

AIR QUALITY AND AIR EMISSIONS MODELLING

ADVANCED SCIENTIFIC KNOWLEDGE AND PRACTICAL EXPERTISE



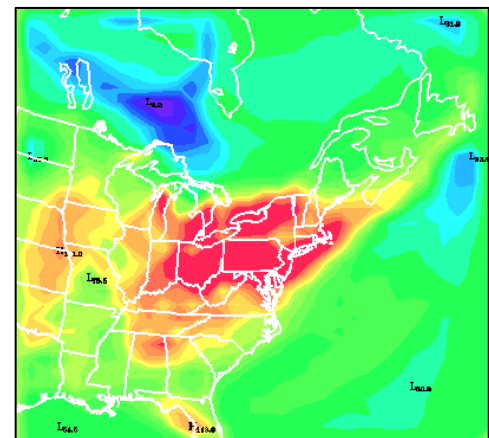
**Kinectrics is
registered to
ISO 9001.**

Unique air modelling capability

Kinectrics' Environmental Technologies provides a complete range of air quality modelling services. Kinectrics' internationally recognized expertise has been built on more than 20 years of in-depth air quality management experience. Our modelling work covers a wide spectrum of pollution such as acid rain, SO₂, NO_x, VOCs, ozone, particulate matter, visibility, mercury and other criteria pollutants. To meet today's environmental challenges and provide the best solutions available, Kinectrics uses up-to-date regulatory models as well as state-of-the-science modelling systems. Our unique professional capabilities and long-term experience ensure innovative solutions and superior service for our clients.

Regional chemistry and transport modelling

- Kinectrics' services address the fate of air contaminants emitted by the client which are transported hundreds of km from the originating site, and/or react chemically in the air to produce secondary pollutants.
- We provide answers to questions such as:
 - Where do the client's air emissions go?
 - What share of a specific pollution level in receptor areas of concern is due to the client's air emissions?
 - How does the client's share of pollution compare to other sources of contamination and the background level of the pollution?
 - What is the most effective measure to enable client compliance with air quality criteria?
- Kinectrics' air quality modelling services can be used effectively to determine potential environmental impacts for future emission projections. (e.g. Southern China's 15-year energy planning strategy)



- Kinectrics uses the most comprehensive regional air quality modelling system available, the U.S. Environmental Protection Agency's *Models-3/CMAQ*, incorporating the state-of-the-science meteorology processor MM5 and emission processor SMOKE.
- Kinectrics' regional modelling covers acid deposition, SO₂, NO_x, VOCs, ozone, PM_{2.5}, PM₁₀ and visibility.
- Kinectrics has expanded the *Models-3/CMAQ*'s capabilities to model the emissions, concentration and wet/dry deposition of elemental/divalent/particulate mercury. (See *Journal of Atmospheric Chemistry and Physics*, 3, p. 535-548, 2003)
- Other available modelling software includes MC2, ADOM, RAMS, UAM.

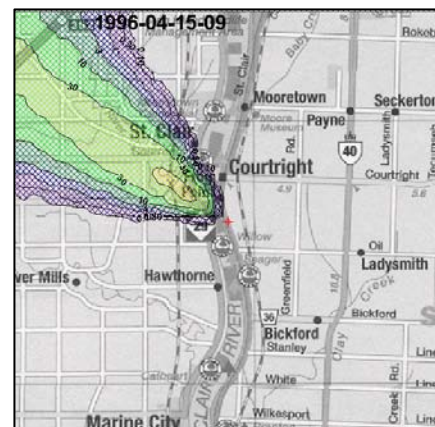
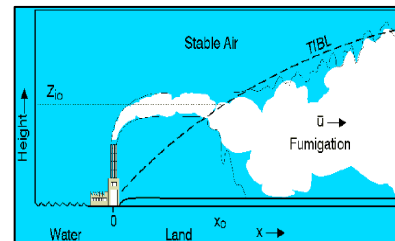
Air emissions modelling

- The most up-to-date software, BEIS3 and MOBILE 6 based on GIS data, is used to model regional biogenic and mobile emissions.
- Kinectrics uses the modelled emissions inventory to conduct assessment studies on the relative importance of natural vs. anthropogenic emissions and NO_x vs. VOCs emissions. Our studies can evaluate the consequences of technology and fuel changes for the transportation sector.

Regulatory dispersion modelling and plume puff modelling

Kinectrics' capabilities include:

- Dispersion modelling for various source types such as point, line, area, volume, open pit, flare.
- Dispersion modelling with U.S. EPA regulatory models ISCST3, ISC-Prime, AERMOD and AERMOD-Prime.
- Modelling air dispersion at specific shoreline settings to account for thermal internal boundary layer (TIBL) effects.
- Plume puff modelling with U.S. EPA preferred CALPUFF for downwind distances up to 150-200 km.
- Regulatory applications for:
 - Certificate of Approval (CoA)
 - Abatement or compliance assessment
- Air quality studies for industrial parks/areas (e.g. North America and Asia).



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