ICON Data Product 2.2: Cardinal Vector Winds

This document describes the data product for ICON MIGHTI Cardinal Vector Winds (DP 2.2), which is in NetCDF4 format. First, the **dimensions** are described, then all **variables** in the file are described.

See Harding et al. [2017, doi:10.1007/s11214-017-0359-3] for a description of the inversion algorithm.

Dimensions

The dimensions used by the variables in this file are given below, along with nominal sizes. Note that the size may vary from file to file. For example, the "Epoch" dimension, which describes the number of time samples contained in this file, will likely have a varying size.

Dimension Name	Nominal Size
Epoch	0
Altitude	41
Longitude	1649
N_flags	10

Variables

Variables in this file are listed below. First, the most important variables (the "data" variables) are described, followed by the "support_data" variables, and finally the "metadata" variables. The variables classified as "ignore_data" are not shown.

data

Variable Name	Description	Units	Dimensions
ICON_L2_MIGHTI_GREEN_ZONAL_WIND	Zonal component of the horizontal wind. Positive Eastward.	m/s	Altitude, Longitude
ICON_L2_MIGHTI_GREEN_MERIDIONAL_WIND	Meridional component of the horizontal wind. Positive Northward.	m/s	Altitude, Longitude
ICON_L2_MIGHTI_GREEN_ZONAL_WIND_ERROR	Error in the zonal wind estimate.	m/s	Altitude, Longitude
ICON_L2_MIGHTI_GREEN_MERIDIONAL_WIND_ERROR	Error in the meridional wind estimate.	m/s	Altitude, Longitude

support_data

Variable Name	Description	Units	Dimensions
EPOCH	Sample time, midpoint of A and B measurements. Number of msec since Jan 1, 1970.	ms	Altitude, Longitude

Variable Name	Description	Units	Dimensions
`ICON_L2_MIGHTI_GREEN_TIME`	Sample time, midpoint of A and B measurements. Number of msec since Jan 1, 1970.	ms	Altitude, Longitude
`ICON_L2_MIGHTI_GREEN_ALTITUDE`	WGS84 altitude of each wind sample	m	Altitude, Longitude
`ICON_L2_MIGHTI_GREEN_LONGITUDE`	WGS84 longitude of each wind sample	deg	Altitude, Longitude
`ICON_L2_MIGHTI_GREEN_LATITUDE`	WGS84 latitude of each wind sample	deg	Altitude, Longitude

metadata

Variable Name	Description	Units	Dimensions
`ICON_L2_MIGHTI_GREEN_FRINGE_AMPLITUDE_A`	Fringe Amplitude from MIGHTI-A The approximate volume emission rate (VER) in arbitrary units from MIGHTI A. Technically this is the visibility of the fringes, which has a dependence on temperature and background emission.		Altitude, Longitude
`ICON_L2_MIGHTI_GREEN_FRINGE_AMPLITUDE_B`	Fringe Amplitude from MIGHTI-B The approximate volume emission rate (VER) in arbitrary units from MIGHTI B. Technically this is the visibility of the fringes, which has a dependence on temperature and background emission.		Altitude, Longitude
`ICON_L2_MIGHTI_GREEN_FRINGE_AMPLITUDE`	Fringe Amplitude The approximate volume emission rate (VER) in arbitrary units, estimated by combining MIGHTI A and B. Technically this is the visibility of the fringes, which has a dependence on temperature and background emission.		Altitude, Longitude
`ICON_L2_MIGHTI_GREEN_FRINGE_AMPLITUDE_RELATIVE_DIFFERENCE`	Difference in MIGHTI A&B;'s fringe amplitude estimates, divided by the mean This is the quantity used to determine if spherical asymmetry flag is raised. Always positive.		Altitude, Longitude
`ICON_L2_MIGHTI_GREEN_ERROR_FLAG`	Error flags. See Var_Notes attribute for description. Ten error flags for each grid point, each either 0 or 1: 0 = missing MIGHTI A file 1 = missing MIGHTI B file 2 = A signal too weak 3 = B signal too weak 4 = A did not sample this altitude 5 = B did not sample this altitude 6 = A sample exists but is NaN 7 = B sample exists but is NaN 8 = Spherical asymmetry: A&B; VER estimates disagree 9 = Unknown Error		Altitude, Longitude, N_flags

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Software version: ICON SDC > ICON UIUC MIGHTI L2.2 Processor v0.11