

NUMERICAL WEATHER PREDICTION - AN ALTERNATIVE TO METEOROLOGICAL OBSERVATIONS FOR DISPERSION MODELLING

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Short-range atmospheric dispersion modelling is a key tool for the assessment of local environmental impacts. Dispersion models typically use hourly meteorological observations from quality-controlled sites. However, it is often difficult to find an observation site near enough to be representative of the site under investigation. Numerical Weather Prediction (NWP) modelling, used to produce operational weather forecasts, could provide an alternative source of input data. To assess the applicability of NWP data, studies were undertaken to predict, using the ADMS 3.1 atmospheric dispersion model, ground level concentrations from typical power station emissions, driven by observed meteorological data and by NWP data supplied by the UK meteorological office. Two resolutions of NWP were investigated. The basic input meteorological parameters were compared, together with the predicted ground-level concentrations. The modelled concentrations for several power stations were also compared with local monitoring data. NWP resolution was found to have little effect on predicted concentrations. Predicted concentrations using NWP input were generally close ($\pm 10\%$) to those based on observed meteorology, although occasionally there were differences of a factor of 2. The results show that the use of NWP output for annual modelling produces no significant changes on the accuracy of model predictions compared with the use of observed weather data.