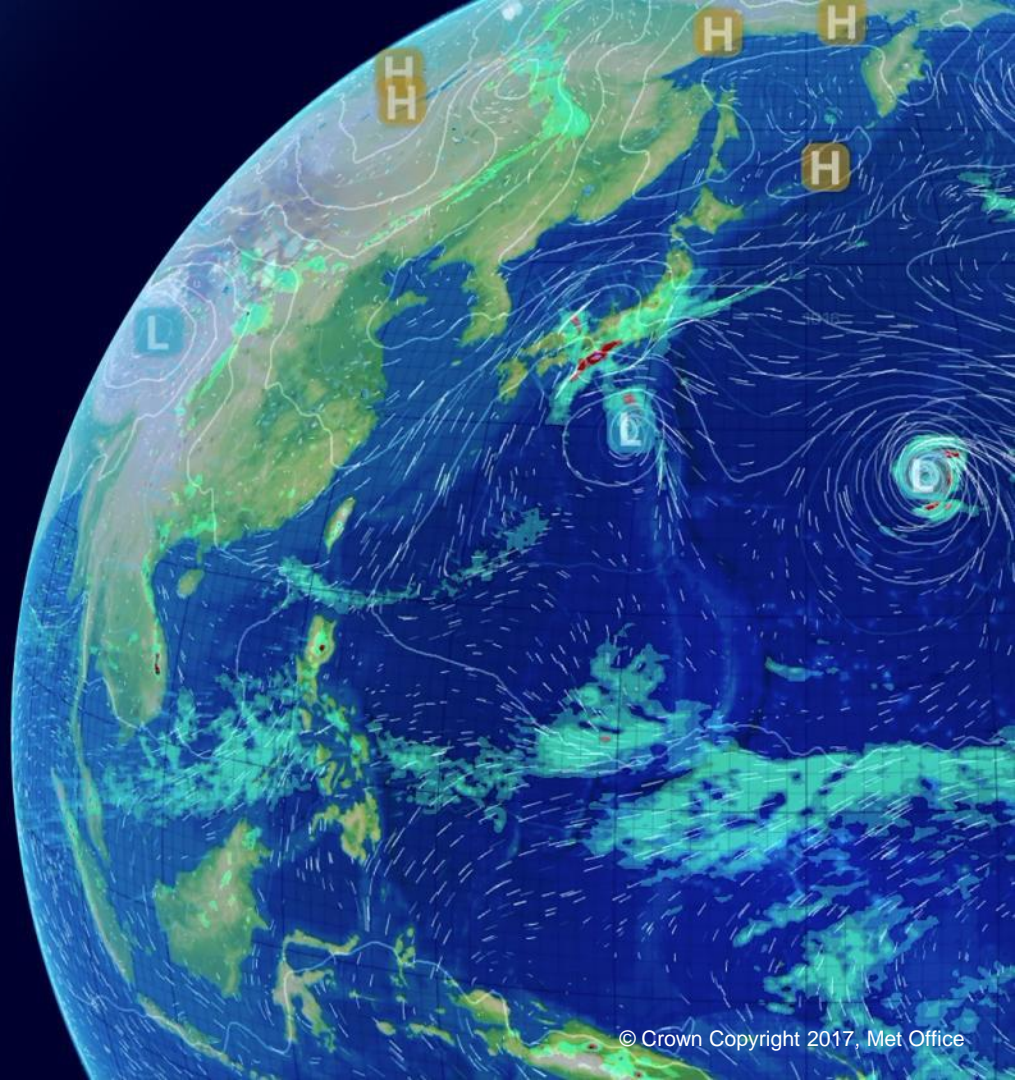


Lightning passive sensors

Neil Bewley

Spectrum Policy Manager

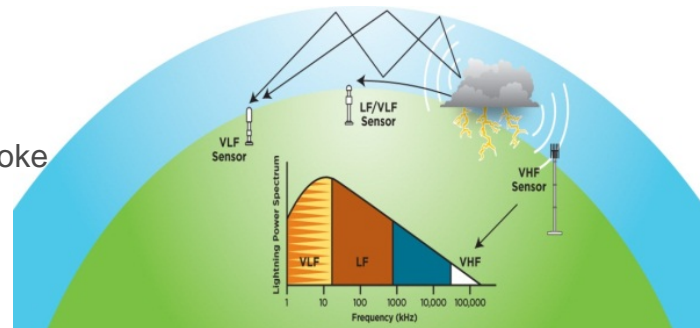
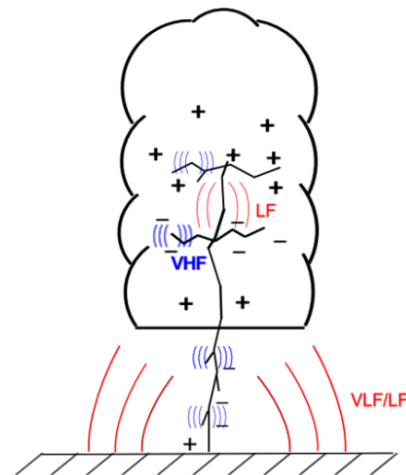


Contents

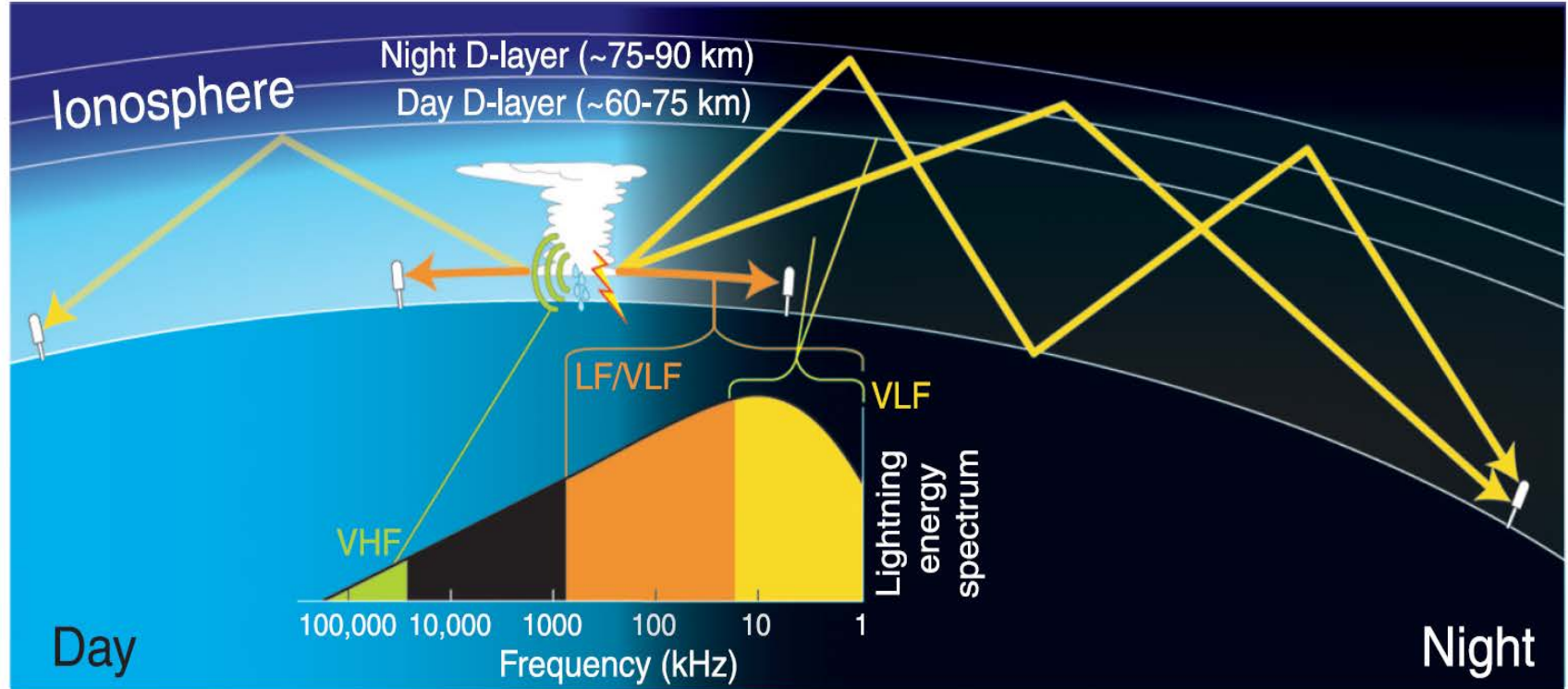
- How do they work?
- Why are they useful?
- What does the future hold?

Met Office Radiation Sources

- Wavelength should roughly “match” the size of the feature being detected
- VHF (~30 – 300 MHz)
 - Matches the length of short branch channels / breakdown processes in lightning
- LF (~30 – 300 kHz)
 - Matches the length of multi-km return-stroke channels
 - Long cloud pulses
- VLF (~3 – 30 kHz)
 - Includes frequencies with the highest-energy that occur in return stroke waveforms
 - Signals propagate well along the ground and bounce well of the ionosphere



Lightning passive sensors



Pessi *et al.* 2009: Development of a Long-Range Lightning Detection Network for the Pacific: Construction, Calibration, and Performance. *J Atmos Oceanic Technol*, **26**, 145-166.

How useful is it to monitor lightning

FedEx Aircraft Diverting in a
Thunderstorm courtesy of You Tube







The future of lightning detection



but, in the mean time!

WRC 2019 Agenda item 9.1.6 (Wireless Power Transmissions (WPT))

CEPT position has been agreed, supporting studies to assess the impact of WPT for electric vehicles on radio communication services.

The frequency bands targeted for such WPT applications are still within the 20 to 6800 kHz range, but the main band under consideration is now the 70-90 kHz.



Questions?



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