CO2 dense gas cloud on a non-uniform rough area typical of industrial process plant. The emphasis has been put on the modelling of stable and very stable surface layers, since these atmospheric conditions, associated with low wind speed, are the most common conditions encountered for risk assessment. Hence, neutral to very stable conditions trials have been reproduced for both dataset. The evaluation process uses the methodology already discussed at previous Harmonization Conferences. It is applied to several measures: the arc-wise maximum concentration, the cross-wind lateral spreading, the cross-wind integrated concentration and also plume geometric characteristics for Kit Fox Field dataset. The results highlight a good level of performances with values in the range of good performance criteria. Moreover, the influence of the Schmidt number value correlated to the layer stratification on the results has also been investigated.

H13-52
USING A NOVEL QUANTITATIVE PRECIPITATION EVALUATION TECHNIQUE, SAL, TO EVALUATE AIR QUALITY FORECASTS
Helen Dacre

In this study the object-based quantitative precipitation evaluation measure, SAL, developed by Wernli et al. (2008) has been adapted to evaluate air quality forecasts. An example applying SAL to air quality forecasts will be shown using data from the European Tracer Experiment (ETEX) field campaign and forecasts from the UK Met Office's dispersion and numerical weather prediction models. The structure (S), amplitude (A) and location (L) of the forecast tracer fields are considered separately. The amplitude component allows us to determine if the domain-averaged tracer forecast is overestimated or underestimated compared to observations. Coherent tracer 'objects' are then separately identified in the forecast and observed datasets. The location component compares the centre of mass of the observed and forecast fields and also allows us to quantitatively evaluate the distribution of tracer in the domain. The structure component provides information on the volume of identified objects. Positive values of S occur if objects are too large and/or too flat, and negative values occur if the objects are too small and/or too peaked. The components of SAL have been designed to be as close as possible to a subjective visual judgment of the forecast skill and are particularly useful for evaluating high-resolution numerical model air quality forecasts.

H13-58
ADVANCED DISPERSION MODELLING OF WINTER PARTICULATE MATTER FROM LOCALISED EMISSION SOURCES IN RURAL NEW ZEALAND
Basit Khan, Tim Appelhans, Peyman Zawar-Reza, and Andrew Sturman

This study investigates the utility of advanced dispersion modelling techniques with The Air Pollution Model (TAPM) in small townships of New Zealand. Data assimilation techniques and an ensemble of scenarios were used to find the key parameters for better simulating high ground level concentrations from emissions into an extremely stable nocturnal surface-layer. Since the preferred method of home heating in rural areas of New Zealand is based on solid fuel burning, concentrations of PM10 exceed National Environmental Standards (NES) in many locations. The NES is set at 50 µg m-3 (24-hour average) with one allowable exceedence per year from 2013. TAPM is used to investigate particulate matter dispersion for two towns, the first, Reefton, is situated in a valley in the Southern Alps, and the second, Invercargill, is a somewhat larger coastal town at the southern tip of the South Island. Although situated in very different geographical settings, the nocturnal low-level meteorology at both places is controlled by cold air drainage off sloping terrain. The maximum PM10 concentration measured in Reefton is 129 µg m-3 and was recorded in June 2007, while on average 18 exceedences of the NES of 50 µg m-3 occur each year. Domestic heating contributes around 93% of the daily winter PM10, with 5% from outdoor burning, 1% from motor vehicles and less than 1% from industry. The maximum PM10 concentration measured in Invercargill is 198 µg m-3, where the domestic heating contribution to daily winter PM10 emissions is 96%, with motor vehicles and industry contributing 2% each. Outdoor burning produces less than 1% of the PM10 emissions. Work is under way to refine the emission profiles for both places in light of the modelling results. Dispersion modelling with TAPM shows that it has a better success at capturing stability and wind profile characteristics in a setting where down-valley flow is more prominent (Reefton), than in the coastal town (Invercargill) where the model significantly overestimated the ground level concentrations. In this instance, TAPM was unable to faithfully reproduce local meteorology.

H13-112
UPPER AIR WIND CLIMATOLOGY FOR LEGISLATION, INDUSTRIAL APPLICATIONS AND POLLUTION MODELING.
G.T.Geertsema

Upper air wind information climatology is derived from an operational numerical weather prediction model archive. The archived data is available with a high spatial and temporal resolution. Short term Wind forecasts from this archive are extracted for the Netherlands. Measurements from the 200 meter mast at Cabauw located in the centre of the Netherlands are used for verification purposes in this study.