

Title: HYVIS Snow Crystal Camera

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Dataset Overview:

The HYVIS snow crystal camera, which was deployed at University of Utah's North Redfield site for much of the field program, takes motion-activated pictures of snowflakes as they fall through the camera's field of view.

Time period covered by the data:

IOP 1: 1200 UTC 07 December– 0000 UTC 08 December 2013

IOP 2: 1400 UTC 10 December – 2300 UTC 11 December 2013

IOP 3: 0500 UTC 13 December – 1415 UTC 13 December 2013

IOP 5: 1500 UTC 18 December – 2350 UTC 18 December 2013

IOP 14*: 2200 UTC 19 January – 1115 UTC 20 January 2014

IOP 21&22*: 0130 UTC 27 January – 2220 UTC 27 January 2014

**The frequency of images captured during IOPs 14, 21, and 22 was very low.*

Location of station:

43.62442 N, 75.8783 W

Elevation: 385 m MSL

Instrument Description:

The hydrometeor videosonde (HYVIS) snow crystal camera (Murakami and Matsuo, 1990) was originally designed to be an add-on to a radiosonde, and documented a vertical profile of hydrometeors as the radiosonde ascended. The HYVIS was adapted for use as an in situ snow crystal camera by Tim Garrett of the University of Utah, and the motion-activated camera and lenses are now housed within a weatherproof box (black box shown below). Hydrometeors fall through the attached tube, past the camera, and out the bottom of the box.

This system was very sensitive to high winds due to the tube's small opening. This limitation rendered it nearly inoperable during windy events. The system seemed to perform best during periods of graupel and very high snowfall rates, although the orifice would often clog with snow when large aggregates were falling. This dataset must be approached with these limitations in mind, and does not have a high temporal resolution.

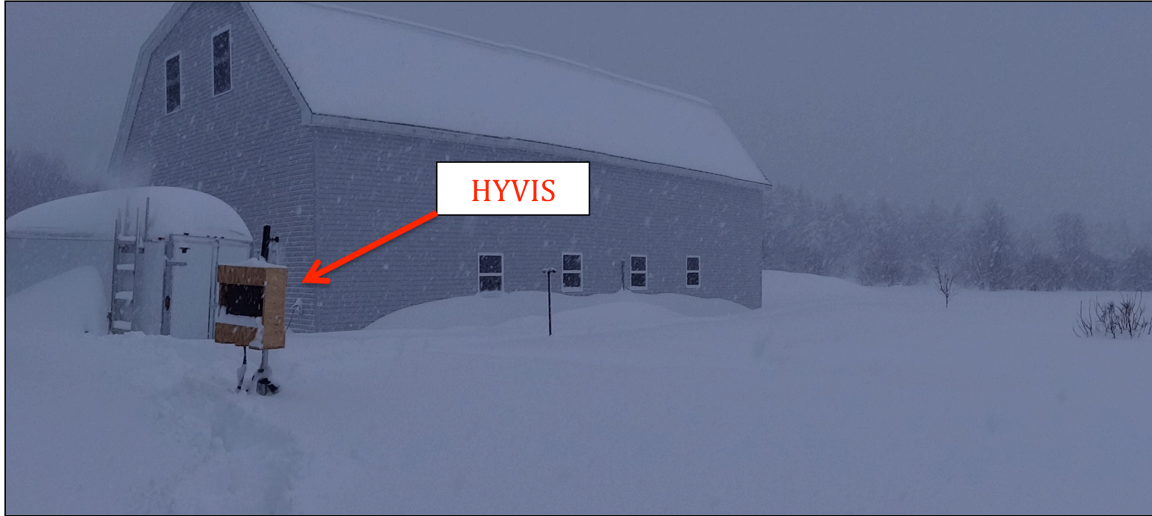


The HYVIS snow crystal imager, mounted on a tripod using a wooden frame.

The HYVIS snow crystal imager was deployed at the North Redfield site. It was placed in a moderately sheltered area (during westerly winds) between two buildings.



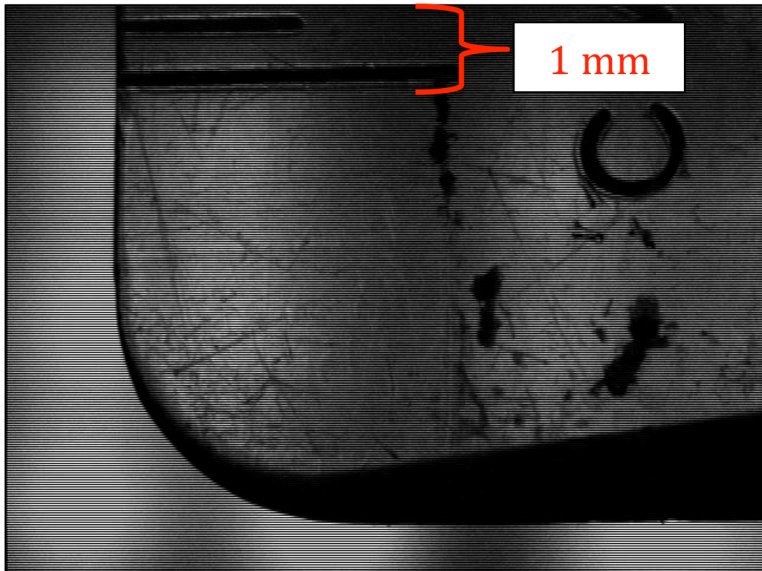
View looking south



View looking northeast

Sensor specifications and additional information:

For scale, a photo was taken of a ruler using the HYVIS camera. The scale shown is one millimeter:



Data Collection and Processing:

No post-processing has been applied to the snow crystal images.

Data Format:

HYVIS snow crystal photos are available in .jpg format at [hyvis/north-redfield/images/](#) and are organized into folders by IOP. Some additional crystal photos taken during non-IOP periods are available in the non-IOP folder, with subfolders organized by date.

Files are named as follows:

YYYYMMDD_HHMMSSUTC.jpg

Where the time stamp represents date and time (UTC) that the photo was taken.

Data Remarks:

- The temporal resolution of the HYVIS camera during events was severely limited by issues with undercatch and/or snow bridging over the orifice.
- IOPs 1, 2, 3, and 5 have the best data quality for the HYVIS.
- Additional notes on the HYVIS snow crystal camera are available in the [/hyvis/fieldnotes/](#) folder

References:

Murakami, M., and T. Matsuo, 1990: Development of the Hydrometeor Videosonde. *J. Atmos. Oceanic Technol.*, **7**, 613–620.