

## **A comparison of estimates of global carbon dioxide emissions from fossil carbon sources**

Comparing global CO<sub>2</sub> emissions is no small undertaking, but immensely important in the modern era as space-based measurements need ground verification. Robbie Andrew does a thorough job in stating the problem, describing the different boundary conditions of each dataset, and doing a more intensive comparison of selected countries or groups of countries. This is similar to the efforts of Andres et al. 2012 and Macknick 2011, but there is a need for a newer update. Most of my commentary is for copy edits and some clarification of sources and language/terminology, but I recommend this for publication with minor revisions.

Line by line comments

Page 1, line 24-25: Is there a source for this somewhere?

Line 26: "realm of scientific enquiry"

Page 2, line 7-8: A simple listing of these core reasons would be helpful to the reader

Line 9-10: What exactly is the total budget we are drawing near? More detail would be helpful here, especially in connecting with section 7

Line 11-13: Does this really help reduce uncertainty, or rather identifies potential sources of uncertainty?

Line 19-22: a list of acronyms used would be helpful for the reader

Page 3, Line 3-7: Regular updates to procedures like this (Comparisons of FFCO<sub>2</sub> from different sources) are important, but maybe a connection to the IPCC's 1.5 C report as to why this is especially relevant to address.

Page 4, Line 28-30: What were Keeling's global and cumulative estimates, and how do they compare to the previous estimates? Don't know if that is available, but would be interesting to add.

Page 5, line 13: "estimates had be based"

Page 5, line 29: (REF)?

Page 7 line 19-20: Is there a reason for the separation? Or just a discipline versus generic issue?

Page 14 line 96: Reference needed for USGS minerals yearbook.

Page 15 line 128-129: The estimates of uncertainty needs to be on a consistent format (See also lines 152 and 203)

Page 24, line 363: "in liquid fuels than"

Page 28, line 442-444: Any inclination as to why there is this difference between the other datasets and IEA/CDIAC? Treatment of nonenergy uses maybe? Carbon content of fuel types?

Page 33, line 32: IEA, not IEWWA

Page 34 line 33: "one can see more"

Page 40 line 637: Would a recommendation to data producers be to make their methodology and data sources more transparent to allow for better understanding?

Page 41 line 656: What would a better measure of uncertainty be? This is a good measure of variance in system boundaries and how they relate to outputs though.

Page 42 line 690-693: What about space-based measurements?