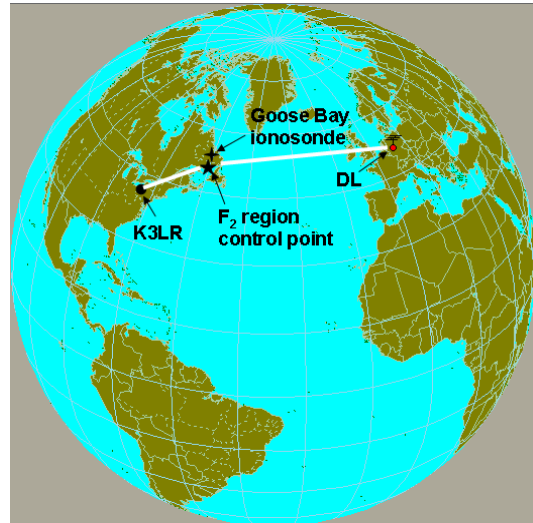


## 15m Propagation for 2007 CQWW PH and CW

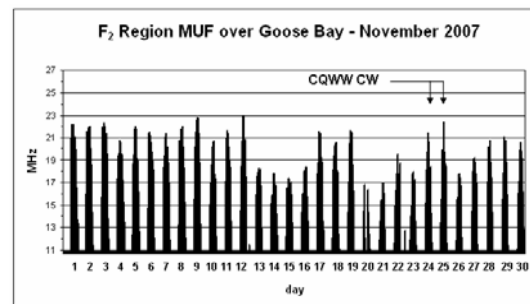
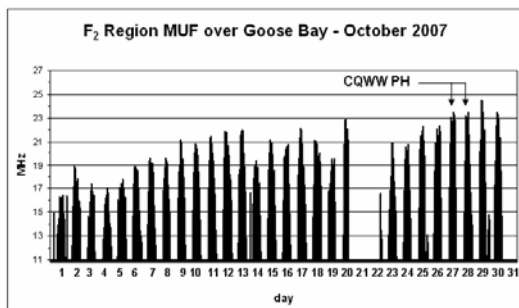
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The 2007 CQWW PH contest in October offered excellent 15m propagation. For example, the K3LR Multi/Multi effort claimed 2042 QSOs, 32 zones, and 146 countries – very impressive numbers for 15m at solar minimum. For the CW event in November, 15m propagation was more ‘normal’. Other East Coast M/Ms experienced similar results – excellent propagation for PH, more normal for CW. What happened?

We can gain an understanding of this by looking at ionosonde data. The image on the right (tnx DX Atlas) shows the great circle path from K3LR (western PA) to Europe (Germany). The Goose Bay ionosonde is very close to the path, and is about 2000km from K3LR. To determine long distance  $F_2$  region propagation, 2000km from K3LR is a critical distance – it’s where the  $F_2$  region control point on the western end of the path is located. What’s a control point? It has been found empirically that long distance  $F_2$  region propagation does not appear to fail until the ionosphere fails to support propagation at one of two ‘control points’ on the great circle path 2000km from each end (*Ionospheric Radio*, Davies, 1990). Thus an  $F_2$  region control point is the mid point of the first  $F_2$  hop out of each end.



The data from Goose Bay for October 2007 and November 2007 are shown below. Both plots show the MUF (maximum usable frequency) for a long hop with a mid point over Goose Bay. It would be nice to have data for the eastern control point (2000km from DL), but that control point is out over the Atlantic.



The  $F_2$  MUF in October was high enough to support 15m on about half the days of the month. Fortunately two of these “good” days were during the PH contest, and the MUF exceeded 21MHz for many hours.

The  $F_2$  MUF in November was also high enough on about half the days of the month. But the MUF for the CW weekend was above 21MHz for much shorter periods. This is the norm for 15m at solar minimum, and resulted in “more normal” lower scores (the decrease in scores is also attributable to less participation in the CW event). In essence, 15m propagation for both the PH and CW weekends was a roll of the dice.

This “roll of the dice” comment highlights the fact that the MUF varied from about 16MHz to 24MHz when the daily solar flux was essentially constant ( $69 \pm 2$ ). This should set off an alarm if you try to use daily solar flux to predict today’s propagation. The day-to-day variability of the  $F_2$  region does not correlate well with today’s solar flux. This day-to-day variability appears to be more dependent on geomagnetic field activity issues and events in the lower atmosphere coupling up to the ionosphere than on solar flux. This is why we have monthly median propagation predictions – not daily predictions. We simply do not have a complete handle on how the ionosphere responds short-term to those other two factors.