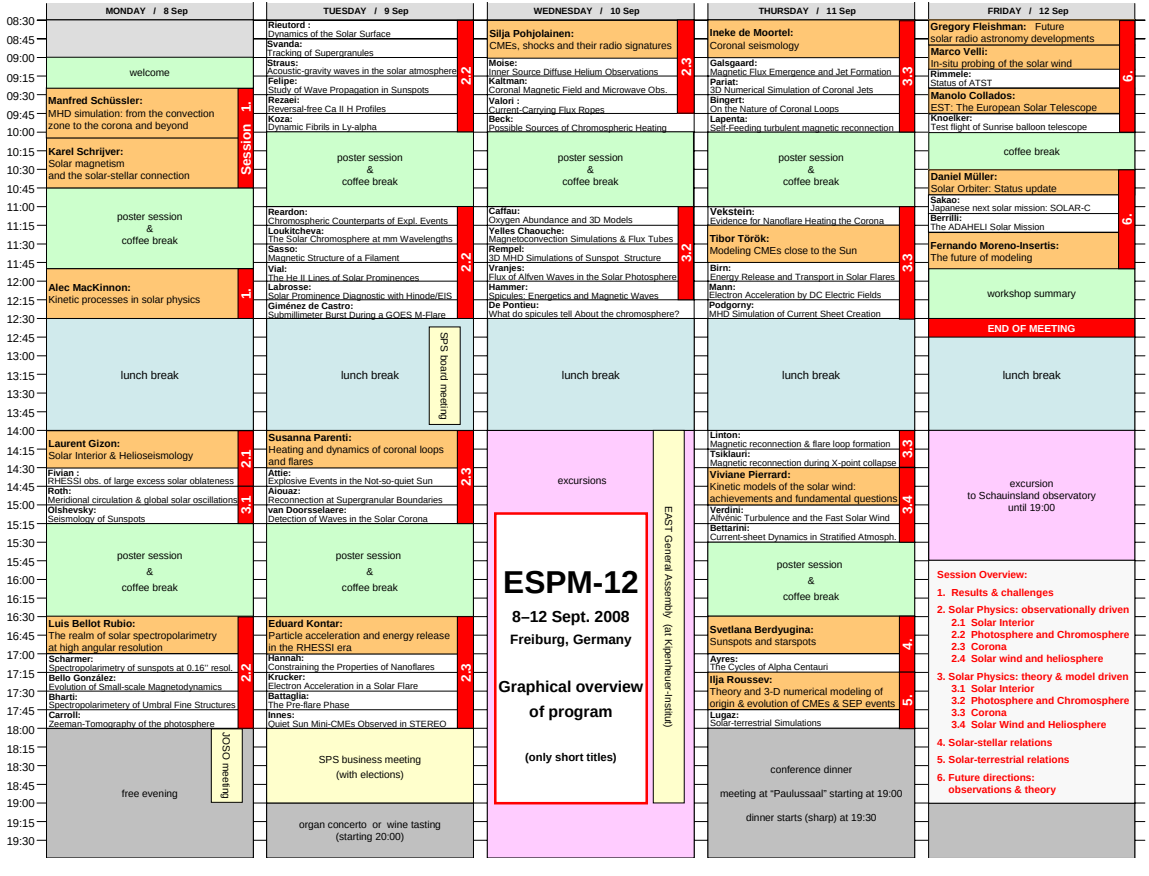
CONCLUDING REMARKS

Rob Rutten

“Du bist ein guter Bursche, aber Du mußt Dein großes Maul halten”



CONCLUDING REMARKS: WEBPOST FORMAT

From R.J.Rutten@uu.nl Fri Sep 19 15:11:08 2008
To: Hardi Peter
Subject: web posting of my ‘‘Concluding Remarks’’

Dear Hardi,

I thought more about presentation posting on the web. Since there will be no proceedings volume for ESPM-12, this seems certainly a good idea for the posters. They are written to be largely self-explanatory, have complete citations, and usually are pdf already.

Talks differ. Talk viewscreens are designed to capture both a subject and the audience. Some talks have viewscreens that are sufficiently complete to be clear without the speaker’s explanation (for example new mission summaries), but more often the speaker’s oral explanation (and enthousiasm and pessimism and comments and warnings and jokes and put-downs etc.) is a key part of the presentation. That part is missing in a web posting of just the viewscreens.

My ‘‘Concluding remarks’’ were of the second type, too cryptic for stand-alone viewscreen posting. I therefore try a new format: a copy of my viewscreens interspersed with thumbnail repeats adding text that emulates what I said. Or rather what I planned to say, improving on the actual talk just as when writing up a talk for printed proceedings. And adding links. Clicking on the thumbnail re-opens the previous display.

Advantages of this electronic form over printed proceedings are that there is no page limit and that clickable links to websites, ADS abstracts and full papers can be included. This can also be done in posters without upsetting the pdf printing of the poster itself. And adding links for movies shown in talks but not included at the proceedings site. Plus, obviously, production speed and no need for any editing (except ppt=>pdf conversion) on your side.

A disadvantage is that such web postings do not get listed on ADS - but conference writeups are generally poorly cited anyhow. Perhaps electronic-only conference posting will improve the AH/NA ratio that I make so much of below.

Best wishes,

Rob Rutten

Good afternoon!

When Hardi Peter invited me to give this final talk I felt very honored. But nevertheless refused, because about twenty years ago the most senior person in this room told me: "Du bist ein guter Bursche, aber Du mußt Dein großes Maul halten". Upshot: "shut up".

However, last Friday I inspected the ESPM website and then reacted to Hardi:

> I now saw that your participant list has grown to 245 – must be the biggest SP meeting I ever went to. So I realized that refusing the summary made me loose an opportunity to insult more colleagues than I will ever get again. So if you haven't found another summarizer I may reconsider. But if so, then not "conference summary" but "concluding remarks".

Tom Ayres suggested yesterday at the start of his talk that it is German nature to complain. I guess he doesn't know the Dutch! My aim is to complain about everything including all of you. My first complaint is that the countdown clock there on the chair's table makes that mission impossible. But I will try.

So, whereas normally in a conference summary the game is to have one's name mentioned by the summarizer, the game here is not be mentioned by me.

SOLAR PHYSICS

- *The golden age of solar physics*
  - ground-based: wavefront correction + open
  - space-based: short wavelength + high energy + continuous
  - simulation: precise understanding of solar-like stars

- *Evolution*
  - past: single spectrograms
  - present: multi-wavelength image sequences, spectropolarimetry
  - future: terabyte data/simulation mining

- *Europe*
  - MHD physics
  - spectropolarimetry
  - students

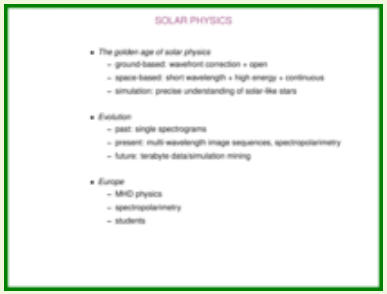
Ground-based telescopes: adaptive optics with speckle and MOMFBD reconstruction have made existing telescopes much sharper than the 15-cm Fried limit. The 1-m aperture limit set by evacuation technology appears unnecessary. Multi-conjugate adaptive optics is relatively easy thanks to the solar granulation.

We eagerly await the 1.5-m class NST and GREGOR, and hope for the 4-m class ATST and EST. The science drivers are not only angular resolution and photon-starved precision spectropolarimetry, but also chromospheric imaging which is photon-starved by requiring sufficient multi-line profile sampling at fast enough cadence. As shown below.

• *Complaint: beyond 1-m aperture, adaptive optics must be combined with MOMFBD postprocessing. Speckle and PD (phase diverse) reconstruction need too many photons. However, presently MOMFBD is much too slow. I hope that Moore's law and/or Michiel van Noort speed it up fast. Please!*

• *Complaint: spectrograph slits are always at the wrong place. For the chromosphere we need Fabry-Pérot's not only for 5000-8700 Å (Göttingen FPI, TESOS, IBIS, CRISP) but also in Ca II H&K and the near ultraviolet. Please!*

• *Complaint: spectrograph slits impede numerical wavefront restoration. Integral-field spectrometry is needed just as in nighttime astronomy. Field reformatting with fiber and/or lenslet arrays inherently enables MOMFBD (including PD) without photon loss. Not only in the infrared but also in the optical down to Ca II K, please!*



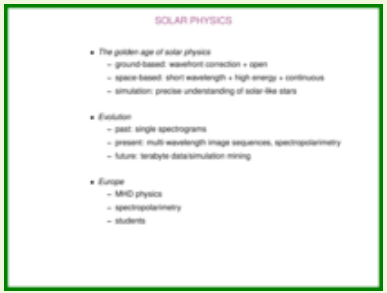
Space-based telescopes: SOHO and TRACE revived our field, RHESSI, STEREO and Hinode strengthen it. We eagerly await SDO and Sunrise, and hope for Solar Orbiter, Solar Probe, Solar-C, ADAHELI, and tbd.

• *Complaint: spectrograph slits are always at the wrong place. Also when in space. Since the mid-ultraviolet is too crowded for mixing viewing angle into dispersion, we also need integral-field spectrometry there. Please!*

• *Complaint: SolarSoft is a major asset of our space age. But I wish IDL were cheaper and easier.*

Simulation: in my view this meeting was the coming-of-age party of time-dependent 3D MHD simulations. Impressive progress!

• *Complaint: the century-long Moore wait for realism predicted by Manfred Schüssler exceeds my career planning. Maybe even yours, Tobías. . . .*



Evolution: when I was a student solar physics was primarily a matter of spectroscopy, except for incidental filtergrams and spectroheliograms. Alan Title went from the latter to turn solar physics into multi-wavelength imaging in sustained sequences. I suspect that MDI is the most successful solar instrument of all time; HMI will feed us daily bread. SDO's data stream will require serious mining effort – but what joy! And then I hope for integral-field spectrometry down to the mid-ultraviolet.

Europe: the three strengths listed above are a personal choice. I believe that each is a major one.

My first encounter with MHD was when Henk Spruit presented Kees Zwaan's magnetostatic fluxtubes in the 1975 ESMOC meeting and turned them into thin ones in his thesis ("the much-maligned thin fluxtube approximation does not have these problems" said Manfred Schüssler here). Utrecht regained MHD expertise with Alexander Vögler.

My first encounter with spectropolarimetry was when Egidio Landi degl'Innocenti wrote MALIP in Utrecht, also in 1975. The topic went with Kees Zwaan (I left it open in my lecture notes) but Christoph Keller brought it back to Utrecht.

My first encounter with non-Utrecht solar-physics students was in a solar physics meeting in Lagonissi in 1965, but only very few were there. I was glad to see many more here, recognizing quite some from recent schools in which I was involved. So many good guys and gals!

ESMOC/EPS/EAS MEETINGS

- 1975 ESMOC Florence
- 1978 SPS/EPS Toulouse
- 1981 SPS/EPS Oxford
- 1984 SPS/EPS Noordwijkerhout
- 1987 SPS/EPS Titisee
- 1990 SPS/EPS Debrecen
- 1993 SPS/EPS+EAS Catania
- 1996 SPS/EPS+EAS Saloniki
- 1999 SPS/EPS+EAS Florence
- 2002 SPS/EPS+EAS Prague
- 2005 SPS/EPS+EAS Leuven
- 2008 SPS/EPS+EAS Freiburg

- 2011 SPD/EPS+EAS ?

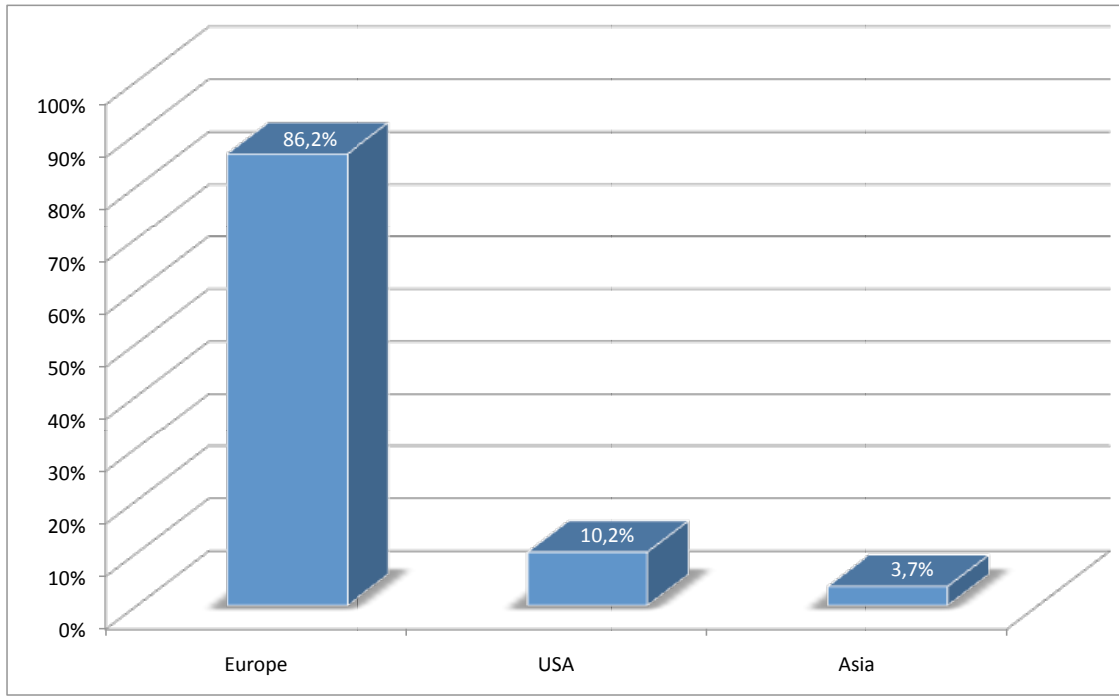
These European solar physics meetings started with ESMOC, the "European Solar Meeting Organizing Committee" driven by Kees Zwaan and Nigel Weiss. It aimed to combine JOSO and CESRA into a more formal solar physics body embedded in an organization of European stature. The European Physical Society (EPS) was selected as the latter. Its Solar Physics Section (SPS) also became such of the European Astronomical Society (EAS) when that started, and may now become their Solar Physics Division (SPD).

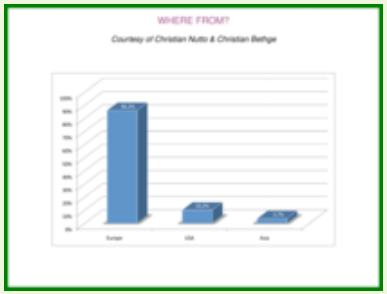
Organizing these three-yearly meetings has been the principal activity of the SPS. Minor activities were a short-lived newsletter and handing out a few prizes. In a Solar Orbiter workshop paper I first reviewed this history and then complained that the European solar physics research area needs better coordination. The SPS Chair (Stefaan Poedts) expressed the same opinion here and the intention to expand the SPD role. Presently there is also EAST, and there is ASTRONET defining an infrastructure roadmap. That road is narrow and full of competing traffic including pushy oversize loads. We must indeed get our act together.

What about ESPM-13? The geographical distribution so far suggests Spain or Scandinavia.

WHERE FROM?

Courtesy of Christian Nutto & Christian Bethge



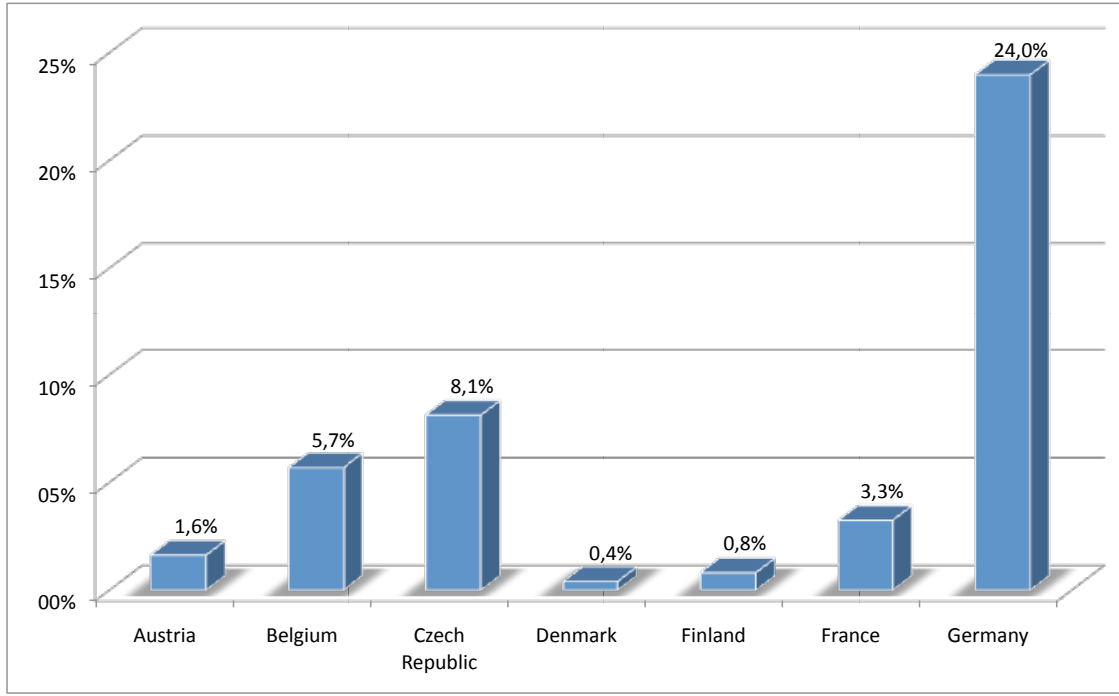


This viewscreen and the following ones show statistics distilled from the participant list by these two Christians. If you need something done in Freiburg, go find a Christian!

Obviously this meeting adhered to the E in ESPM. But note that the USA contingent towers higher in mean quality, see below.

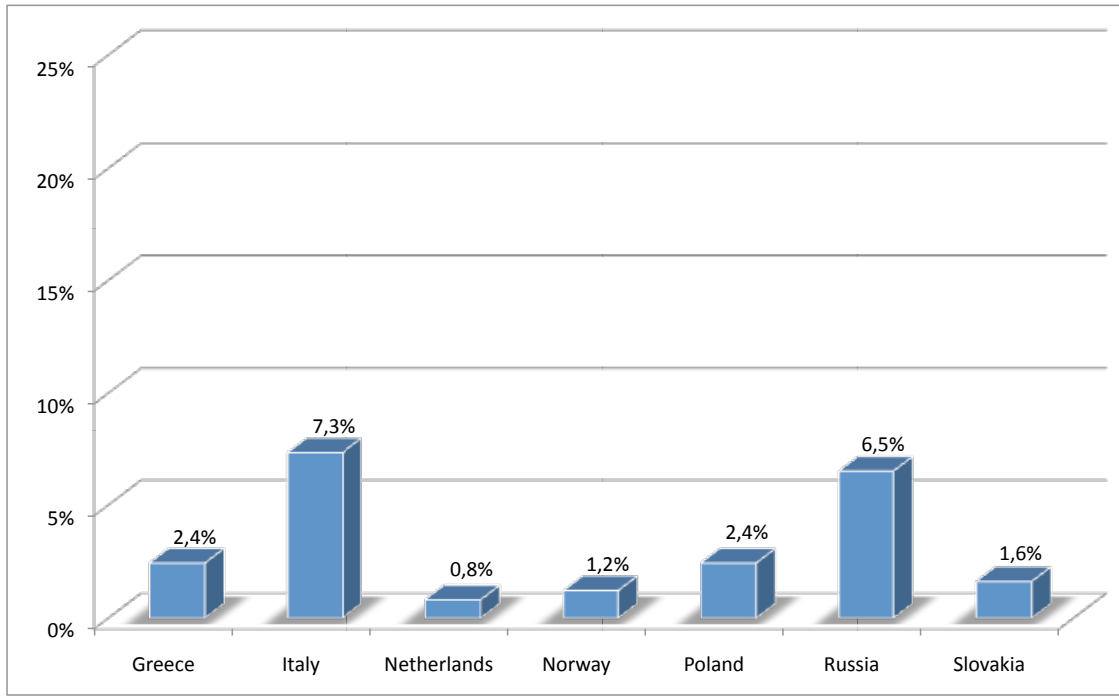
WHERE FROM?

Courtesy of Christian Nutto & Christian Bethge



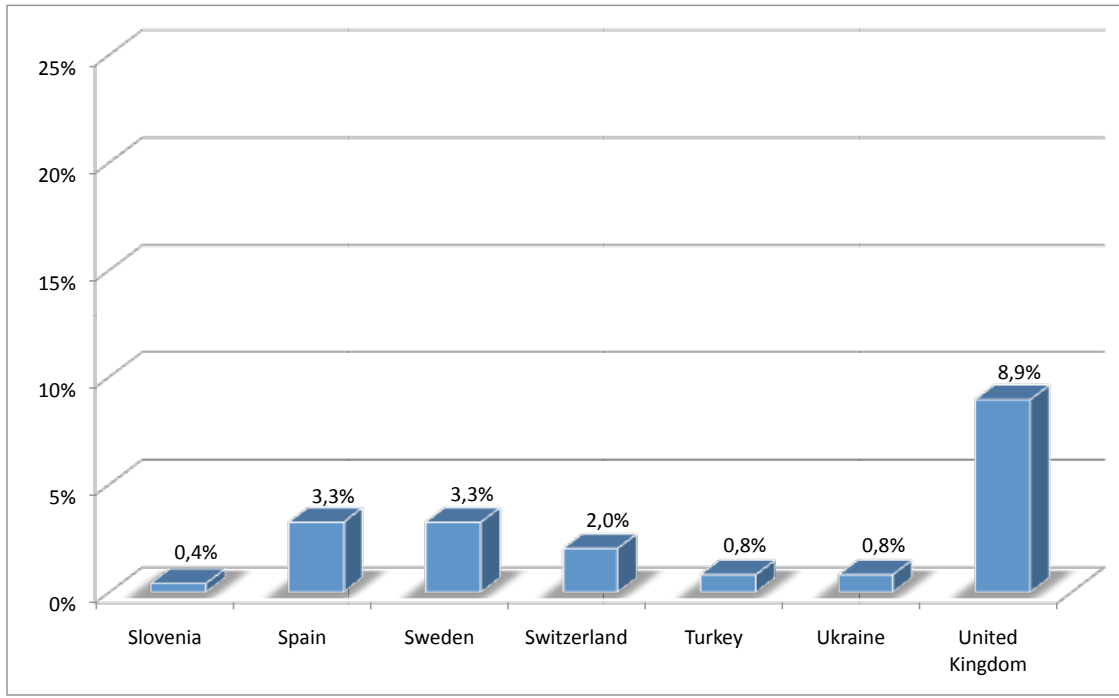
WHERE FROM?

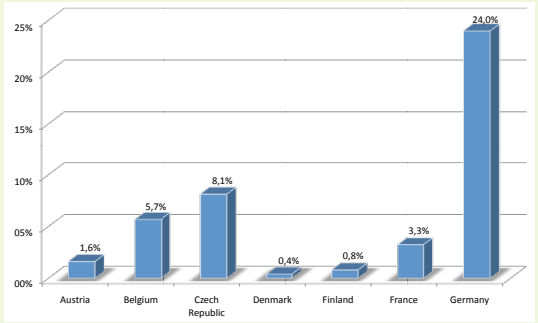
Courtesy of Christian Nutto & Christian Bethge

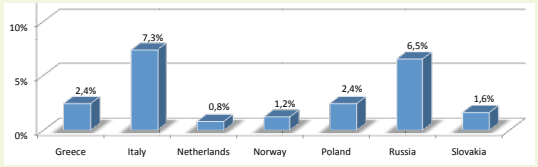


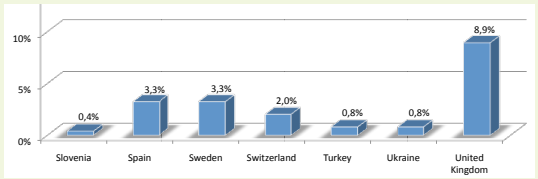
WHERE FROM?

Courtesy of Christian Nutto & Christian Bethge







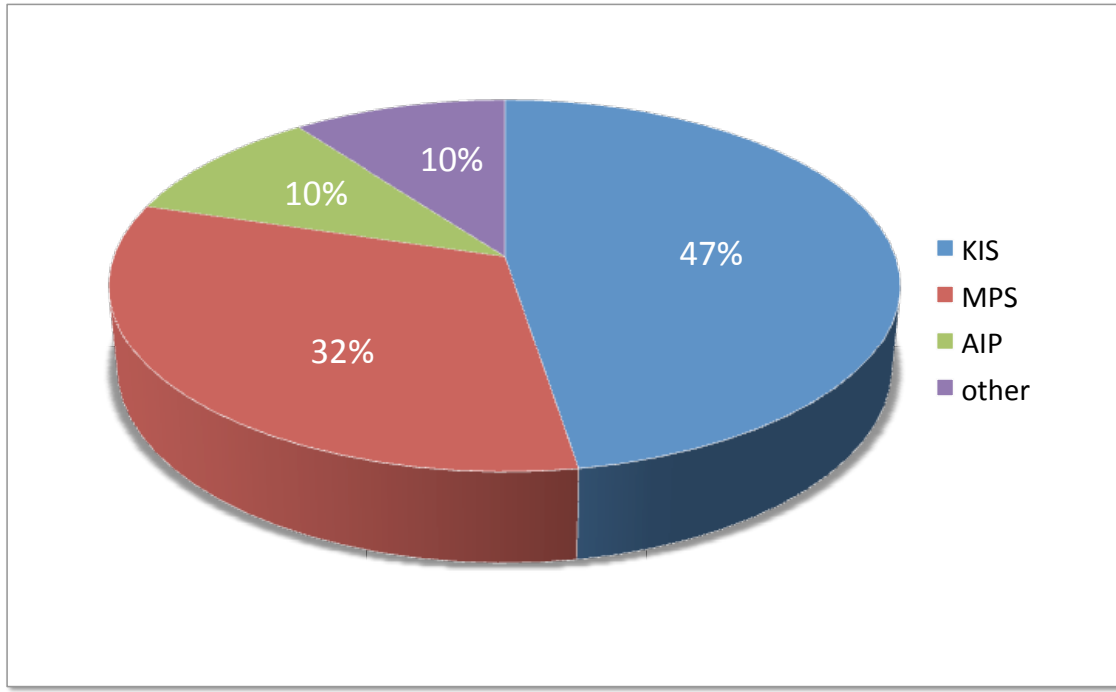


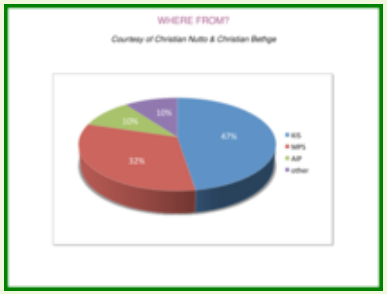
Obviously Germany-dominated. Spain ≈ Sweden implies nearly all solar Swedes were here, but only few of the solar Spanish. Most solar Czechs and Slovaks attended. Denmark = Klaus Galsgaard and Slovenia = Sonja Jejčič.

Utrecht only two? Ah, Nikola Vitas lacks on the participant list. He pointed out that counting affiliations isn't the same as counting nationalities nowadays. Indeed, I am the only Utrecht Dutch here while there are five ex-Utrecht Dutch from elsewhere; all my former graduate students live and work abroad. We mix all over the place and that mixing now includes Eastern Europe.

WHERE FROM?

Courtesy of Christian Nutto & Christian Bethge





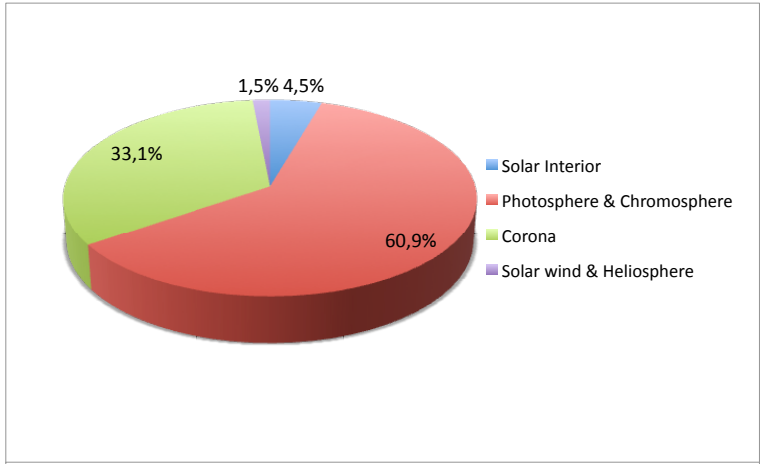
The Christians made this one because I wondered whether the Lindau complement here exceeds the Freiburg one. I am much impressed by the huge success of the MPI school, possibly now the premier solar physicist producer worldwide. It sets a splendid example to other non-university institutions which often lack inflow of young talent because they lack a mechanism for grabbing incoming talent. Especially in the USA.

The non-university KIS also used to be an institute with many more staff than students. This has much improved, making Freiburg win above.

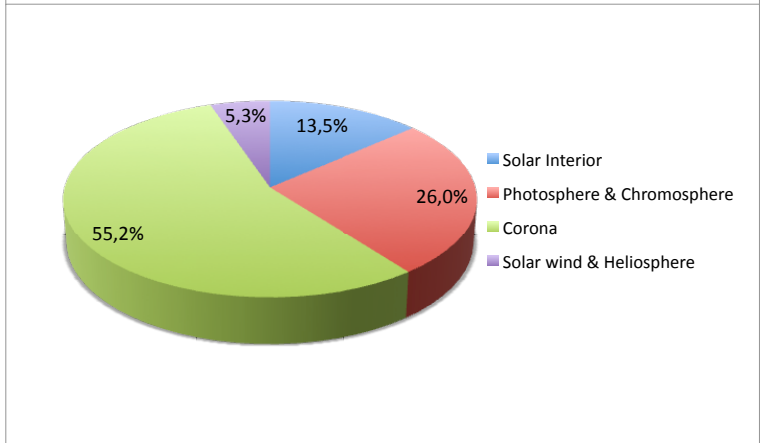
PRESENTATIONS

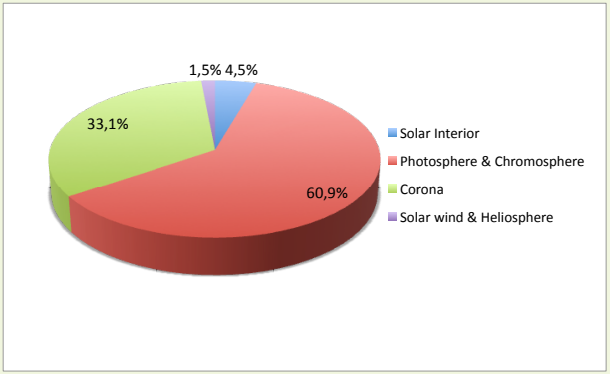
Courtesy of Christian Nutto & Christian Bethge

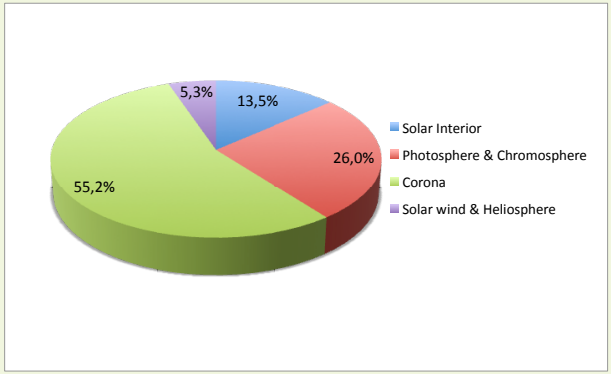
Observationally driven:



Theoretically driven:







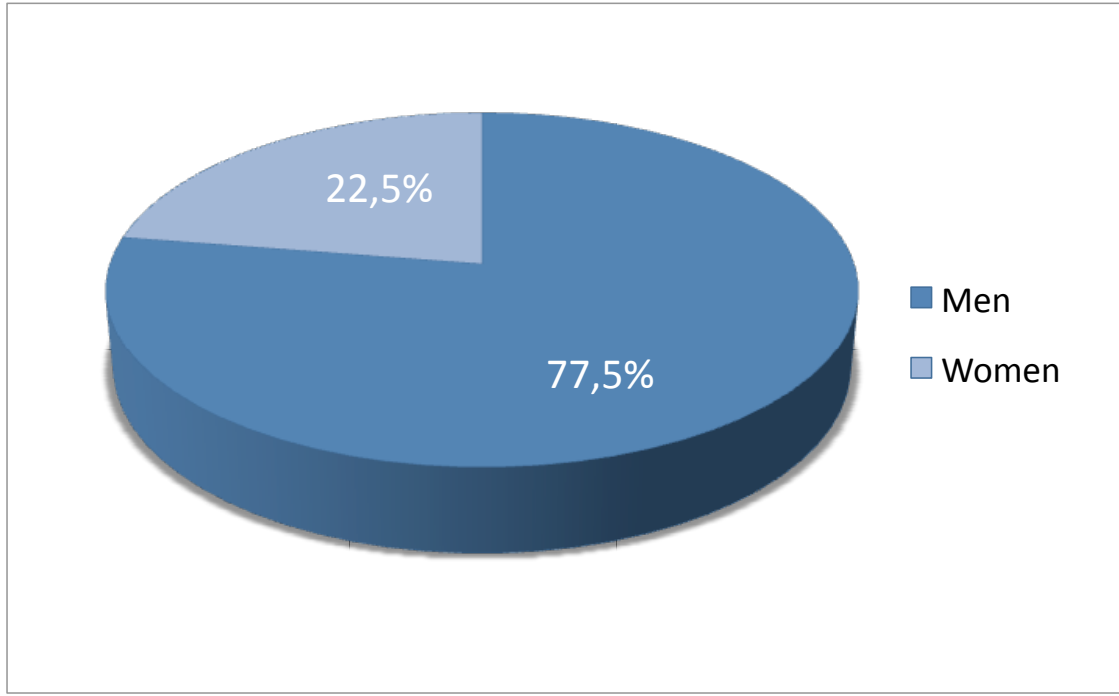
Compiled by the Christians from all presentations, both oral and posters.

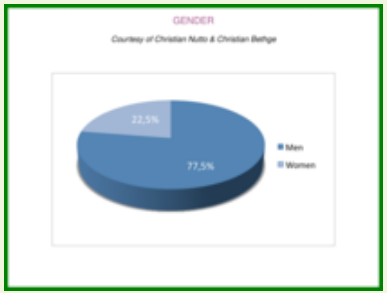
Left: observers like to observe what is best observable. Their lines are mostly spectral lines.

Right: theoreticians prefer domains that are not observed too well. Their lines are mostly field lines.

GENDER

Courtesy of Christian Nutto & Christian Bethge





I suspect that subdividing this chart into different age groups will show improvement of the gender ratio.

It would also be nice to have a pie chart for age distribution without gender separation, and to compare that to recent SPD/AAS meetings. I suspect that the slice of youngsters is appreciably larger here. But the USA forbids age discrimination at 65.

Who said: *“This is mission impossible”*?

Who said: *“This is mission impossible”*?

Manfred Schüssler

EXAM

Who said: *"This is mission impossible"*?

Manfred Schüssler

Who said: *"This is a masterpiece of observation"*?

To whom?

Who said: *"This is mission impossible"*?

Manfred Schüssler

Who said: *"This is a masterpiece of observation"*?

To whom?

Franz Kneer to Tobías Felipe

So now I need to complain about these three characters.

• *Complaint re Manfred Schüssler: see below.*

• *Complaint re Franz Kneer: he retires two weeks and four days from now. Very bad. Mandatorily through age discrimination - that is Europe for you. Also very bad.*

• *Complaint re Tobías Felipe: see below.*

ORAL PROGRAM

1. Results & Challenges

09:25	Schüssler	MHD Simulation: From the Convection Zone to the Corona and Beyond (in 30 Minutes)
10:05	Schrijver	Solar Magnetism and the Solar-stellar Connection
10:45		***posters*** & *coffee break*
11:50	MacKinnon	Kinetic Processes in Solar Physics
12:30		*Lunch break*

2.1. Observationally driven: Solar interior

14:00	Gizon	Solar Interior and Helioseismology
14:30	Fivian	RHESSI Observations of a Large Excess Solar Oblateness and its Identification as Magnetic in Nature

3.1. Theory driven: Solar interior

14:45	Roth	Meridional Circulation and Global Solar Oscillations
15:00	Olshevsky	Seismology of Sunspots: An Interplay between Temperature and Magnetic Field Structures
15:15		***posters*** & *coffee break*

2.2. Observationally driven: Photosphere & chromosphere

16:30	Bellot Rubio	The Realm of Solar Spectropolarimetry at High Angular Resolution
17:00	Scharmer	Spectropolarimetry of sunspots at 0.16 arcsec resolution
17:15	Bello González	Evolution of Small-scale Magnetodynamics on the Sun with High Spatial and Temporal Resolution
17:30	Bharti	Spectropolarimetery of Umbral Fine Structures from Hinode: Evidence for Magnetoconvection
17:45	Carroll	Characterizing the Quiet Solar Photosphere Using a Zeeman-Tomography Approach

On my website I maintain a list of recipes for meetings organisers. For oral presentations it has:

```
workshop:  keynote talks 45+15 min, contributions 20+10 min
symposium:  reviews 30+10 min, contributions 15+5 min
```

The first three speakers indeed had 30+10 but most other invited speakers used 30+0 and most contribution speakers 15+0. No or meager discussion was the result. For example, there should have been a long Bart De Pontieu – Valery Nakariakov one regarding Alfvén waves and loop modes.

Also in my recipe list:

```
chairs must always cut speakers in favor of discussion
chairs must never cut interesting discussions - run late instead
```

Chairs who dare to say "Only a few seconds for discussion" or "Only one brief question" should be blacklisted.


ORAL PROGRAM

1. Results & Challenges

09.01 Schlesier MHD Simulation: From the Convection Zone to the Corona and Beyond, in 30 Minutes

10.00 Schüssler Solar Magnetism and the Solar-stellar Connection

10.45 poster & coffee break

11.50 MacKinnon Kinetic Processes in Solar Plasma

12.50 Lunch break

2.1. Observationally driven: Solar interior

14.00 Gizon Solar Interior and Helioseismology

14.50 Fraser SHEISS: Observations of a Large Scatter Solar Oblateness and its Identification as Magnetic in Nature

3.1. Theory driven: Solar interior

14.45 Roth Meridional Circulation and Global Solar Oscillations

15.00 Dikpati Seismology of Sunspots for Interplay between Temperature and Magnetic Field Structures

15.15 poster & coffee break

2.2. Observationally driven: Photosphere & chromosphere

16.00 Bellot Rubio The Realm of Solar Spectropolarimetry at High Angular Resolution

17.00 Scharmer Spectropolarimetry of sunspots at 0.16 arcsec resolution

17.15 Bello Gonzalez Evolution of Small-scale Magnetofeatures on the Sun with High Spatial and Temporal Resolution

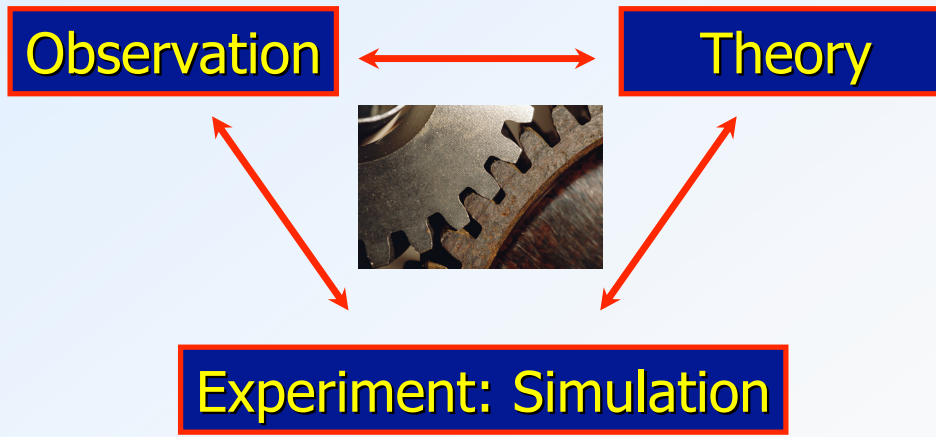
17.30 Wiehr Spectropolarimetry of Umbral Flow Structures from Hinode - Evidence for Magnetoconvection

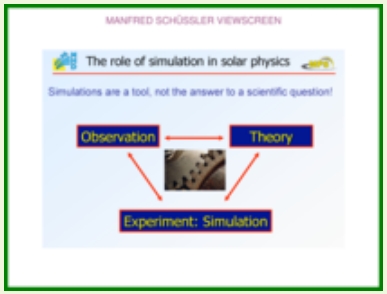
17.45 Carroll Characterizing the Quiet Solar Photosphere Using a Zeeman Tomography Approach

So now I aim to complain about all presentations. The first oral one was Manfred Schüssler's.

The role of simulation in solar physics

Simulations are a tool, not the answer to a scientific question!





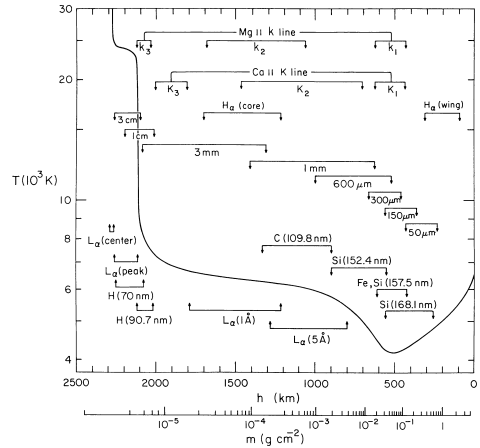
With this nice diagram Manfred emphasized that simulation enriches solar physics with the capability to experiment.

We cannot stick a thermometer under a sunspot, but Matthias Rempel can read off the temperature below his MURaM spot. This is not experimentation but just diagnosis. Some simulation papers lack even in that aspect, by only showing that a particular simulation produces something looking like the sun and concluding that therefore the sun is like the simulation and that therefore the sun is explained. Such papers lack simulation analysis. This tends to be as non-trivial as analysis of observations, but it is required to provide explanation rather than just demonstration.

Experimentation is an enrichment beyond diagnosis. Matthias' MURaM spot breaks up after the snapshot he showed. That makes the simulation yet more interesting. The best ones may be those that clearly depart from the sun and invoke and permit analysis of the differences. Much better then believing or arguing that a simulation duplicates the sun while it actually does not.

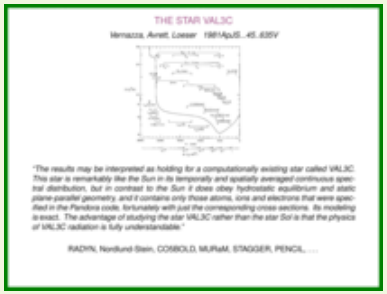
THE STAR VAL3C

Vernazza, Avrett, Loeser 1981ApJS...45..635V



"The results may be interpreted as holding for a computationally existing star called VAL3C. This star is remarkably like the Sun in its temporally and spatially averaged continuous spectral distribution, but in contrast to the Sun it does obey hydrostatic equilibrium and static plane-parallel geometry, and it contains only those atoms, ions and electrons that were specified in the Pandora code, fortunately with just the corresponding cross-sections. Its modeling is exact. *The advantage of studying the star VAL3C rather than the star Sol is that the physics of VAL3C radiation is fully understandable."*

RADYN, Nordlund-Stein, CO5BOLD, MURaM, STAGGER, PENCIL, . . .



The quote is from my radiative transfer lecture notes. It raises VAL3C to stellar status, not because of its 1200 citations but because it will forever remain a most beautiful star to teach – of immense educational value whatever I or others complain about its stationarity and one-dimensionality and statistical equilibria.

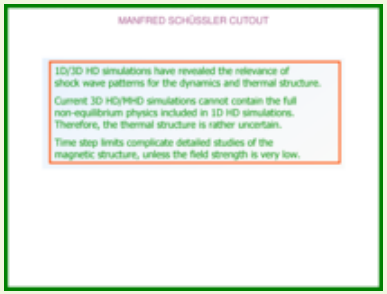
The same holds for the simulation codes listed under the quote. They produce shocks, granulation, wave patterns, weak-field concentrations and strong-field spots, dynamic fibrils, loops etc. for stars that exist only computationally but that can be of substantial educational interest to solar physicists, in particular through experimentation.

For example, most incarnations of the CO5BOLD star have an outer atmosphere obeying LTE. Their chromosphere is the CO5BOLD chromosphere, not the solar chromosphere. It may be a first approximation to the latter, or not at all. Nevertheless, it is educationally interesting to study. For example, it should be full of internal gravity waves as suggested by Thomas Straus, and isolating and studying these beyond k-omega phase signature may show how to catch these elusive waves in the solar atmosphere.

1D/3D HD simulations have revealed the relevance of shock wave patterns for the dynamics and thermal structure.

Current 3D HD/MHD simulations cannot contain the full non-equilibrium physics included in 1D HD simulations. Therefore, the thermal structure is rather uncertain.

Time step limits complicate detailed studies of the magnetic structure, unless the field strength is very low.



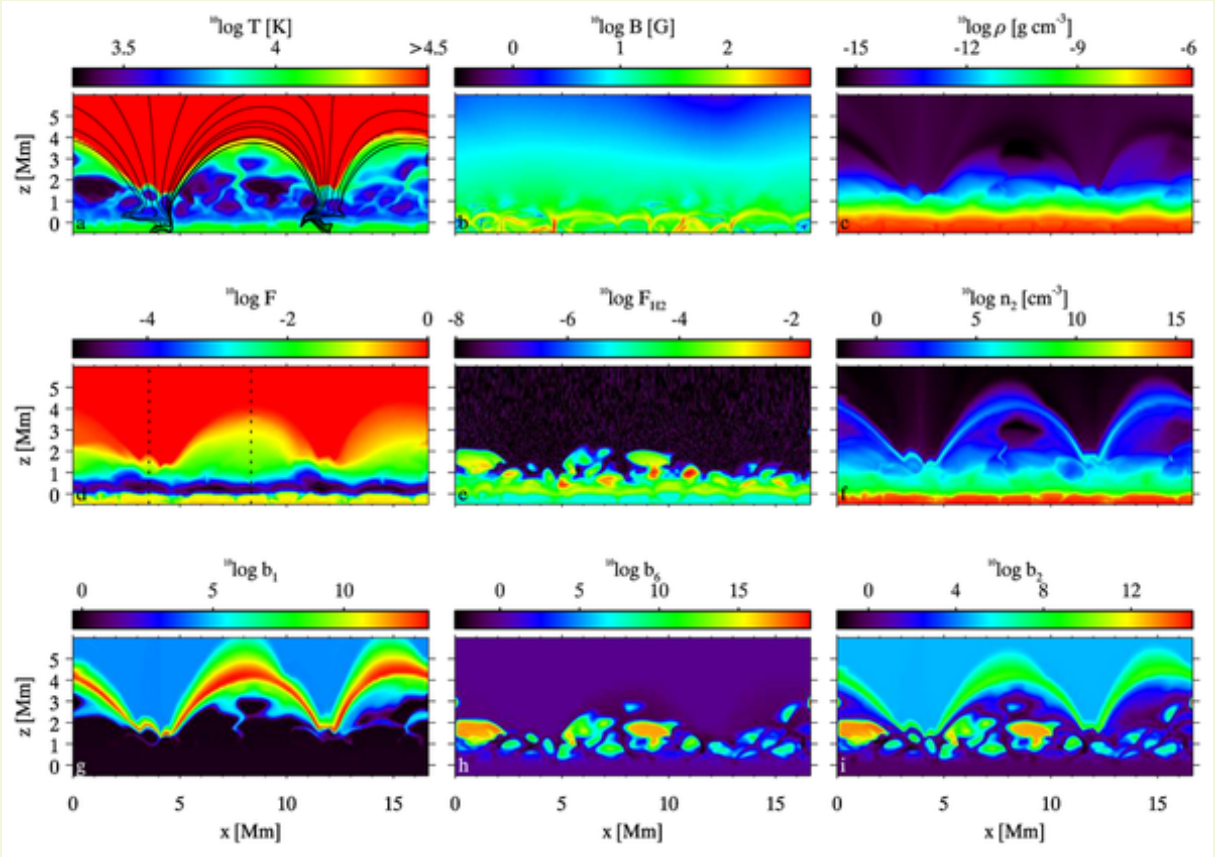
This cutout from Manfred's talk makes me complain most bitterly: it skips 2D. The only paper on time-dependent MHD simulation ever co-authored by me was a 2D one. So I will remedy that shortly by briefly discussing that paper (next screen).

I am aware that our sun is very much 3D, but time-dependent 2D is nicer than time-dependent 3D in one aspect: visualization. For 3D one needs viewpoint rotation around the volume, awkward when the content changes with time. For 2D one may just present movies.

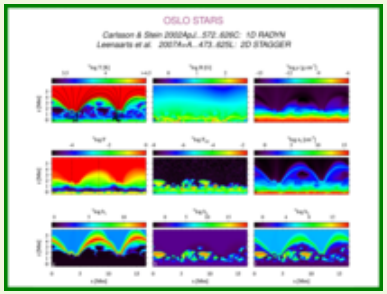
The same multi-D visualization problem crops up in multi-diagnostic solar observing. In our DOT movie collection we have many multi-panel movies. They are nice to watch but not fit for analysis. For that one often needs interactive time-delayed multi-cube movie playing, blinking, cut-slicering. I recommmend the Oslo ximovie.pro movie player and Alfred de Wijn's xslice.pro cube slicer, both SolarSoft widgets.

OSLO STARS

Carlsson & Stein 2002ApJ...572..626C: 1D RADYN
Leenaarts et al. 2007A&A...473..625L: 2D STAGGER



click on display to download movie



These Oslo stars have chromospheres where hydrogen ionization and recombination are not instantaneous. The 10 eV electron-collision jump from n=1 to n=2 causes sluggish rates in cool gas. This dramatically influences the actual hydrogen populations, as shown in this movie version of the above display.

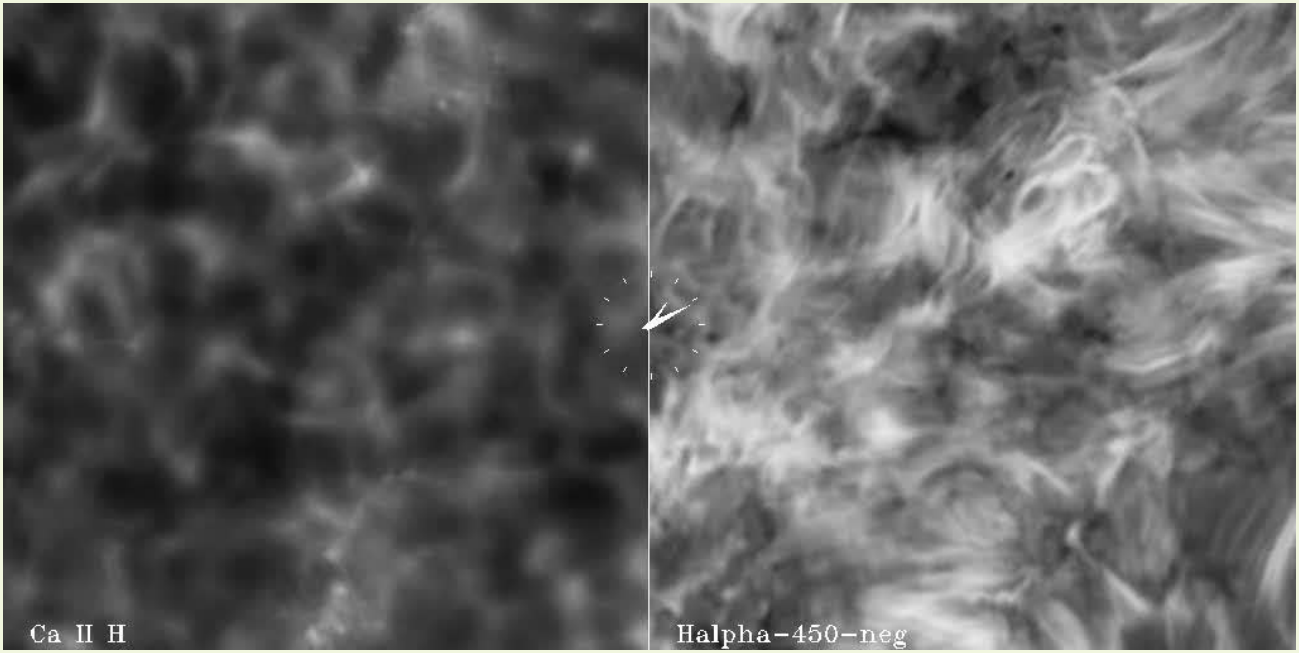
The first panel is just like cartoons of the chromosphere, such as my old one shown earlier today. This 2D incarnation of star STAGGER extends from subsurface to corona, has granulation and waves, and shows two magnetic elements with quiet internetwork elsewhere. There is field everywhere (2nd panel); a selected few field lines are drawn in the first panel. They demonstrate high-β jostling of the magnetic elements below the surface and field opening and smoothing in the low-β regime on top. The hot corona comes deep down in and near the magnetic elements where dynamic fibrils jut out and retract periodically. The internetwork canopy gets kicked up high by shocks. The underlying, heavily shocked clapotisphere remains mostly cool up to 3 Mm height.

The 2nd and 3rd rows concern hydrogen populations. The NLTE departure coefficient for n=2 in the last panel shows that the Halpha opacity can exceed LTE by 10 orders of magnitude! This is because it is slaved to the proton population which increases much by fast ionization in the hot shocks but then remains high during the cool post-shock phase until the next shock comes along.

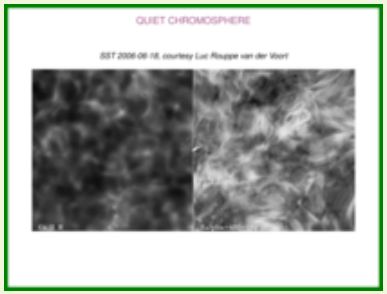
What does this star STAGGER show and not show compared to the sun? It has photospheric granulation and magnetic concentrations, chromospheric canopies, shocks and dynamic fibrils, a highly dynamic transition region, and a corona. It shows a tantalizing suggestion of internetwork-spanning canopy-mapping Halpha fibrils as n=2 population arcs (6th panel), but these are too thin to be seen. No coronal loops (at this dense density scaling) nor straws/spicules-II. Maybe this star needs another dimension to make those. And to enjoy reconnection and its fireworks.

QUIET CHROMOSPHERE

SST 2006-06-18, courtesy Luc Rouppe van der Voort, see 2007ApJ...660L.169R



click on image to download movie



Now let us inspect the solar chromosphere rather than a computational one. This two-panel SST movie is a cutout of a very quiet area. It lies to the upper-left of the rosette in Fig. 1 of Rouppe van der Voort et al. (2007) who discussed the same data.

The Ca II H movie has 1.2 Å bandwidth and shows the clapotisphere (defined in Fig. 12 of this old review) made up by interacting granular overshoot, acoustic waves, gravity waves, and a few magnetic patches. The Halpha movie is narrow-band at -0.45 Å in the blue wing. I reversed its greyscale for radiative transfer reasons so that the underlying granulation appears as dark pancakes. The bright filamentary structures make up the chromosphere.

Where there is activity Hα images show well-organised fibrils stretching across internetwork cells or even beyond. The small rosette beyond the righthand side of this movie also causes organised fibrils to come in at right. The rest of the field is very disorganised.

I get the impression that big bombs go off producing bright blobs that appear as highly filamentary, spreading patches of brightness. The bombs may be shocks coming up from below. But why the filamentary structure? Is that fine structure of a weak canopy? Or small-scale reconnection? It doesn't look like just wave interference to me. But be aware that much of the apparent brightness may just be Doppler modulation, and that none of it has necessarily to do with temperature.

The movie has 1 second cadence. Full profile sampling is clearly desired even at this fast clip. Plus synchronous Dopplergrams and magnetograms. Photon-starved indeed!

ORAL PROGRAM

1. Results & Challenges

09:25	Schüssler	MHD Simulation: From the Convection Zone to the Corona and Beyond (in 30 Minutes)
10:05	Schrijver	Solar Magnetism and the Solar-stellar Connection
10:45		***posters*** & *coffee break*
11:50	MacKinnon	Kinetic Processes in Solar Physics
12:30		*Lunch break*

2.1. Observationally driven: Solar interior

14:00	Gizon	Solar Interior and Helioseismology
14:30	Fivian	RHESSI Observations of a Large Excess Solar Oblateness and its Identification as Magnetic in Nature

3.1. Theory driven: Solar interior

14:45	Roth	Meridional Circulation and Global Solar Oscillations
15:00	Olshevsky	Seismology of Sunspots: An Interplay between Temperature and Magnetic Field Structures
15:15		***posters*** & *coffee break*

2.2. Observationally driven: Photosphere & chromosphere

16:30	Bellot Rubio	The Realm of Solar Spectropolarimetry at High Angular Resolution
17:00	Scharmer	Spectropolarimetry of sunspots at 0.16 arcsec resolution
17:15	Bello González	Evolution of Small-scale Magnetodynamics on the Sun with High Spatial and Temporal Resolution
17:30	Bharti	Spectropolarimetery of Umbral Fine Structures from Hinode: Evidence for Magnetoconvection
17:45	Carroll	Characterizing the Quiet Solar Photosphere Using a Zeeman-Tomography Approach

So much about the first talk. Now let's rate it. Or rather, let's define how to classify potential speakers prior to a meeting. So far, my meetings recipe list did not include a recipe to select good speakers. But during this meeting I tested a simple one which I will now present.

The basis is the assumption that good researchers make good speakers. In my experience this holds true with remarkably tight correlation. So the question becomes how to rate researchers. This is easiest done by obtaining their NA number, AH index, and AH/NA hit rate. And maybe their age.

Recipe:

- *go to ADS*
- *enter "Parker, E.N.", tick "Exact name matching", hit "Send Query".*
- *you get a listing of his 366 ADS abstracts. Click under "Sort options" on "Sort by citations".*
- *you find that (presently) he has 11350 citations. Say "wow!". Slide down until you find the paper with as many citations as its list number. Presently 48. Say "wow!".*

So E.N. Parker has:
number ADS abstracts NA=366
ADS-Hirsch index AH=48
ADS-Hirsch hit rate AH/NA=13%.

As simple as that. Alfred de Wijn kindly automated this in a script hadsauthor which I ran on all of you.

WIKIPEDIA

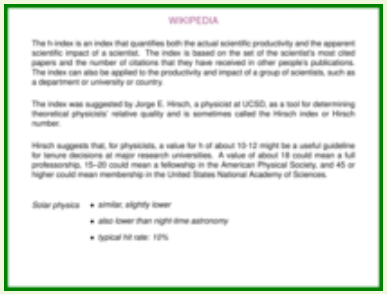
The h-index is an index that quantifies both the actual scientific productivity and the apparent scientific impact of a scientist. The index is based on the set of the scientist's most cited papers and the number of citations that they have received in other people's publications. The index can also be applied to the productivity and impact of a group of scientists, such as a department or university or country.

The index was suggested by Jorge E. Hirsch, a physicist at UCSD, as a tool for determining theoretical physicists' relative quality and is sometimes called the Hirsch index or Hirsch number.

Hirsch suggests that, for physicists, a value for h of about 10-12 might be a useful guideline for tenure decisions at major research universities. A value of about 18 could mean a full professorship, 15–20 could mean a fellowship in the American Physical Society, and 45 or higher could mean membership in the United States National Academy of Sciences.

Solar physics

- *similar, slightly lower*
- *also lower than night-time astronomy*
- *typical hit rate: 10%*



WIKIPEDIA

The h-index is an index that quantifies both the actual scientific productivity and the apparent scientific impact of a scientist. The index is based on the set of the scientist's most cited papers and the number of citations that they have received in other people's publications. The index can also be applied to the productivity and impact of a group of scientists, such as a department or university or country.

The index was suggested by Jorge E. Hirsch, a physicist at UCSD, as a tool for determining theoretical physicists' relative quality and is sometimes called the Hirsch index or Hirsch number.

Hirsch suggests that, for physicists, a value for h of about 10-12 might be a useful guideline for tenure decisions at major research universities. A value of about 18 could mean a full professorship, 15–20 could mean a fellowship in the American Physical Society, and 45 or higher could mean membership in the United States National Academy of Sciences.

Solar physics
- *similar, slightly lower*
- *also lower than night-time astronomy*
- *typical hit rate: 10%*

The ADS recipe is a very simple one. ADS is incomplete and contains doublures. A more authorative way may be to use the Web of Science and to exclude proceedings papers and self-citations. Generally high hitters (AH/NA) will then climb in their relative Hirsch ranking, low hitters descend. But generally I find the ADS ranking corresponding well with my personal appreciations. And this recipe is so easy, especially with Alfred's script. So I stick to it here.

Of course, NA and AH improve with age. Wikipedia remarks that Einstein would have stuck at h=4-5 if he had died in 1906.

The remark above that solar physics seems to have lesser Hirsch indices than nighttime astronomy is based on my sampling both communities for people I know. I think that the difference is significant. The same has been noted in other bibliometric studies. I don't know the reason. In fact, the most-cited paper in my own list is a stellar one (but also both Mats' and my most boring one).

I found that the ADS Hirsch hit rate AH/NA is typically about 10% from checking many colleagues. A higher one means less bullshit. A rate above 20% is unusual amongst established authors, say with AH>10. Youngsters tend to have higher hit rates (solid thesis papers and few proceedings contributions).

INVITED SPEAKERS

ESPM−12 Freiburg	NA	AH	rate
Manfred Schüssler	255	38	15%
Karel Schrijver	257	40	16%
Alec MacKinnon	66	14	21%
Laurent Gizon	75	13	17%
Luis Bellot Rubio	96	17	18%
Susanna Parenti	40	7	18%
Eduard Kontar	57	11	19%
Silja Pohjolainen	117	10	9%
Ineke De Moortel	53	13	25%
Tibor Török	24	7	29%
Svetlana Berdyugina	161	18	11%
Ilia Roussev	79	11	14%
Gregory Fleishman	69	11	16%
Marco Velli	181	16	9%
Daniel Müller	22	6	27%
mean	103	15	18%

SPM−11 Leuven	NA	AH	rate
Michael Thompson	188	31	16%
Allan Brun	105	17	16%
Javier Trujillo Bueno	112	16	14%
Oskar Steiner	88	19	22%
Bart de Pontieu	82	15	18%
Åke Nordlund	336	48	14%
Fabio Reale	159	24	15%
Sara Matthews	79	10	13%
Nicole Vilmer	113	18	16%
Ruth Esser	119	17	14%
Peter Wurz	205	17	8%
Zoran Mikić	206	25	12%
Mike Lockwood	201	30	15%
Henrik Lundstedt	71	12	17%
mean	147	21	15%

In this comparison Åke Nordlund has the highest AH, equalling that of Gene Parker (but see below). They are both giants (AH>45), but very different ones. Gene's Hirsch papers are nearly all single-author; Åke's abound in co-author diversity.

Of the AH>10 established authors only a few exceed 20% hit rate (Alec MacKinnon, Ineke de Moortel, Oskar Steiner).

Our meeting started with big shots (AH>30) and then had a larger number of lower-Hirsch invited speakers than the previous SPS/EPS+EAS meeting in Leuven three years ago. Is that bad? I don't think so. I have not added age in this comparison but it obviously plays an important role. The lists suggest that AH is a good selector for senior speakers, the hit rate for junior speakers.

Which meeting was the better one? I don't know since I had to cancel my participation in Leuven. These lists indicate similarity to me, with somewhat more emphasis on younger talent here.

ESPM-12 SPEAKERS

Monday	*NA*	*AH*	rate
Manfred Schüssler	255	38	15%
Karel Schrijver	257	40	16%
Alec MacKinnon	66	14	21%
Laurent Gizon	75	13	17%
Martin Fivian	30	5	15%
Markus Roth	?	?	?
Slava Olshevsky	2	0	0%
Luis Bellot Rubio	96	17	18%
Dan Kiselman	51	16	31%
Nazaret Bello G.	9	2	22%
Lokesh Bharti	20	2	10%
Thorsten Carroll	8	4	50%

Tuesday	*NA*	*AH*	rate
Michel Rieutord	81	13	15%
Michal Svanda	16	3	19%
Thomas Straus	49	9	20%
Tobías Felipe	1	1	100%
Reza Rezaei	9	3	33%
Julius Koza	12	2	17%
Gianna Cauzzi	74	11	15%
Maria Loukitcheva	12	3	25%
Clementina Sasso	7	1	14%
Jean-Claude Vial	316	21	7%
Nicolas Labrosse	17	3	18%
Guillermo Giménez C.	40	4	10%
Susanna Parenti	40	7	17%
Raphael Attie	4	0	0%
Taieb Aiouaz	13	3	23%
Tom van Dorsselaere	24	6	25%
Eduard Kontar	57	11	19%
Iain Hannah	31	4	13%
Säm Krucker	226	21	9%
Marina Battaglia	21	5	24%
Davina Innes	83	19	23%

Wednesday	*NA*	*AH*	rate
Silja Pohjolainen	117	10	8%
Elena Moise	8	1	12%
Tatiana Kaltman	23	2	9%
Gherardo Valori	9	5	55%
Christian Beck	38	7	18%
Elisabetta Caffau	22	6	27%
Lotfi Yelles C.	7	3	43%
Matthias Rempel	38	10	26%
Stefaan Poedts	171	19	11%
Reiner Hammer	108	10	9%
Bart De Pontieu	89	17	19%

Thursday	*NA*	*AH*	rate
Ineke De Moortel	53	13	25%
Klaus Galsgaard	85	15	18%
Etienne Pariat	30	5	17%
Sven Bingert	5	1	20%
Giovanni Lapenta	66	7	11%
Grigory Vekstein	34	6	18%
Tibor Török	24	7	30%
Joachim Birn	219	35	16%
Gottfried Mann	185	19	10%
Alexander Podgorny	32	5	16%
Mark Linton	50	9	18%
David Tsiklauri	42	13	31%
Viviane Pierrard	38	7	18%
Andrea Verdini	10	2	20%
Lapo Bettarini	8	2	25%
Svetlana Berdyugina	161	18	11%
Tom Ayres	406	37	9%
Ilia Roussev	79	11	14%
Noé Lugaz	27	5	18%

Friday	*NA*	*AH*	rate
Gregory Fleishman	69	11	16%
Marco Velli	181	16	9%
Thomas Rimmele	150	17	11%
Manolo Collados	181	22	12%
Michael Knölker	66	15	23%
Daniel Müller	22	6	27%
Taro Sakao	150	23	15%
Francesco Berrilli	90	10	11%

All speakers. This meeting's contributed-talk selection also yielded relatively many juniors. Only two from the fairly large AH=20–30 "solid senior" population, both as project presenters.

The ? for Markus Roth marks author name confusion. It probably affects more listings. One should name children uniquely these googling days! The Parker example worked because he usually signs as "Parker, E.N." - but "Parker, Eugene N." adds another 1000 citations and some more Hirsch papers. (Try Alfred's script with multiple spellings or the `--sloppy` *option.)*

Don't vary your initials, don't spell out your first name, don't have namesakes (René Rutten ≠ Rob Rutten), don't vary transcriptions (Roman Kostik = Roman Kostyk), don't misspell (Han Uitenbroeck = Han Uitenbroek), use only one surname (Róbert von Fáy-Siebenbürgen = Róbert Erdélyi) or correct ADS (Sven Wedemeyer + Sven Wedemeyer-Böhm).

Highest AH in this list: Tom Ayres. Highest Hirscher in this meeting: Bob Lin (872/45/5%). With Leon Golub (386/38/10%) and Hugh Hudson (534/40/8%) the USA was high-Hirsch here. Hugh was also question champion.

Dan Kiselman and David Tsiklauri: highest hitters of the AH>10's.

Tobías Felipe: a hit rate of 100%! Wow! Congratulations! Just continue!

This list confirms to me that this simple quality predictor works pretty well. So I have added to my meetings recipes:

```
selection:  (N=nr papers, H=Hirsch index)
            10% big-shot seniors (N>200, H>30)
            40% solid scientists (H>10, H/N>10%)
            50% promising juniors (H<10, H/N>20%)
```

• *Complaint:* $\Longrightarrow$ *your* $\Longleftarrow$ *numbers are too low! (Yes, yes, yes, mine too.)*

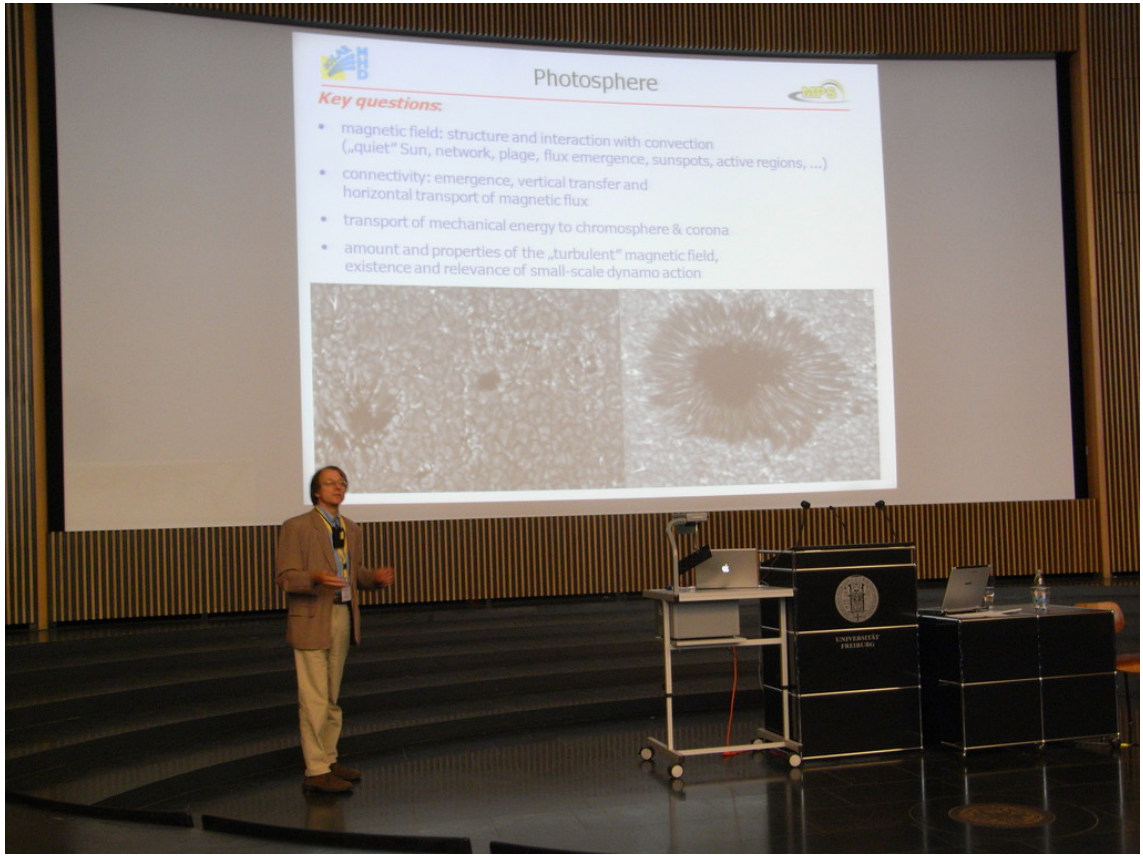
By remarking that solar physics Hirsches tend to be lower than nighttime astronomy Hirsches, I have complained about ("hirsched") all of us here. Not mission impossible but mission already accomplished – even within my 25+0 time allotment and without complaining about the remaining 248 presentations.

Whatever my complaints, I think that all of you will agree with me that this meeting was a very good one. The list above shows this re speakers, but there were also a great many excellent posters. The chaired discussions were often too much cut, but the unchaired discussions and exchanges during the breaks, excursions and dinners were very lively.

To me this meeting has demonstrated that European solar physics is in good shape. Keep it on the road, please!

What remains for me here is to announce the best speakers of this meeting. The best senior speaker and the best junior speaker are unequivocally dictated by the recipe and the numbers in the table above. Here they are:

Manfred Schüssler



Tobías Felipe García