Contextualizing urban atmospheric CO_2 observations for primary education: a case-study from New Zealand

Vanessa Monteiro[1,2,3], Leigh Fleming[2], Celia Wells[2,4], Jocelyn Turnbull[2,5], Jack Drummond[2], Rachel Lawson[2], Xuemei Tang[2], Erin Edmonds[6], Donna Calis[7], and Cybelli Barbosa[8]

[1]Institut de Ciència i Tecnologia Ambientals de la Universitat Autònoma de Barcelona (ICTA-UAB), Barcelona, Spain; [2]GNS Science *now* Earth Sciences New Zealand, Lower Hutt, New Zealand; [3]Antarctic Research Centre (ARC), Victoria University of Wellington, Wellington, New Zealand; [4]*now at* GeoExchange New Zealand, Auckland, New Zealand; [5]Cooperative Institute for Research in Environmental Sciences (CIRES), University of Colorado, Boulder, United States of America; [6]Silverstream School, Upper Hutt, New Zealand; [7]Utrecht University, Copernicus Institute of Sustainable Development, Utrecht, The Netherlands; [8]National Institute for Amazonian Research, INPA, Manaus, Brazil

Drive it down! Measuring and mitigating school-gate transport emissions

Make the invisible greenhouse gases visible!

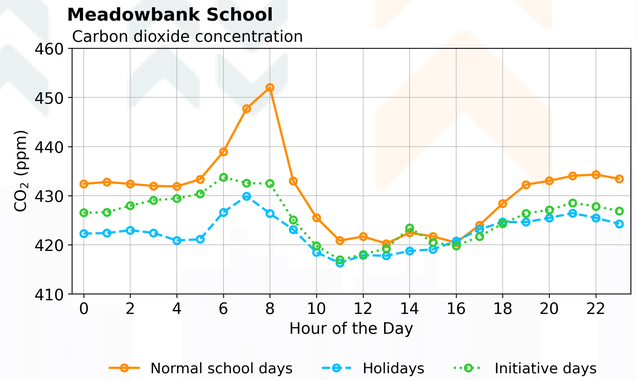
- Mid-cost carbon dioxide sensors deployed at primary school gates to monitor atmospheric concentrations under three scenarios:
  - Normal school days
  - Holidays
  - Initiative days

Students were challenged to create initiatives to drive their transport emissions down and make visible changes in measurements

Examples of active transport activities:
'Glam your Wheels' day for scooters and bikes, ***'Wear What Ya Want Walking Wednesday'***, and a ***'Feel Good Friday'*** to encourage groups of kids to walk to school together.

Example from Meadowbank School

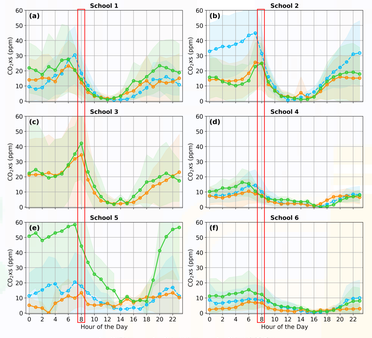
- The school community got to their feet and wheels: the count of scooters being ridden to school jumping from four on the Tuesday before the initiative to 192 on the first Tuesday of the festival.
- The two-week campaign resulted in a noticeable drop in CO_2 concentration, bringing it down to school holiday levels!



Replicating in Other Schools

We attempted to replicate the results in 5 other schools (and reran the process in Meadowbank one year later). We could not replicate it for a range of reasons such as:

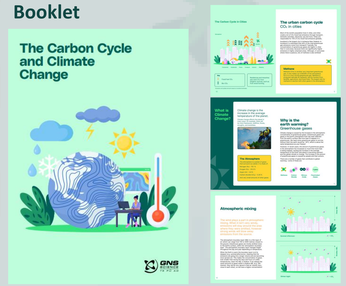
- Insufficient observations (noisy data)
- Windy conditions (mainly in Wellington)
- Some school areas were impacted by heavy traffic (reducing the efficacy of campaigns)
- Holidays: some schools experienced construction-related traffic during these periods



CO_2xs is the atmospheric concentration minus a baseline concentration, indicating how much CO_2 has been added above this baseline. We found this to be an easier metric for visualizing changes in atmospheric CO_2 concentrations.

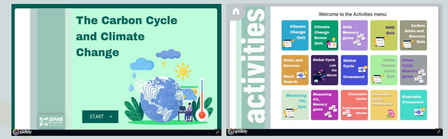
Free teaching resources for urban carbon cycle

Booklet

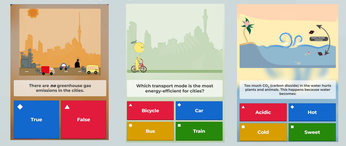


Interactive platform

Current versions available in English and Portuguese



Kahoot! (quiz)



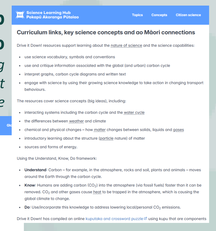
Discussion cards

Memory cards

Desktop game

Science Learning Hub Pokapū Akoranga Pūtaiao

Teacher Professional Learning Development: resources to support planning and teaching science



Available here:

https://linktr.ee/drive_it_down

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Contact:
Vanessa.Monteiro@uab.cat
Leigh.Fleming@earthsciences.nz