

REQUESTING, DOWNLOADING AND VIEWING MARINE-WEATHER FILES

Updated Jan 10, 2022

1. GRIB FILES, in “.grb” format

- GRIB files represent VECTOR charts, i.e. drawn by a graphics program on a computer which draws curves driven by equations. They can only be viewed with a special program to handle the “.grb” format. Two programs are required:
 - o One, “SAILDOCS”, to format the request and send it via “SAILDOCS”, either by HF or by email,
 - o The other, “VIEWFAX”, to read the .grb files received.
- Grib files, representing vector files, are small and load rapidly. By contrast, NOAA traditional weather maps (and other paper maps, designed to be printed by weather fax or computer), are represented by RASTER files, and are scanned from the originals (see below, next section), or designed by a computer pixel by pixel. These files are very large, and very slow to load.
- Grib files represent a computer model’s interpretation of inputs from thousands of stations (land, sea, air). The “current” or “actual” map is not a real description of the current situation, but the output of the computer model given all the weather data for the day. There is no human intervention for the Grib files. It is a raw computer output. The Grib files do not show fronts. They are excellent for ocean passages, but not very useful along shorelines because they do not make allowance for the discontinuity land-water. Over land, they make no allowance for relief. The wind representation is given for each corner of squares with sides of as little as 0.5 degree, i.e. 30 NM.

Forecasts are available for as often as every three hours, and for up to 10 days ahead. Remember, it’s all blind and mechanical computer output, which does not always make a lot of sense, i.e. on a very specific spot inland and 10 days in advance

Grib maps describe surface winds, surface pressure, waves, and winds at 500hPa (5,500 m above sea level).

- **1st Program: “SailDocs”** is a component of “Sail Mail”, a paying air-mail service (\$250/year) for email communications over long range by High Frequency (“HF”) radio signals. It is possible to use Sail Docs to collect weather information without being a member of Sail Mail.

- SailDocs is a program which formats requests for Grib files. The formatting standards are rigorous, and formatting the request is easier done by SailDocs rather than manually and directly into a personal e-mail system. Information required in the request includes:
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 - . Model of Grib files requested: NOAA uses the format “GFS”; the US Navy uses the format “COAMPS”. There are other formats.
 - . Time intervals for the forecast.
 - . Time horizon for the forecast.
 - . Area required; nature of data required, for instance: surface winds; waves; 24 hour forecast.

Once the format of the request is set up, it can be stored in memory and used for subsequent requests automatically (e.g. every day). A typical email request format is:

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"send GFS:60N,18N,178W,120W|5,5|0,24..120|PRMSL,WIND,HGT500,WAVES"
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- In this example, the request for weather information over an area of the East Pacific defined by the two latitudes and two longitudes: 60° N; 18 N; 178° W; 120° W; the request is for information in squares of 5 NM of width and height (lat. and long.), for the next five days every day (0 hour; 24 hours,...120 hours). The types of data requested are: Pressure at mean sea level (PMRSL), the Winds, the 500 hPa map (i.e. the height a.s.l. of the 500hPa pressure level), and the Waves.
- At sea, the downloading of Grib files requires either access to the web (e.g. from not too distant Wi-Fi stations at marinas), or access to email services either directly from satellites (such as the Skymate system; or Inmarsat C at 600 bits /sec), or through an HF radio link via a modem – e.g. a Pactor 3.
- **2nd Program: “View Fax”** is a program which comes with SailDocs, and allows viewing the grib files received by email, for instance via Airmail.

- **1. Loading Airmail and Viewfax on Computer:**

Go to www.siriuscyber.net/sailmail; or do a search for “**Airmail Version 3 for SailMail**”. Scroll down to “**Airmail 3.5: “Click Here to download Airmail ver 3.5.036”** (about 38 MB)”. Click to download, and select a directory to save the file, typically “Programs (x86)\Airmail”.

The download of Airmail includes the “**Viewfax**” fax/grib viewer.

- Find the saved file “amsm35036b.exec”, and click on it to unzip and install; accept all parameters or defaults. Tick the “Make a shortcut on the Desktop”.
- This installs two icons on the Desktop (computer screen), “Airmail 3” and Viewfax”.
- Click on the icon “Airmail 3”. A large window appears (Airmail, Message Index), and a smaller “Setup” window. If the small setup window does not open, go to the top line (File,

Edit, View, Message, Tools...), and click on "Tools". Down in the menu which unfurls from Tools, click on "Setup Wizard".

- Select a "HAM call sign", and a "SailMail call sign" with letters and digit: use your own, or invent one (e.g. "AB1CDE", using this sequence of 5 letters and 1 digit to make it look like a call sign).
- Choose a password, for instance your year of birth.
- Enter approximate current boat coordinates, to locate the nearest HF stations. Don't forget "N" and "W", or whatever you need to define your hemisphere.
- Select HF Modem type (or "no HF Modem" if you don't have one, for instance for home practice), and COM port and Baud rate if you have a modem.
- Click "Next"
- Click "Finish"
- This creates a new entry in the Airmail "Inbox" message index, to the left of the screen, with a red mark on it. The message is a note of caution to the new user about the use of Grib files.

- **2. Operation of Airmail:**

. In the horizontal bar at the very top of the screen, displaying "Files, Edit, View...", click on the "Window" tab. In the column which unfurls below "Window", scroll down to "Catalogs". This displays, on the left of the screen (yellow directories), a list of all functions available, such as "Grib files", "Atlantic", "Buoy data", "Caribbean"....Select the first option, "Grib files".

. The world map which opens up can be scrolled up and down, as well as sideways. Around the diamond representing the boat location, select an area for the weather files of interest with a continuous left click and a drag of the mouse. Adjust the scale if needed, using the magnifying glasses (+ or -) along the left margin of the world map. Adjust the area of interest (deep blue rectangle) by dragging the middle of the sides of the deep-blue rectangle, where the cursor switches to horizontal or vertical arrows).

. At the bottom left of the screen with the world map, select the Model of Grib files (e.g. "GFS" for NOAA Grib files, the most commonly used); below this window, select "Request (to be sent once)", or "Subscription" for files to be sent regularly. Click on the "Request" button, below the world map, to the left.

. In the subsequent "GFS Grib parameters" window, choose the forecast times (e.g. every "6" hours, i.e. four times per day), and the number of days for the forecast (e.g. "3"). This brings up a list of $4 \times 3 = 12$ forecast, i.e. four per day over the next three days, in our example. Tick which ones, among all these forecast, you want to receive during this period, by checking each forecast, e.g. "0", "6", "12", "18" ... Select also the "parameters" of interest, e.g. "Pressure at mean sea level ("PRMSL"); Wind; map of the winds at the altitudes where the pressure is 500 hPa ("HGT 500"); Waves, etc. Finally,

define the resolution in the “Data Grid” window at the bottom left: for instance, every 3° of Lat and every 3° of Long (squares with vertical sides of 3° x 60 NM/degree = 180 NM). For more details, but larger files, chose smaller sides for the resolution squares, for instance 0.5° of Lat. (30 NM) and 0.5°Long. Click on “Post request”, on the bottom right corner of the GFS Grib Parameters window. Files are small, perhaps 10 KB, unless the resolution requested is high, or the area covered is large. Via HF, reception could take 5 minutes. “Post request” formats the request as an email and stores it, ready to be sent.

. Go to the tab “Window” at the top of the screen, and scroll down to last line (“Message Index”); on the left column (yellow directories), click on “Outbox”. Note the newly created message ready to be sent, e.g. “85880AB1CDE”.

. To send the message by HF, establish radio link with Windlink. The message then goes out automatically.

. Alternatively, if you want to use an email system on a computer directly to the web, for instance from home, **double click on the message to see it in its email format, and copy its components individually to the corresponding boxes of your own email system (e.g. Outlook, Yahoo or Gmail)**: copy the address (“To”, i.e. “**query@saildocs.com**”) to the address box of your email system; then copy the “subject” of the message (e.g. “Saildocs request”) to the subject box of your email; and, finally, copy the text of the message (e.g. “**send GFS: 60n, 18N, 178W, 120W,....WAVES**”) to the text box your email system. Nothing else is needed. You can then send the email from your computer by whatever connection you are using (cable, Wi-Fi, phone line or other). The requested Grib files will arrive rapidly (typically within minutes) in your email “in” box. Check your Spam if you don’t see the file in your Inbox.

. The reply looks like a regular email, with some text. The Grib file is an attachment called something like “GFS20.....10217.....grb”. Left click on the file to try opening it. A window will tell you that the “.grb” format is unknown: “No preview available”. Click on the Download button, in the same window, to download the Grib file to your computer. The file is now in whatever directory your files are normally downloaded into, typically in the “Downloads” section. It can be opened only with Viewfax.

Find the downloaded file, usually in “This PC \ Downloads”, right click on it, and, in the “Open With” line, look for the Viewfax icon and click. The Grib files then display instantly.

If the “Viewfax” icon is not displayed, scroll down to the line “Chose another app” then “more apps”; scroll down to “Look for another app in this PC”; move to the directory “Program files (x86)” or wherever you installed Air Mail; click on AirMail; click on Viewfax. The file opens instantly. Usually, once the computer has been told once which application to sue to open a GRIB file, it remembers and does it automatically each time.

. Details of wind and waves are attached to the cursor. Use the Up and Down arrows at the top of the screen to move from one period of forecast to the next.

Note: Size of files: The NOAA weather maps are equivalent each to 2,000 – 6,000 characters of text. The NOAA text reports are approximately 1,000 characters per report. The NEXRAD colour radar reports are equivalent to 600-900 characters.

- **3. Viewfax:**

Viewfax is a viewing program for Grib files. Like AirMail, it can be used to send requests for Grib files, directly by HF (with a modem) or by email (by copying all the components into your own email system). The procedure is the same as with AirMail.

2. RASTER (FAX) FILES, in “TIF”, “GIF”, or “.jpg” formats

These files are pre-drawn and stored in a master computer, and need to be either selected on the web and downloaded in a personal computer to be read with a raster-graphics program. You cannot adjust the area covered or the information required: you select the ready-made chart, or group of charts, which is most useful. The files are prepared in traditional formats such as TIF (most commonly used for these files) but also GIF (larger files) or, for certain files such as satellite images, JPG (smaller files). Programs such as Photoshop, PaintShop or Microsoft Paint work well to read them. Weather files can be requested individually by email and received also by email, to be opened with a graphics program. They can also be accessible directly from the web. The most commonly used raster maps, which cover a good part of the world but not all, are from NOAA (National Oceanic and Atmospheric Administration) in the US.

1. Request of NOAA weather charts by e-mail (i.e. from a boat via HF and a modem, or from home with email but without web access)

Raster or fax files are typically stored on powerful central servers which have their own built-in e-mail, and can be accessed with personal computers via commercial email systems (e.g. Outlook, g-mail, Yahoo and others). The format of the e-mail requests is extremely strict: any tiny typing mistake produces an “error” response. The request format for downloading the NOAA weather maps by email, for instance from a home with the internet, is described below:

The e-mail address for NOAA raster weather maps is:

“nws.FTPMail.OPS@noaa.gov” (“nws” stands for **National Weather services**)

Whatever text is in the “subject” box is ignored by the web site.

Older email systems had provision for formatting the text in “Plain Text”, “Rich Text”, or “html”. In it is an option, set the format to “Plain Text”. The language used is the old ASCII II, to reduce the size of the transmissions; the command “cd”, for instance, means “change directory”. **This software is case-sensitive: all caps automatically placed at the beginning of each new line of text, for instance, must be changed to small letters; all spaces must be removed before or after each line, as well as before and after the first and last words of the text. NOAA only accepts “Plain Text” messages.** Most of the errors send back to the person requesting the files by email come from formatting errors, i.e. a capital letter in the wrong place, a blank space which should not be there, or the email mode set as html instead of Plain Text.

a) to request from NOAA a text description of how to use the e-mail requests:

email address: nws.FTPMail.OPS@noaa.gov (paste it on the “To” box of your own email system)

- in the “subject” box, write anything or leave it blank
- in the text box (Plain text; watch the spaces and capitalization), type the following command: help

Send exactly as is, with this one-word message. **NO SPACES** before or after “help”; **SMALL LETTERS; PLAIN TEXT FORMAT** (not “html” or other formats); no return after “help”.

The e-mail answer from NOAA, a file called “FTP Mail”, lists the groups of files available by region (on page 4 of the NOAA reply). For instance, the directory for the radio-fax files covering the Pacific is called **rfaxpac.txt** (note the small letters); the one for the files for the Atlantic is called **rfaxatl.txt**

b) In order to find out from those lists what are the alpha-numeric names of each of the various radio-fax files available for the Pacific, for instance, send the following e-mail message to the same address:

email address: **“nws.FTPMail.OPS@noaa.gov”** (use your own email system)

Subject: type anything or leave the space blank

Text: open
 cd fax
 get rfaxpac.txt
 quit

Send as is: **SMALL LETTERS; NO SPACES** before or after each line; **NO CAPITAL** letters at the beginning of each line; use “**PLAIN TEXT**” format only (not “html” or other formats); no space between “c” and “d” for “change directory”; single space between “cd” and “fax”; single space between “get” and “rfaxpac.txt”. No space and no return after “quit”.

The e-mail received from NOAA, “[tgftp.nws.noaa.gov:rfaxpac.txt \(get rfaxpac.txt\)](mailto:tgftp.nws.noaa.gov:rfaxpac.txt)”, gives the list of all the names of the weather maps available for the region, under several broad categories: “Wind/wave charts”; “Tropical Wind/wave charts”; “Surface charts”; “Tropical Surface charts”; “Tropical Cyclone charts”; “Sea Surface Temperatures”; “Satellite Imagery”; “Schedule Information”.

For instance, within the “Surface charts”, the “MOST RECENT” “surface analysis NE Pacific part 1 (20N-70N, 115W-175W)” is called: **PYBA90.TIF** (note the caps); In the Satellite Imagery section, the “GEOS Satellite Image, East Pacific (most current) is called: **evpn10.jpg** (note the small letters).

c) In order to get the specific file(s), we send our request(s) to the same address again. Each map requested will be received as a different e-mail response. If we want both the 18Z surface analysis map for the NE Pacific (called “part 1”) and the satellite image for the East Pacific, for example, you can send the following e-mail request:

email address: **“nws.FTPMail.OPS@noaa.gov”** (use your own email system)

Subject: type anything or leave the space blank

Text: open
 cd fax (meaning: change directory to “fax” directory”)
 get PYBA90.TIF (that’s the first of the two files you want)
 get evpn10.jpg (that’s the second file you want)
 quit (meaning “Good bye, and please send the maps by email right away”)

Send the email.

d) once you receive the answer, click on it to open. Since the format is TIF or similar (GIF, jpg), the file should open automatically.

2. Download of NOAA weather charts directly from the web (i.e. from a boat with access to the web, or from home)

The NOAA raster files can be downloaded directly from the NOAA web site. Got to the site:

https://w2.weather.gov/marine/radiofax_charts

(note the underline “_” between “radiofax” and “charts”)

Chose the area of interest, and click on the blue button for the chart you want, normally in TIF (GIF is larger), or in colour.

3. Read directly off the web the charts in colour

The NOAA charts can be displayed, in full colours, directly from the site

https://ocean.weather.gov/Pac_tab.php

Note that clicking on the Eastern, Central or Western parts of the overall Pacific Ocean, for instance, blows up that portion of the map into a regional map.

January 17, 2022

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