KTM ASTROMICAL INSTITUTE OF THE HUNGARIAN ACADEMY OF SCIENCES

KONKOLY OBSERVATORY

Location: 1121 Budapest, Konkoly Thege út 15-17, Postal address: 1525 Budapest, Pf. 67
Phone: 3955 866, 3754 122 Fax: 2754 668
E-mail: balazs@konkoly.hu WWW: http://www.konkoly.hu

HELIOPHYSICAL OBSERVATORY

Location: Debrecen, KLTE, Botanikus kert, Postal address: 4010 Debrecen, Pf. 30
Phone: (52) 311 015
Email: ludmany@tigris.klte.hu WWW: http://fenyi.sci.klte.hu

SCIENTIFIC STAFF:

Space research	Space Astrophysics	Solar physics
Almár, Iván	Balázs, Lajos	Ludmány, András
(head)	(director)	(head)
Van Driel-Gesztelyi, Lídia	Ábrahám, Péter	Baranyi, Tünde
Horváth, András	Holl, András	Győri, Lajos
Illés, Erzsébet	Kővári, Zsolt	Kálmán, Béla
Kelemen, János	Kun, Mária	Kovács, Ágnes
Tóth, Imre	Oláh, Katalin	Tóth, László
	Szabados, László	
	Vavrek, Roland	

SCIENTIFIC ACTIVITIES AND RESULTS

Upper Atmospheric Research

We continued the analysis of the measurements of the DBI accelerometer on board of the Italian San Marco satellite. We studied the time and spatial variations of the following phenomena:

1. sudden depletion of the neutral density
2. sudden, impulse like increase of the total density, appearance of giant waves
3. acoustic gravitational waves associated with spatial resonance
4. sudden increase of the amplitude of waves at certain heights

We studied the dependence of the above phenomena on the part of the day, the geographic longitude and height.

We performed a statistical study of the locations and times of the respective appearance in order to explain the sudden increase of the amplitude of the neutral density depletions (NDD), giant waves and waves. We recognized that the NDDs are resulted in the interaction with the plasma bubbles arising in the ionosphere and the sudden increase of the amplitude is triggered by the convective instability due to the decreasing growing rate in the function of the height. We constructed an expression for improving the MSIS/CIRA upper atmosphere model describing the density increase by the heating, previously not represented by the model.

Solar-Terrestrial Relations

We studied the physical background of the previously published dependence of the solar-tropospheric effect on the magnetic polarity. We concluded that the By component of the IMF plays a key role in this process.

We succeeded to demonstrate further geoeffective properties of the solar plasma currents. Among these the most interesting are those connected with the polarizations dependence of the semiannual fluctuation. The Russell-McPheroneff effect is powerful primarily in those years when the dipole fields of the Sun and Earth are antiparallel. We found, however, that in case of CMEs the effect appeared in those years when the fields are parallel. The reason for this is probable the helical topology of the CMEs. We performed further investigations for demonstrating the relationship between PIXIE ionosphere measurements and air pressure data.

Planetary Studies

We started to construct the general model of the Zodiacal Light by comparing the ISO and COBE measurements.

We succeeded in observing the nucleus of the 22P/Kopff comet in the optical (HST) and thermal infrared (ISO). We obtained 1.67±0.18 km for the effective radius and 0.042±0.006 for the geometric albedo.

Using the HST PC2 we successfully detected the nuclei of 13 short period comets and the special 29P/Schwassmann-Wachmann 1 object.

Based on the measurements of the ISO ISOCAM camera we obtained for the effective radii of cometary nuclei 0.56 km (103P/Hartley 2) and 56 km (Hale-Bopp).

The NASA DS1 in situ space probe confirmed the size of the nucleus of the P/Borelly comet, we obtained earlier using the HST. After the Halley comet this is the second one having close up images from the nucleus.

The dust jets visible on the images obtained by Deep Space 1 also give support for our previous hypothesis on the differences concerning the hardness and/or the volatile matter content of subnuclei of the cometary nuclei.

In 2000/2001 during the 9th session of the HST we successfully detected the nuclei of 10 short period comets. We succeeded in determining their size and large scale properties. The assumption seems to be firmly supported that the majority of the short period comets originates from the Kuiper belt, might have evolutionary relationship with the Kentaurs, respectively.

Using the HST, VLT (Very Large Telescope) we observed fragments of cometary nuclei, becoming observable by the disintegration of the C/1999 S4 (LINEAR) comet in 2000. The diameter of the fragments of measurable size (assuming spherical shape and 4% geometrical albedo) are about 70-100 m. One can recognize several dozen fragments on the HST images. We discussed a possible effect for speeding up the process of disintegration: collisions with the debris dispersed along specific asteroid orbits.

In the period reported we succeeded in collecting accurate astrometry data on the 2000RD53 NEA object which was classified into the PHA category.

We continued the observation and data reduction of the smaller bodies of the Solar System, using the telescopes of the Konkoly Observatory. In the framework of a recent international campaign we did observations with the CCD camera, mounted on the 1 m RCC telescope on Piszkéstető, for multicolor photometry of the minor planet 1998 SF, a quite recently specified target of the MUSES-C Japanese-American project.

We continued operating the PDS-SBN European Subnode. In agreement with the Department of Astronomy of the University of Maryland we started the revision of the images taken from the Halley comet by the VEGA TVS.

We suggested an explanation for the meteoritic origin of a cluster of dark boulders on the bright Martian surface photographed by the Mars Global Surveyor.

On the 3-10 m resolution images of the Mars Global Surveyor (MGS) space probe we observed interesting gray-black spotting phenomena on the late winter and early spring pictures. Based on the study of more than 200 high resolution images taken by the Mars Global Surveyor (MGS) we worked out a possible biological model for the activity of suspected Martian Surface Organisms (MSO), might be responsible for the DDSs.

Space-related Solar research

We investigated how the total flux and flux density of the active region was changing during six months. With disappearing the sunspots the flaring was practically stopped. The CMEs, however, was continuously formed in a great number (4-8 in one rotation).

We gave a comprehensive picture on the changes at all available wavelengths we followed up in the period between the birth and disappearance of an active region (AR) (from July until December, 1996). We used for this the data of the SOHO instruments (MIDI, EIT, CDS, SUMER, CELIAS), the Yohkoh soft X-ray (SXT, BCS), the GOES, the SOLSTICE and the 10,7 cm radio data. We performed the follow up of the evolution of two AR using the Kitt Peak and the SOHO/MIDI magnetic pictures. It turned out from the comprehensive investigation of two cases (NOAA 7912, October 1995 – January 1996, and NOAA 7978, July-December 1996) that depending on the configuration of the magnetic field below the photosphere the changes observable on the surface are caused by the differential rotation. In case of distorted flux tubes, however, we may expect a different behavior.

The statistical analysis of the birth, the geometrical and physical properties of the CMEs leaded us to conclude that the most probable time for the coronal mass ejection is the increase of the helicity of the related ARs (e.g. due to the raising of a twisted flux tube or successive appearance of bipolar fields, in a lesser extent, the differential rotation).

With the detailed study of an isolated AR (July-December, 1996) we followed up the long term housekeeping of the AR. We gave a lower estimate for the helicity taken away by the magnetic clouds of matter.

We did a significant progress in the field of the photospheric databases. We put historical Hungarian solar observations of four decades in digital form onto the ftp server of the Heliophysical Observatory and the DPD1988 database was completed. Our sunspot area-contrast investigations served as starting point for the later irradiancy studies.

According to our investigations the Debrecen sunspot catalogue is recently the most reliable concerning not only the positions of the spots but also the data of the areas.

Space Astrophysics

We mapped the chromospheric activity of AR Lacertae, a close binary consisting of components of K0+G2 spectral types. Resulting in this procedure we found more compact bright UV sources and an absorption region.

The longest variation showed a periodicity of 70 years, known already. Beside this we found cycles of about 6.5 years and a shorter one of about 2.4 years in the brightness variation of the star.

We established and operate a group for scientific and calibration works in connection with the ESA Infrared Space Observatory (ISO) and in a close cooperation with the data centers in Madrid and Heidelbedrg. The cooperation will be continued also in long term focusing on the Herschel satellite, planned to launch by the ESA in 2007.

Using Fourier analysis we investigated the images obtained by the ISOPHOT and instead of getting an expected spectral index of $\alpha = -3$ we found values within very wide limits.

Studying the fine structure of the Galactic cirrus clouds based on the ISO measurements we worked out a formalism enabling us to make a more accurate prediction for the arc minute scale brightness fluctuations. Using these results we determined the relative contribution of the cirrus and cosmological infrared background radiation on the faintest parts of the sky and gave a new value for the fluctuation of the background level.

We started studying systematically the cold dust disks around main sequence stars by the standard reduction of the far infrared measurements observed with the ISO photometer. One of the main objectives of this investigations will be the search for dust structures, similar to the dust clouds of the Sun and the Kuiper belt, around nearby very bright stars (e.g. Sirius)

Using the SRON 'IRAS Software Telescope' we estimated the fluxes of the far infrared. point sources and obtained pictures of better resolution from star forming regions.

Based on the observations of the Compton Gamma Ray Observatory we showed that the relationship between the energy and duration of the gamma bursts are different for the short and long GRBs.

PUBLICATIONS

International scientific papers and talks:

2000

1. Ábrahám, P., et al.: 2000, Proceedings. of the IAU Coll. 181, in press.
2. Ábrahám, P., Balázs, L.G., Kun, M.,: 2000, "Morphology and kinematics of the Cepheus Bubble", *A&A*, **354**, pp.645-656
3. Ábrahám, P., Leinert, C., Burkert, A., Henning, T. Lemke, D.,: 2000, "Far-infrared photometry and mapping of Herbig Ae/Be stars with ISO", *A&A*, **354**, pp. 965-982
4. Ábrahám, P. and Acosta-Pulido, J.,: 2000,"Refinements of the calibration of ISOPHOT-S", in 'ISO beyond the peaks: The 2nd ISO workshop on analytical spectroscopy', held 2-4 February 2000, at VILSPA.
5. Ábrahám, P. and Leinert, C.,: 2000, "ISO observations of binary T Tau stars", in Proc. of. IAU Symposium 200, p. 343,
6. Ábrahám, P., Leinert, C., Lemke, D., Burkert, A., and Henning, T. H.,: 2000, "ISOPHOT Observations of the Circumstellar Environment of Young Stars", *Astronomische Gesellschaft Abstract Series*, Vol. 17., p 2.
7. Baranyi, T., Győri, L., Ludmány, A. and Coffey, H.: 2001, "Comparison of sunspot area databases", *Monthly Notices*, in press

8. Bencze, P., I. Almár, E. Illés-Almár: 2000, "Further results referring to the neutral density depletions attributed to plasma bubbles", *Journal of Atmospheric and Solar Terrestrial Physics,* Vol. 62 pp. 1339-1350

9. 33. COSPAR congress, Warsaw: E. Illés-Almár, P. Bencze, I. Almár: Spatial and temporal variation of acoustic gravity waves and sudden impulse-like neutral density changes in the thermosphere. (accepted in Adv. Space Res.) talk

10. 33. COSPAR congress, Warsaw: I Almár : *„What could COSPAR do for the protection of the planetary and space environment?"* , talk

11. Detre, Cs.H., I. Tóth, G. Donó, A.Z. Kiss, I. Uzonyi, P. Bodó, Z. Schléder,: 2000, „The Paleozoic came to end by the biggest train of disasters known in the Earth's history". In: '*Terrestrial and cosmic spherules*'. Proceedings of the 1998 Annual meeting TECOS. Akadémiai Kiadó, Budapest, 2000. (ed..: Detre Cs. H.). pp. 45-56

12. Detre, Cs.H., I. Tóth, G. Donó, A.Z. Kiss, I. Uzonyi, P. Bodó, Z. Schléder,: 1999, "The Permian--Triassic supernova impact.", In: '62nd Annual Meeting of the Meteoritic Society', 11--16 July 1999, Johannesburg, South Africa. *Meteoritics and Planet. Sci.* 34, Supplement 1999 July, p. A124.

13. van Driel-Gesztelyi, L., Manoharan, P.K., Demoulin, P.,Aulanier, G., Mandrini, C.H., López-Fuentes, M., Schmieder, B., Orlando, S., Thompson, B., and Plunkett, S.: 2000, „Initiation of CMEs: the role of magnetic twist" *J. Atm. Solar-Terr. Phys.*, **62/16**, 1437-1448.

14. van Driel-Gesztelyi, L., Kővári, Zs., López-Fuentes, M., Mandrini, C.H., and P. Demoulin P.: 2001, "What can we learn studying long-term magnetic evolution of solar active regions?", Proc. 1st SOLSPA Euro conference `The Solar Cycle and Terrestrial Climate', 25-30 Sept. 2000, Santa Cruz de Tenerife, Spain,ESA-SP, in press

15. van Driel-Gesztelyi, L., Demoulin, P., Ireland, J., Thompson, B., Fludra, A., Oláh, K., Kővári, Zs., Harra L.K., Mandrini, C.H., Bocchialini, K., and Orlando, S.: 2001, "An observational test for solar atmospheric heating", in Proc. 'Recent Insights into the Physics of the Sun and Heliosphere: Highlights from SOHO and other Space Missions', IAU Symp. No. 203, edited by Paul Brekke, submitted

16. van Driel-Gesztelyi, L., Schmieder, B. and Baranyi, T.: 2000, "Evolution of the source region of the interplanetary magnetic cloud of 18-20Oct. 1995", Accepted to Adv. in Space Res. (COSPAR, Nagoya, Japan, 1998)

17. van Driel-Gesztelyi, L., Kővári, Zs., López-Fuentes, M., Mandrini, C.H., and P. Demoulin P.: 2000, ''What can we learn studying long-term magnetic evolution of solar active regions?" Proc. 1st SOLSPA Euro conference 'The Solar Cycle and Terrestrial Climate', Santa Cruz de Tenerife, Spain,. poster

18. van Driel-Gesztelyi, L.: 2000,“Emergence of a U-loop - Sub-Photospheric Link between Solar Active Regions", Mullard Space Science Laboratory, University College London, UK,. Aug. 3. talk

19. van Driel-Gesztelyi, L.: 2000, “Evolution of CME-productive active regions and switchbacks", S-RAMP Symposium 3, `CMEs and Coronal Holes'', Sapporo, Hokkaido, Japan,. talk

20. van Driel-Gesztelyi, L., Demoulin, P., Ireland, J., Thompson, B., Fludra, A., Oláh, K., Kővári, Zs., Harra L.K., Mandrini, C.H., Bocchialini, K., and Orlando, S.: 2000, “An observational test for solar atmospheric heating", in Proc. ‘Recent Insights into the Physics of the Sun and Heliosphere: Highlights from SOHO and other Space Missions’, IAU Symp. No. 203, IAU General Assembly, Manchester, UK, poster

21. van Driel-Gesztelyi, L., Malherbe, J.-M., Demoulin, P.: 2000, “Emergence of a U-loop - Sub-Photospheric Link between Solar Active Regions", *Astron. Astrophys.*, in press

22. Illés-Almár, E., A.Gesztesi, A. Horváth, I. Fejes: 2000, “The Gray Bands on Europa”, *Adv.Space Res.,* Vol. 26 No.10 pp. 1677-1680

23. Ishibashi, M., Y., A. Fujiwara, and I. Tóth,: 2000, “Ground-based observations of (10302) 1989 ML; Mission target of MUSES—C”, In: ‘*Western Pacific Geophysical Meeting Supplement P42A-10, 2000 of the American Geophysical Union’,* 2000 WPGM, held June 27-30, 2000, in Tokyo, Japan. EOS Trans. AGU, **81** (22).

24. Jorda, L., P. Lamy, O. Groussin, I. Tóth, M.F. A'Hearn, and S. Peschke,: 2000, “ISOCAM observations of cometary nuclei”, In: *‘ISO Beyond Point Sources: Studies of Extended Infrared Emissions’*, 14--17 September 1999, ISO Data Centre, Villafranca del Castillo, Madrid, Spain. Eds.: R. J. Laurejs, K. Leech, and M.F. Kessler. *ESA SP--455*, 61-65.

25. Kelemen, J.: 2000, *AAS Bulletin*, Vol. 32, No. 3. (65.09)

26. Kelemen, J.: 2000, "CCD photometry and astrometry of the PHA 2000RD53", AAS-DPS Annual Meeting, poster.

27. Lamy, P.L., I. Tóth, H.A. Weaver, C. Delahodde, L. Jorda, and M.F. A'Hearn,: 2000, “The nucleus of 13 short--period comets”, *Bull. Amer. Astr. Soc.* **32** (3), 1061, Abstr. [36.04]

28. Laureijs, R. J., Herbstmeier, U., Ábrahám, P., Klaas, U., and Lemke, D.,: 2000, "Far-infrared Properties of Small Scale Cirrus Structure", in ’ISO Beyond Point Sources: Studies of Extended Infrared Emission’, ed. R.J. Laureijs, K. Leech and M. F. Kessler, ESA-SP 455, p.131.

29. Linden-Vřrnle, M. J. D., Norgaard-Nielsen, H. U., Jorgensen, H. E. Hansen, L., Haas, M., Klaas, U., Ábrahám, P., Lemke, D., Lundgaard Rasmussen, I. and Schnopper, H.

W., 2000,"Deep far infrared ISOPHOT survey", in `Selected Area 57. I. Observations and source counts', *A&A*, **359**, pp. 51-64,

30. López-Fuentes, M.C., Demoulin, P., Mandrini, C.H., and van Driel-Gesztelyi, L.: 2000, ``The Counter-kink Rotation of a Non-Hale Active Region", *Astrophys. J.*, **544**, in press

31. Ludmány,A. and Baranyi,T. 2000, "Comparative study of the atmospheric effects driven by irradiance vs.corpuscular radiation", .ESA SP-463 in press.

32. Medovarszki, T., Bencze, P. and Ludmány, A.,: 2000, "Considerations about the ionospheric effects of the 1999 eclipse", .Proceedings of 15.Solar Coelostat Seminar, Hurbanovo, 2000, in press.

33. Mészáros, A. and Bagoly, Z. and Horváth, I. ;. and Balázs, L. G. and Vavrek, R.,: 2000, "A Remarkable Angular Distribution of the Intermediate Subclass of Gamma-Ray Bursts" *ApJ*, **539**, pp 98--101,

34. Mészáros, A., Bagoly, Z., and Vavrek, R.,: 2000, "On the existence of the intrinsic anisotropies in the angular distributions of gamma-ray bursts", *Astron. Astroph.*, 354, pp 1--6},

35. Mészáros, A. and Balázs, L. G. and Vavrek, R. and Horváth, I. and Bagoly, Z.,"Angular Distribution of Gamma-Ray Bursts: An Observational Probe of Cosmological Principle", IAU Symposium 201, 2000, E78

36. Oláh, K., Strassmeier, K.G., Kővári, Zs., Guinan, E.F.: 2000, "Time-series photometric spot modeling IV. The multi-periodic K5Ve binary V833 Tauri", *Astron. Astrophys.*, submitted

37. Pagano, I, Rodonó, M., Linsky, J.L., Neff, J.E., Walter, F.M., Kővári, Zs., Matthews, L.D.: 2000, "Spectral Imaging maps of AR Lacertae. I -- Results from IUE observations in 1994 October.", *Astron. Astrophys.*, in press

38. Tóth, I.,: 2000, "Impact--generated activity period of the asteroid 7968 Elst-Pizarro in 1996: Identification of the asteroid 427 Galene as the most probable parent body of the impactors", *Astron. Astrophys*. **360**, 375-380.

39. Tóth, I., and P. Lamy,: 2000, "Spectral properties of the nucleus of short--period comets", *Bull. Amer. Astr. Soc.* **32** (3), 1063, Abstr. [37.05].

40. Tóth,L. and Gerlei,O.,: 2000, "Tilt angle variation through the 14th sunspot cycle", ESA SP-463, in press.

41. Tóth, L. and Szegedi,S.,:. 2000, "Relationships between ionospheric disturbances and changes of sea level pressure over the Arctic", ESA SP-463 in press.

42. Weaver, H.A., R. West, M.F. A'Hearn, C. Arpigny, J.M. Bauer, M.R. Combi, C.E. Delahodde, P.D. Feldman, M.C. Festou, O.R. Hainaut, R. Hook, L. Jorda, M.S.W.

Keesey, P.L. Lamy, C.M. Lisse, B.G. Marsden, K.J. Meech, Z. Sekanina, I. Tóth, and G.-P. Tozzi,: 2000, "Comet C/1999 S4 (LINEAR)", *IAU Circ. 7476* (10 August 2000, Ed.: E.O. Waagen)

43. Weaver, H.A., R. West, M.F. A'Hearn, C. Arpigny, J.M. Bauer, M.R. Combi, C.E. Delahodde, P.D. Feldman, M.C. Festou, O.R. Hainaut, R. Hook, L. Jorda, M.S.W. Keesey, P.L. Lamy, C.M. Lisse, B.G. Marsden, K.J. Meech, Z. Sekanina, I. Tóth, and G.-P. Tozzi,: 2000, "HST and VLT investigations of the fragments of C/1999 S4 (LINEAR)", *Bull. Amer. Astr. Soc*. **32** (3), 1061, Abstr. [36.06].

2001

1. Ábrahám, P.; Acosta-Pulido, J.A.,: 2001, "Analysis of ISOPHOT chopped Observations", Proceedings of the conference `The calibration legacy of the ISO Mission', ESA Special Publications Series 481, in press
2. Acosta-Pulido, J.A., Ábrahám, P.,: 2001, "In-Orbit Calibration of the Spectrophotometer ISOPHOT-S", Proceedings of the conference `The calibration legacy of the ISO Mission', ESA Special Publications Series 481, in press
3. ACTA ASTRONAUTICA 'Special Issue on Astronautical Terminology', guest editor I. Almár,: I. Almár: "Preface - Astronautical Terminology", I. Almár - E. Both: „The delimitation problem - selecting the basic list of terms for an astronautical dictionary", I. Almár: „Some difficulties with the standardization of definitions", accepted,
4. Almár, I.: 2001 „Space civilisation and its increasing vulnerability to cosmic effects" *Earth Space Review* Vol. 10 No.1 p. 85-89
5. Almár, I., E. Illés-Almár: 2001 „On circumstellar habitable zones". 'The Bridge Between the Big Bang and Biology'. ed.: F. Giovannelli. CNR President Bureau Spec. Vol. pp. 356-361, Roma, Italy,.
6. Almár I., D. Mishev: 2001, „Multilingual Space Data Base – an Imperative not just an Option", 52. IAF Congress, Toulouse, talk
7. Baranyi, T., Győri, L., Ludmány, A. and Coffey,H:. 2001, „Comparison of sunspot area data bases". *Monthly Notices*, Vol.323, p.223,
8. del Burgo, C., Ábrahám, P., Klaas, U.,: 2001, "A New Analysis of the Dark Current Behaviour of the ISOPHOT Detectors", Proceedings of the conference `The calibration legacy of the ISO Mission', ESA Special Publications Series 481, in press
9. Démoulin P., Mandrini C.H., van Driel-Gesztelyi L., López Fuentes M.C., Aulanier G.: 2001, ``The magnetic helicity injected by shearing motions", *Solar Phys*., in press
10. Démoulin P., Mandrini C.H., van Driel-Gesztelyi L., Thompson B., Plunkett S., Kővári Zs., Aulanier G., Young A.: 2001, ``What is the source of the magnetic helicity shed by CMEs? The long-term helicity budget of AR 7978", *Astron. Astrophys*., in press

11. Démoulin P., van Driel-Gesztelyi L., Mandrini C.H., Harra L.K., Klimchuk J.: Testing coronal heating models: The long-term evolution of AR 7978", *Astrophys. J.*, submitted

12. van Driel-Gesztelyi L., Schmieder B., Poedts S.: 2001, ``Magnetic built-up and precursors of CMEs", Proc. SOLSPA-2001 Euro conference `Solar Cycle and Space Weather', 24-29 September 2001, Vico Equense (Italy); ESA SP Series (SP-477), in press

13. Green L.M., López Fuentes M.C., Mandrini C.H., Démoulin P., van Driel-Gesztelyi L., Culhane J.L.: 2001,``The magnetic helicity budget of a CME-prolific active region", *Solar Phys.* submitted

14. Héraudeau, Ph., Ábrahám, P., Klaas, U., Kiss, Cs.,: 2001, "Systematic comparison of ISOPHOT and DIRBE Surface Brightness Calibration", Proceedings of the conference `The calibration legacy of the ISO Mission', ESA Special Publications Series 481, in press

15. Héraudeau, Ph., Ábrahám, P., Klaas, U., Lemke, D.,: 2001, "Absolute Surface Brightness Photometry with ISOPHOT", Proceedings of the conference `The calibration legacy of the ISO Mission', ESA Special Publications Series 481, in press

16. Herbstmeier, U., Ábrahám, P., Héraudeau, P., Klaas, U., Laureijs, R.J., Müller, T., Schulz, B.,: 2001, "Beam profiles of ISOPHOT detectors", Proceedings of the conference `The calibration legacy of the ISO Mission', ESA Special Publications Series 481, in press

17. Horváth, A., T. Gánti, A. Gesztesi, Sz. Bérczi, E. Szathmáry,: 2001, „Probable Evidences of Recent Biological Activity on Mars: Appearance and Growing of Dark Dune Spots in the South Polar Region", *Lunar and Planetary Science XXXII. #1543*, Lunar and Planetary Institute, Houston (CD-ROM)

18. Horváth A., T. Gánti, A. Gesztesi, Sz. Bérczi, E. Szathmáry,: 2001 „Probable Evidence of Recent Life on Mars", International Scientific Conference "Intercosmos-30", Moscow, Apr. 9-10, 2001., in press

19. Horváth, A., E. Illés, F. Horváth, A. Gesztesi,: 2001, „Proposes for Determination of Phobos Layered Structure with Local Measurements by Phobos-Grunt Spacecraft" International Scientific Conference "Intercosmos-30", Moscow, Apr. 9-10, 2001. in press

20. Horváth, A., I. Almár, E. Illés-Almár, A. Szabó: 2001, „Comparison of the surface grooves on Gaspra and Phobos". *Adv. Space Res.* Vol.27 No. 8 pp.1489-1492,.

21. Illés-Almár, E.: 2001, „SL9-like impact-traces on Jupiter? Observations in Hungary at the end of the XIX. Century". 'Homage to Miklós Konkoly Thege'. pp. 75-84. ed.: C. Sterken and J. Hearnshaw Universitaire Stichting van Belgie, Brussels, Belgium,.

22. Illés-Almár, E., I. Almár, P. Bencze, G. Laneve: 2001, „Wave-like variations and sudden density decreases in the lower thermosphere as measured by the San Marco V satellite". *Journal of Physics and Chemistry of the Earth (C)* Vol. 26 No. 4 pp.275-280,

23. Kawamura A., Kun M., Onishi T., Vavrek R., Domsa I., Mizuno A., Fukui Y.,: 2001, "Study of L688/L694/L700: A Complex of Dark Clouds in Aquila", *PASJ* 53, 1097—1108

24. Kiss, Cs., Ábrahám, P., Klaas, U., Juvela, M.,: 2001, Sky confusion noise in the far-infrared: Cirrus, galaxies and the cosmic far-infrared background, *Astron. Astrophys.* 379, 1161

25. Kiss, Cs., Ábrahám, P.,: 2001, „Zodiacal light disk around Sirius?", Publications of the Astronomy Department of the Eötvös University No. 11, 59

26. Klaas, U., Laureijs, R.J., Schulz, B., Acosta-Pulido, J.A., Ábrahám, P., Lemke, D.,: 2001, "ISOPHOT Calibration Strategy", Proceedings of the conference `The calibration legacy of the ISO Mission', ESA Special Publications Series 481, in press

27. Koch Miramond, L., Bonnet-Bidaud, J-M, Ábrahám, P., Claret, A.,: 2001, „Observations of Cygnus X-3 in Quiescence in the 2.4 -- 12 micron Range with ISO", Proceedings of the ESO Workshop 'Black Holes in Binaries and Galactic Nuclei', Eds.: L. Kaper, E.P.J. van den Heuvel, P.A. Woudt, 137

28. Kun M., Aoyama H., Yoshikawa N., Kawamura A., Yonekura Y., Onishi T., Fukui Y.,: 2001, Study of Molecular Clouds and Star Formation in the Region of IC 2118, *PASJ* 53, 1063—1070

29. Lamy, P.L., I. Tóth, H.A. Weaver, C.E. Delahodde, L. Jorda, and M.F. A'Hearn,: 2001. „The nucleus of 10 short-period comets." *Bull. Amer. Astron. Soc.* 33, 1093, Abstr. [31.01].

30. López-Fuentes, M., Mandrini, C.H., P. Démoulin P., and van Driel-Gesztelyi, L.: 2001, ``Long term evolution of active regions'', 'Magnetic Fields across the H-R Diagram', Santiago de Chile, Chile, Jan.15-19, 2001 ASP Conf. Ser., in press

31. Mandrini, C.H., P. Démoulin P., van Driel-Gesztelyi, L.,Thompson, B., Plunkett, S., Kővári, Zs., Aulanier, G.: 2001, ``Magnetic evolution of along-lived active region: the sources of magnetic helicity'', 'Magnetic Fields across the H-R Diagram', Santiago de Chile, Chile, Jan.15-19, 2001,ASP Conf. Ser., in press

32. Mandrini, C.H., López-Fuentes, M.C., Démoulin P., van Driel-Gesztelyi, L.: 2001, `The distribution of peculiar active regions along two solar cycles'', Proc. SOLSPA-`2001 Euro conference `Solar Cycle and Space Weather', 24-29 September 2001, Vico Equense (Italy); ESA SP Series (SP-477), in press

33. Richards, P.J., Klaas, U., Laureijs, R.J., Ábrahám, P.,: 2001, "The ISOPHOT Pipeline Data Processing", Proceedings of the conference `The calibration legacy of the ISO Mission', ESA Special Publications Series 481, in press

34. Tóth, I.,: 2001, „Impact--triggered breakup of comet C/1999 S4 (LINEAR): Identification of the closest intersecting orbits of other small bodies with its orbit." *Astron. Astrophys*. 368, L25-L28.

35. Tóth L., Mező Gy. and Gerlei O.,: 2001, „Historical photospheric observations of the Haynald Observatory from 1880 to 1919". *Journal for the History of Astronomy*, in press.

36. Weaver, H.A., Z. Sekanina, I. Tóth, C.E. Delahodde, O.R. Hainaut, P.L. Lamy, J.M. Bauer, M.F. A'Hearn, C. Arpigny, M.R. Combi, J.K. Davies, P.D. Feldman, M.C. Festou, R. Hook, L. Jorda, M.S.W. Keesey, C.M. Lisse, B.G. Marsden, K. Meech, G.P. Tozzi, and R. West ,: 2001, „HST and VLT investigations of the fragments of comet C/1999 S4 (LINEAR)." *Science* 292, 1329-1333.