Stella 2000 ™

CAN YOU READ THE SKY AS EFFORTLESSLY AS YOU CAN READ?

Your Virtual Observatory for the Millennium

Stella 2000 is new astronomical software for the PC which runs in all **32-bit** flavours of Windows. Stella generates highly realistic views of the heavens as seen from anywhere in the world.   Think of it as your Virtual Observatory. Stella is nothing less than a simulation of the stars in their courses as seen from Earth, and has **the capacity to transform you into an expert on the skies.**

Unique Features

• 	**Stella 2000** gives you carte blanche to explore the most **realistic skies** in real time, complete with **observing log** and list facility, live ephemeris, location browser, and a sophisticated search embracing planets, comets, DSOs, and up to 300,000 stars.

• 	Choose between **4 different celestial projections** and observe from between 0-90 degrees of elevation and 0-360 degrees of the compass in either resizeable windows or in a faithful **full screen mode**.

• 	Advance, retard, or **animate** the simulation's clock by years, months, days, and minutes of both sidereal or solar time.

• 	Stella builds upon the unique aspects and verisimilitude of its precursor <u>Coeli - Electric Planisphere</u> to bring effects such as **scintillation, refraction, extinction, and precession** in point-source, spotlight, and the **new photoplate display modes.** Subtler color gradations accurately reflect a star's true nature, and the complete Messier catalog in ImageIcons features as an integral part of this new package, crowned by the facility to record and plan your real-sky observations quickly and conveniently.

• 	The sky, ephemerides, observing logs and lists, may be **printed in either mono or colour**, with both horizon and equatorial grids, aequator, ecliptic, horizon, constellation lines, names, boundaries and legends.

• 	Depend on Stella's **data quality** and **extendability.** In the final analysis, an astronomical application stands or falls by the quality of its data, and Stella 2000's sources are second to none. The starting point is the much relied-upon Harvard Revised Catalog (Hoffleit & Warren, 1991), an incomparable source of details on 10000 or so naked eye stars down to magnitude 6.5. A permanent level-one database, the Bright Star Catalog is present in both the shareware and registered versions of Stella 2000, supplemented by a 7000 star selection from the ultra-modern ESA Hipparcos satellite sky survey. Even the Bright Star catalog may be overridden by an all-Hipparcos substitute.

• 	For telescopic and binocular stars, we begin to climb the ladder of Stella's optional **SAO extensions**, all the way from magnitude 7.0 to those stars beyond magnitude 9 resolvable by more powerful amateur telescopes. The SAO and **Hipparcos** extensions are tiered in batches of 25000 stars, and may be purchased and loaded at your discretion. Stella's current star-capacity is thus a more-than-respectable 300,000, with forays imminent into the unsurpassed Tycho / ACT data sets, ultimately bringing our stellar population to a round 1 million.

System Requirements

What do you need to run Stella 2000?

Minimum System

Stella can be installed on any **IBM compatible PC** with a 486 DX processor or higher running **Windows 95, 98,** or **NT**. The more video and conventional RAM you have, the better - 1 Mb or more for the former, and at least 8Mb of the latter.

Although Stella will run on the stated minimum system, operations -- especially loading -- will be slow. We make no apologies for the fact that Stella is a most advanced planetarium system containing more celestial objects and graphics than average and, in order to attain such excellence, speed optimizations were inevitably among the first to be sacrificed. We would therefore suggest a more *practical minimum system* as an Intel **Pentium 166** with 16Mb of RAM.

Recommended System

The recommended system for running the basic configuration of Stella 2000 is a **Pentium 200 or higher** with **32 Mb of RAM** and a graphics card equipped with at least **2 Mb** VRAM. For smooth handling of Stella's data extensions at 100000 stars and above, a Pentium II / Pro with 32Mb+ is highly desirable.

Additionally, Stella requires that your Windows display be in either **Hi-color** or **Truecolor** mode at a resolution of at least **800**x**600** pixels. The **optimum screen resolution for Stella is** **1024**x**768**. Please note that a display of only 256 colors is bound to be a disappointment. If your video subsystem is not up to displaying in at least Hi-color at 800x600, we would *strongly recommend* purchase of our slightly less demanding **Coeli - Electric Planisphere**, with which Stella 2000 is maintaining maximum compatibility. Just point your Web browser at

http://www.sci.fi/~elk/index.htm

for details.

A Quick Excursion around Stella 2000

Loading Stella 2000 is simply a matter of clicking on the Coeli icon in your Start Menu.

What the **Sky window** initially presents you with is the entire celestial sphere for the preset location (Lahti, if you downloaded the evaluation version; your very own home if it is a registered copy), with South at the bottom, East at the left. Capella will be the initial focus for northern observers and Canopus for the southern hemisphere. Stars plotted in **dark green** lie below your horizon: they have set, not yet risen, or may never rise at your position.

Display the **time bar** by pressing **[t]**, the **Live Ephemeris** with **[ctrl][L]**

Now hide the time bar using the right-click menu entry |**Clock**|**Bar**|. It is worth noting here that enabling the timebar prevents the use of single keypresses in the sky window, unless the timebar itself was invoked with keypress [t] and not accessed with the mouse. So during intensive manipulation of the display it is as well to avail yourself of the **Viewbar's** comprehensive functions while the Clock bar is present..

Press the **[h]** key for a quick list of Stella's keypress functions, or avail yourself of   Stella's comprehensive **help system**.

An important feature of Stella 2000 is its online Guide. Just press **[F1]** or select **Guide** from the **Help menu**. You'll discover over *10,000 words* of instructions and tips on Stella's inner workings.

The Guide, called **KEYGUIDE.RTF**, can also be read externally or printed out.

Stella's virtual Earth revolves in real time, and the apparent motion of the stars is from left to right when facing

south.   Stella's level-one star population is around 16000 in shareware and unextended registered versions, and this results in a realtime display update every minute or so. Zooming will be smooth all the way down to the magnitude limit of approximately 6.5.

As you add in SAO/Hipparcos **data extensions** at 25000 stars each,   significant slowdowns during zooming and centering operations may gradually become apparent as auto-resolution lets in the full flood of stars at higher magnifications. For stellar populations over 50000, you will need to call on either a   modicum of patience or a Pentium Pro/II!

Stella's default celestial projection is an azimuthal Equal Area, [F3], centered on your zenith.   It is of the type used by planetaria the world over, so it is in good company, but if you happen to desire a change, there are three more to experiment with: Equidistant [F2], Stereographic [F4], and Orthographic [F5]. When you gain a little more experience using Stella, you'll want to begin experimenting with contrasting viewpoints too.

Start by pressing **[H]** for a **horizon view** of the southern sky.   To traverse through the 360 degrees of the compass, access the **traverse and elevation tools** with **[ctrl][D]** or **[ctrl][E]**. Alternatively, you may prefer to enable auto-centering at the outset with **|Viewpoint|Projection|Auto-center|** thus doing the job of the traverse and elevation tools automatically each time you click on a new object. With its often abrupt switching of view, this setting can prove disorienting on occasion, especially if you have not yet attained full familiarity with your local celestial geography! As with all things Stella, it will therefore pay to experiment a little.

[Z] will return you to a zenith view, but at the new line of sight you traversed with the tools.

It is worth stressing that after any operations which somehow change Stella's viewpoint, pressing **[F12]** immediately is the safest way to ensure an accurate display of all stars visible at the current magnification. For extra responsiveness, some operations do not incorporate this process.

By default, **[a]uto-resolution** of stars is switched on. What this means is that you only begin to see the dimmer stars as you increase your resolving power (change to binoculars/telescope), in imitation of reality. Stella's initial magnification is negative in order to encompass the entire sky. Zoom down to zero magnification to receive an impression of the sky as seen on a clear night by the naked eye. To adjust the number of stars visible at any given magnification, press **[+]** or **[-]**. Auto-resolution will need to be disabled with **[a]** if you wish your changes to survive any zooming or unzooming operations you might perform subsequently.

For **Stella's** representation of the sky, **realism has been the watchword**, and we are confident that this ideal has been achieved. **Color is the key.**   The essence of a star is its color, linked intimately to its spectral class. Astronomers have given all the brighter stars a **color index**, and Stella's palette is based on it. So, if you see a deep crimson in Stella, you can be certain that it is an M, or a piercing white an F, or an orange like Arcturus or Aldebaran a K. Not that this may matter to you, but it will to many. Observe the true heavens on a crystal night - each star has its tint, each planet its hue, albeit cast over with tropospheric blue.

Stella itself provides these keys for tampering with colors: **[B]** , **[D]** , and **[R]**.

[B] brightens (lightens) the palette uniformly, giving a washed-out effect, and finally washes color out completely. **[D]** achieves exactly the opposite, darkening - and thereby deepening - all the colors. Unrealistic, as if seen through sunglasses, but you may find it a change. It at least reveals a star's underlying 'character', subleties that the brightness may have hidden.

Inveterate stargazers and stellar observers will recognise that Stella is meant to be viewed to full effect in subdued lighting. It is preparatory, if you like, to the 'real thing', and the human eye takes at least ten minutes to become fully dark-adapted. Stella is not going to make the situation trickier than it already is! Hence the dimming and overall reddish tint of most readouts. Star labels, while reflecting the color of the star in question, have been darkened by an order of magnitude, but may be brightened if the inclination or need arises.

The **Location dialog box** provides one way - the most precise - of setting your geographical position. The **Location Browser (world map)** is another. Perhaps you would like to view the heavens as Amundsen   saw them after finding

Scott's camp? Press **[l]** to accomplish this feat. Just use the mouse to move the pointer about the continents and oceans and click the <left> button when you find your desired spot. The sky window will instantly reflect and register the change in geographic position, and **a red circled star** will mark your new location on the World Map.

A geographic position correct to the nearest degree will be sufficient for any but the most precise telescopic purposes - and thus the Location Browser is the ideal tool. An error in location of one degree corresponds to a change of about 4 minutes in an object's rise and set times. Such an error will not be discernible with the naked eye without years of practice, and for most binocular views will be undetectable. So stick with the Location Browser unless ultimate precision is required. The location dialog box is in any case only functional in registered versions of Stella.

[z] does just what it says: zooms you in (or narrows the field of view, like a pair of binoculars or a telescope), displaying the magnification factor as you go. Try this on Albireo, Izar, Castor, Mizar and many others. They will eventually resolve as true doubles, imitating reality. **[x]** widens the field, and zooms you out.   Stella automatically resolves stars for you in proportion to the magnification, like a real instrument: the bigger the objective glass, the more stars you will see and the brighter the more brilliant ones will appear. Conversely, the more extremely your field narrows, the fewer stars will be seen, because Stella's database is restricted, unlike the galaxy's.

Perhaps the **[a]uto resolution** feature merits a bit more elaboration. Firstly, if you disable it, you will have to add and brighten stars manually via the keys listed on Stella's [h]elp screen. This is long winded, but the best way to achieve the most impressive results for the given magnification, and to derive the most personal satisfaction. We all see the sky differently and are affected by different facets of it. But for quicker and yet still fairly realistic resolution, our preset values are quite good. Keep it automatic until you come across a starfield which you truly deem worth perfecting.

Use **[f]** to **find a specific constellation, star, DSO, or planet**. If a constellation was selected, the group of stars will be spotlighted for you against a neutralised star background. Selecting **'not designated'** from the dropdown list will always return you to a normal display.

Stars may also be searched for by common name: Stella has almost 200 of these recorded, and you may add more if you've the inclination. There is also a file of extra names for registered users, bringing Stella's potential total to more than 300.

Above all, Stella 2000 is a point-and-click introduction to the skies, and the **mouse-crosshair** its most useful instrument. Use the crosshair to select a star, then **click the <left> button** for a short display of the star's name and designation as follows:

• 	The Greek letter plus I.A.U. abbreviation (Bayer nomenclature), accompanied by the Flamsteed number. For dimmer stars, just a Yale Catalogue number will be given, and in the case of Hipparcos and SAO stars, the Henry Draper ID. If the star has a common name this will be displayed underneath.

Using the **[c]entre** key on a series of points is the best way to star-hop across the heavens: Use the stars as 'stepping stones' as you shift your gaze. `The technique goes like this: click on the first point, centre the display, click on the next point, centre the display, and so on.` Stella does not restrict you to stepping across stars, you may also click and center on Deep Sky Objects, planets, comets,   the Sun and Moon, or empty space.

The Celestial Sphere modeled by Stella revolves in real time, updating itself without your intervention. Ever yearned to see a heliacal rising of Sirius on an unexpectedly clear southeastern horizon when all the zenith is thunderous overcast? Stella plots the moment of its rising, so effectively you're permitted to observe it twice - first on Stella's virtual heavens, and then outside in the strangely silent dawn cold where Sirius twinkled ominously red for a fleeting instant in the atmospheric turbulence of sea-level. Stella even shows **scintillation (twinkling)** for that extra touch of realism.

Incidentally, if the relative positions of some stars begin to appear a little scrambled (as they may do during frequent use of functions which change your viewpoint in some way) , simply press **[s]**, **[n]**, **[e]**, **[w]**,   or **[F12]** depending on

your preferred orientation, for a full recalculation of all altitudes and azimuths. In any event, Stella's ongoing calculations will eventually get around to returning every star to its correct position.

The **Report** function will get you what the left button gets plus ancillary data - things of interest include the following:

• A full expansion of the rather cryptic Bayer nomenclature. Eg. Omicron Ursae Majoris for 'o UMA'. A great help if you are new to astronomical conventions.

• The full Latin name for the constellation, followed, if applicable, by the English translation. Bare catalogue numbers, although they may lie slap in the centre of, say, Orion, will have no constellation associated with them. This will probably be cosmetically remedied in future Stellas.

• The brightness (apparent magnitude) and luminosity (absolute magnitude), based on the Yale Catalogue parallax value. If the star is among the 100 brightest, this will also be indicated.

• The star's approximate distance in light-years (LY) or parsecs (Pc), again computed from parallax figures in the relevant catalog. You may assume the lower numbers are about as accurate as we can get, but please take anything over about 500 LY with a pinch of salt - they may be reliable, they may be not. Don't say we didn't warn you! There doubtless exist more accurate stellar parallax figures in dedicated statistical catalogs, but Stella hasn't access to these. All values are computed from Yale / Hipparcos / SAO catalog data.

• At the bottom, you will be shown some terrestrially-based information, the most important of which will be the rising, setting, and transit times for the currently focussed star, its altitude, azimuth, right ascension, and declination.

Useful extensions to the information tables now include proper motion, parallax, spectra, remarks where available, sunrise/sunset, dawn/dusk/hours of darkness, solar and lunar apparent and equatorial coordinates, astronomical twilight, as well as the phase of the moon.

Shareware: definitions

Uniquely, shareware distribution gives you the chance to **try software before buying**. If you try a shareware program and continue using it, you are expected to register.

Copyright laws apply to both shareware and retail software, and the copyright holder retains all rights, with a few specific exceptions. Shareware authors are accomplished programmers, just like the authors of over-the-counter products, and the programs are of comparable quality. (In both cases, there are good programs and bad ones!) The main **difference is in the method of distribution**. The shareware author specifically grants the right to copy and distribute the software, either to all and sundry or to a specific group.

In the early to mid '80s when shareware was in its youth and adolescence, the precise concepts had yet to be formulated and authors tended neither to demand payment nor invoke the law. It was then as now **a system based on honour**, but back then it was far more an offshoot of programming enthusiasm and a desire to share. By the nineties we'd had Thatcherism and terms like 'professional', 'enterprise' and 'capital' were at a premium. That outlook has, for better or worse,   now filtered through to shareware programmers, who were once mere enthusiasts, but who are now fully fledged professionals with their own umbrella organisations such as the ASP, ESC, and STAR.

Today, with the rise of the Internet, even corporate multinationals have seen the benefits of shareware distribution, the only differences being that they call their packages 'trialware' or 'evaluation software' rather than good old honest 'shareware', Netscape being a good example, and a high proportion of 'shareware' authors have jumped on the same bandwagon. Distinctions are becoming blurred, but please do not make the mistake of equating shareware with the commercial demo: there is a world of difference. **True shareware is, or should be, fully - and continuously -**

functional. Above all, remember that the term shareware defines a distribution method rather than the nature of the software itself.

You should find an application suited to your needs and pocketbook, whether it be shelfware or shareware. The shareware system simply makes fitting your needs easier, because you can **try before you buy**. And because shareware overheads are negligible, prices are nearly always lower than the equivalent shelfware products. Shareware offers the ultimate money-back guarantee: if you don't use the program, you don't pay for it. If you do use it, however, you are expected to bring out your wallet in just the same way as you would for a more conventionally marketed product, whatever its type.

Share without Wear

Using Stella beyond the 30-day period allowable for evaluation is a clear infringement of several laws, but let's not delude ourselves that the vast majority won't be doing just that.

On the other hand, if you have every intention of **registering** you can be confident in the knowledge that *you* will gain and the majority will lose. The others, ultimately, get only the 'nag screens'.

Registration brings many benefits, not the least of which will be a sensation of warm altruism accompanied by a clear conscience.

Among the features setting Stella's registered version apart from your shareware copy is **total personalization, removal of all reminder screens and restrictions, tiered SAO/Hipparcos data extensions bringing Stella's capacity to over 300,000 stars, Precession, Dynamic Sky, added comets and star names, and the complete Messier Catalog in ImageIcons.**

In return for your registration, we will send you a **personal** (dedicated) copy of the latest version of Stella pre-programmed with your name, home location and startup preferences. You may contact us by post or E-mail at any time after registration with update requests or problems and queries concerning the inner workings of Stella.

Swimming Elk Software welcomes any pre-registration enquiries you might have, even if their sole motive is to confirm to yourself that we actually exist. A simple postcard or e-mail with your name, address, and the Stella version number will suffice to get you a reassuring reply, along with details of some exciting new incentives. We undertake to answer **ALL** Stella-related correspondence, whether it concerns registration or not

Ordering Stella 2000

Stella 2000 costs **$49 U.S.** or **£25** sterling for the basic configuration.

Alternatively, you may purchase the **Stella 2000 Extended Edition***, which includes the 118000 star ESA Hipparcos catalog and the integral Sky Quiz Color as standard, for just $69 inclusive. See details of this option under the* Extend *tab in Stella's Special menu. Tiered data extensions of 25000 stars each may also be obtained separately whenever requirements dictate.*

Payment may be in the form of a **personal cheque** (made out to R. Hughes), **major credit card**, International Money Order, or even the equivalent (check/cash) at present rates in your own **hard currency**.

Ordering by **CREDIT CARD** is by far the **fastest way to obtain your registered copy of Stella**. Turnaround times are typically between 24 and 72 hours. You may order online or by phone/fax anytime and from anywhere in the world.

Summary of Payment Methods

Briefly, the following types of order are accepted. Please see next section for details.

Non-sterling equivalents are given in U.S. dollars.

METHOD	TOTAL COST
1A) Sterling currency (cash)	25 pounds UK
1B) Sterling cheque (personal or banker's)	25 pounds UK
2A) Non-sterling currency (cash)	$49 U.S.
2C) Non-sterling personal/business check	$49 U.S.
3A) International Money Order	$49 U.S.
4A) Australian orders by credit-card, cheque etc *See Help menu entry Register|Australia*	A$89
5A) Credit card order	**$49 U.S.**

Ordering by check, Money Order, or hard currency

To order by check, cash, or International Money Order, simply enclose your remittance for 25 GBP / $45 U.S. (or the *latter's* equivalent in your own hard currency), along with covering letter or registration form, and **send it direct to**

Coeli Software Products
Bahnhofstrasse 58
CH-8001 Zurich
Switzerland

Order by CREDIT CARD via ShareIt

ShareIt! takes worldwide orders for Stella online by **Visa, MasterCard, EuroCard, American Express, or Diners Club**. Just navigate to one of the following using your Web browser:

http://www.shareit.com/programs/100809.htm

and follow the signposts, or telephone

1-800-903-4152   (Toll-free USA)

+49-221-2407278   (International)

or fax

+49-221-2407279

THE AUTHOR OF STELLA CANNOT BE REACHED AT THESE NUMBERS - THEY ARE FOR ORDERS ONLY!

ShareIt! also takes orders by post at:

**ShareIt! - Reimold & Schumann Internet Services GbR
Habsburgerring 3
50674 Koeln
Germany**

If you are located in the **USA**, you can also pay by sending a check or cash to the following address:

**ShareIt! Inc.
P.O. Box. 97841
Pittsburgh, PA 15227-0241**

(Please send only checks drawn on US-American banks to this   address.)

When ordering from ShareIt! please quote program/product ID

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Any questions about the status of the order, refunds, registration options, product details, technical support, volume discounts, dealer pricing, site licenses, non-credit card orders, etc, must be directed to

**Coeli Software Products
Bahnhofstrasse 58
CH-8001 Zurich
Switzerland**

or via the Internet to

contact@coeli.com

To ensure you get the latest version of Stella, our agents will notify us the day of your order and we will ship the product directly to you by our Express Internet service. Optionally, please send your registration/customization form to us here at Swimming Elk Software either electronically or through the post.

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Grateful acknowledgements to Hartmut Frommert of SEDS for permission to incorporate his fine Messier thumbnail images into Stella 2000.