Readily Available Propagation Predictions for DXpeditions
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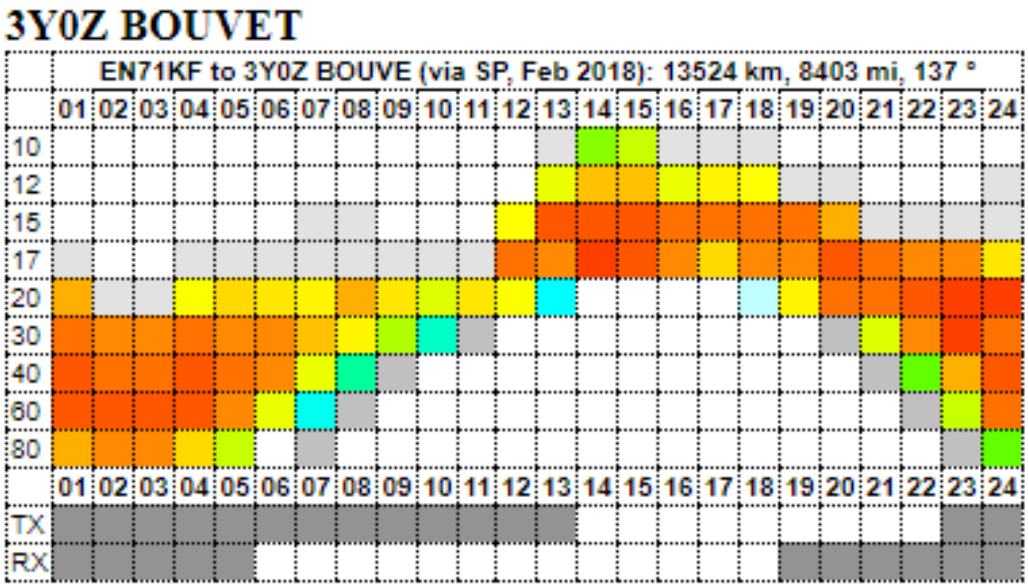
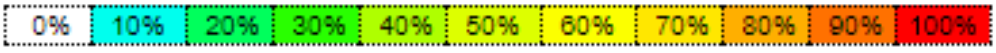
If you're a DXer, the upcoming DXpedition to 3YØZ Bouvet in early 2018 is an important one to put in your log if you need it since it's currently #2 on the DXCC Most Wanted List at ClubLog (https://secure.clublog.org/loginform.php). It may be many years before another operation from this rare DXCC entity takes place.

In addition to 3YØZ, there are many other DXpeditions to DXCC entities that you may need. How do you determine the best time and band for working these DXpeditions? You certainly can roll your own propagation predictions with VOACAP or W6ELProp (two free propagation prediction software packages) or any other propagation prediction software out there. Or you can go to the web site of the DXpedition, as many have propagation info included.

Another way is to visit http://www.voacap.com/dx.html. This web site has VOACAP predictions for many current and future DXpeditions, and is offered by Jari OH6BG, James HZ1JW and Juho OH8GLV. You input your 6-character grid square, and predictions to all the listed DXpeditions are calculated. As an example, here are the predictions for my location in EN71kf (northeast Indiana) for the forthcoming 3YØZ DXpedition.



The color coding is as follows:



The percentages, in simple terms, indicate the probability of making a QSO on the desired band at the desired time. For your best shot, concentrate on the dark yellow, orange and red blocks.

Digging deeper into the documentation, we find that the predictions assume the DXpedition has a 3-element Yagi at 10 meters high (about 30 feet) on 20m thru 10m and a quarter-wave vertical over good ground on the low bands. On the other side (your side), a 3-element Yagi at 20 meters high (about 60 feet) for 20m thru 10m and a quarter-wave vertical over good ground for the low bands are assumed. The transmit power for both the DXpedition and your station is 1.5 kW.

What if you have a more modest station? This means in reality you may not have any dark yellow, orange or red blocks. But these three colors in the predictions will still indicate the highest probabilities for a QSO regardless of your station parameters.

In addition to short path predictions, long path predictions are also given. There may be some DXpeditions where long path is best to your QTH. So be sure to check both short path and long path.

The bottom two rows labeled TX and RX indicate when each end of the path is in darkness – thus sunrise and sunset times to the nearest hour at both ends of the path are given. TX is your end. Note that it's easy to determine how much common darkness exists on the path – when both TX and RX blocks are gray. Of course you should determine sunrise and sunset times to better than the nearest hour (you can do this by hovering your cursor over TX and RX).

Hovering your cursor over any colored block gives three parameters: the color-coded probability, the estimated monthly median signal power in dBW (add 30 to translate from dBW to dBm) and the probability that the operating frequency is below the MUF (maximum useable frequency).

This last parameter is called "MUFday" in VOACAP, and is equivalent to "Availability" in W6ELProp. Historically we've assumed that for a QSO to be completed, the MUF must be at least as high as the operating frequency for refraction and the losses (which at a minimum include the free space path loss, ionospheric absorption and ground reflections) must be low enough to give a signal strength above the noise level at both ends of the path.

But VOACAP has an above-the-MUF mode that gives signal strengths (simply put, due to scatter – which adds in additional loss) even when the MUF is below the operating frequency. Thus the importance of the MUFday parameter in VOACAP is questionable, and depends on how accurate the above-the-MUF loss calculation is.