1/2012 at 11:08 AM you ordered reference data for 4 reference station(s).
The data has been generated and you can download it as a ZIP archive from the web server or view a detailed analysis.

Order number: 3

Best regards,
Your Trimble VRS³Net Web App Service Administrator

3a. Read

Reference Data Shop - Data Generation

Data generation finished.
You can now view the results and download the data on the next page.

<< Back: Overview   Next: Order Details >>

3b. Press

Reference Data Shop – Data Generation:
Delivery option: Download the data

4. Press the **[Download]** button.

Reference Data Shop - Order #3

The following order items have been generated. You may view the details of each item, remove single items from the order or finally submit the order and download the whole package.

	Station	Start time	End time	Duration (min.)	Interval (sec.)	Epochs req./ available	Eff. Minutes	Price
○	NC77	3/9/2012 11:00 AM	5:00 PM	360	1	21600 / 21600	360	0.00 $
○	NC77	3/12/2012 10:00 AM	4:00 PM	360	1	21600 / 21600	360	0.00 $
○	NCMR	3/9/2012 11:00 AM	5:00 PM	360	1	21600 / 21600	360	0.00 $
○	NCMR	3/12/2012 10:00 AM	4:00 PM	360	1	21600 / 21600	360	0.00 $
	Total:			1440		86400 / 86400	1440	0.00 $

Applying to selected item: [Details]   [Remove]

By downloading the order you will be charged the above total price.

Choose the login on which to book the order: rufus.latrans@acmc.com ▾

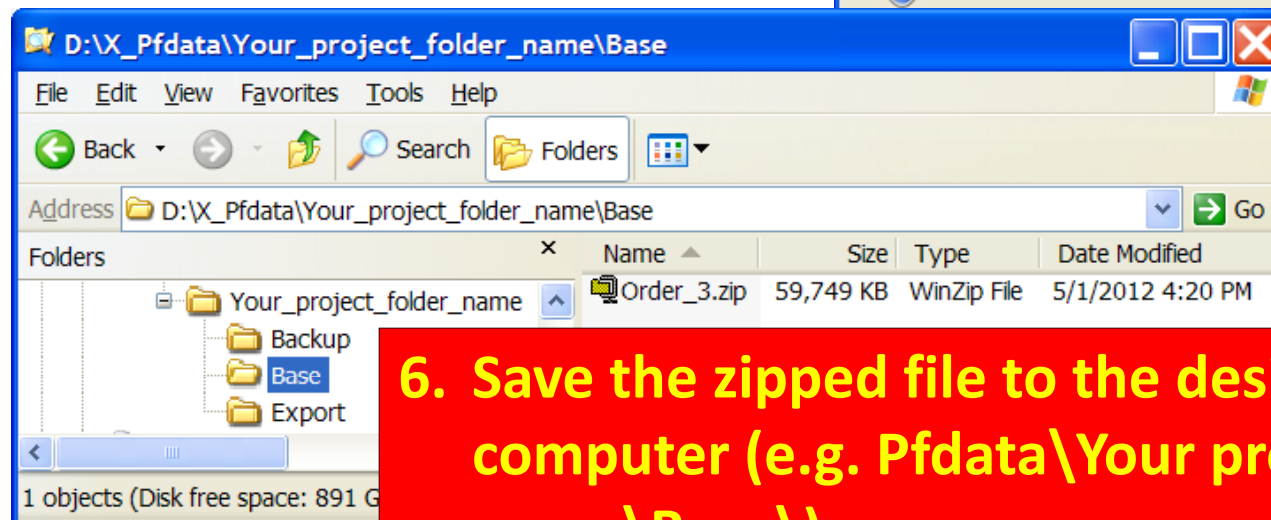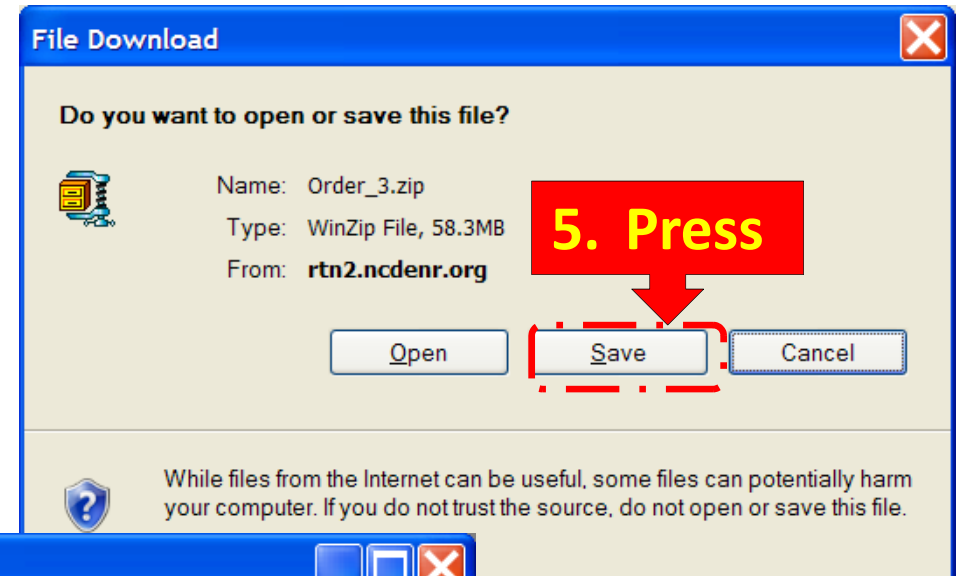[^ Back to Overview]   [Cancel order]   [Send by e-mail]   [Download]

4. Press

Downloading the data to your computer:
Delivery option: Download the data

5. Press the **[Save]** button in the "Save Download" dialog box.

6. Save the zipped file to the desired folder on your computer.

File Download

Do you want to open or save this file?

Name: Order_3.zip
Type: WinZip File, 58.3MB
From: **rtn2.ncdenr.org**

5. Press

Open | Save | Cancel

While files from the Internet can be useful, some files can potentially harm your computer. If you do not trust the source, do not open or save this file.

D:\X_Pfdata\Your_project_folder_name\Base

File Edit View Favorites Tools Help

Back • • • Search Folders •

Address D:\X_Pfdata\Your_project_folder_name\Base • Go

Folders ×

Name	Size	Type	Date Modified
Order_3.zip	59,749 KB	WinZip File	5/1/2012 4:20 PM

- Your_project_folder_name
  - Backup
  - Base
  - Export

1 objects (Disk free space: 891 G

6. Save the zipped file to the desired folder on your computer (e.g. Pfdata\Your project folder name\Base\).

Downloading the data to your computer:
Delivery option: Download the data

7. Extract the RINEX files from the zipped file and then confirm your files before using them for post-processing.

Address	D:\X_Pfdata\Your_project_folder_name\Base\Order_4				Go

Folders

- Your_project_folder_name
  - Backup
  - Base
    - Order_3
    - Order_4

Name ▲	Size	Type	Date Modified
NC77069I.12g	80 KB	12G File	5/4/2012 3:18 PM
NC77069I.12n	148 KB	12N File	5/4/2012 3:18 PM
NC77069I.12o	60,845 KB	12O File	5/4/2012 3:18 PM
NC77069I.txt	1 KB	Text Document	5/4/2012 3:18 PM
NC77072I.12g	82 KB	12G File	5/4/2012 3:19 PM
NC77072I.12n	147 KB	12N File	5/4/2012 3:19 PM
NC77072I.12o	60,173 KB	12O File	5/4/2012 3:19 PM
NC77072I.txt	1 KB	Text Document	5/4/2012 3:19 PM
NCMR069I.12g	80 KB	12G File	5/4/2012 3:20 PM
NCMR069I.12n	149 KB	12N File	5/4/2012 3:20 PM
NCMR069I.12o	60,012 KB	12O File	5/4/2012 3:20 PM
NCMR069I.txt	1 KB	Text Document	5/4/2012 3:20 PM
NCMR072I.12g	81 KB	12G File	5/4/2012 3:21 PM
NCMR072I.12n	149 KB	12N File	5/4/2012 3:21 PM
NCMR072I.12o	59,184 KB	12O File	5/4/2012 3:21 PM
NCMR072I.txt	1 KB	Text Document	5/4/2012 3:21 PM

16 objects ( ) GB)   235 MB   My Computer

NC77 RINEX files for March 9th (JD 069) and 12th (JD 072)

NCMR RINEX files for March 9th (JD 069) and 12th (JD 072)

Downloading the data to your computer:
Delivery option: Email the data

1. If you selected the **"Send me the data by email"** option, selected the **"Multiple emails, one for each order item"** sub-option, entered your email address, selected the desired file format, and pressed the **[Next Generate Data>>]** button as depicted below, then:

File types:
- RINEX 2.11
- RINEX 2.10
- RINEX 3.0
- DAT
- TGD
- T01
- T02

1a. Select the "Email" option & the "Multiple emails" sub-option

1b. Enter

1c. Select the file format

1d. Press

Reference Data Shop - Delivery Options

You can choose to either download the generated reference data files or to send them to you by e-mail.
In the latter case you don't have to wait until the files are generated, which may take some time, depending on the amount of requested data.

○ Download the data

or

⦿ Send me the data by e-mail
  ○ One single e-mail containing all order items
  ⦿ Multiple e-mails, one for each order item

Please provide your e-mail address:

rufus.latrans@acme.com

Choose the file format (all files will be packed into a single ZIP archive):

RINEX 2.11 ▾

<< Back: Current Order   Next: Generate Data >>

Downloading the data to your computer:
Delivery option: Email the data

2. Confirm the following:

   a. The **"Multiple"** email option is selected (if you have multiple periods &/or stations)

   b. Your email address is listed correctly

Reference Data Shop - Send Order by E-mail

Send me the data by e-mail

○ **One** single e-mail containing all order items

2b. Confirm

2a. Confirm ● **Multiple** e-mails, one for each order item

Please provide your e-mail address: rufus.latrans@acme.com

<< Back: Overview | Next: Send e-mail now >> **3. Press**

3. Press the **[Next: Send e-mail now>>]** button

Downloading the data to your computer:
Delivery option: Email the data

4a. Confirm

Reference Data Shop - Confirm Mail Delivery

You have chosen to receive the requested reference data by e-mail. This way you don't have to wait until the generation is finished. If you proceed, feel free to logout immediately as you will automatically receive the data later.

Note that you will have to pay for the data in any case! If the data is incomplete and has missing epochs, you will probably be charged less, but you still risk that the data won't be sufficient for your task.

You will also be charged if the supplied e-mail address is misspelled. So please double-check that the following e-mail address is correct:
rufus.latrans@acme.com

4b. Confirm

If you don't accept these conditions, go back now and choose Download as delivery option.

By clicking the Next button you accept the above statement!

[<< Back: Delivery Options]   [Next: Generate Data >>]

5. Press

4. Confirm the following:

   a. You want the data & want it to be emailed to you

      Note: Although the confirmation box states that there is a charge, the data is free

   b. Your email address is listed correctly

5. Acceptance

   – If **not** acceptable, press the **[Back: Delivery Options]** button and then edit or cancel the order.

   – If acceptable, press the **[Next: Generate Data >>]** button

Downloading the data to your computer:
Delivery option: Email the data

6. If you pressed the **[Next: Generate Data >>]** button, then you may either:

- Log out

  ~or~

- Watch the data generation **Status** indicator change:

From: In Progress

To: Finished

Reference Data Shop - Overview

This service allows you to obtain GNSS data for reference stations in the network or a virtual reference station. You can order and immediately download the requested data files which will either be in RINEX ("Receiver INdependent EXchange") or in a different format.
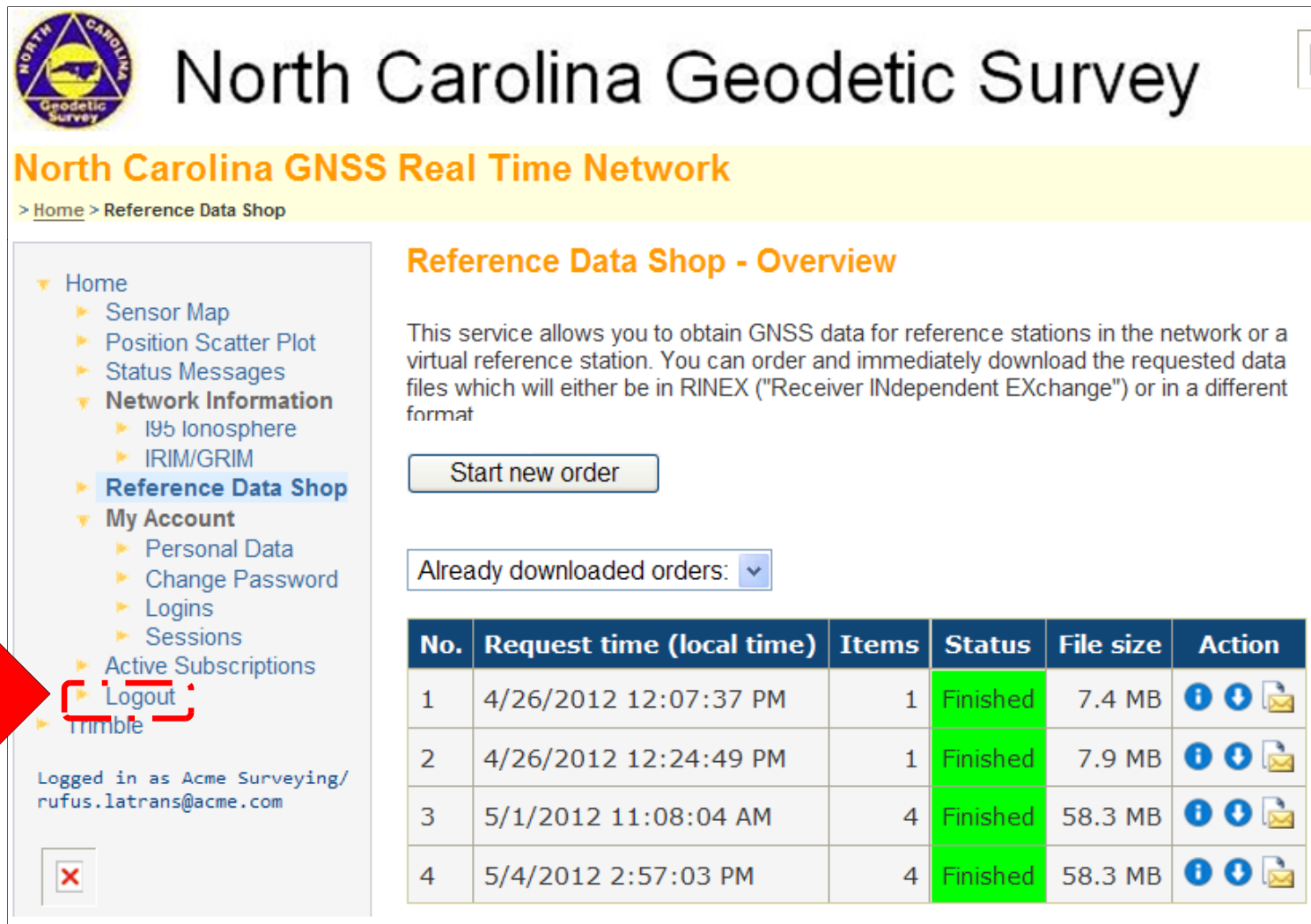
| Start new order |
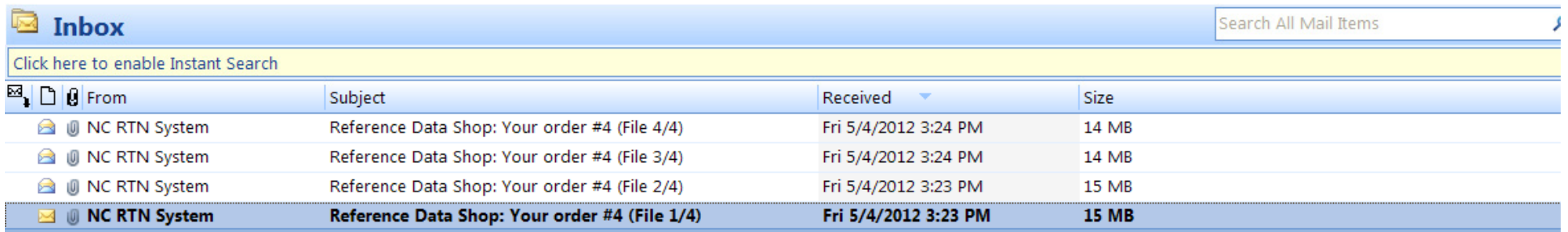
Not yet downloaded orders: ▾

No.	Request time (local time)	Items	Status	File size	Action
4	5/4/2012 2:57:03 PM	4	Finished	58.3 MB	ℹ ⬇ ✉

Downloading the data to your computer:
Delivery option: Email the data

7. Save the zipped file from each email in your order (the example had 4 emails) to the desired folder on your computer (e.g. Pfdata\Your project folder name\Base\).

		From	Subject	Received	Size
		NC RTN System	Reference Data Shop: Your order #4 (File 4/4)	Fri 5/4/2012 3:24 PM	14 MB
		NC RTN System	Reference Data Shop: Your order #4 (File 3/4)	Fri 5/4/2012 3:24 PM	14 MB
		NC RTN System	Reference Data Shop: Your order #4 (File 2/4)	Fri 5/4/2012 3:23 PM	15 MB
		NC RTN System	**Reference Data Shop: Your order #4 (File 1/4)**	**Fri 5/4/2012 3:23 PM**	**15 MB**

Inbox   Search All Mail Items

Click here to enable Instant Search

Reference Data Shop: Your order #4 (File 1/4)

NC RTN System [ncrtn@ncdenr.gov]

Sent: Fri 5/4/2012 3:22 PM
To: Latrans, Rufus

✉ Message | 🗎 Order_4-1.zip (15 MB)

7. Save the zipped file from each email to the desired folder on your computer.

Hello Rufus Latrans,

on 5/4/2012 at 2:57 PM you ordered reference data for 4 reference stations.
For each station you get one e-mail. One reference data file is attached to this e-mail, packed in a ZIP-file. The other files are sent in separate e-mails.

You can also download the whole order as a ZIP archive from the web server or view a detailed analysis there.

Order number: 4
File: 1 of 4

Downloading the data to your computer:
Delivery option: Email the data

8. Extract the RINEX files from each zipped file and then confirm your files before using them for post-processing.

NC77 RINEX files for March 9th (JD 069) and 12th (JD 072)

NCMR RINEX files for March 9th (JD 069) and 12th (JD 072)

Logout

Before you logout, you can do the following with each previous order:

Icon	Function
Details	Access that order's item table
Download	Download that order
Email	Send that order via email

Logout

1. To logout, press the [Logout] link

Logout

2. Close your Internet browser
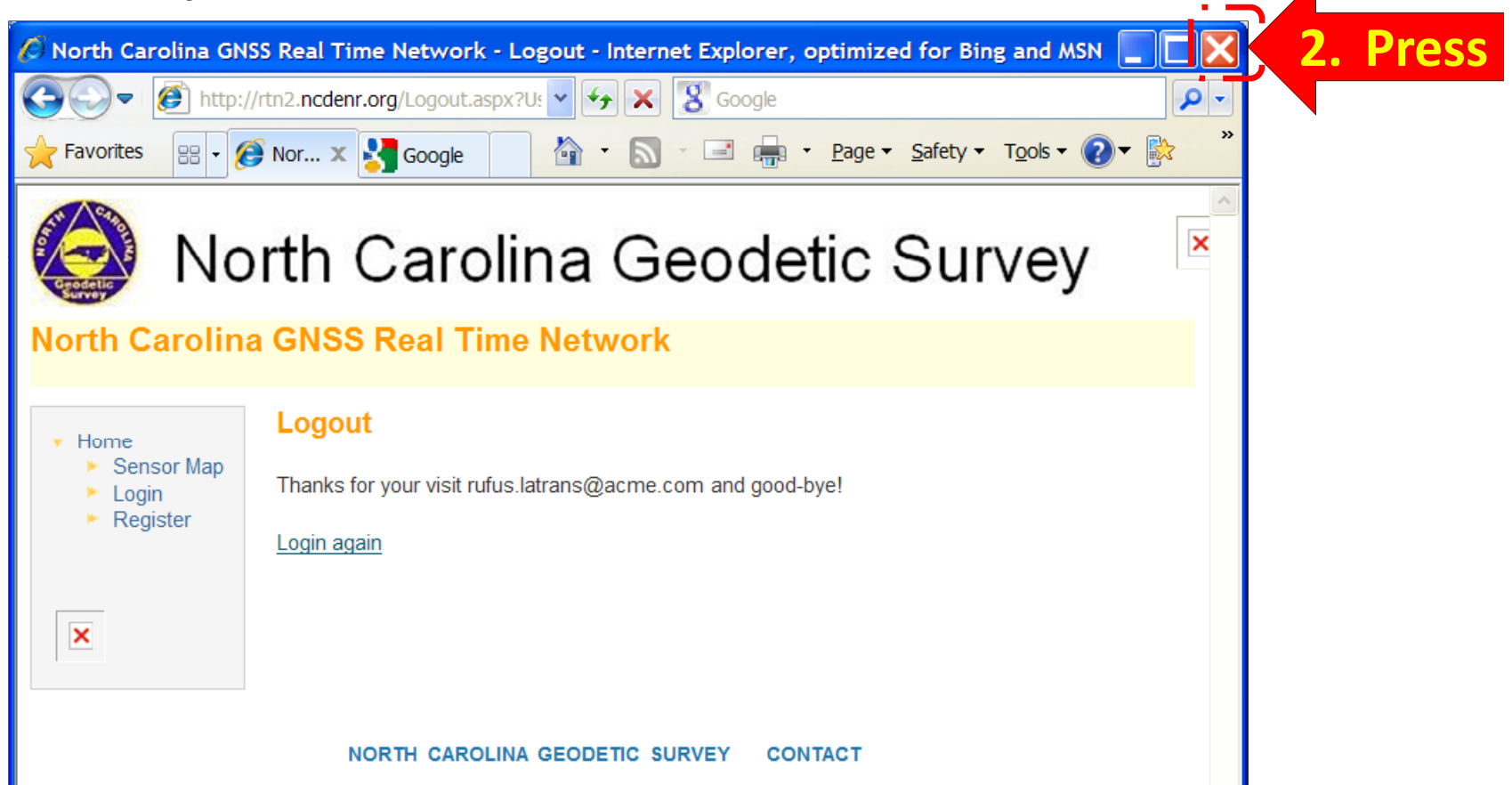
If you have any questions,
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