UGGA SET UP AND GAS EFFLUX METHODS

RULE 1: If you do not feel comfortable and unsure about something, call a supervisor.
RULE 2: If you see someone else that is unsure how to use the instrument or doing something that might not seem right, stop them and call a supervisor, together.

Supervisors of UGGA by lab:

Carey lab includes: Ryan McClure
Cayelan Carey
Hotchkiss Lab includes: Erin Hotchkiss (office: 540-2310-7005; mobile: 540-449-4750)
Kristen Bretz
Bobbie also knows how to use the UGGA She is a great resource if supervisors are not around.

GETTING THE UGGA:

1) **All UGGA use must be scheduled in advance** using the shared Google Calendar. DO NOT TAKE THE UGGA out of 1082 if someone else has reserved it without checking with them first.
2) The UGGA is in Derring 1082. The code into 1082 is the same as the Blue Room. It is in the grey cabinet on the bottom shelf or on the shelf furthest from the door. **IF YOU USE THE UGGA, PLEASE SIGN IT OUT ON THE SHEET ON THE OUTSIDE OF THE CABINET, THANK YOU!**
3) The UGGA has four components for field
    a. The instrument (large yellow pelican case)
    b. The battery pack (smaller yellow pelican case)
    c. The toolbox (Olive container – Thanks, Erin) - * check to make sure power cord is in here
    d. iPad (may be in toolbox if not out charging)

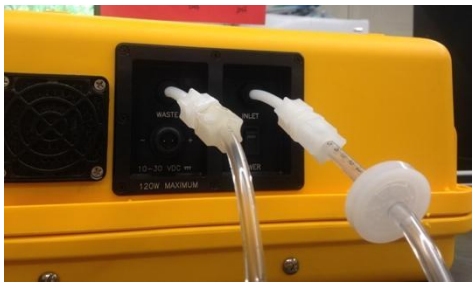
    Always transport the instrument (a) in the extended cab of the field trucks. NOT in truckbed!

IN THE FIELD:

4) Set the instrument up with the shallow lid on the bottom (noted by “This side up”).
5) Remove the black caps to expose the power input and the inlet and waste nozzles.

6) Connect inlet tubing with filter BEFORE connecting to power supply. In the toolbox, find the correct connections for your usage. Your supervisor will let you know what type of connections you will be using.

7) There are two hoses in your lab group's Ziploc.
    a. The hose with the disk is pressed into the inlet opening, this disk is a filter if any moisture or bugs are somehow sucked into the hose.
    b. The second is an outlet hose that will feed back into the flux hat that is setting on the water.
8) Insert the appropriate hose into the appropriate opening. Lightly press the hard end of the hose into the opening. The UGGA will automatically lock onto that hose. VERY lightly pull on the hose to make sure the UGGA has attached.



9) Connect the instrument to a power supply (either the plug-in adapter or the battery pack) in on the left side.



10) A red light should come on the cord at the connection of the battery pack. This is Good!

11) Turn on the UGGA.

Flip the power switch on directly below the inlet opening. A green light should appear on the power switch and a fan noise should sound.

If using flux chambers: Attach the flux hat to the UGGA hoses.

    a. The inlet hose on the hat will attach to the inlet hose will attach to the inlet hose from the UGGA.
    b. The waste hose on the hat will attach to the Waste hose on the UGGA.

CONNECTING AND COMMUNICATING WITH THE UGGA SENSOR AFTER IT IS POWERED ON:
Use iPad Mini (or your own phone or computer) to communicate through WiFi using vnc (virtual networking client) software.

1) Turn on iPad Mini. Lock combination is 2029. **MAKE THE WIFI of all other phones on the boat with the are OFF.**

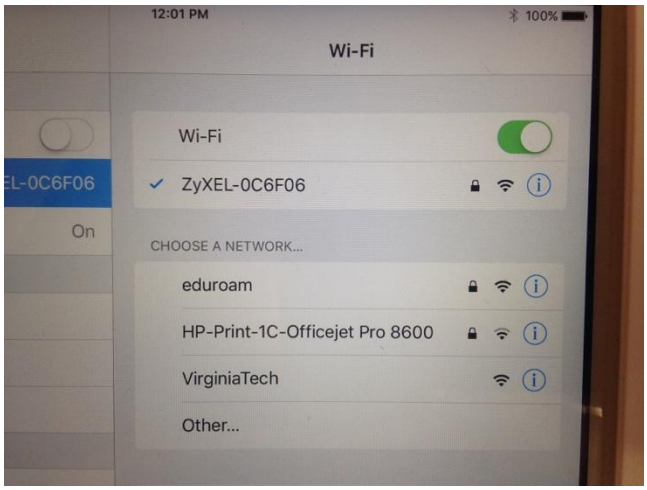
SURE UGGA

2) On tablet or phone, open settings and choose the network:
   Settings → Wi-Fi → Choose a network
3) The UGGA is its own computer system that has its wifi network. You will connect to this on the iPad.
   a. Network Wireless SSID is ZyXEL-0C6F06
   b. Password is 2B961AD3 **(iPad is already set, password required)**
   c. Wait for the blue check on the left of the network ID

WiFi

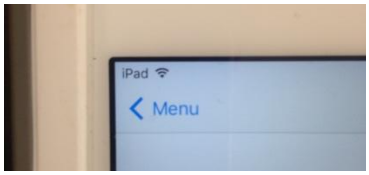
own

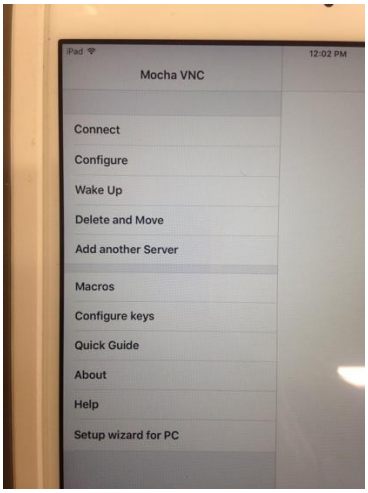
no

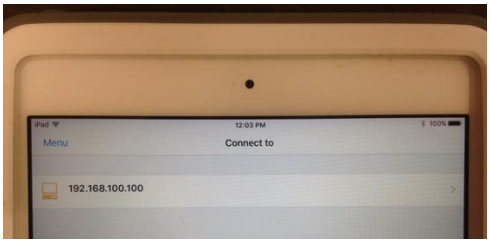


4) Open your VNC software-For iOS we use “Mocha VNC”

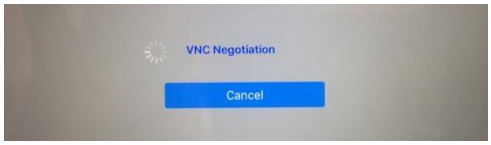
5) Click on Menu Connect 192.168.100.100







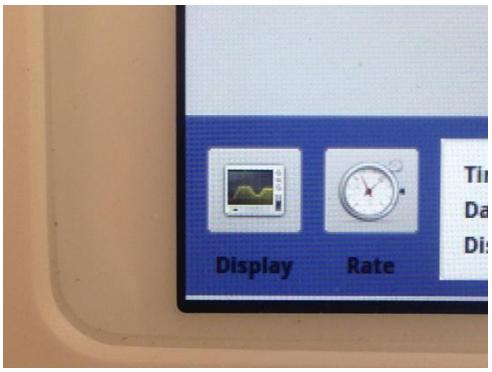
6) Typically, there is a gray launch screen, a countdown, then the UGGA starts and you'll end up on "Main Panel" (See Figure 15).

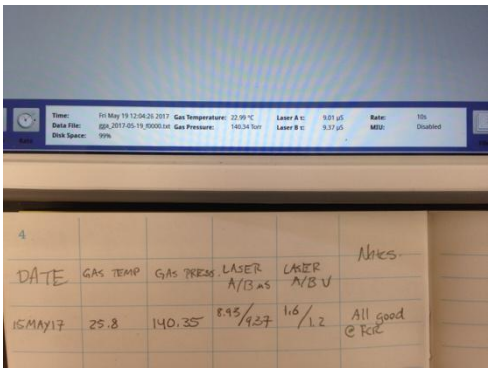


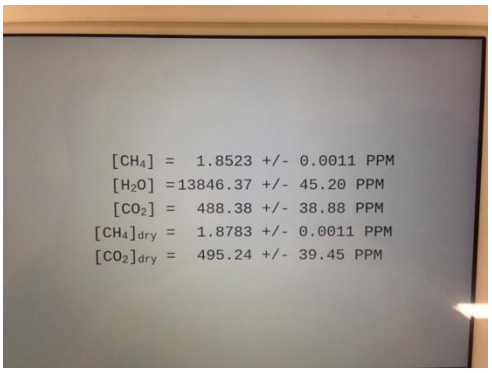
7) If you want to download all the data files on the internal drive to the USB flash drive at start up, you can click the "SERVICE" button (lower left) on the launch screen and click on "Files".
8) When on the "Main Panel", If you hit the 5th button from the left (a rectangle within a rectangle), you'll get the "User Interface Control Bar" and the "Parameter Window".

LOG INSTRUMENT INFO BEFORE TAKING SAMPLES:

9) Cycle through the display screens (numeric, spectrum, or time chart) to the spectrum display. Verify that the graphs for both lasers (toggle between them in the gray box, lower right) look normal; the peaks in the bottom graph should be within the blue windows and the curve in the upper graph is mostly a gentle incline near the top of the y-axis with one small dip and an abrupt start and finish.

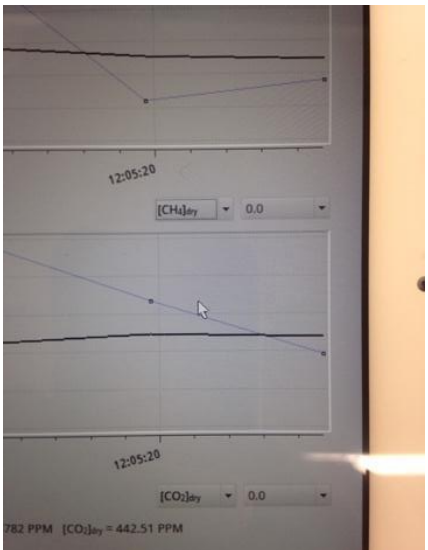






10) Log the ring down time in µS for both lasers (A and B). This info is in the Parameter Window of the user Interface Control Bar. Check the log. This number should not drop more than 20% (dirty mirrors). P.52 in the manual suggests this is effectively measuring path length.
11) Log the gas pressure in the analyzer. This number should not drop (obstructions) or increase (leaks). ~140 Torr is normal.

12) When everything has been recorded, move to the real-time data display screen. See figure on right.
13) Below each graph, click the arrow and select dry and [CH4] dry
14) Time to make some GHG science happen. Happy sampling!



[CO2]

MAKE SURE THAT NO WATER GETS INTO THE TUBES!!!! THIS DESTROYS THE UGGA!

Disconnect tubing and replace with dry tubing and filter capsules if you see any condensation.

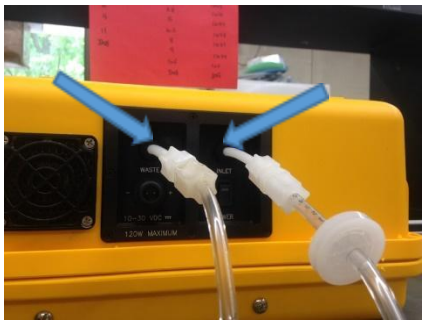
EXPORT YOUR DATA while the instrument is on and communicating. That either means before you shut down for the day, or at start-up the next day.

Retrieving data (either before shut-down while running or on startup from SERVICE button):

1) Connect flash drive to USB
2) Click “Files” button on User interface control bar.
3) Click “Mount USB” button at bottom of screen
4) See on left a folder (an Archive Directory) for each day of collection, on right the contents of the flash drive
5) Lock the screen by hitting the lock button (a picture of a padlock, bottom right) in user interface bar.
6) Drag and drop files from one side to the other
7) When finished, click “Unmount USB” button and remove flash drive
8) Click “Close” to exit Files menu

TO SHUT DOWN THE ANALYZER:

1) **Click the Exit button on the user interface control bar (x on far right)**
2) **A pop-up box ”Do you wish to shutdown?” -click okay**
3) **“Host has closed the session, Reconnect? “ click “Cancel”.**
4) **Wait 30 seconds, then shut off power switch on the instrument. (When using the wireless interface, you won’t see the message “You may turn off the instrument”).**
5) **To remove the tubes from the inlet and waste valves: DEPRESS THE OUTTER RIM OF THE VALVE AROUND THE TUBES, RIGHT WHERE THE TUBING MEETS THE UGGA. THIS WILL RELEASE THE TUBING AND ALLOW IT TO BE PULLED OUT FROM THE SENSOR!!!**
6) **Disconnect power cord and replace black caps before transporting the instrument.**
7) **Note the approximate # hours used in the log book.**
8) **Set up charging for ipad and battery pack once back in 1082.**



If you still do not understand the shut-down process:

a. Call or text Ryan (406 581 6925) or other supervisors (page 1).

b. *If you cannot get it and do not have service*… Leave the tubing in ***and carefully transport*** it back to Derring. Then find someone who knows how to pull out the hoses.
c. *If you have service but no one answers their phone…* USE THE INTERNET AND LOOK IT UP! They are called push-connect bulkhead union valves.