INFORMATION ON GOES TELNET, LRGS and HOW WWW.GOESLINK.COM WORKS

Here is some information regarding the option of accessing data directly from NESDIS system at Wallops Island, Virginia (i.e. “Wallops”).

1 Methods of accessing data from NESDIS :

A. Telnet

Telnet works well, although users have claimed that the connecting is slow and takes time to do. Here is a link to information on Telnet instructions:

What IPs are available for telnet access to DAPS?
Answer: 205.156.2.173 and 205.156.2.178 are available. The 178 address is more reliable.

What are the proper procedures for accessing DAPS through TELNET?
Answer:
Telnet Address is: **205.156.2.173 or 205.156.2.178**
User Name: *Contact the DCS operators*
Password:

Normal logon:
User name and assigned password: This would be your assigned password.
You can **email Al McMath at al.mcmath@noaa.gov** for further help.

http://dcs.noaa.gov/telnet.html

B. Local Readout Ground Station (LRGS)

The LRGS servers and open-source DDS (DCP Data Service) clients were developed for the U.S. Federal Government by ILEX Engineering, Inc. The following is a PDF link by ILEX that explains the LRGS well.

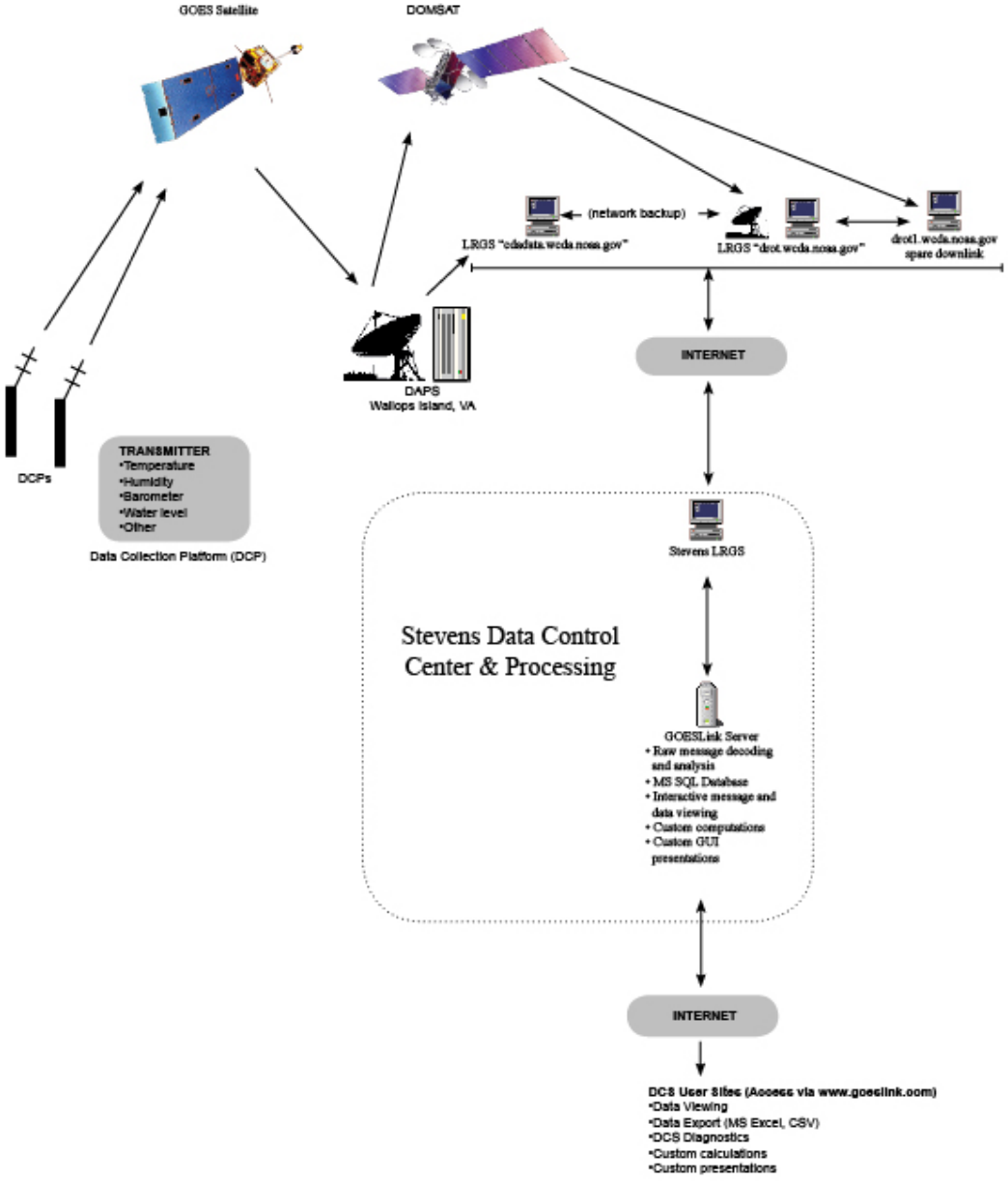
http://www.ilexeng.com/LrgsSpecSheet.pdf

This LRGS was developed in an open source format and, therefore, have good resources to help potential users set up their own LRGS Client. The LRGS provides a means to retrieve environment messages from Data Collection Platforms (DCPP that have been transmitted through the GOES DCS (Geostationary Operational Environmental Satellite – Data Collection System). The information to help a user set up their own system is at:

http://drot.wcda.noaa.gov/

This is what we did at Stevens that resulted in the development and data information source for www.goeslink.com. Originally, with www.goeslink.com we were using the feed from our own DRGS at Stevens, but eventually moved to using the Wallups LGRS server as our primary raw data source because of its reliability and is well supported. This reduced a lot of our time trouble shooting DRGS hardware issues. The following is a picture that presents how Stevens uses the LRGS system:

Stevens Web Based Data Collection/Management
www.GOESLink.com



C. How www.GOESLink.com works:

In summary, the flow of data using the LRGS for Stevens GOESlink system (which would be similar to anyone setting up their own LRGS Client system) is as follows:

1) Data message from remote site is relayed off the GOES satellite.

2) Message is received by DAPS (DCS Automatic Processing System) which is managed and maintained by NESDIS at Wallops, Virginia.

3) NESDIS (National Environmental Satellite Data Information Service) has three LRGS (Local Readout Ground Stations) servers that receive and store the raw data message for a short time frame (Normally the DCS user can recover up to 72 hours [3 days] worth of platform data).. Each service has different sources of data feed and purposes:

- Server called “CDADAT” - Direct feed from DAPS
- Server called “DROT” - DOMSAT downlink with backup from CDADAT
- Server called “DROT1”

4) The messages received by these LRGS servers are identical to what is transmitted from the remote site, along with header information that is added by the DRGS (the big one in Wallops) such as the originating site, arrival time, and message quality.

5) The server we connect to is configurable. There are no special restrictions and firewall issues on the Wallops side for LRGS data.

Stevens www.goeslink.com has have been accessing and downloading raw data from the CDADAT server for some time and have found it to be very reliable. However, recently (around July 2006) they made some changes that caused our LRGS client system some problems. We have not receive a clear understanding of the changes they made and why. As a result, CDADAT server has turned out to be too unreliable lately, so we made some changes to how our GOESLink system accesses the data.

As a result of this recent problem, we have reprogrammed our GOESLink system to automatically connect to whichever NESDIS service is up at the moment. If one is down, our system automatically routes to the next server. This provides us the highest level of reliability, and should make us fairly immune to their individual server outages, since Wallups goal is to have at least one of their three servers up at all times. Therefore, we will only have a similar problem of missing data, similar to what recently happened, if all three NESDIS service were down at the same time.

6) Stevens LRGS client downloads messages from Wallops LRGS server via an Internet connection.

After receiving the message, the Stevens LRGS client (which we have internally named “GOESLinkLRGSRouter”) does a basic breakdown of the Wallops message to make sure it is valid. Header information (like I mentioned above) is parsed out by the Stevens LRGS client and sent to the GOESLink database along with the original message body.

The GOESLink database is run off Microsoft SQL Server 2000.

The database handles the parsing of the original message body and converts this data into real numeric readings. The database stores a description of every message so that it knows how to parse out the readings. This message description is usually one of the more time-consuming aspects of initial site setup.

7) Stevens LRGS client stores message in the GOESLink (i.e. Microsoft SQL) database

8) GOESLink database parses relevant messages into readings.

9) http://www.goeslink.com displays these readings in an optional tabular and graphical format.

In summary, we hope this provides you with some good background information on the LRGS system that we and others are using for accessing the data via the GOES DCS without installing their own DRGS. The following is a summary of options for receiving GOES transmissions (not including a telnet process with Wallups):

A. Purchase a DRGS system – This includes purchasing and mounting a satellite receiving antenna (typically a 5 meter dish antenna), a feed, LNA and down converter to be attached to the antenna, cable from the antenna to a indoor instrument that receives, filters, demodulates and formats the message to be outputted to a computer (typically a dedicated PC). There is a software program that controls and manages the indoor receive site instrument and software on the PC that receives, stores and processes the raw data message in a user defined process.

   The advantage to having your own receive site includes some direct trouble shooting capabilities such as seeing if someone else is transmitting on your assigned channel / time. However, it the user suspects that someone is stepping on their platform transmission channel and time, the Wallops CDA technician can help you determine if there is a platform reporting in your time

slot. They do this by comparing the database with the actual received replies. Also, if a major storm such as a hurricane is threatening Wallups Island, NESDIS will lower their satellite dishes to avoid damage. During this period of time you would not receive any GOES messages from NESDIS LRGS system.

B. Develop their own LRGS system similar to www.goeslink.com using the open source tools available on-line. A good software engineer could easily handle this. Per Stevens' software engineer that set up GOESLink.com, it is not very complicated and he would be available to answer any questions. Wallups LRGS has a specific port at an external address. Stevens GOESLink system does not have any problems connecting to Wallups LRGS.

C. Hire Stevens to set up a server / LRGS client systems for your customer.

D. Use Stevens system to access the raw data message and develop a RSS feed. The idea is your customer's server could pull Stevens LRGS server for changes and their system would automatically update their data base with any changes.

"RSS (Real simple syndication) is a format originally designed for syndicating news and the content of news-like sites, including major news sites like Wired, news-oriented community sites like Slashdot, and personal weblogs. But it's not just for news. Pretty much anything that can be broken down into discrete items can be syndicated via RSS: the "recent changes" page of a wiki, a changelog of CVS checkins, even the revision history of a book. Once information about each item is in RSS format, an RSS-aware program can check the feed for changes and react to the changes in an appropriate way."

NOTE: This RSS is a new web tool concept that will require further investigate if this is an option of interest.

E. Optional features that could be included with www.GOESLink.com.

- Enhanced graphs
- Limits and Alarms: Set actions to be taken when rate-of-change and value are exceeded. Sending an alarm for out-of-range conditions
- DCP Full Performance Parameters:
    - GOES Channel
    - Date
    - Transmission Start
    - Transmission end
    - Window start
    - Window end
    - Failure code
    - Signal Strength

        - Message length
        - Frequency offset
        - Modulation index
        - Battery voltage
        - Click on transmit time and shows individual raw and decoded message
- DCP Message Status Report
- Select DCP message by time, address, site name, network list, or GOES channel
- Stations information
- Customer web site presentations with user defined links