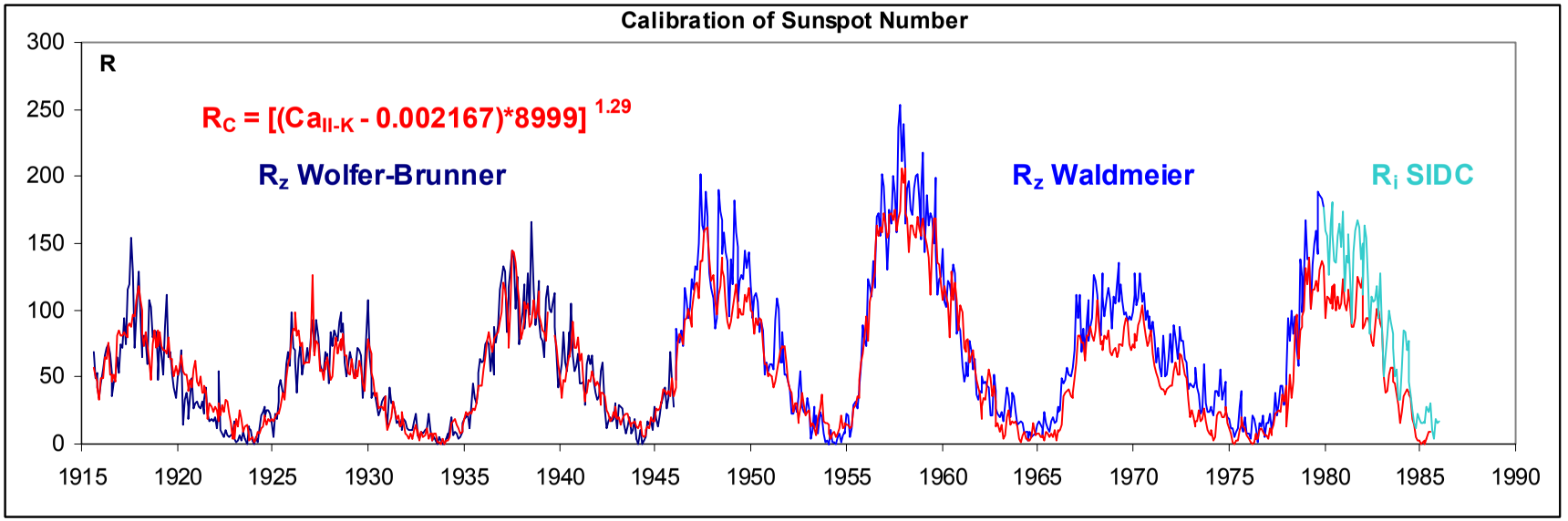

Recalibration of Zurich Sunspot Number

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Abstract: Three independent datasets support the finding that a discontinuous change of ~20% was introduced in the Zurich Sunspot Number, Rz, when Max Waldmeier took over the production of Rz in 1946. The range of the diurnal variation of the geomagnetic field (the East-component) is controlled by the EUV-induced conductivity of the day-side ionosphere and indicates a 23% increase of Rz from 1946 on. The Greenwich Sunspot Areas (and the Group Sunspot Number derived from the Greenwich data since 1874) indicate a 17.5% increase of Rz. A CaII K-line index derived from recently digitized Mount Wilson Observatory spectroheliograms (since 1915) indicates a 21% increase in Rz. Friedli [2005] notes that "The new observer-team in Zurich was thus relatively inexperienced and Waldmeier himself feared that his scale factor could vary". We suggest that his fear was not unfounded and that the Zurich Sunspot Number be increased by 20% before 1946 to match the modern record.