HAMSCI PERSONAL SPACE WEATHER STATION PROJECT

ATTENDANCE (17)

ANNOUNCEMENTS / GALLERY

1. World Amateur Radio Day is Apr 18, 2025
   a. The ARRL is encouraging amateur radio open houses in the month of April
   b. Please register open house and science activity on the website
   c. See the video starring Dr. Frissell, W2NAF

OLD BUSINESS (UPDATES)

1. **(KC3UAX) Converting and Uploading Grape 2 Data**
   a. UPDATES
      i. (0327) Code to run conversion works on the server
      ii.
   b. DISCUSSION
      i. (0220 AB4EJ) Need a grape 2 list for uploading to the server
      ii. (0220 AB1XB) This program needs to run before the drive is swapped (and it requires ~3.5 GB of space per day on the drive to run)
         1. Should the program run in a sequence to save space?
         2. What is the plan if a drive is out of space?
      iii. (0220 AB1XB) We also need to download a program/script for uploading the data
      iv. (0220 AB4EJ) We might be able to use the new hard drive (if there is a spare USB port or powered USB hub) to run the conversion
         1. (N8OBJ) or a jump drive?
         2. 16-32 GB
         3. We might be able to automate the copy to a thumb drive
      v. (0220 AB4EJ) Added more compression to the CSV → DRF conversion, it doesn't save a lot of space (and adds a lot of processing time)
         1. Plotting would take 5 times as long

2. **Physical Drive Swap of Grape 2 (6 week maximum)**
   a. `Completed ▾` Purchase drives
   b. `Completed ▾` Drive formatting
   c. `Completed ▾` Generate shipping labels for Alabama
   d. `Completed ▾` Drive packing and shipping
   e. `In Progress ▾` Upload DRF Data
      i. (0227 AB4EJ) scripts to upload drive data is prepared
         1. University of Alabama has a dedicated an office space to this
      ii. (0327 AB4EJ) drives are arriving in Alabama
      iii. (0403 AB4EJ) Moved data from one received thumb drive to the server, successfully created plots from the data. Manual process, which Bill will be automating for efficiency's sake. Known bug in server upload program - some redundant files in fldigi data - Bill will look into addressing
      iv. (0403 AB1XB) 16 Grape 2s have swapped successfully as of 2 Apr
      v. (0403 N8OBJ) One USB drive 'fault' which seems to have corrected itself
   f. DISCUSSION
      i. (0320 N1HAC) If antennas are going to be down, should we take the grape offline?
         1. Yes
      ii. (0327 AF8A) Drive swap instructions are now posted on the HamSCI website
      iii. nnected temporarily, giving a port for the keyboard (or use a hub)
      iv. (0327 and 0403) N8OBJ) The flash drive process may take a couple hours
         1. You may have to unplug the Leo Bodnar (during file copy operation) to fit the flash drive if you are using a mouse and keyboard and don't have an available USB port
      v. (0327 AB4EJ) Is there a specific connector needed for the drives?
         1. (N8OBJ) The drives are SATA drives (so you will need an adapter)
         2. (N1HAC) make sure to get an adapter with a wall wart
      vi. (0403 AB4EJ) Mass downloader program under consideration at U of A
      vii. What to do with drives while waiting to repeat this exercise next year?
      viii. (0403 N1DQ) Are there improvements to be made to the instructions? Please bring up suggestions to the group.

3. Moving Grape 1 FlDigi Data to the University of Alabama server

a. **Completed** ▾ **Add instrument types to the PSWS site**

b. **Completed** ▾ **Add a user id on PSWS site for grape 1 data**
   - i. UPDATES
     1. (1003) going to mass create accounts with random passwords for new users
     2. (1114) Programming meeting soon to work on creating multiple accounts
     3. (1205) Student is working on this, should be ready to go

c. **In Progress** ▾ **Need a new package to load data from current repository**
   - i. Zenodo has grape1 classic 2019-2024/08: https://zenodo.org/records/13637199
   - ii. UPDATES
     1. (1003) What about 2022-24 data that isn't in real time
     2. (1031) ignore log files from Grape 2 stations
     3. (0116) PSWS Site has loaded Grape 1 DRF data
     4. (0123) Data will be loaded using appropriate trigger directory heading, on add the metadata to the website, and generate a plot
     5. (0306) Grape 1 data and some amount of plots have been uploaded
     6. (0327) Data missing on Grape 1 Data, may need to allow updates from stored data

d. **In Progress** ▾ **Need to update Grape1 setup so that they upload to the PSWS site automatically**
   - i. UPDATES
     1. (0306) AB1XB has helped develop an update to redirect new data uploads directly to the Alabama server
     2. (0320) There is an uploader config and loader file which need to be updated, and possibly an install for LFTP
        a. AB1XB (node 51) has done this successfully - uploads OK until 3/26; none showing after
        b. AF8A (done - not showing on server?) and W0DAS will be trying this next

4. (AI6VN) Grape Antenna Project

    a. UPDATES

        i. (1121 AI6VN) field probes have arrived, contact AI6VN if you are interested

        ii. (0123 AI6VN) Elmer's station has a lot of local radio stations nearby, testing receive capabilities

            1. Glen, Elmer, Franko, Michael, and Phil have been doing a lot of work and testing (thank you!)

        iii. (0130 N1HAC) Michael gave an update on the Monday call, there are quite a few antennas being tested (including a new vertical which is unfortunately very tall)

        iv. (0206 Michael) Testing antenna at two sites, going to continue to test performance and assembly

            1. Dipole performing well

            2. DX engineering antenna is also performing well

            3. If we can have one antenna for HF and VLF then it would be convenient

            4. 5 kits to be deployed and assembled at new sites (e.g. AFS, Scranton)

            5. May want to screen sites for high RFI or nearby broadcast stations

        v. (0320 AI6VN) There is no commercial vendor for the ENAMS (?) antenna

            1. DX engineering may be willing to produce them (need to check)

            2. Carl Leutzelschwab, K9LA (?) in Indiana has a version of this antenna for testing

        vi. (0327 and 0403) AC0G) Work is in progress

            1. (AI6VN) Full DASI set up at W2NAF's station (the week of April 21st)

            2. (0403 AC0G) Looking to test VLF + active monopole at Elmer's Long Island QTH - compatibility?

            3. (0403 AC0G) - Does HamSCI have a deadline to move from 'test' to 'purchase & deploy'? (W2NAF) More important to get it right - even if it is 5 in 2026, more in 2026, all deployed by 2027. What is the best antenna? Performance, physical robustness, long term support all figure into the decision.

            4. VLF questions under consideration: Could N6GN's S.A.S. antenna function for VLF?

5. Might TAPR become a supplier/source of support for the S.A.S.? Or DXEngineering as a producer/supplier?

b. DISCUSSION
   i. (0130 W2NAF) It may be better to give the hosts some options depending on their location
   ii. (0130 W2NAF) Diversity of equipment helps keep the network running when some types of equipment struggle
   iii. (0206 W2NAF) The current VLF setup is optimized and it may not be possible to use one antenna for both set ups
      1. (W1XP) The antennas can be small, but need to be stable
      2. (N1HAC) May be able to work something out with DX engineering
      3. (AF8A) We should talk to Jonathan about this before making any decisions
   iv. (0306 AI6VN) Lots of work being done (Michael, Elmer, Scott, and Phil) analysing sampling in the current system for the purposes of having multiple antennas set up

5. **(AI6VN) WSPR Grape Updates**
   a. Current Goals
      i. (AI6VN) working on removing AGC from WSPR Grape system Recalibrating voltage/amplitude in terms of decibels
      ii. Deploying WSPR Grapes in the Antarctic
      iii. Update monitoring frequencies
   b. PREVIOUS/BACKLOG
      i. (1017 AI6VN) Receiver architecture may need updates (rx888 is unknown)
      ii. (1205) Can remove a piece from the rx888 to improve low-frequency performance, AI6VN will send details to the grape group, https://groups.google.com/g/hamsci-grape?pli=1
      iii. (0306 AI6VN) Now that the AGC has been removed, we can update the plots on the psws site to use decibels
   c. UPDATES
      i. (0306 AI6VN) a new version of WSPR Daemon is coming out
         1. That will be a good time to update the psws.eng.ua.edu address in the WSPR Grapes
      ii. (0403 AI6VN) Running the RX888 at 64 MSamples might help solving a missing sample problem. Rob continues to analyze and work on a solution.

iii. (0403 AI6VN) Rob proposed sending redundant systems to highly remote sites, ie Antarctica.

d. DISCUSSION

i. RX888 reliability is a concern, but we have 18 months experience so most issues are known. Are there alternate rx systems (Ettus USRP?) Difficult to achieve data rates in other systems. Continue discussion on Monday night TAPR/HamSCI telecon.

UPCOMING

1. (KD8OXT) HamSCI PSWS Package updates
   a. (AB4EJ) The PSWS site will be getting a bulk downloader (!!!)
   b. (KD8OXT) Will require API access so that hamsci_psws Python package can download files programmatically. Interested in using SigMF to annotate features in the data (e.g., the "spiders" identified by Mary Lou)
2. Review of Grape Stations

NEW BUSINESS

1.

MAINTENANCE PROJECTS

1. **Grape 1-2 Redeployment**
2. **Website Updates**
   a. UPDATES (AF8A)
      i. (0213) HamSCI Calendar - need to update names and descriptions of telecons
   b. BACKLOG
      i. Suggested ⌄ Need a better way to make sure node list is updated on website and recognition page
      https://hamsci.org/grape1-contributors
   c. THINGS TO ADD/CHANGE
      i. (AB4EJ 0215) Can get a map of stations running Grape1-DRF → AB4EJ
      ii. (0606) instructions for setting up a WSPR grape
3. **PSWS Website Updates**
   a. UPDATES (AB4EJ)
      i. (0306) Website will be changing to psws.eng.ua.edu soon (using the new server) updates at HamSCI

b. OPEN
   i. `Backlog ▾` Website display duplicating data
   ii. `Backlog ▾` non-observation files from harddrive being mirrored to the server
   iii. (AB4EJ 0215) adding more plots to dataset
   iv. (AB4EJ 0215) super-mag features for analysis tab
   v. (AB4EJ 0215) improved (key-based) security
c. DISCUSSION
   i. Update the the hamsci_psws package and plots for PSWS Site (dB instead of voltage on the plot)
   ii. (0123 AB4EJ) Eventual HAPI API Support

4. **Grape 1 Updates and Documentation**
   a. `Backlog ▾` need procedure for changing receiving band
   b. `Backlog ▾` Listening to Grape Audio output (this should be fairly straight forward)
   c. `Backlog ▾` FIDigi conversion from DRF
   d. **(AB4EJ) Conversion to dB from 'Uncalibrated Units'**
      i. (1107 AB4EJ)
      ii. Is it possible to do this with the WSPR Station?
         1. (AI6VN) AGC woes, we still haven't sorted that (see 1010 for start of discussion)
5. **Grape 2 Updates and Documentation**
   a. UPDATES
      i. (AB4EJ) Current Deep dive document for hamsci.org/grape1-drf-docs
   b. BACKLOG
      i. `Suggested ▾` wireless feature (post 0408) with ARDC
      ii. Is there time to archive the case design to Zenodo?
      iii. Possibility of using TDOP instead of PDOP as the GNSS timing solution is being utilized.
      iv. Power outage automatic restart
      v. Network access to grapes (44net?)
         1. (0425 AI6VN) linux program that forms reverse tunnel (ssh)
         2. Only about 15 lines of bash
         3. Could be used to access the whole network
      vi. Documentation for the Grape 2's
      vii. Daily log of active vs inactive systems updates for the online map

   BACKLOG (OTHER OPEN PROJECTS)

1. `Backlog ⌄` HamSCI Legal Agreement (after grape 1 deployment) → W2NAF