

## Goodrich Ice Detector Data from HIWC 2022 Read Me.

The Goodrich Ice Detector on the NASA DC-8 was recorded for all HIWC 2022 flights with NASA Glenn's M300 data acquisition system. The Goodrich ice detector model 0871LM5 is owned by NSERC and the serial number is unknown.

The following data files used data acquired through the M300 DAS. The acquisition rate was 1 Hz.

- 20220708\_Goodrich Ice Detector.xls
- 20220710\_Goodrich Ice Detector.xls
- 20220714\_Goodrich Ice Detector.xls
- 20220716\_Goodrich Ice Detector.xls
- 20220718\_Goodrich Ice Detector.xls
- 20220722\_Goodrich Ice Detector.xls
- 20220724\_Goodrich Ice Detector.xls
- 20220726\_Goodrich Ice Detector.xls
- 20220727\_Goodrich Ice Detector.xls
- 20220730\_Goodrich Ice Detector.xls

All files provide date, time MSOFreq, OutputSignalState, OpsState, OnTimeCnt, TotIceCnt from the Goodrich Ice Detector. Additional parameters include TASExp, AmbTemp, DewPoint, TotTemp from the realtime IWG1 records. These were all recorded on the M300 data acquisition system. Below is a description of these parameters:

Date:	MM/DD/YYYY
Time:	hh:mm:ss.0 (UTC)
MSOFreq:	MSO frequency - The ice detector sensor (MSO) frequency in kHz
OutputSignalState:	Output Signal State – 0=Ice1 Signal, 1=fail signal, 2=heater control
OpsState:	Operational State – 0=Reset state, 1=Clean state, 2=validating state, 3=deicing state, 4=shedding state, 5=failed state, 6=Fail failed state
OnTimeCnt:	On Time Count- Total power on time = (on time count) * 5 minutes
TotIceCnt:	Total Ice Count – Total number of de-ice cycle counts
TASExp:	True Airspeed from Experimental Pitot probe (m/s). No quality control.
AmbTemp:	Ambient Temperature (deg C) from real-time IWG1. No quality control
DewPoint:	Dewpoint Temperature (deg C) from real-time IWG1. No quality control
TotTemp:	Total Air Temperature (deg C) from real-time IWG1. No quality control

Sheet1 tab has time history plots of the ice detector frequency, OnTimeCount, TotIceCnt, Ambient, Dewpt and total temps for the entire flight and select time periods when ice detector was reacting to define time periods of possible LWC encounters.

[HIWC 2022 RID Summary.xlsx](#) provides a summary of the date/time periods when possible LWC encounters occurred during the HIWC 2022 flight campaign.

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