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Interactive comment on "Measurements of the dissolved inorganic carbon system and associated biogeochemical parameters in the Canadian Arctic, 1974–2009" *by* K. E. Giesbrecht et al.

Anonymous Referee #1

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The dataset consists of dissolved inorganic carbon system parameters (total inorganic carbon, alkalinity and pH) and supporting parameters (nutrients, oxygen etc.) which have previously been publically unavailable. The bulk of this data-set was collected from 2000 and onwards. It also contains data from a cruise as early as 1974 (admittedly very few samples with regards to the carbon system), and data from 10 cruises in the 80s and 90s. Undoubtedly, this dataset would be a very valuable contribution to the scientific community. The data coverage in the Arctic, even though it has greatly increased during the later years, is still far from sufficient neither in time nor space.

Particularly older data of high quality is extremely scarce and very valuable as they can be used as a base-line to study changes in the system.

Overall the paper is well organized and easy to follow. The authors give sufficient background information on the different projects involved, sample analyses and the additional primary quality control on the carbon system parameters.

I would like to see a more thorough discussion on the consistency of the data, especially the older data. Fairly or not, older data is often regarded with some scepticism and if they are to be used e.g. as a base-line for studying temporal changes it needs to be clear that the data can be trusted. For DIC, the authors describe and show the results of an intercalibration study between two different methods of analyses for DIC which is very valuable information for the reader. However, for total alkalinity the authors report on the risk of offsets in the alkalinity results for analyses conducted using closed-cell titrations with no further discussions on the subject. This might very well make a potential user wary of using the older alkalinity data which also would also make it impossible (unless there are pH measurements available) to calculate pCO2 or the CaCO3-saturation. I think it would be an improvement if the authors could elaborate on the interconsistency between the cruises for the older alkalinity data (and preferably for the DIC-data, at least the ones where no CRMs were used).

I am aware that the above task is not easy and regardless of the outcome I support publication.

Interactive comment on Earth Syst. Sci. Data Discuss., 6, 223, 2013.