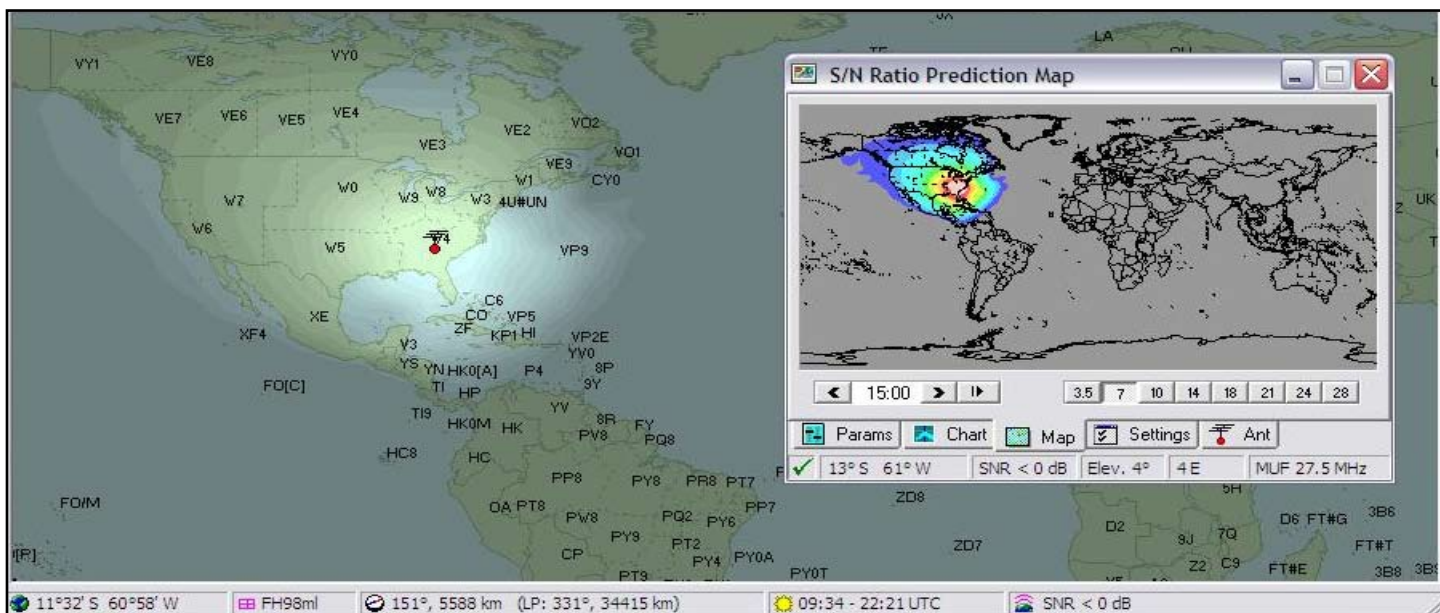


Score More in Your Next Contest with Ham CAP

Freeware from Afreet Software will help you know when and where to look for those important multipliers



By Tim Lilley
N3TL

Contesting is fun.

It also can be frustrating – especially if you’re a casual competitor.

If you’re like me, you don’t work every contest that comes along – but there are a few that you enjoy being a part of every year. Here, for me, those include the CQ WW DX CW contest and another that I just recently discovered – the PSK31/63 DeathMatch sponsored by the Michigan DX Association. Many of the digital modes fascinate me, and the DeathMatch gives me a chance to indulge that fascination with a goal – scoring well as a QRP (Class 3 in this contest) entry.

Just before the 2009 CQ WW DX CW contest, I learned about Ham CAP from Adrian, AA5UK. He’s been using it and one of its companion programs, DX Atlas, for some time. “You should check it out,” he said in an email. “I believe you’ll find it very helpful in preparing for the contest.”

Many – if not most (and maybe all!) – contesters focus on racking up multipliers as they make contacts. For those who are new to the competitive side of amateur radio, let’s use a log that shows 100 contacts, each of them worth 1 point in a contest. Multipliers increase your score by the number of points those contacts represent – in this case, 100.

Example: Contesters A and B each make 100, 1-point contacts in a contest. In this contest, every U.S. state is a multiplier. Contester A has stations in 27 states among his/her 100 contacts. Contester B has stations in 32 states among his/her 100 contacts.

Contester A’s score is QSO points (100) x Multipliers (27), or 2,700 points.

Contester B’s score is QSO points (100) x Multipliers (32), or 3,200 points.

They worked the same number of stations, suggesting that, most likely, they invested similar amounts of time in the contest. Contester B, however, has 500 more points to show for the effort because of the extra multipliers.

What if you could know, in advance, when to expect different multipliers to be “available” during a contest? What if you could plan your operating to maximize your ability to rack up multipliers?

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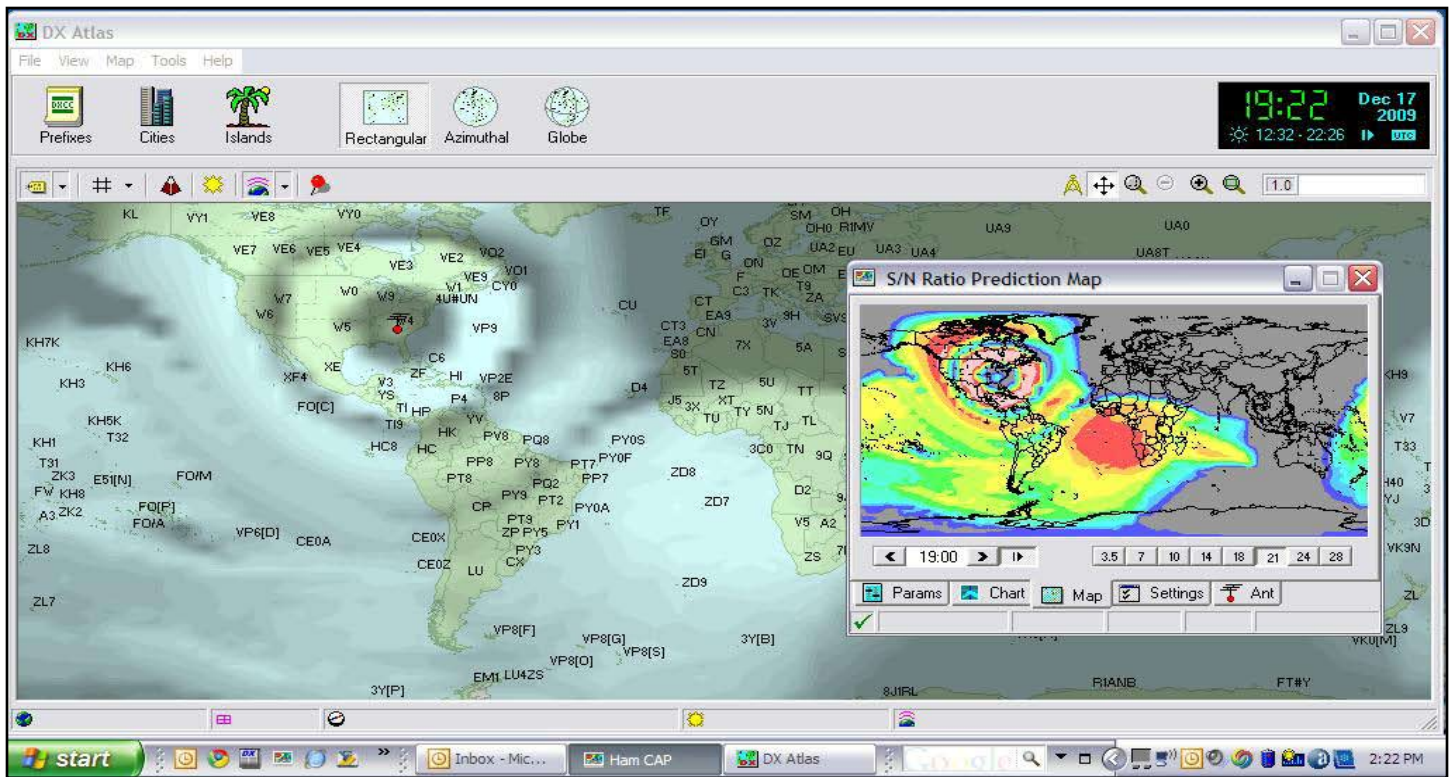
Ham CAP will do that for you. That's the reason I'm writing this tutorial.

I suspect that a majority of Ham CAP users consider the program an invaluable aid to their DXing efforts, and it certainly is. But it's just as valuable for the contester who wants to make the most of every second he/she has to work one. I've learned that – and benefitted from it – first-hand.

How Does Ham CAP Work?

Ham CAP uses data generated by another program called VOACAP, which was developed by the U.S. National Telecommunications and Information Administration's Institute of Telecommunications Services (NTIA/ITS). They are part of the U.S. Department of Commerce.

Originally developed for use by the Voice of America, VOACAP provides the data necessary to enable accurate predictions of propagation at different times across the HF frequencies. Ham CAP is a software tool that incorporates VOACAP to provide useful, map-based propagation predictions for amateur radio operators. VOACAP and Ham CAP are freeware.



Ham CAP's author, Alex, VE3NEA, also offers several other programs for amateur radio, including DX Atlas and Iono Probe, which work seamlessly with Ham CAP. These and other programs from VE3NEA's Afreet Software are shareware – that is, users are free to download and try the programs for certain periods of time, after which they must purchase a license for each program and register it in order to continue using the software.

In the interest of full disclosure – VE3NEA provided licenses for DX Atlas and Iono Probe to me at no charge. You don't need them to use Ham CAP to enhance your contesting experience and help you improve your scores. After using them in two contests, I highly recommend that you consider purchasing them. They're inexpensive, and are wonderful enhancements that make Ham CAP even easier to use and, in my opinion, more effective.

Since you have visited the Afreet Software Web site and downloaded this PDF, I urge you to return and read the fine Ham CAP User's Guide written by Jari, OH6BG, and the tutorial written by Peter, VE3SUN. I don't see a need to duplicate their efforts, and so will focus this presentation on Ham CAP's role in your contesting efforts.

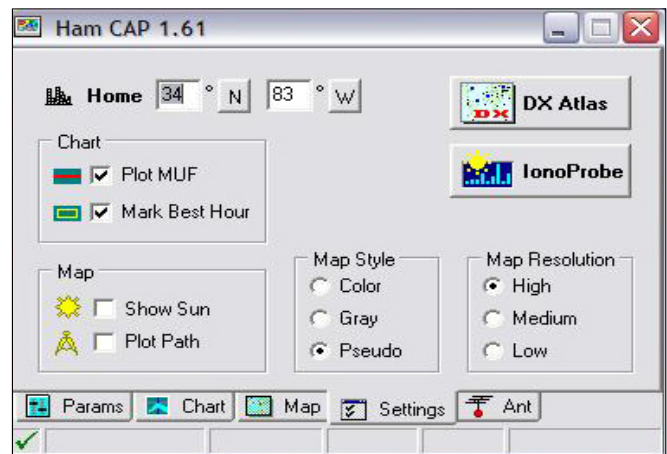
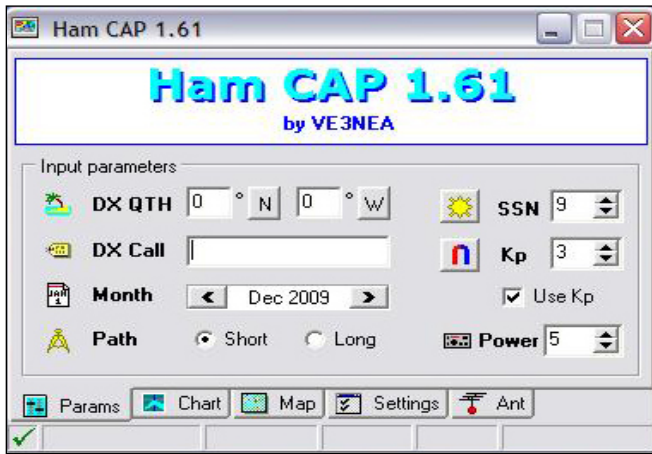
Making Ham CAP Work For You

Now ... let's learn how to use Ham CAP to make every contesting effort more productive. For this tutorial, I'm using screen captures of Ham CAP as used during the 2009 MDXA PSK31/63 DeathMatch, a 48-hour digital-mode contest for users of PSK31 and PSK63.

DeathMatch multipliers include states, Canadian provinces and countries – the U.S., Canada and DX entities. All non-WARC bands from 160 meters through 6 meters were countable, and stations could work the same station no more than once per PSK mode on each band.

Here, I have always assembled and operated simple HF stations that incorporate end-fed longwire antennas. At my current location, the longwire is about 200 feet long, and it's not up very high. I mention this because Ham CAP provides the option to select transmit and receive antennas on every band that it covers (80 meters through 10 meters).

To get the most accurate predictions for my station, I chose a Dipole at 35 feet as my antenna for all bands. Ham CAP provides a number of other antenna options, and there is sure to be one that will work best for you and your station. When you download and install Ham CAP, set your antenna selections the first time you run the program. Unless you change your antenna system or want to use the program for another setup (e.g., a portable Field Day station, or when using another ham's station in a multi-operator effort), you'll be all set.



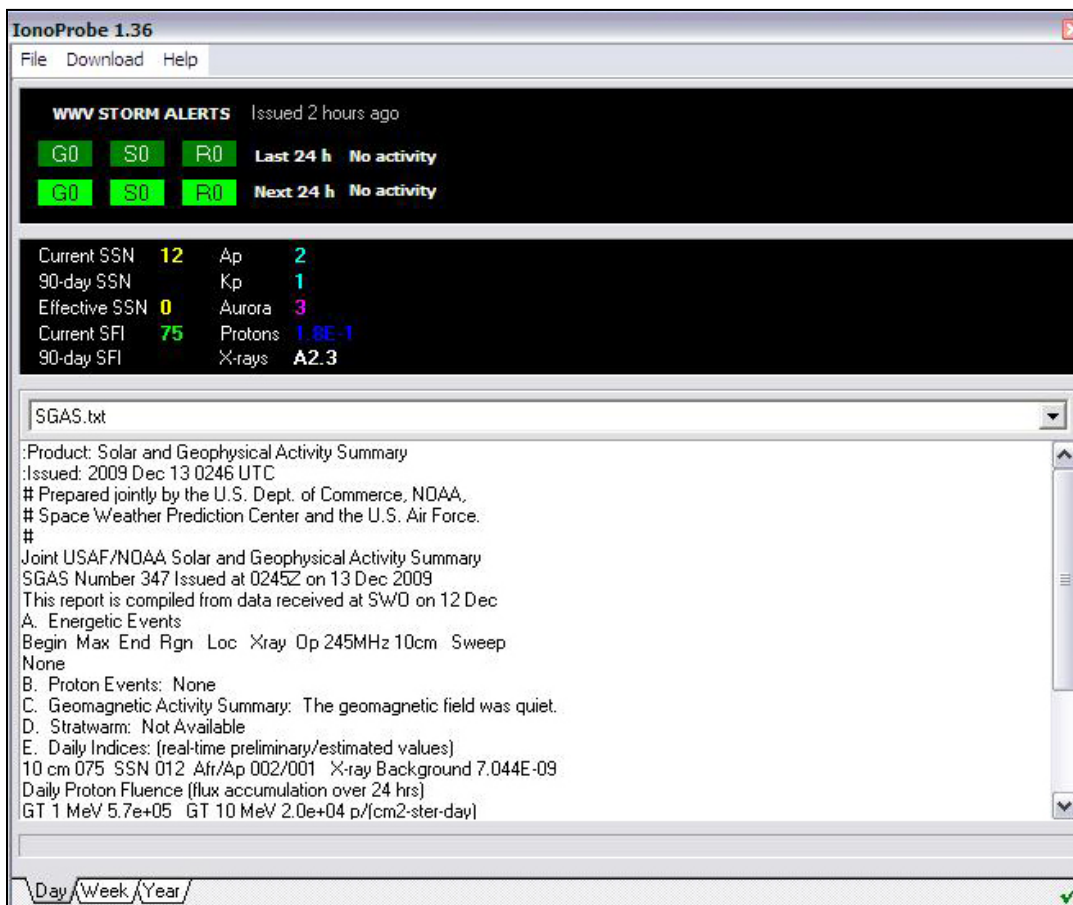
Data Input

The photo at left above shows the Ham CAP startup screen. For now, let's say you're only using Ham CAP and VOACAP (i.e., you have not downloaded and installed Iono Probe or DX Atlas). Clicking on the buttons to the left of the SSN (smoothed International Sunspot number) and Kp windows will open Web pages with the current data you need for those fields. I always click on the box to "use Kp" because I want to use all available data in generating Ham CAP's predictions and maps.

The photo at right above shows Ham CAP's Setting tab. Here, you'll note that I have entered my home coordinates, and told the program

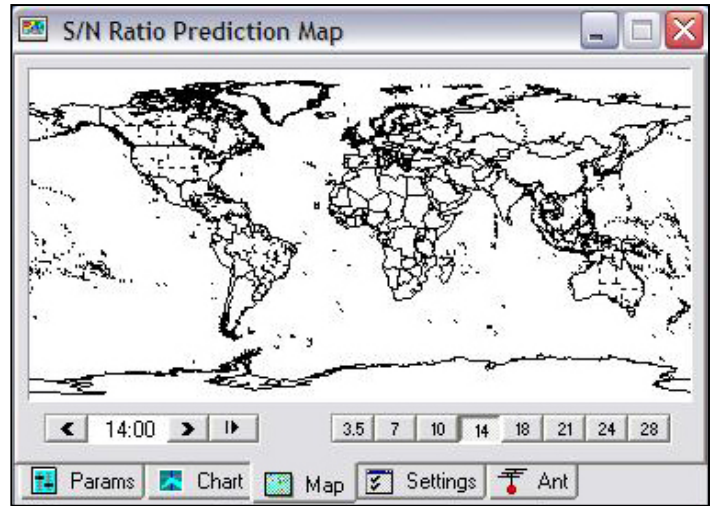
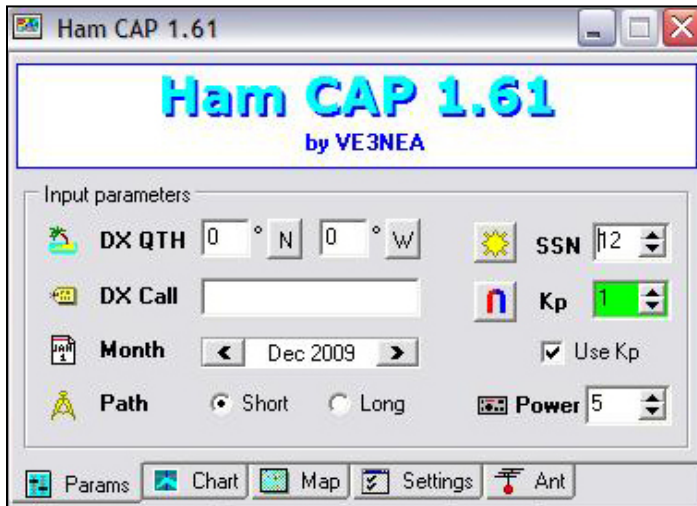
that I want to use the high-resolution map and the Pseudo map display, which displays information in color. This window also include buttons that launch Iono Probe and DX Atlas, and link them to Ham CAP. When I installed Iono Probe, I set it to launch automatically when I turn on my computer.

The photo at left shows Iono Probe's display. When you close the window, Iono Probe continues to run, with an icon in the task tray at the bottom of your Windows desktop. Clicking on that icon restores this window. Note that, in addition to other values, it provides real-time SSN and Kp.



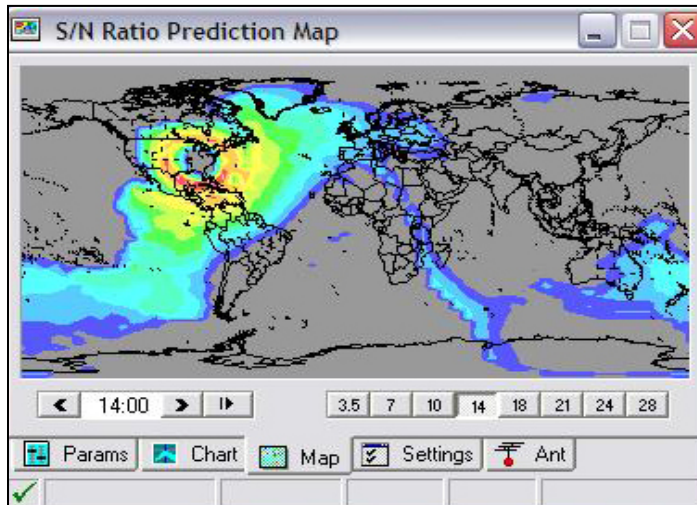
You can download real-time data for Iono Probe in a few seconds from the Download menu.

Our next photo (below left) takes us back to Ham CAP's Params window. Note that, after clicking on the Iono Probe button in the Setting window, the Params now show the current Kp number. When you run Iono Probe, run "Download old data" from the Download menu, and it also will provide Ham CAP with the 90-day-average SSN. It's a very nice tool!



Mapping Your Contest Effort

After you set the values as noted above, click on the Map tab. The photo above at right is a screen capture of what you'll see. The map is a graphic outline, black on white. Ham CAP is using the SSN and Kp values to generate an initial prediction of propagation at 14 MHz for the current hour in UTC. Ham CAP defaults to 14 MHz at start. If you want to look at another band first, simply click on it and the program will generate an initial prediction.



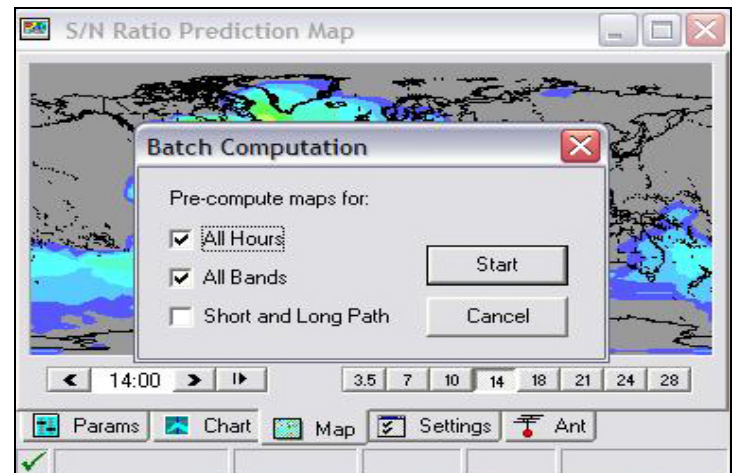
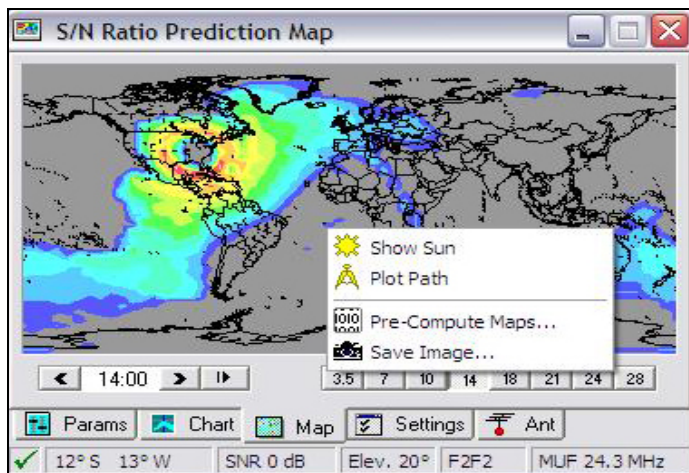
In this case, I let Ham CAP finish its prediction for 20 meters during the 1400 UTC hour. The photo at left shows the result. By using your mouse to move the cursor around the map, you will see Maximum Usable Frequency (MUF) numbers displayed to correspond with the various regions and shadings.

The first easy rule to remember when you look at this map is, "If it's gray, stay away." You won't have propagation at all in those gray areas.

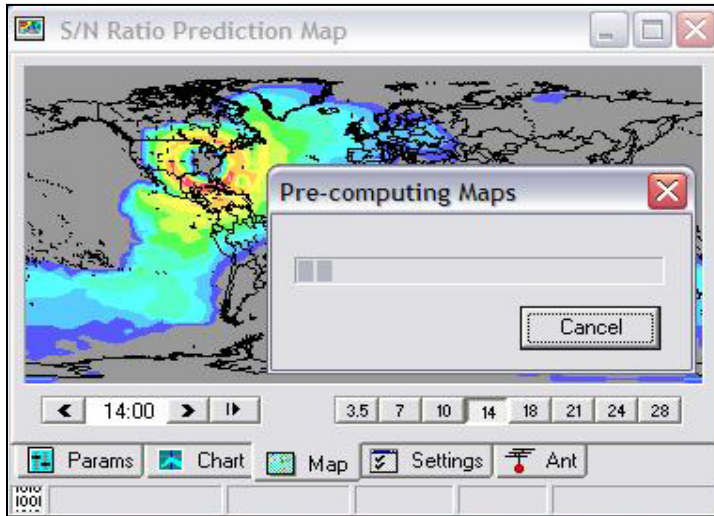
After you've done that, right-click on your mouse when the cursor is over any part of the map to get the small window shown at left below. This is where things start get interesting and really useful for contesters.

Click on the second item from the bottom, "Pre-Compute Maps..." to get a sub-menu for this action. You can see it in photo at right below.

Checking "All Hours" enables Ham CAP to generate a 24-hour look at propagation. Clicking on "All Bands" enables the



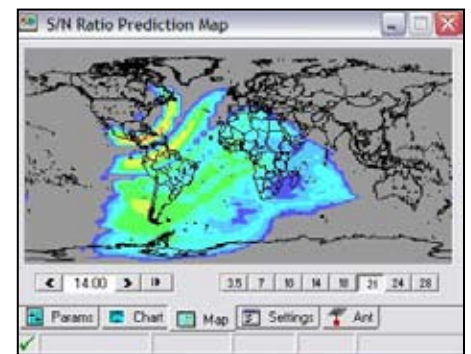
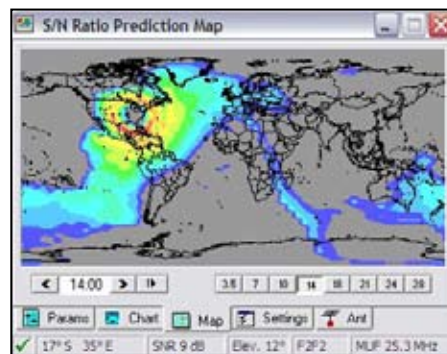
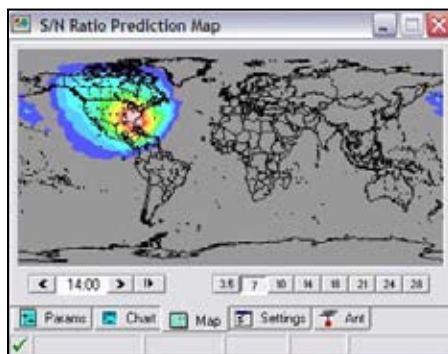
program to generate that look on all the bands that Ham CAP covers. Here, I routinely do short-path predictions, so I don't click on that box. When I'm ready, I click on "Start" and get the small window shown below



If you ask Ham CAP to generate predictions for all hours and all bands, the process will take several minutes to complete. You also can generate a prediction for only one band by (1) making that band active on the map display and (2) leaving "All Bands" unchecked. I did that in preparing for the 2009 CQ WW DX CW contest because I competed as a single-band (15 meters) entry. In the DeathMatch, however, I intended to work at least 80, 40 and 20 meters – so I asked the program to generate "All Bands" and "All Hours."

When finished, Ham CAP provides a look at prospective band conditions from 80 meters through 10 meters for the next 24 hours. This is where things get good for us contesters. The next three photos compare 40, 20 and 15 during the 1400 UTC hour. If the DeathMatch was just a U.S. contest, I'd go to 40 meters and stay there because Ham CAP suggests I'll have propagation – for that hour, at

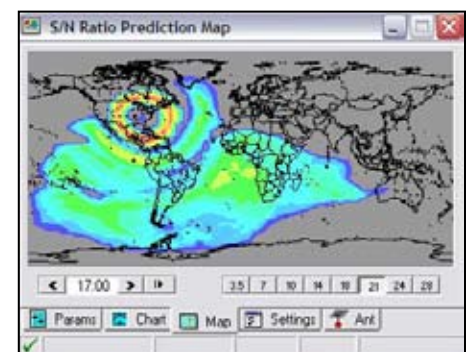
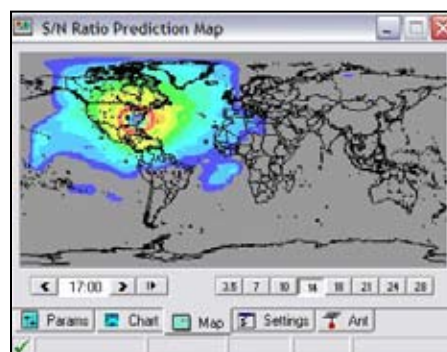
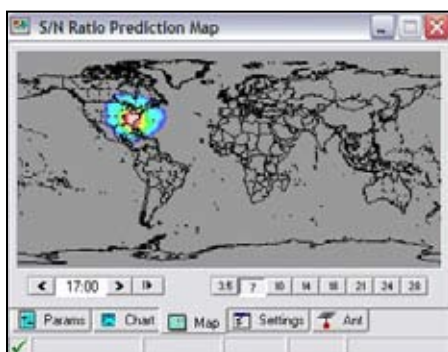
least – on 40 to virtually every part of the continental U.S. But DeathMatch is a worldwide contest, so 15 or 20 meters makes more sense for me during this hour. I'll have a chance to pick up DX multipliers – if stations are active from the countries that Ham CAP predicts I have propagation to.



Following Changes On The Map

Three hours later ... during the 1700 UTC hour ... band conditions have changed. By then, maybe I have worked a number of DX stations and also gotten multipliers from stations in the western U.S. and western Canada, but I haven't done much closer to home. 40 meters will be worth a check. If there isn't much going on, 20 meters should have stations from just about all of North America and at least a portion of western Europe. And 15 meters will be worth a check for stations in the southern hemisphere. Look at the three photos below to see why I say that.

This kind of look is where Ham CAP really shines, in my opinion, for contesters. Although the next photo on the following page is a screen capture of Ham CAP's prediction for the first day of the DeathMatch contest, it's a perfect example of how I used the program in my single-band effort during the CQ WW DX CW contest. One of the questions I asked myself in planning for the contest was, "When should I expect to hear Hawaii and other possible Pacific/Oceana



multipliers?" I answered that by scrolling through the 15-meter prediction map and noting when Ham CAP predicted I'd have propagation to that part of the world.

Using Predictions To Pick Up Multipliers

In this photo, note the data that appears at the bottom of the map screen. I moved my cursor over Hawaii (far left of the map), and Ham CAP showed me, among other things, that the MUF to Hawaii during the 2100 UTC hour would be 22.7 MHz, which made 15 meters a viable option for contacts. A few weeks earlier, during the CQ contest, Ham CAP showed me that my best bet for hearing Hawaii stations on 15 would be a couple hours later. With that in mind, I didn't start thinking about Hawaii until late afternoon. When I did, however, I simply went into "search and pounce" mode, listening for Hawaiian calls as I moved around the band.

I found one fairly quickly and worked it, picking up another multiplier in the process. A few minutes later, I heard another Hawaiian call and added a second contact from the islands to the log. Ham CAP played a key role.

Most importantly, it helped me see which bands I should be focusing on to gain multipliers I needed to improve my score. And, just as importantly, it helped me to understand when and where I should be looking for stations and multipliers I needed as the contest unfolded. It was the same with the DeathMatch.

Ham CAP Helps You See The Best Options For Your Contest Station

There's one other element to my approach to contesting that I haven't mentioned. I routinely run 5 watts or less and enter as a QRP station. In the CQ contest, my 5-watt signal from an end-fed longwire competed against stations running plenty more power to beams up many times higher than my roughly 61-meter (200-foot) length of wire. Ham CAP helped me to understand when and where (i.e., which bands and which parts of the world) my QRP signal stood the best chances of earning me contacts and multipliers. It did the same in the DeathMatch.

Adding DX Atlas will give you an even better look at things. Use it and Iono Probe with Ham CAP. They're worth the investment. At the very least, install HamCAP and VOACAP, and use them in your next contest. I believe HamCAP will provide information that will help you improve your score, and that improvement can be dramatic.

