New features for observers on the Computing Section website

Based on a talk presented on 2012 October 6 to the joint Asteroid–Comet Section meeting at the Open University, Milton Keynes.

Figure 1. The 'What's Observable' screen.

New features continue to be added to the website of the Computing Section [**www.britastro.org/computing**] with the aim of assisting observers of asteroids and comets.

What's Observable?

The first place to look when planning an observing session is the 'What's Observable?' page, under the Applets tab (Figure 1, *right*).

This summary of the equatorial strip (±45º) between sunset and sunrise (right to left if in the northern hemisphere) was described in some detail in the 2011 February *Journal*.[1] Since then several new features have been added, some specifically for asteroid and comet observers.

The display starts by showing four asteroids (red) and four comets (white) which may be of topical interest. Other asteroids and comets can be added to the display via the 'add object' button. The lists and orbital elements of such bodies are updated regularly from Minor Planet Center data and we are currently working on automating that process.
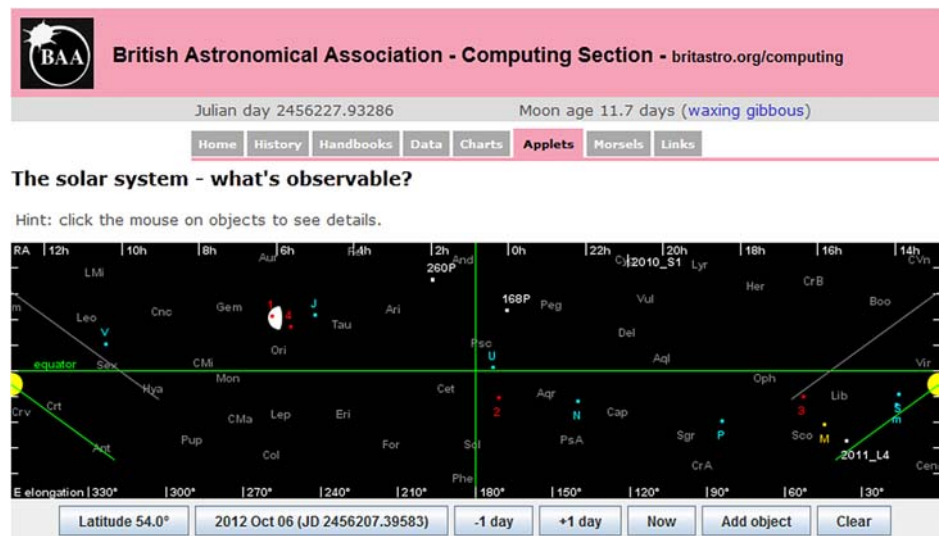
Finder charts for a given time

Clicking near any displayed object pops up a window of numerical data about it. The data window now includes a button for generating a detailed finder chart around the object, for the date and time set in the applet (Figure 2).

Kreutz search area

The 'Add object' button (Figure 3) now includes an option to display a likely search area for comets of the Kreutz group. The applet calculates positions in the three reference Kreutz orbits, as described in two papers by Brian Marsden.[2,3]

The resulting display is shown in Figure 4. The calculated positions are 50, 100, 150, 300, 600 and 1,000 days before perihelion for each of the three orbits (shown in red, green and blue). These define a likely area for searching for new members of the group. Unfortunately the area always lies below the equator, so it is not ideal for observing from the UK except via remote telescopes.

As usual, clicking the mouse shows more details, including a summary of all the positions, and the option to plot finder charts around them.

Asteroid oppositions and appulses

The Computing Section website now has several pages of finder charts, under their own 'Charts' tab. All charts are available both as printable black on white and, for observers at night, red on black.

One page of charts tabulates all asteroids coming to opposition at predicted magnitude 12.0 or brighter, with opposition data (including phase angle) and charts covering their trajectories for one month either side of opposition.

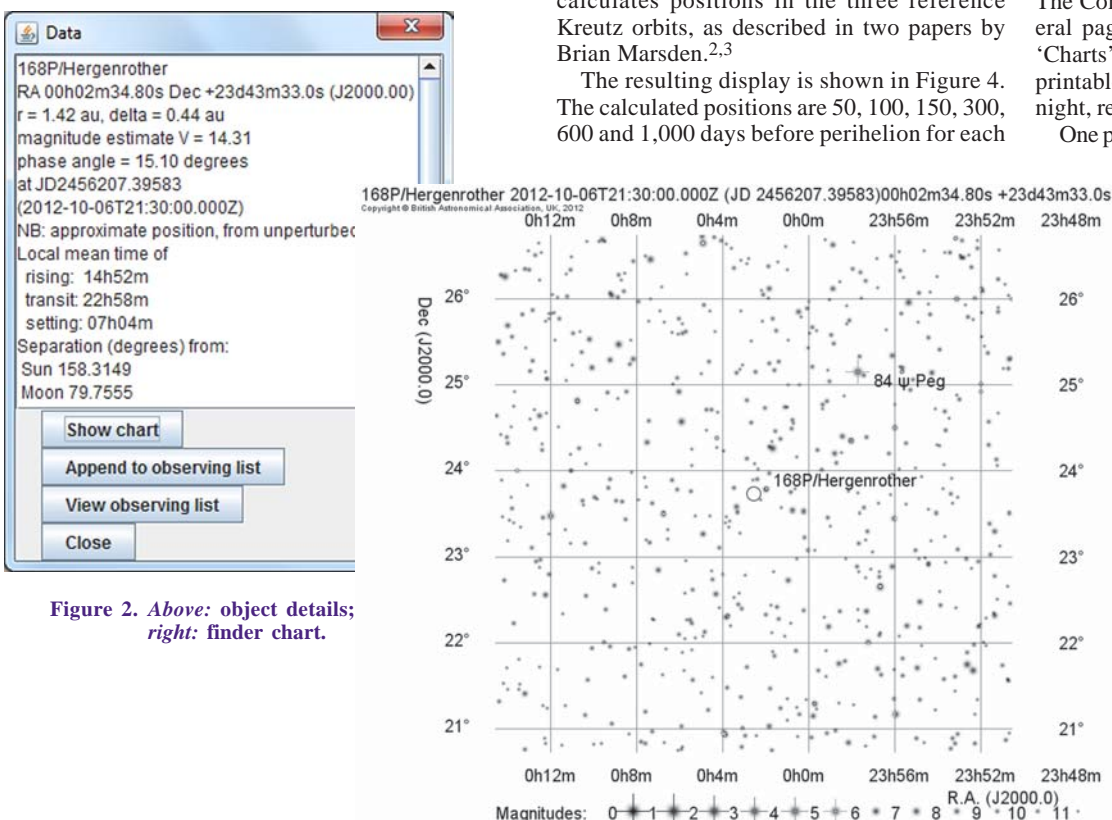Another page shows appulses between asteroids if they are brighter

Figure 2. *Above:* **object details;** *right:* **finder chart.**
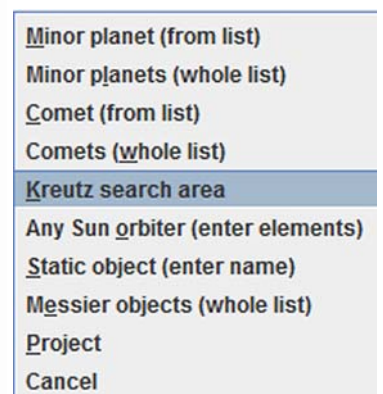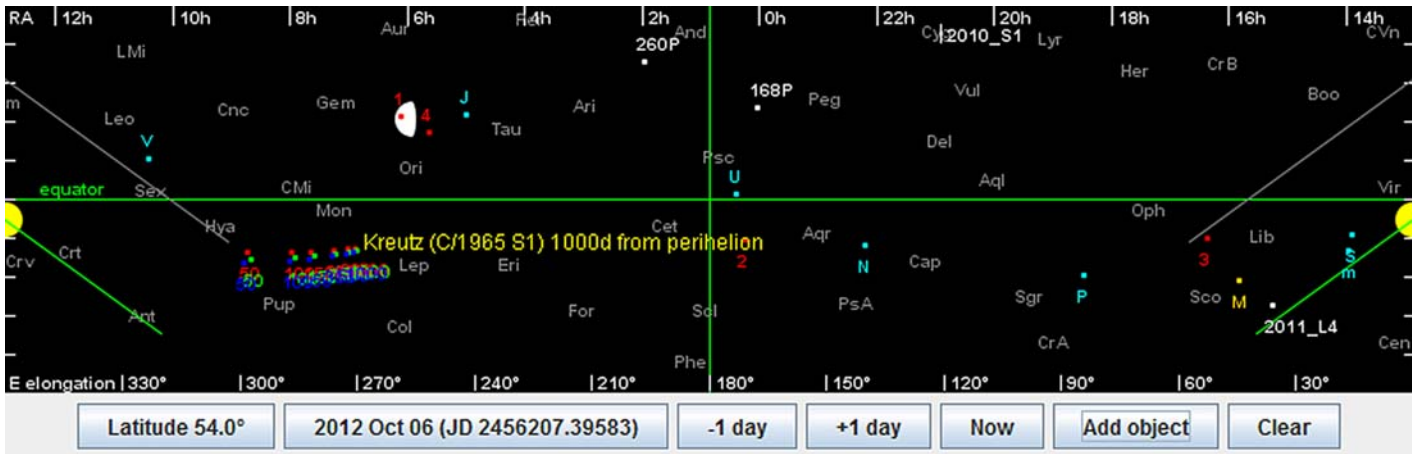

Figure 3. 'Add Object' button

Figure 4. Kreutz comets search area.

than magnitude 15 and have a good elongation from the Sun. Figure 5 shows a detail from a sample chart.

Comet finder charts

Since 2011 December there has also been a page of comet charts, regularly updated to show all comets on the BAA Comet Section's current observing list.

Help!

There are several advantages to the BAA in having our own site with the above kinds of computations. It provides an independently programmed check on other sources of information, and presents data in different ways. Perhaps more importantly it enables us to add features specific to the BAA's own observing projects. That is exactly what has happened in 2012 with the new Kreutz search area facility which resulted from a request by Richard Miles.

We now have a considerable body of program code for generating the content of our site. It is mostly written in Java, with some client JavaScript and some PHP on the server. We have a flexible chart generator which is a Java desktop application. Along with some orbital element pre-processing applications it largely automates the maintenance of the chart pages by outputting HTML as well as charts. It is continually being enhanced and current work includes using better chart projections, particularly for comets which pass near the poles.

Please contact Sheridan Williams or Graham Relf if there are further features you would find useful (we enjoy a challenge); or if something is wrong or does not work as expected (we can't fix things if we don't know they're broken); or if you could help with some routine site maintenance or even some real programming.

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References

1 G. Relf, *J. Brit. Astron. Assoc.,* **121**(1), 10–12 (2011)
2 B. G. Marsden, 'The Sungrazing Comet Group', *AJ,* **72**(2), 1170–1183 (1967)
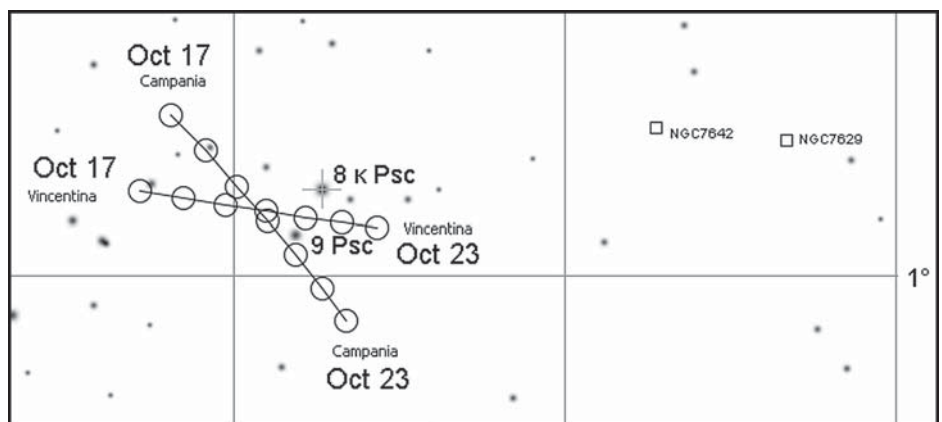3 B. G. Marsden, 'The Sungrazing Comet Group II', *AJ,* **98**(6), 2306–2321 (1989)

Figure 5. Asteroidal appulse.