The Cryosphere Discuss., 7, C46–C48, 2013
www.the-cryosphere-discuss.net/7/C46/2013/

The Cryosphere Discussions

Interactive comment on "New estimates of Arctic and Antarctic sea ice extent during September 1964 from recovered Nimbus I satellite imagery" *by* W. N. Meier et al.

Anonymous Referee #2

Received and published: 12 February 2013

Review of Meier et al.: New estimates of Arctic and Antarctic sea ice extent during September 1964 from recovered Nimbus I satellite imagery. Manuscript -tc-2012-187 The manuscript describes the method of estimating the Arctic and Antarctic ice edge and extent from the NIMBUS I TV camera system and presents the results of an initial application to data of the month September 1994. The impact of the paper is that the method, applied to complete data sets of the satellites NIMBUS I, II and III may lead to more precise sea ice estimates than are currently available for the 1960 and early 1970 years.

The subject matter is suitable for TC, the paper is technically correct except the com-

ments below, mainly concerning some more detailed explanations. The paper makes a significant contribution to the published knowledge, and it is complete for understanding. Title and abstract reflect well the content. I recommend publishing the manuscript after minor revisions.

My main comments are: The imaging and geolocation processes should be described in more detail.

Detail comments: TCD Page 37 Line 22: 'The National Ice Center ice chart climatology': reference?

P39 L3-5: Give more details: region covered by each TV frame and pixel? Size of frames in pixels and km2? Did AVCS operate continuously over whole month? Night time?

P 40 L6: '4-bit resolution of the original film': The radiometric resolution of a photographic film depends on the assumed resolution. At the finest scale, the single grains, it is binary.

P40 L12: 'spectral range corresponds to 4-bit resolution': meaning unclear: resolution independent of spectral range of camera.

P40 L18ff: Composition process requires geolocation of each single frame.

- Mention: The center coordinates are also recorded in each frame.

- Were they critically assessed, e.g. by checking their compatibility with land contours?

- How was the correct rotation of each frame achieved?

P40 L23: manually -> visually?

P41 L1: basin-wide fields: Antarctic not a basin.

P42 L3: range 18.3 to 21.2 x10^6 km2:

- This information requires knowledge of area of ice sheets. Where from taken? Ref?

Might be uncertain for that time.

- numbers incompatible with Fig 4 where I read 19.4 to 19.8 (red box). Explain difference.

P42 L28-29 ‘difficulty to distinguish ice from land snow and glaciers’: Land contour should be known. Which source used?

P43 L21: median extent 7.04x10^4 km2: stdev?

Interactive comment on The Cryosphere Discuss., 7, 35, 2013.