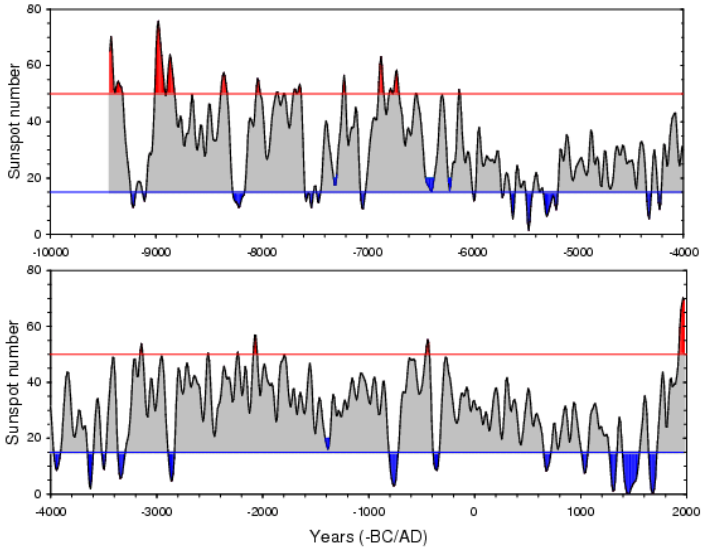
Astronomy & Astrophysics

HIGHLIGHTS: this week in A&A

Volume 471-1 (August III 2007)



Long-term evolution of solar activity

"Grand minima and maxima of solar activity: new observational constraints" by I. Usoskin, S. Solanki, and G.A. Kovaltsov, A&A 471, p. 301

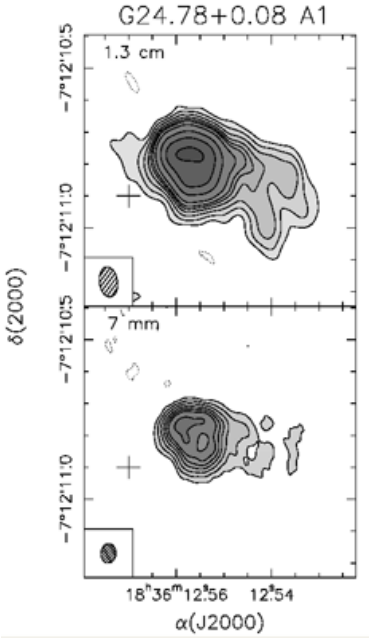
This paper shows that the duration of times with high or low sunspot numbers (e.g. the well-known Maunder minimum) is determined by a stochastic or chaotic process. This is very interesting for dynamo modeling, in particular at the level of constraining the mechanism(s) responsible for the occurrence of such minima and maxima (nonlinear modulation, intermittency, etc.).

Study of a hypercompact HII region

"The hyperyoung HII region in G24.78+0.08 A1" by M.T. Beltran, R. Cesaroni, L. Moscadelli, and C. Codella, A&A 471, p. L13

The authors present new, high-quality, VLA continuum observations at 1.3 cm and 7 mm of a hypercompact HII region located at the centre of a massive rotating toroid. This HII region was found to have a ring-shaped structure with an outer radius of 590 AU.

The analysis indicates that the ionized shell is expanding in accordance with the observed kinematics of the water maser spots associated with the HC HII region. According to the model, the HC HII region is extremely young with an expansion age of ~50 yr. This region is then interesting for further observations of the early development of a region of ionized gas.



In section 10. Planets and planetary systems

"Surface composition of the largest dwarf planet 136199 Eris (2003 UB313)" by C. Dumas, O. Hainaut, F. Merlin, M. A. Barucci, C. de Bergh, A. Guilbert, P. Vernazza, and A. Doressoundiram, A&A 471, p. 331

The authors have studied the surface composition of the largest TNO, the dwarf planet 136199 Eris, using TNG and ESO-VLT visible and near-infrared reflectance spectra observations. Modeling of the data reveals that the surface of Iris can be explained with two distinct surface compositions, with about half of the surface covered with pure methane ice and the rest of a mixture of methane, nitrogen, water and Tholin ices. The methane on Eris appears to be in its pure form, rather that diluted in a nitrogen matrix as seems to be the case on Pluto.