



## ICESat-2 Scale Model

This 1/48<sup>th</sup> scale model represents the general arrangement of the ICESat-2 spacecraft as of 2014. For more information, see the project website: <http://icesat.gsfc.nasa.gov/icesat2/>.

### General Instructions

Tools and materials needed:

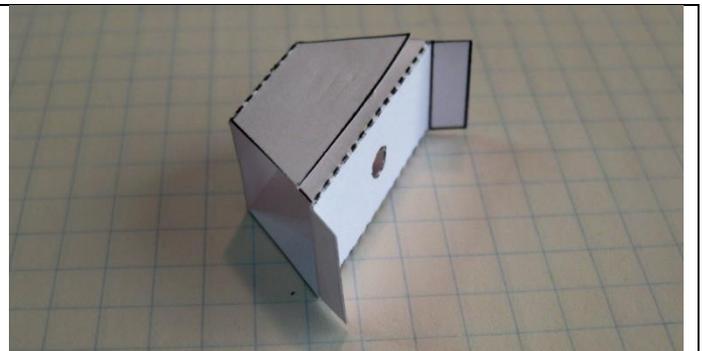
- Scissors
- Hobby knife
- White glue (optional: glue stick, Alene's Tacky Glue)
- Coffee stirring stick or straw, plastic
- Optional: removable low-tack tape

The model should be printed on heavy cardstock and can be cut out using scissors or a hobby knife (e.g., X-Acto). The dashed lines on the drawings indicate folds. To get a sharp fold, lightly score the paper (before or after cutting) with a dull pointed object like an orange stick (cuticle stick for cosmetics) or a dried ballpoint pen. Alternatively, a dull hobby knife can be used with care and a very light touch, being careful not to cut all the way thru. All of these scores are on the front (printed) side unless noted otherwise. Note that not all scores/folds are shown, as the obvious ones (main bus structure panels for example) are indicated by features of the drawing itself.

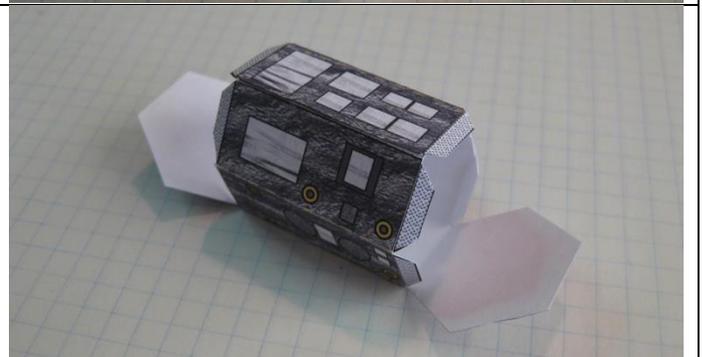
Areas on the drawings that are filled with a dot pattern are usually gluing surfaces. White glue (e.g., Elmers) is recommended, while a glue stick is recommended for the solar panels. You may need to hold the pieces together for a few minutes to allow the glue to set. This can be done by hand, small clamps, rubber bands or low tack tape. Remember to use only a little bit of glue, as the more you use, the longer it takes to dry.

### Building Your Model

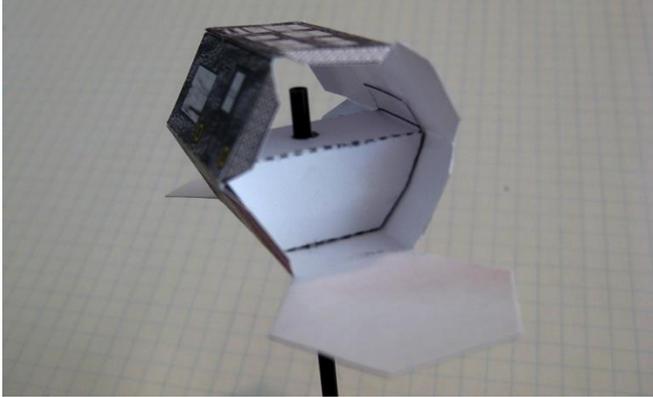
1. Before building the main structure, you need to construct a feature to reinforce the mounting rod for the solar array. This is the shape in the lower middle of the parts. Cut this out and score it in four places on the dashed lines. Use your knife and a toothpick or pencil to punch out the two small holes. Fold it as shown in the little diagram. The coffee stirrer will slide into these holes to form a solid mount for the solar array in a later step.



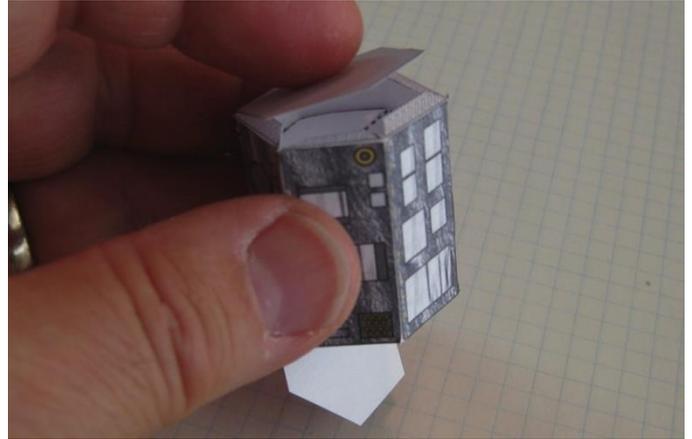
2. Cut out the main bus structure, B, and score it in six places to achieve the hex shape. Also score across the top and bottom to make the gluing tabs. As with the inner array mount from the previous step, punch a hole for the solar array. It is best to have the stick you will use for this (coffee stirrer or similar) so that the hole is large enough but still snug.



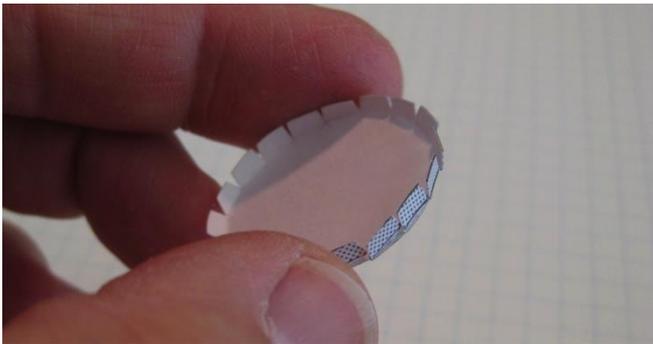
3. Before gluing the bus together, glue the solar array mount to the inside of the middle of the bus, making sure to align the SADA (Solar Array Drive Assembly) hole with the holes in the interior mount. Wrap the bus around into a hexagon shaped box, and just glue the edge together that forms that hex-cylinder.



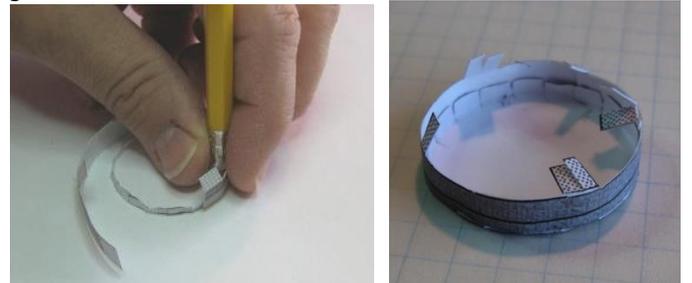
4. Tuck the bottom tabs around the solar array mount and gradually glue those on. Don't try to glue the entire assembly at once. Do a few panels, make sure it is aligned and square, let it dry and then do the rest after a bit. Lastly, fold the top down and glue that to the tabs to form a nice solid bus.



5. Cut out the two pieces of the propulsion module (section C). On the round piece, score a circle on the ring inside the cross hatched rim. Then snip along the multiple radial lines and bend those tabs up.



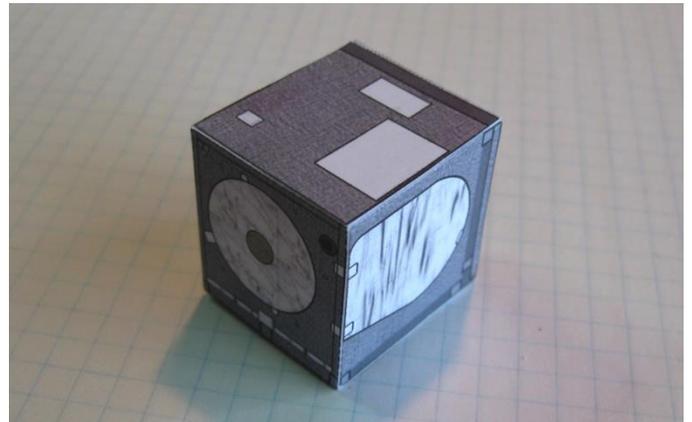
6. The long piece forms the outer wall of the module and there are five tabs that need to be scored and folded in. Wrap this around the round piece with the five tabs opposite the round wall, using the small tabs on the wall to glue to the rim. Glue a few tabs at a time so that you get it nice and flat. Hold it until the glue sets.



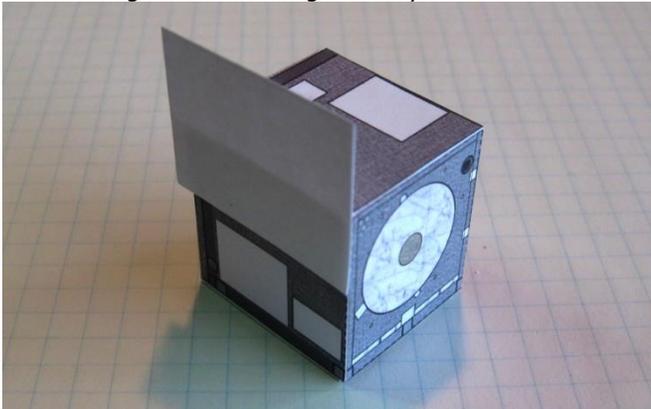
7. Glue the Prop module to the bottom of the bus.



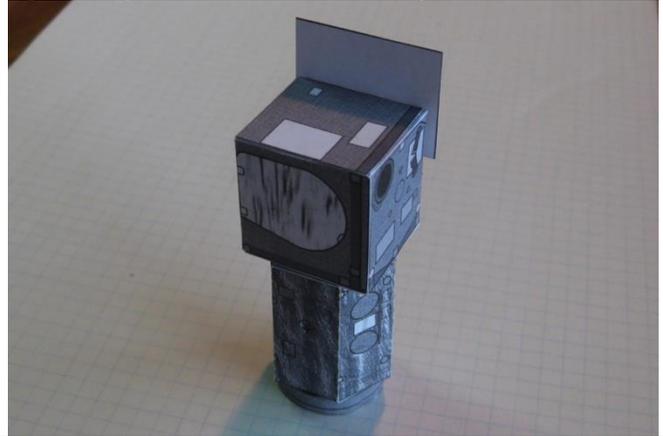
8. Cut and fold the ATLAS instrument into a simple box.



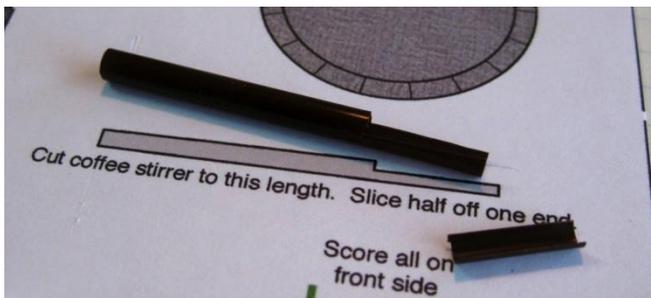
9. Next cut out the ATLAS radiator and glue it on the side of the unit. Note the dashed line to align the bottom edge. It overhangs mostly on the left side.



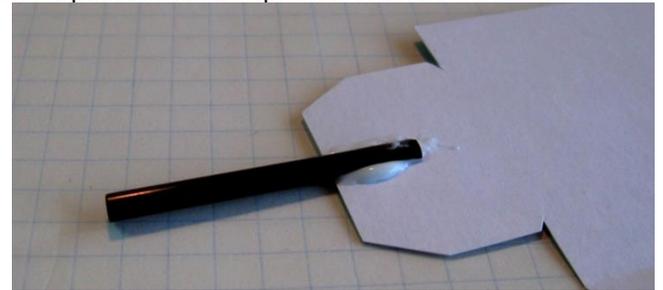
10. Glue the ATLAS instrument to the top of the bus. Align the aperture as shown in the photo.



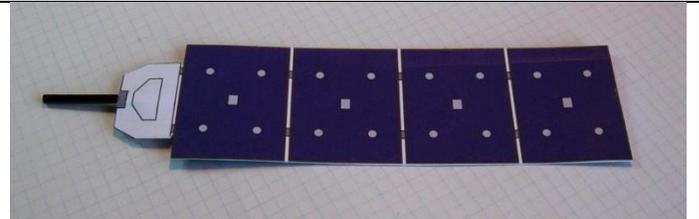
11. Cut a plastic coffee stirrer (plastic straw) to the length noted, and cut out a section as shown in the photo.



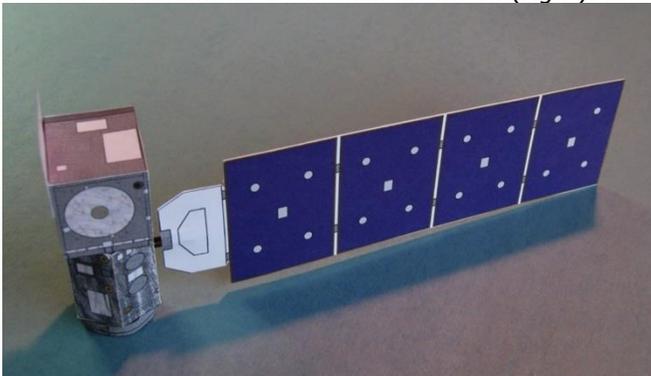
12. Cut out the solar array and glue the cut side of the notch of the coffee stirrer to the root of one side of the wing. A thick craft glue like Alene's Tacky Glue works well for this, but regular white glue (Elmers) will do. Use a piece of clear tape to secure it.



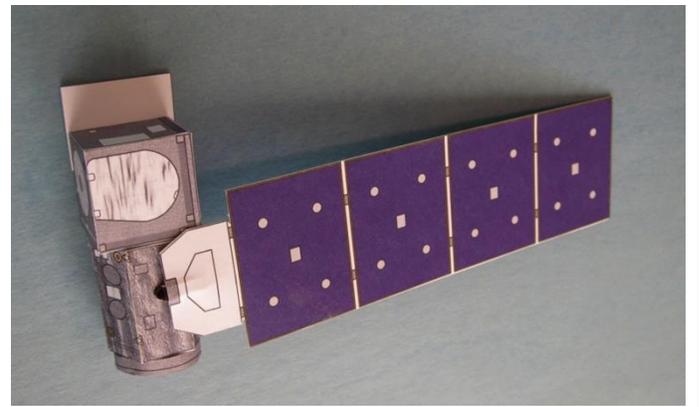
13. Glue the two solar array sides together to make a nice stiff panel (right). A glue stick works best for this, as white glue may warp the large area.



29. When dry, slide the solar array rod into the holes in the bus, being careful to align it through the interior structure you installed in Step 1. You can also fold it back to simulate the sailboat mode (right).



30. You're done! You now have a really cool ICESat-2 model to show all your friends!



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For more information on building models of real spacecraft, see [www.spaceinminiature.com](http://www.spaceinminiature.com).