

Interactive comment on “On the relationship between metrics to compare greenhouse gases – the case of IGTP, GWP and SGTP” by C. Azar and D. J. A. Johansson

Anonymous Referee #2

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General comments A well-written ms. addressing technical aspects of metrics for comparison of climate impacts of emissions of different greenhouse gases. No new ground is broken but a systematic comparison is made of previously published metrics. The results are potentially useful by showing that for policy making it is enough to consider the two clearly distinct metrics: GWP and GTP.

Specific details

Introduction: it would have been interesting to add a comment on why previous authors have felt the need to introduce other metrics, in addition to GWP and GTP. In particular, why did the IPCC 2009 report write that researchers should "develop new refined

C169

metrics"? What weaknesses of the "traditional" metrics were identified?

p 114, l 21: "comparing emissions of different .."

p 116, l 9-10: Unclear

p p 1 18: many assumptions are used in the formulation of the model, but in the sensitivity analysis only vertical heat diffusivity and climate sensitivity are investigated. How do you know that other parameters are less critical?

p 119, l 2: Are there other such cases when the forcing is homogeneous?

p 119, l 10: When using subjective words like "close" or "slightly higher" one must have some standard in mind. What is it?

p 121, eq. 4: Define lambda

p 122, l 12: What is the difference between "perturbation life time" and "adjustment time" used on p. 118?

p 124, l 14-24: These are important conclusions that should also appear in some form in the abstract.

p 126, l 11: The cycles themselves need not be linear.

p 126, l 20: Background conc. of what?

Tables C1-C3: How do the numbers change for sensitivities below 2, e.g. 1.5?

Interactive comment on Earth Syst. Dynam. Discuss., 3, 113, 2012.

C170