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Microwave applications - clear sky temperatures, cloud and rain detection and assimilation

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Microwave radiation has wavelengths of the order of millimetres, very similar to the size of atmospheric particles such as rain and snow. This means that the interaction of cloud and precipitation particles with microwave radiation is complex and frequency-dependent, but it means that the microwave is one of the best ways to observe cloud and precipitation in all its forms. Weather-forecasting centres are increasingly trying to assimilate this information and to extend temperature and moisture-sounding information further into areas affected by cloud and precipitation. This talk will briefly look at solving the radiative transfer equation in scattering conditions before examining the practical details of microwave assimilation in all-sky conditions. All-sky assimilation is still not practical in every case, particularly temperature sounding, so methods for cloud screening will also be covered.

Presenter: GEER, Alan (ECMWF)