A national model of the impact of road traffic emissions on local air quality

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The National Air Quality (NO₂) Monitoring Network



- Established 2007, expanded 2010
- Monthly samples at 135 sites





The National Air Quality (NO₂) Monitoring Network





Other similar datasets

- Auckland (NZTA, AC, NIWA, UoA, UoC)
- Hamilton (WRC)
- Hastings/Napier (HBRC)
- Gisborne (GDC)
- Gtr Wellington (GWRC, UoO)
- Dunedin (UoO)







Most polluted locations in NZ













Climate, Freshwater & Ocean Science

Spatial gradients







Spatial gradients





The <u>Traffic Impact Model</u>: A monitoring-modelling partnership





National Traffic Impact Model





Uses (1): Urban background maps for project and risk assessment





Uses (2): Constructing indicators







Uses (3): In-transit exposures





Uses (4): Daytime exposures





Work in progress with GWRC



Climate, Freshwater & Ocean Science

Uses (5): Detecting "missing" sources



Observed NO₂ higher than modelled over extended area implies additional source



Central Business Districts





Model does not (yet) account for poor dispersion in street canyons



Coming soon: (Black) Carbon monitoring







Model coverage

Currently

- Long-term means
- Nitrogen Dioxide
- Traffic sources only

Future

- "typical" hourly averages
- Black carbon and Particulates from traffic
- Non-traffic sources



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