

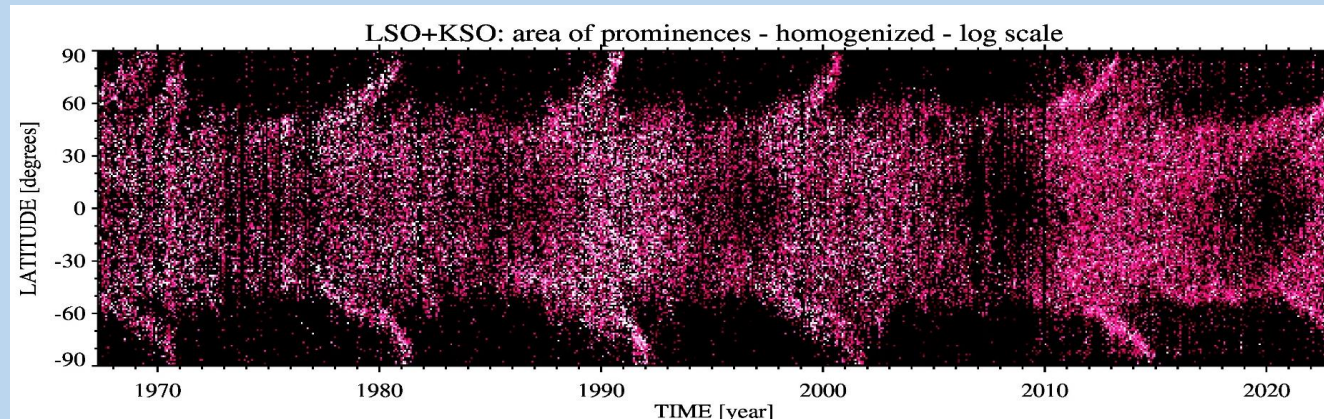
Space Weather activities in Slovakia

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Space weather research in Slovakia is performed at 4 leading institutions: (1) Astronomical Institute, Slovak Academy of Sciences (SAS), Department of Solar Physics, Tatranská Lomnica; (2) Institute of Experimental Physics SAS, Department of Space Physics, Košice; (3) Earth Science Institute SAS, Division of Geophysics Bratislava - Geomagnetic Observatory Hurbanovo); (4) Slovak Central Observatory, Research and Observational Dept., Hurbanovo.

Solar Weather:

- **Astronomical Institute (AI) of the Slovak Academy of Sciences (SAS), Tatranská Lomnica**



LSO/KSO H-alpha prominences catalogue - Lomnický Štít Observatory and the Kanzelhöhe Observatory for Solar and Environmental Research (Treffen, Uni Graz, Austria): time-latitude distribution of the H-alpha prominences for the time period 05/1967 – 12/2022.

- **Slovak Central observatory, Research and Observational Department Hurbanovo**

- Radio spectrometer **CALLISTO**: solar radio bursts at 45 – 200 MHz ( **instrument**)

- Measurements of solar continuum in VIS spectral band with the aim to detect solar flares (AI CAS, Ondřejov, Czech Republic)

- ☐ Modified Coronal Index (MCI):

<https://www.kozmos-online.sk/slnko/modifikovany-koronalny-index-modified-coronal-index/>

- ☐ Modified Homogeneous Data Set of solar coronal intensities (MHDS):

<https://www.kozmos-online.sk/slnko/modifikovany-homogenny-rad-modified-homogeneous-data-set/>

Solar Activity and Earth's Magnetic Field
(data according to observations of the Scientific Observational Dept. of the Slovak Central Observatory - SCO Hurbanovo)
 47°52,372' N and 18°11,368' E


slovensky

JANUARY 2024

H-alpha Telescope Lunt 100, SÚH Hurbanovo
H-alpha filter - FWHM 0,7 A

Coudé Refractor, Historical Building of the SCO
D/f: 150/2250 mm

Archive of solar images and sunspot drawings



Day	5	6	7	8	9	10	11	12	13	14	15
Wolf num.	107	▲	▲	173	▲	204	285	233	182	199	166
Obs. cond.	4	▲	▲	4	▲	5	5	5	4	5	4
Earth's MF	np	np	np	np	np	np	np	np	np	np	np

<https://www.kozmos-online.sk/obs/aktivita/activity.htm>

- **Solar telescopes for solar atmosphere observations are installed at several public observatories in Slovakia:**

- telescopes for optical observation of the sunspots in the solar photosphere
- LUNT telescope with H-alpha filter for photographic observation of the chromosphere and prominences



- **Institute of Experimental Physics (IEP), SAS, Košice**
(Department of Space Physics)

- **Heliospheric Weather**

- Measurements of energetic particles by own instruments on space missions: e. g. JUICE (launch to Jupiter in 2023, target in 2031) - **the ACM anti-coincidence** detector for the Particle Environment Package (PEP) science suite was developed, constructed, and tested at IEP SAS.

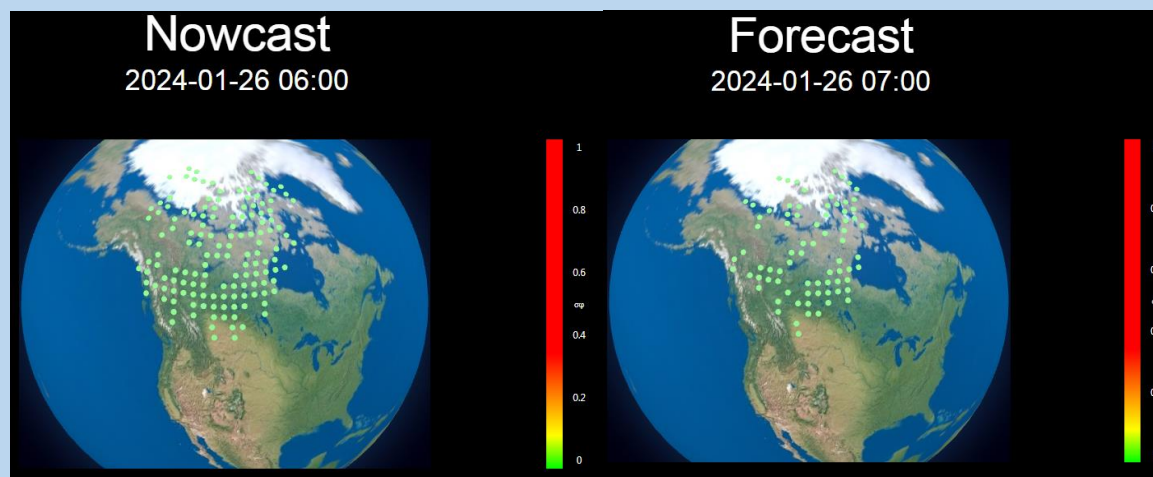


- **Space Radiation Cosmic Rays** measurements (ground based observations using both the Neutron monitor [<http://neutronmonitor.ta3.sk>] and the **SEVAN** ( **instrument**) http://crd.yerphi.am/Lomnicky_stit_SEVAN_Data

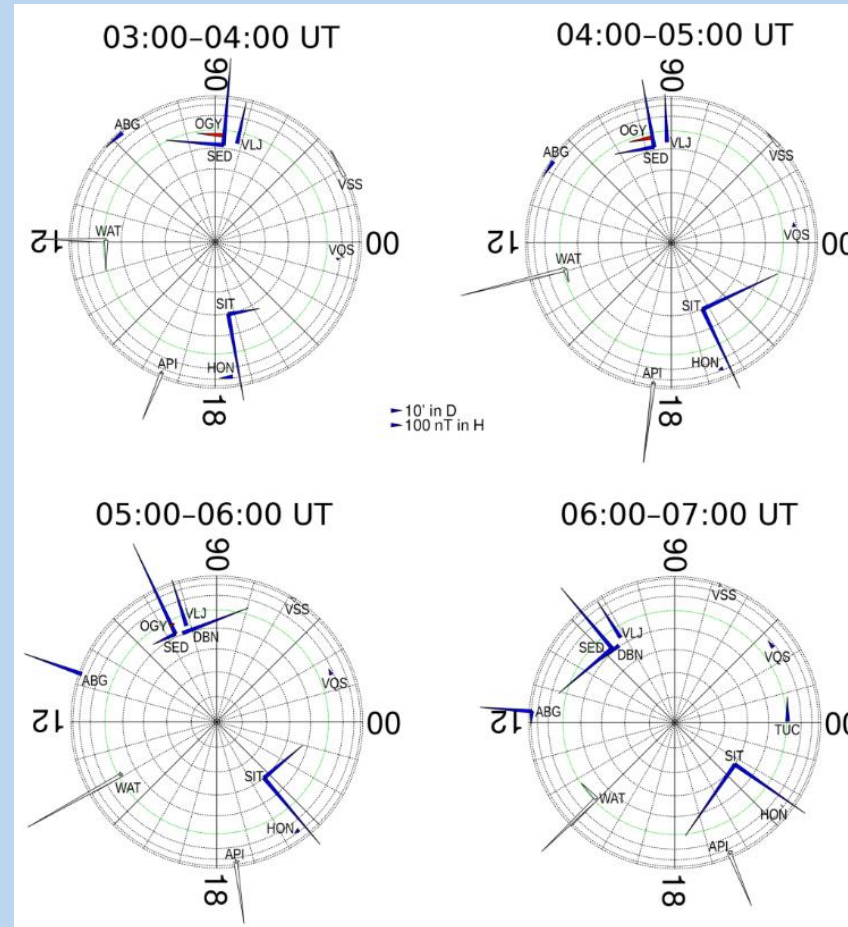
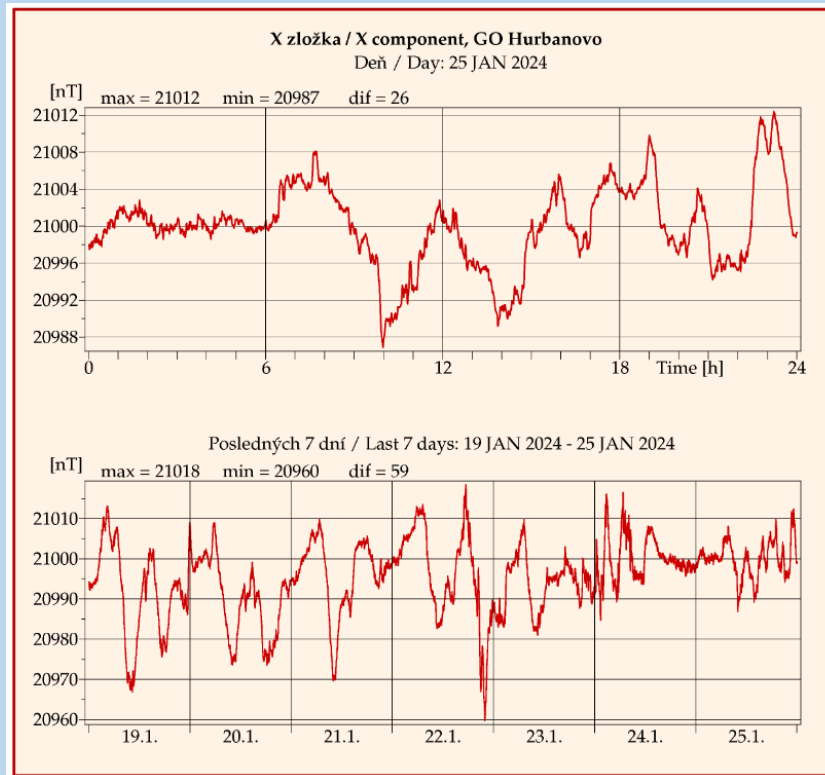
- **Ionospheric Weather**

- AMON (Airglow MONitor) - processes in the thermosphere-ionosphere system
- ASPIS - predictions of ionospheric scintillations:

<https://aspis.services>



- Earth Science Institute (ESI), Slovak Academy of sciences (ESI SAS), Bratislava
- **Geomagnetic Conditions**
- Geomagnetic Observatory
- several types of magnetometers,
- registration of the Earth's magnetic field in Hurbanovo within the **INTERMAGNET** network:



Variations in the horizontal intensity and magnetic declination during the part of the extreme storm of 15 May 1921 as observed at multiple global observatories
[Kočič and Valach, *Ann. Geophys.*, 41, 355–368, 2023].

Continuous records of the geomagnetic field (individual components): last 24 hours / 7 days / 30 days

http://www.geomag.sk/index.php?option=com_content&view=section&layout=blog&id=18&Itemid=81

ISWI Steering Committee Meeting, February 5 – 6, 2024, VIC Vienna (Austria)

• **International Space Weather Initiative (ISWI)**

in Slovakia - web page: http://stara.suh.sk/id/iswi/iswi_SK-en.htm

National Coordinator: I. Dorotovič

Event: National Solar Physics Meeting (NSPM)

27th NSPM, 3 – 7 June 2024, Košice:

contributions on space weather events and studies as well

❖ Slovak scientists are actively participating also in the:

- COSPAR,
- SCOSTEP/PRESTO,
- ESA activities.