

Jocelyn Christine Turnbull

CIRES, University of Colorado Boulder, CO, USA
and National Isotope Centre, GNS Science, Lower Hutt, New Zealand
ph: +64 4 570 4726 fax: +64 4 570 4657
email: j.turnbull@gns.cri.nz

Education

B.Sc. Chemistry and Mathematics, Massey University, Palmerston North, New Zealand, 1992.
B.Sc. (Hons.) Chemistry, Massey University, Palmerston North, New Zealand, 1993.
Ph.D. Geological Sciences, University of Colorado at Boulder, Boulder, CO, USA, 2006.

Appointments

Senior Scientist, National Isotope Centre, GNS Science, Lower Hutt, New Zealand, Sept 2011 – present.
Research Associate, NOAA/ESRL Global Monitoring Division and CIRES, University of Colorado at Boulder, 12/2010 - present.
Postdoctoral Fellow, NOAA/ESRL Global Monitoring Division and National Research Council (NRC), 9/2008 – 12/2010.
Research fellow, INSTAAR, University of Colorado at Boulder, 4/2008 – 9/2008.
Postdoctoral Fellow, Laboratoire des Sciences du Climat et de l'Environnement (LSCE), Gif-sur-Yvette, France, 10/2006 – 3/2008.
Professional Scientist, INSTAAR, University of Colorado at Boulder, AMS Radiocarbon Laboratory, 9/1997 – 9/2006.
Laboratory Technician, Rafter Radiocarbon Laboratory, Lower Hutt, New Zealand, 11/1992 – 9/1993, 3/1996 – 5/1997.
Antarctic Research Assistant, McMurdo Station, 10/1994 – 1/1997, summer seasons only.

Five most relevant publications

Turnbull, J. C., D. Guenther, E. Anderson, C. Sweeney, T. Newberger, A. Karion, A. E. Andrews, J. Kofler and P. P. Tans (2012). "An integrated flask sample collection system for greenhouse gas measurements." *Atmospheric Measurement Techniques* **5**: 2321-2327.

Miller, J. B., S. J. Lehman, S. A. Montzka, C. Sweeney, B. R. Miller, C. Wolak, E. J. Dlugokencky, J. R. Southon, **J. C. Turnbull** and P. P. Tans (2012). "Linking emissions of fossil fuel CO₂ and other anthropogenic trace gases using atmospheric ¹⁴CO₂." *Journal of Geophysical Research* **117**.

Turnbull, J. C., P. P. Tans, S. J. Lehman, D. Baker, Y. Chung, J. S. Gregg, J. B. Miller, J. R. Southon and L. Zhao (2011). "Atmospheric observations of carbon monoxide and fossil fuel CO₂ emissions from East Asia." *Journal of Geophysical Research* **116**: D24306.

Turnbull, J. C., Karion, A., Fischer, M. L., Faloona, I. C., Guilderson, T. P., Lehman, S. J., Miller, B. R., Miller, J. B., Montzka, S. A., Sherwood, T., Saripalli, S., Sweeney, C., and Tans, P. P. (2011), Assessment of fossil fuel derived carbon dioxide and other anthropogenic trace gas emissions from airborne measurements over Sacramento, California in spring 2009, *Atm. Chem. Phys.*, **11**, 705-721, 10.5194/acp-11-705-2011.

Turnbull, J.C., J.B. Miller, S.J. Lehman, P.P. Tans, R.J. Sparks, and J.R. Southon, Comparison of ¹⁴CO₂, CO and SF₆ as tracers for determination of recently added fossil fuel CO₂ in the atmosphere and implications for biological CO₂ exchange, *Geophys. Res. Lett.*, **33**, L01817, 2006.

Five other publications

- Turnbull, J. C.**, S. J. Lehman, S. Morgan, and C. Wolak (2010), A new automated extraction system for ^{14}C measurement in atmospheric CO_2 , *Radiocarbon*, 52, 1261-1269, 2010.
- Turnbull, J. C.**, Miller, J. B., Lehman, S. J., Hurst, D. F., Peters, W., Tans, P. P., Southon, J. R., Montzka, S. A., Elkins, J. W., Mondeel, D. J., Romashkin, P. A., Elansky, N. F., and Shkorokhod, A., Spatial distribution of $\Delta^{14}\text{CO}_2$ across Eurasia: Measurements from the TROICA-8 expedition, *Atm. Chem. Phys.*, 9, 175-187, 2009.
- Turnbull, J.C.**, S.J. Lehman, J.B. Miller, R.J. Sparks, J.R. Southon, and P.P. Tans, A new $^{14}\text{CO}_2$ time series for North American continental air, *J. Geophys. Res.*, 112, D11310, doi:10.1029/2006JD008184, 2007.
- Turnbull, J. C.**, P. J. Rayner, J. B. Miller, T. Naegler, P. Ciais, and A. Cozic (2009), On the use of $^{14}\text{CO}_2$ as a tracer for fossil fuel CO_2 : quantifying uncertainties using an atmospheric transport model, *J. Geophys. Res.*, 114, D22302, doi:10.1029/2009JD012308.
- Hughen, K.A., S.J. Lehman, J. Southon, J.T. Overpeck, O. Marchal, C. Herring, and **J.C. Turnbull**, ^{14}C activity and global carbon cycle changes over the past 50,000 years, *Science*, 303, 202-207, 2004.

Synergistic activities and service

- Editorial article in Science magazine highlighting atmospheric $^{14}\text{CO}_2$ measurements. Balter, M. (2012). "Using radiocarbon to go beyond good faith in measuring CO_2 emissions." *Science* 337: 400-401.
- Reviewer, European Integrated Carbon Observation System (ICOS), 2010.
- NOAA Hollings Undergraduate Scholar mentor, 2009, 2010 and 2011, developing web based tools for climate change education.
- DISCCRS Dissertation Initiative for the Advancement of Climate Change Research Symposium Fellow, 2007.
- EarthPortal website contributor, 2007-present.
- Scientific contributor to *Lonely Planet Guide to Chile* (2009) and *Lonely Planet Guide to Trekking in Patagonia* (2009), text for "Indecent Exposure," explaining the ozone hole.

Collaborators in last four years

Eric Anderson (NOAA), Arlyn Andrews (NOAA), Troy Baisden (GNS Science), David Baker (Colorado State University), Chanda Bertrand (GNS Science), Maria Cambaliza (Purdue U.), Silvia Canessa (GNS Science), Dawn Chambers (GNS Science), Y.S. Chung (KCEAR, Korea), Philippe Ciais (LSCE), Anne Cozic (LSCE), Ken Davis (Penn State U.), Ed Dlugokencky (NOAA), Nikolai Elansky (Ohbukov Inst.), James Elkins (NOAA), Ian Faloona (UC Davis), Jay Gregg (U. Maryland), Doug Guenther (NOAA), Kevin Gurney (Arizona State U.), Tom Guilderson (LLNL), Dale Hurst (NOAA), Anna Karion (NOAA), Jonathan Kofler (NOAA), Thomas Lauvaux (Penn State U.), Craig Lee (U. Colorado), Jenny Borreson Lee (U. Colorado), Scott Lehman (U. Colorado), Natasha Miles (Penn State U.), Ben Miller (NOAA), John B. Miller (NOAA), Debra Mondeel (NOAA), Steve Montzka (NOAA), Tobias Naegler (U. Heidelberg), Timothy Newberger (U. Colorado), Wouter Peters (NOAA), Gabrielle Petron (NOAA), Andy Phillips (GNS Science), Chris Prior (GNS Science), Peter Rayner (LSCE), Scott Richardson (Penn State U.), P. Romashkin (NCAR), Paul Shepson (Purdue U.), A. Shkorokhod (Ohbukov Inst.), John Southon (U. Irvine), Colm Sweeney (NOAA), Pieter Tans (NOAA), Chad Wolak (U. Colorado), Lingxi Zhao (Chinese Meteorological Administration), Albert Zondervan (GNS Science).