

BIO-PROFILE (180 words)

Dr Anne Unewisse obtained a PhD in Radio Astrophysics from the University of Sydney. In 1993 she began working for the Defence Science and Technology Group (DSTG) with the Australian Department of Defence, in support of the Jindalee Operational Radar Network (JORN). Apart from a two-year secondment working on amphibious lodgment, most of Anne's work has focused on optimizing JORN performance through high frequency signal processing, non-recurrent waveforms, mesospheric and thermospheric airglow studies, and ionospheric Doppler clutter characterisation.

JORN is a network of three high frequency (HF) over-the-horizon radars (OTHR) located at Longreach (QLD), Alice Spring (NT), and Laverton (WA). OTHR work by refracting HF signals through the Earth's ionosphere and measuring the signals that bounce back from the ground, sea, or human-made objects (e.g., ships, airplanes). The network monitors Australia's northern approaches out to approximately 3000 km, at frequencies ranging from 3 to 30 MHz, and is operated by the Royal Australian Air Force from the Edinburgh base (Adelaide, SA).

Dr Unewisse maintains a database of DSTG HF publications, and is Honorary Secretary of the Edinburgh site social club.

ANSWERS TO SPECIFIC QUESTIONS

Where do you work, and what is your occupation / position?

I currently work as a research scientist supporting the Jindalee Operational Radar (JORN) for the Defence Science and Technology Group (DSTG) within the Australian Department of Defence. JORN is a network of three over-the-horizon radars (OTHR) located in Queensland, the Northern Territory, and Western Australia, that monitors Australian northern coastline. I use my knowledge of space weather and the ionosphere to optimize the signals received on the network.

What is the most exciting part of your job?

Learning new things all the time.

What do you enjoy most about your job?

Working with really clever people, and opportunities to try new areas of science.

How did you become...

I began with a BSc (Hons 1st Class) in Physics from the University of Sydney, where I studied pure maths, physics and computer science, and continued with a PhD in Radio Astrophysics at the same university, working on a project entitled: 'Radio Emission from Southern Clusters of Galaxies'. The PhD involved a lot of data processing using Molonglo Observatory Synthesis Telescope (currently known as UTMOST) data at 843 MHz, and many of the radio astronomy algorithms are also used in HF radar data processing at 3-30 MHz. I then successfully applied for a position in the DSTG in Adelaide, and I have been working on optimizing JORN signals ever since.

Any other interest

I enjoy sorting out my family history and spending time with my family.