

# Troubleshooting Digisonde Software



Ivan Galkin

University of Massachusetts Lowell  
Center for Atmospheric Research

The logo for the XIV International Giro Forum (IGF) 2014. It features the text 'IGF 2014' in a large, blue, sans-serif font. The number '0' in '2014' is replaced by a blue and white globe showing the Americas. The background of the slide is a photograph of the Earth's horizon from space, with a bright sun or light source on the right side, creating a lens flare effect.

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# “What can go wrong” Presentations

- Digisonde programming mistakes – IG
- Hardware troubleshooting with BIT and DCART – RH
- Lightning Protection – IL
- **Software troubleshooting – IG**
- Computer security and Windows XP – RH
- How to find out your digisonde is not working right - IG

# Outline

- Dispatcher with 2 Watchdogs & a Guardian
  - Hard disk overfill
- ARTIST and NHPC
  - The dreadful confidence level 55
- DFT2SKY, DDAV, TILT – drift data post-processing
- Picture making tools
- FTP deliveries
- Science data troubleshooting

# “Die Hard” Dispatcher

- If dispatcher crashes, watchdogs reboot the computer
  - Software watchdog = 10 minute timeout
  - Hardware watchdog = 15 minute timeout
- Dispatcher’s screen prior to crash is available  
[D:/WWW/control/screenCap\\_beforeReset.html](D:/WWW/control/screenCap_beforeReset.html)
- If reset does not happen, try calling Guardian reset by putting Guardian.req file to D:\Secure\Incoming folder
  - This will request direct soft reset of Windows
  - Dispatcher dead and watchdogs unable to reset – indicates a very rare problem
    - Windows hangs while resetting, FTP still alive, hardware watchdog missing
    - A trip to observatory is warranted
    - Remote reset by modem is a long requested feature needed for very remote installations

# Known File I/O Problems

- File needs to be deleted, but it is however locked for access by windows
  - Example: FTP client crashes trying to append to a damaged stat file. No communications.
  - Example: ARTIST crashes trying to contact DIDBase, ARTIST502.jar is locked and cannot be upgraded. No autoscaling.
  - Example: pkzip25 crashes, leaving .zip file locked. Accumulating zip files.
  - DDAV crashes leaving DRIFT0.SKY file locked. No drift processing occurs.
- Solution: add delete command to DPS\_Init.bat, then remote-reset, then remove delete command

## Known File I/O Problems (2)

- Incoming file from digisonde has an illegal character in the name and cannot be removed via call to Windows file system. Dispatcher initiates processing of the file repeatedly and indefinitely.
- Solution: rename DPS2AUX folder, create new DPS2AUX folder.

# Known File I/O Problems (3)

- New Dispatch.exe is bad after upload
  - Can happen if reset happens while dispatch.new is still uploading
  - This is one file you need to be VERY careful upgrading. Never upload dispatch.new directly.
  - Software watchdog will be resetting windows every 10 minutes
  - Upload dispatch.new, quickly. If the link is too slow,
    - Consider temporarily uninstalling software watchdog in DPS\_Init.bat (watchdog –remove).
    - Consider asking Ivan to provide small dispatcher program that only feeds the watchdog

# ARTIST-5 and NHPC

- NHPC unable to complete inversion
  - ARTIST-5 will attempt to kill NHPC process
  - Offending SAO file goes into Output folder with added .timeout extension
  - If NHPC process cannot be terminated, memory may be filled with these processes. Not Good. (So far, does not happen).
  - Send us \*.SAO.timeout files.



# ARTIST-5 and NHPC (2)

- ARTIST-5 crashes (e.g., array index out of bounds)
  - Dispatcher places offending ionogram file to D:\Diagnostics\
    - Can be caused by illegal program definition, e.g., wrong frequency stepping
    - If happens frequently, problems with data gaps and many files in /Diagnostics
- Send us the offending ionogram files

# ARTIST-5 and C-level 55

- Usually indicates unreasonable ARTIST trace that NHPC correctly flags down
- Smaller frequency step and smaller N can help
- Consider 5 km steps instead of 2.5 km

# Drift Processing

- **IMPORTANT:** edit DDASETUP.ONL file to remove height restriction that blocks processing of E-layer drift.
- Visible in Daily Drift Display panel (empty E layer panel)
- Question \*169 – set to 90

# Picture Making Tools

- Always check pictures after software updates
- If pictures are not being made
  - check .out and .err files for diagnostic information
  - Directogram pictures require RSF ionograms

# FTP deliveries

- FTP FAILED message
  - Server may have unusual response to successful rename command. Get the latest dispatcher
  - Check packet timeout statistics. Poor link may cause FTP timeouts
  - Server response and packet stats are available in Buffers/FTP\_X/System/ folder.

# Science Content Check

- Consistency of phase measurements is important
- Good quality of Precision Ranging is indicative of correct phase calibration and processing
  - You are running precision ranging mode, right?
- Skymaps during quiet conditions shall show one small cluster at zero zenith
  - If never the case, check 4 channels
- Equatorial locations: sanity check for eastward drift of bubbles, plus check drift plot for pre-reversal enhancement and vertical uplifting of the ionosphere
- Polar cap locations: check the azimuth of drift velocity to follow anti-sunward direction.

Dalu

감사합니다

Gracias Danke Ευχαριστίες

THANK YOU

Obrigado

Köszönöm

Tack  
Grazie

Спасибо Dank

谢谢

Merci

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