Remote Observing with the GBT

Nichol Cunningham
Things to do before you can remote observe

- Proposals are managed through the DSS.
Things to do before you can remote observe

- You need to be assigned remote access in the DSS - only Toney Minter can do this - you must make sure your PI emails him at least two weeks before you plan to observe.

<table>
<thead>
<tr>
<th>Call Order</th>
<th>Name</th>
<th>Email(s)</th>
<th>PI</th>
<th>Contact</th>
<th>Remote</th>
<th>Observer(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>▲ ▼</td>
<td>Nichol Cunningham</td>
<td><a href="mailto:ncunning@nrao.edu">ncunning@nrao.edu</a></td>
<td></td>
<td></td>
<td>Yes</td>
<td></td>
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<tr>
<td>▲ ▼</td>
<td>Toney Minter</td>
<td><a href="mailto:tminter@nrao.edu">tminter@nrao.edu</a></td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
</tbody>
</table>
Things to do before you can remote observe

- You need to be assigned remote access in the DSS - only Toney Minter can do this- you must make sure you email him at least two weeks before you plan to observe.
- You need to have your project enabled- PI is responsible for this.
- Be careful of setting black out dates in the DSS.

Project Sessions

<table>
<thead>
<tr>
<th>Name</th>
<th>Coordinates</th>
<th>Freq</th>
<th>Rcvr</th>
<th>Time billed</th>
<th>Min/Max Dur.</th>
<th>Type</th>
<th>Gr</th>
<th>Enabled</th>
<th>Other Parameters</th>
</tr>
</thead>
<tbody>
<tr>
<td>GBT148-480 - 01</td>
<td>RA: 13:50:00.0</td>
<td>9.0</td>
<td>X</td>
<td>23.75 / 30.0</td>
<td>3.0 - 3.5</td>
<td>spectral line</td>
<td>A</td>
<td></td>
<td>Min Elev 5.0</td>
</tr>
<tr>
<td></td>
<td>Dec: -11:30:00.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GBT148-480 - 02</td>
<td>RA: 13:50:00.0</td>
<td>9.0</td>
<td>X</td>
<td>8.75 / 20.0</td>
<td>2.5 - 3.5</td>
<td>spectral line</td>
<td>A</td>
<td>✓</td>
<td>Min Elev 5.0</td>
</tr>
<tr>
<td></td>
<td>Dec: -11:30:00.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GBT148-480 - 03</td>
<td>RA: 16:00:00.0</td>
<td>9.0</td>
<td>X</td>
<td>14.0 / 19.0</td>
<td>3.0 - 12.0</td>
<td>spectral line</td>
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<td>✓</td>
<td>Min Elev 5.0</td>
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<tr>
<td></td>
<td>Dec: 10:00:00.0</td>
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<td></td>
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</tr>
</tbody>
</table>
Things to do before you can remote observe

- You want to have your observing scripts ready and catalogs set up. These should be validated in advance.
- You want to access the system remotely from the computer you plan on using for the observations before you get scheduled to make sure you have no problems connecting.
- Have access to a phone when you observe and have the operators number - you will want to ring them about 30 minutes before you are due to start.
  - Operators Number 304-456-2341 and 304-456-2346
- You should provide the operator with your contact number.
- You should be remotely logged on in advance.
Your project is scheduled

• Now you need to get onto the system remotely.

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• VNC (Virtual Network Connection).
• You can set this up on any operating system.
• Make sure you test ahead of time and have everything working.
Setting up the VNC Viewer

Firstly you will need to have VNC viewer installed on your machine.

- **Linux** – VNC viewer comes with most Linux distributions
- **Mac** – Chicken of the VNC  
  (sourceforge.net/projects/cotvnc)
- **Windows** - TightVNC (www.tightvnc.com)
- For Windows you will also need to download an SSH client.
  - **Putty** is a freeware SSH client and is available from  
    www.chiark.greenend.org.uk/~sgtatham/putty/download.html
Creating a Password and VNC folder

Create a password and VNC directory for remote observing.

1. Open a terminal or use Putty for Windows.
2. SSH into stargate.gb.nrao.edu.
3. You will be asked for your GBO username and password.
4. Run `passwd`.
5. Enter a password different from your GBO password. This password can be shared with staff if problems occur during your observing run.
6. Create a VNC directory with `mkdir ~/.vnc`.
7. For Windows users, use Putty for the setup.

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Setting up the VNC session on titania

https://science.nrao.edu/facilities/gbt/observing/remote-observing-with-the-gbt

- SSH into stargate.gb.nrao.edu
- `ssh stargate.gb.nrao.edu`
- You will be asked for your GBO username and password
- `ssh titania.gbt.nrao.edu`
- Again you will be asked for your GBO username and password.
- `vncserver`
- This will output New ‘titania:n username desktop is titania:n’
- The number given by the n is your designated session number on titania
Setting up the VNC session on titania

- SSH into stargate.gb.nrao.edu
  
  ```
  >ssh stargate.gb.nrao.edu
  ```

- You will be asked for your GBO username and password
  
  ```
  >ssh titania.gb.nrao.edu
  ```

- Again you will be asked for your GBO username and password.
  
  ```
  >vncserver
  ```

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[https://science.nrao.edu/facilities/gbt/observing/remote-observing-with-the-gbt](https://science.nrao.edu/facilities/gbt/observing/remote-observing-with-the-gbt)
Setting up the tunnel and opening the VNC viewer

- **Linux** - To establish an SSH tunnel and start a VNC viewer, open a terminal on your local computer – and type;

```
> vncviewer -Shared -via YOURLOGIN@stargate.gb.nrao.edu titania.gbt.nrao.edu:port
```

- This should again ask for your GBO password.
- Once entered launch the chicken of the VNC viewer
- A login window will appear.
Setting up the tunnel and opening the VNC viewer

Mac – Establish the tunnel

```
>ssh -N -C -L 590n:titania.gbt.nrao.edu:590n YOURLOGIN@stargate.gb.nrao.edu
```

- Launch the chicken of the VNC viewer
- A login window will appear.

You should now have a VNC viewer to titania!!
Setting up the tunnel and opening the VNC viewer

- **Windows** – You need to create the SSH tunnel through another *putty configuration window*
- *The configuration steps with screen shots are given*

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- Then start the VNC viewer using TightVNC
You are now connected to titania!!

- You need to open the tools required to complete your observations;
- Astrid
- Cleo
  - Status
  - Talk and draw
  - Messages
  - Scheduler and skyview
- GBTIDL

- And now you are ready to observe!!

- Note- You should only be logged on to titania or ariel for observing only.
Ending your VNC session

- Make sure you change Astrid back to offline mode when finished
- After closing the VNC Viewer before closing exiting titania through the terminal you should kill the vnc session.

```
[ncunning@titania ~]$ >vncserver -kill :n
```

- Now you can exit out of the terminals, and you are finished until next time.

- Don’t forget there is an observer comment form.
Recap

- Make sure you are assigned as a remote observer in the DSS well in advance of your project being enabled.

- Make sure you have the operators number and the operator knows your number and you are confident you can connect remotely. You should be logging on 30 minutes before you are due to observe.

- Make sure your observing scripts validate in advance.

- Make your VNC password something other than your GBO password so we can access your VNC session if there are problems.

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