The solar eclipse on 12 August

FIGURE 1: An image of the partial eclipse seen from the UK in 2015 (Barry, G8AGN).

On Wednesday 12 August 2026 there will be a partial solar eclipse over the UK that may lend itself to some interesting HF and MF propagation investigations. Here is your chance to take part in experiments.

The eclipse

The Sun's obscuration will exceed 90% over most of the UK, but it will be a total eclipse over Iceland, the Atlantic Ocean, and eventually parts of northern Portugal and Spain. In London, the eclipse will start at 6.17pm and reach a maximum at 7.13pm with 91.42% obscuration (all times in BST). It will end in London at 8.06pm. However, the total eclipse continues down into northern Portugal and Spain, where it passes over Valencia, and totality ends at 8.32pm. It will remain a partial eclipse over Spain until after sunset, which will be at 8.28pm in London.

This is a great opportunity to try some simple experiments to see how the Sun's ultraviolet and X-ray radiation affects our ionosphere, and hence the way in which radio waves propagate. The radio waves will be affected as follows. During the eclipse, the theory is that the D-region absorption above the UK will not be as strong as it usually is, and listeners might be able to hear stations that would otherwise be inaudible, especially on the lower HF bands (160m and 80m) and medium wave. Likewise, the higher E and F regions will not be as well illuminated during the eclipse, and therefore the critical frequency could drop. This means that stations using 3.5MHz or 7MHz might find that they are no longer able to talk to stations close in around the UK (where near vertical incidence skywave (NVIS) propagation is the norm), but they can still talk to stations on the continent. The Propagation Studies Committee (PSC) has devised some MF and HF experiments to see if you can detect any effects.

The experiments

If you listen for a medium wave radio station that is more than 250-300 miles away during the day, you may not hear it; it is too far away for its ground wave signal to reach us, and the sky wave signal is absorbed by the D region of the ionosphere. But at night, its sky wave signals are not absorbed as there is no D region, and they are refracted back to Earth from the higher E/F regions. This is why you can hear distant medium wave stations on a radio at night, but they aren't there during the day. You get a similar effect on top band, and to a lesser extent 80m and 40m.

Just as we were starting planning our experiments came the news that BBC Radio 4's long wave transmissions on 198kHz would end on 27 June 2026. And then came news that CHU, the Canadian time signal station, which is monitored on 3.33MHz, 7.85MHz and 14.67MHz by the GB0PSC personal space weather station (PSWS) at Baldock, was also closing. What a great start!

But not to worry. We have some other options for you, starting with BBC Radio Scotland's 100kW transmissions on 810kHz from Westerglen, Scotland. Can you detect a change in signal strength as the eclipse progresses? This may suit stations in the south of England. For stations in Scotland or the far north of England, we suggest using the 150kW transmissions on 1089kHz from Brookmans Park (TalkSport), or the 150kW transmissions on 1051kHz from Droitwich (also TalkSport). Will the signal get stronger as the eclipse progresses and D-region illumination is reduced?

The eclipse will eventually pass over northern Spain and this offers an opportunity to check medium wave and long wave signals from North Africa. Will they become audible as the eclipse progresses? To check this we suggest monitoring the following:

- Méde 1 in Morocco on 171kHz (2MW);
- In Algeria, options include the 1.5MW Tipaza transmitter broadcasting the French-speaking station Alger Chaîne on 252kHz, or Radio Algérienne Chaîne on 981kHz from Ouled Fayet, Algiers (300kW);
- Radio Algeria International, broadcasting in Arabic, French, English and Spanish, 24 hours a day, seven days a week on 531kHz from F'kirina Wilaya (600kW),

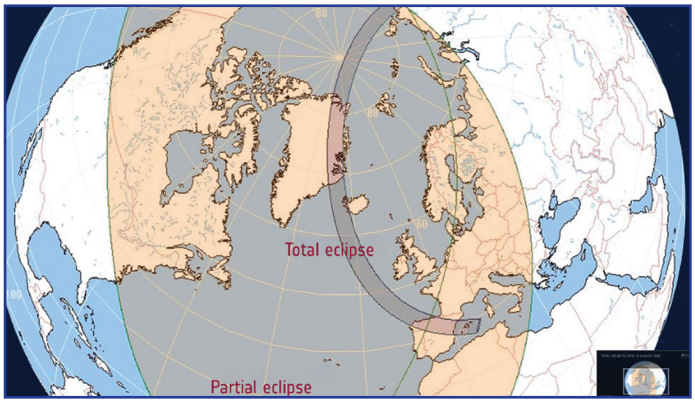

FIGURE 2: A map showing path of totality and partial eclipse (ESA).

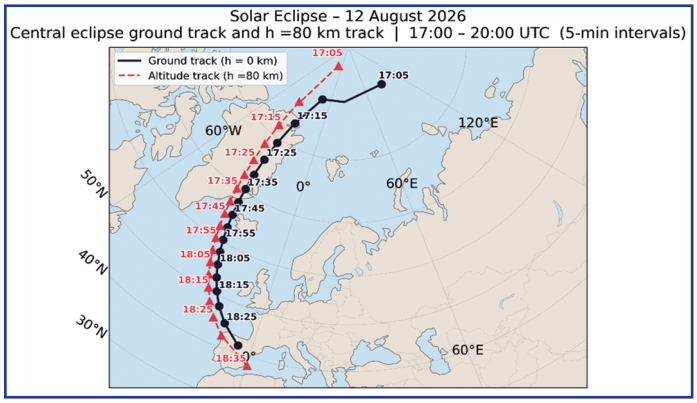

FIGURE 3: The ground track (black) and the track in the D-region of the ionosphere (red), from a Python script generated by Claude AI (Gwyn, G3ZIL).

or perhaps 891kHz from Ouled Fayet (600kW).

- National Radio of the Sahrawi Arab Democratic Republic, the state-owned public radio broadcaster of the Sahrawi Arab Democratic Republic (SADR), proclaimed by the Polisario Front in 1976. This 100kW transmitter is located in Algeria at the Sahrawi refugee camp in Rabouni and can be found on 1550kHz.

As the eclipse is near sunset, and North Africa's position is a long way south of the eclipse path, I am less confident that we will see changes. But that doesn't mean we shouldn't try!

The ground track of the eclipse is shown in **Figure 2**. We are really interested in what happens at, say, a height of 75km to 80km, the D-region of the ionosphere. Gwyn, G3ZIL used the AI agent Claude to adapt the eclipse function code, written by Dr T. Verhulst of the Royal Meteorological Institute of Belgium, to plot the eclipse effects at 80km. As you can see from **Figure 3**, the plot is shifted westward slightly, but not enough to make much of a difference to the paths we are looking at. For the overseas medium wave transmissions, you might be better off using a dedicated medium wave antenna, such as an active loop. It might also be an idea to redo the tests the following or previous day so that comparisons may be drawn. Our thanks to the British DX Club for their help in identifying suitable MW/LW transmissions.

If you wish to log the receive levels, we suggest you use a program like Spectrum Lab by DL4YHF for a Windows PC **[1]**. But one thing to note: make sure you turn off your AGC on your radio receiver. I suggest setting up Spectrum Lab to log the time and highest amplitude reading in a one-minute period. I suggest you download Spectrum Lab well in advance of the eclipse as it is quite complex and will take some getting used to.

Measurements made during the 2015 eclipse

Will we see any effects? It is hard to say, but in a similar experiment in the UK on 20 March 2015 at 8.45am, the Fairford ionosonde showed that the critical frequency was 4.863MHz. This would normally have increased as the morning went on and the Sun's altitude increased, but by 9am it had started to go down. By 9.45am it had decreased to 4.052MHz, before gradually climbing back up again to 6.738MHz and beyond by 11.30am. The Chilton Digisonde showed a similar effect, with the critical frequency pinned at around 4MHz from 8.05am to 10.50am before climbing after the eclipse had ended.

BBC Radio Scotland on 810kHz, broadcasting with 100kW, was used by many listeners who reported an increase in signal strength from around 9.15am to 9.45am, depending upon their locations, with the main peak at about 9.30am to 9.35am. PSC secretary Chris, G4IFX (Surrey), sent in graphs that clearly showed a 25dB to 30dB increase in the signals from BBC Radio Scotland on 810kHz at around 9.40am. Laurie, G3UML (West London), reported that reception of BBC Radio Wales on 882kHz improved dramatically too at the same time. Mike, GU4EON, reported that BBC Radio Scotland on 810kHz came up from a very noisy S4 to just over S9 on his 40m inverted-vee antenna. Others looked at different target stations. Peter Duffett-Smith, GM3XJE (then living near Cambridge), looked at Lisnagarvey (Northern Ireland) on 720kHz and 1341kHz. He also reported an increase in signal strength at 9.36am. Wolverhampton Grammar School ran the experiment using the radio station France Info on 711kHz (no longer broadcasting in the medium wave band). Reception improved slowly, rising to a maximum of S8 or S9 around 9.30am, before dropping into the noise by 9.45am. St Thomas More Catholic school near Buxton listened to France Bleu on 864kHz (also no longer broadcasting in the medium wave band). Their signal peaked at 9.35am and vanished at 9.55am.

Predictions

So what effects will we get this time? It is hard to say, but I wouldn't be surprised if we see some. Another way you can help is by running WSPR on 160m, 80m and 40m during the main eclipse period, say from 6pm to 9pm. Please repeat the transmissions at the same time the following day (13 August), so that comparisons can be made. The WSPR database can then be analysed afterwards to check for enhancements or changes.

Finally, the RSGB has organised two contests on 80m CW and 40m FT8, both running from 5.30pm to 8.30pm on 12 August. For the FT8 contest, amateurs are asked to send their locator rather than skip directly to a signal report. For more details see the HF Contest section of the RSGB website.

We should acquire penty of data from the experiment, which will take time to examine. But whatever option you take, you will be helping to increase our understanding of HF and MF propagation, so we thank you in advance for taking part. Your reports and results can be sent to me at psc.chairman@rsgb.org.uk. My thanks to the other members of PSC for their help and support.

Reference

[1] qsl.net/dl4yhf/spectra1.html

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