

IceHunters website challenges public to find icy worlds in outer solar system

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(PhysOrg.com) -- A team at Southern Illinois University Edwardsville has developed a new website, IceHunters (www.icehunters.org), to challenge the public to discover Kuiper Belt objects in the outer solar system. It is hoped that among the myriad of new objects found by IceHunters there will be an object (or maybe even objects) with just the right orbit to carry it on to a rendezvous with NASA's New Horizons spacecraft.

Scientists have calculated where in the sky an object moving toward a potential meeting with the New Horizons spacecraft should currently be located, and they have used some of the largest telescopes in the world to image this region. Now, those images are provided to the public for searching via IceHunters.

New Horizon's launched in 2006 on a journey that would carry it past Jupiter in 2007 and on to Pluto in 2015. After flying through the Pluto system, the mission will have just enough fuel left to change course toward one or more additional Kuiper Belt objects. The catch is, these future destinations have yet to be discovered. This is where the IceHunters website comes in: this SIUE-developed website is packed with millions of images that could contain the object New Horizons should visit. The public is asked to help examine these images for that sought-after target. Along the way they will discover large numbers of variable stars, asteroids, and other KBOs.

The Kuiper Belt is a region of space that stretches from within the [orbit](#)

of Neptune (from 30 AU) out to nearly twice Neptune's orbit (out to roughly 55 AU). It contains a population of icy objects that vary in size from a kilometer across to roughly Moon-size objects like Pluto, Makemake, and Haumea. While long theorized to exist and to be the source of many comets, the first KBO other than Pluto was only discovered in 1992. Today, the Kuiper Belt remains one of the least well-mapped regions of the [solar system](#), but the IceHunters project will do its part to map one small slice through this region.

The IceHunters website was developed by SIUE assistant research professor Pamela L. Gay and website developer Cory Lehan. "Projects like this make the public part of modern space exploration," says Gay. "The New Horizons mission was launched knowing we'd have to discover the object it would visit after Pluto. Now is the time to make that discovery, and thanks to IceHunters, anyone can be that discoverer."

The millions of images seen in IceHunters don't look like most familiar beautiful astronomical images. This is because they are difference images: the result of subtracting two images in hopes of removing all the stars, galaxies and other non-moving objects being observed. What remains should be the things that move (e.g., Kuiper Belt objects and asteroids) and the things that vary in brightness (e.g., variable stars). In reality, the stars never subtract off perfectly, and the images are too messy for computers to be trained to find the moving and varying objects effectively. Where computers fail, people are required. The IceHunters website was designed to allow people from around the world to easily search through the images for the unknown objects hiding in the residuals of stars.

"Using just about any modern Web browser, users can circle potential KBOs and mark with a star the locations of asteroids," says Lehan. "The [website](#) is filled with examples to help get people started. Anyone should be able to take part -- no Flash required."

Ice Hunters was developed within the SIUE Center for Science Technology Education and Mathematics (STEM) Research, Education and Outreach. This new research center works to define the most effective ways to teach children and adults about STEM topics. This work is part of SIUE's ongoing collaboration with the Zooniverse collection of citizen science projects. Over 400,000 Zooniverse volunteers are already making important contributions to such diverse topics as the classification of galaxies in Hubble images, reconstruction of historical records of Earth's weather, and analysis of close-up pictures of the Moon's surface. The public is invited to become a part of this and all other Zooniverse projects at [Zooniverse.org](https://zooniverse.org). The Zooniverse is administered by the Citizen Science Alliance.

Provided by Southern Illinois University Edwardsville

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