“The need of revising the good old Wolf numbers”

The issue is not the good old Wolf Numbers. They are basically still approximately good. The revision is mostly a simple change of scale, removing the artificial 0.6 factor.

The real issue is the revision of the bad old Group Sunspot Number that not even one of its ‘creators’ believe in anymore

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Ken H. Schatten
The Antique Telescope Society
6th Space Climate Symposium, Levi, April 2016
The Ratio *Group/Zürich SSN* has Two Significant Discontinuities

At ~1947 (After Max Waldmeier took over) and at 1876-1910 (Greenwich calibration drifting)

As we found problems with the H&S normalization, we (Svalgaard & Schatten) decided to build a new Group Series ‘from scratch’
SSN with/without Weighting

The weight (inflation) factor

The observed (reported) SSN (pink) and the corrected SSN (black)

Light blue dots show yearly values of un-weighted counts from Locarno, i.e. not relying on the weight factor formula. The agreement is excellent.

The inflation due to weighting largely explains the second anomaly in the ratio between the GSN and the SSN.
A New Approach: The Backbones

Wolfer

1876 1928

Schwabe

1826 1967
Normalization Procedure

For each Backbone we regress each observers group counts for each year against those of the primary observer, and plot the result [left panel]. The slope gives us what factor to multiply the observer’s count by to match the primary’s.

The right panel shows a result for the Wolfer Backbone: blue is Wolf’s count [with his small telescope], pink is Wolfer’s count [with the larger telescope], and the orange curve is the blue curve multiplied by the slope.

The Backbone is then constructed as the average normalized counts of all observers that are part of the backbone.
Harmonizing Schwabe and Wolfer Backbones
Rectifying the ~1885 Discrepancy

Hoyt & Schatten used the Group Count from RGO [Royal Greenwich Observatory] as their Normalization Backbone. Why don’t we?

Because there are strong indications that the RGO data is drifting before ~1900. And that is a major reason for the ~1885 change in the level of the H&S Group Sunspot Number.
Wolf undercounted the number of groups on the Staudach drawings by 25%. We use my recount in building the backbone (see later).
Help from the Antique Telescope Society
Results so Far for Sunspot Numbers

On Average the Modern Observers see sunspot numbers about 3 times larger than our intrepid observers. This is about what we have found by trying to normalize the old data to modern values, so validating the recent revision of the official Sunspot Number
Putting it All Together (Real Progress!)

Very good agreement between different reconstructions
'if it was so, it might be; and if it were so, it would be; but as it isn't, it ain't