Annual report of Interdivision B and E WG on Coordination of Synoptic Observations of the Sun.

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Report for the period Jan to Dec 2019
Current WG page: https://gonewithsolarwind.com/index.php/iau-wg/

In 2018, this WG spearheaded the development of the IAU Resolution B3: "on preservation, digitization and scientific exploration of historical astronomical data", which was accepted by the General Assembly XXX. As a follow up of this work, we initiated the IAU-wide Survey of historical astronomy data, which received information about 115 endangered historical datasets across all fields of astronomy. We plan to summarize these submissions and make them available to the international astronomy community by mid-2020.

The WG continued raising the awareness about the importance of historical astronomy datasets and an urgent need for their preservation. Thus, the members of the WG co-authored two White Papers submitted to the ASTRO2020 Decadal Survey aimed at identifying the key priorities in astronomy and astrophysics and developing a comprehensive strategy for US Agencies investments in the upcoming decade. On one of these White Papers was in collaboration with the Working Group on the Preservation of Astronomical Heritage (WGPAH) of the American Astronomical Society (AAS).

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- Pevtsov, A., Griffin, E. Grindlay, J. Kafka, S. Bartlett, J. L., Usoskin, I., Mursula, K., Gibson, S., Pillet, V. M., Burkepile, J., Webb, D.; Clette, F., Hesser, J., Stetson, P., Munoz-Jaramillo, A., Hill, F., Bogart, R., Osborn, W., Longcope, D.: 2019, **"Historical astronomical data: urgent need for preservation, digitization enabling scientific exploration**", White Paper submitted to ASTRO2020 Decadal Survey, ArXiv: 1903.04839

We worked with the IAU General Secretary and two IAU Division Presidents to arrange for a letter of endorsement for the World Data Center for Sunspot Index and Long-term Solar Observations (WDC-SILSO) to continue and expand their activity on the production, preservation and dissemination of the international sunspot number. We also arranged for a support letter for a researcher to promote the access and the digitization of Lindener's manuscripts for astronomical observations from the University Archive of Wrocław, Poland. The WG also provided the endorsement letter for IAU Symposium "The Sun and Solar Twins: Variability, Planetary Systems, Composition" proposed by Drs. N. Krivova and A. Shapiro for the next IAU General Assembly in Busan, South Korea.

The members of the WG continued activities aimed at developing a "community consensus" time series of sunspot and group numbers. The discussions continued in the framework of the international team on "Recalibration of the Sunspot Number Series" supported by the International Space Science Institute

(ISSI, Bern Switzerland). In addition, several members of the WG had participated in discussion of the "Solar variability and sunspot indices" started by SCOSTEP's Variability of the Sun and Its Terrestrial Impact (VarSITI) program. The purpose of this discussion was to assess the needs and approaches for developing a single "community consensus" time series of sunspot and group numbers.

We also continued informing the WG members about the relevant activities by other groups. One of these was a call issued by the Digital Preservation Coalition (DPC) to submit nominations for its 2019 edition of the 'BitList' (which digital materials the digital community thinks are most at risk).

One of the at-risk datasets is the Debrecen Photoheliographic Data (DPD) sunspot catalogue, which since 1972 served as a continuation of Greenwich Photoheliographic Results (GPR).

Many historical astronomy dataset continue to be at risk, including several solar (heliophysics) datasets. Lack of dedicated funding is the main issue for delaying the rescue of such important datasets. Nevertheless, the digitization activity continues mostly via the dedicated (often, volunteer) efforts of our astronomy colleagues. Thus, for example, in 2019, the datasets of (1917-2016) magnetic field measurements in sunspots and the full disk observations in Ca II K line from the Mount Wilson Observatory have been digitized and made public. H-alpha observations from the Solar Optical Observing Network (SOON) are put in a public domain by Dr. Alan Kiplinger (University of Colorado). The long-lost sunspot-number archives of the Zurich Observatory (1945-1980) were recovered thanks to a collaboration between the World Data Center SILSO in Brussels and the Specola Solare Observatory in Locarno. Those source data tables are now progressively digitized by the library of the ETH Zürich, in the framework of the e-manuscripta Swiss federal program. There is a continuing effort by the German astronomy community to digitize their extensive collection of the photographic plates including the photographic solar images (Archives of Photographic PLates for Astronomical USE, APLAUSE), and several others. We also note a recent effort to digitize the solar observers' logs from the Tashkent Astronomical Observatory (now Ulugh Beg Astronomical Institute of the Uzbekistan Academy of Sciences). We plan collecting the links to the digitized archives on a new Historical Solar Data server.