



HAIC-HIWC Project & Data Management Web Site

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January 15, 2014 to May 29, 2015
Project Location: Darwin, Australia and Cayenne, French Guiana


What's New?:

[Presentations now available:](#) HAIC-HIWC Science Team Meeting, 9-11 March 2015, NASA GISS, New York, NY

[Submit a HAIC-HIWC Publication](#)

Project Description:

The purpose of the High Altitude Ice Crystals - High Ice Water Content (HAIC - HIWC) International field campaign was to collect cloud data in deep convective clouds to fulfill the industry and scientific objectives, as outlined in the HIWC Science Plan and the HAIC Description of Work. In particular the flight test campaign provided 99th percentile total water content statistics and other relevant parameters of such clouds, as a function of distance scale, to industry and regulators.




The Falcon 20 (SAFIRE) research aircraft landing in Darwin, Australia

The field campaign was the result of an international collaboration between the HAIC and HIWC projects, with the funding support of the European Union's Seventh Framework Programme (FP7/2007-2013), EASA and FAA, and involved necessary expertise in a wide range of skills (airframers, engine manufacturers, equipment & systems suppliers, research institutes and academics, meteorological services and SME's able to provide specific knowledge, service, or support in specific areas) and the main stakeholders in the field, whether they were based in Europe, North America, Australia or Japan.

The first HAIC-HIWC field experiment out of Darwin was carried out from January 15, 2014 to March 15, 2014. The second campaign took place in Cayenne, French Guiana from May 9 - 29, 2015.

The HAIC and HIWC projects brought the Falcon 20 (SAFIRE) research aircraft to Darwin equipped with

- active remote sensing measurements (multibeam 95GHz Doppler cloud radar and lidar), providing 3D high-resolution characterization of the dynamical and microphysical properties of ice clouds in situ, and
- a state-of-the-art in situ microphysics Package. In 2015, the Falcon 20 will be joined by the NRC Conqair 580 aircraft equipped with active remote sensing (airborne Doppler cloud radar) and in situ microphysics probes to sample -10°C Flight Level and vicinity of clouds and the Honeywell B757 aircraft equipped with enhanced weather radar to validate radar ice crystals awareness function thanks to other A/C in-situ measurements.



The Falcon 20 (SAFIRE) research aircraft

This experiment provided the first modern extensive data set of the core and non-core areas of tropical oceanic deep convection and less vigorous tropical continental convection and as such was a unique resource for fundamental research, new industrial developments of detection and/or awareness technologies and for the regulation makers to assess the icing envelope for glaciated conditions as defined in FAA NPRM10-10 and EASA NPA2012-22/23.

DATA ACCESS

- Darwin Data Access
- Cayenne Data Access
- Darwin Field Catalog
- Cayenne Field Catalog

DATA DOCUMENTATION

- Data Policy
- Data Set Documentation Guidelines
- Data Submission Instructions

DOCUMENTS

- HAIC-HIWC Documentation

MEETINGS AND PRESENTATIONS

- HAIC-HIWC Meetings

RELATED LINKS

- Partner Webpages
- NCAR RAL HIWC Page
- HAIC Home Page
- SAFIRE Home Page

- Project Description
- Logistics
- Data Access & Field Catalog
- Documentation
- Meetings and Presentations
- Publications
- Education and Outreach
- Related Web Pages
- Participants

http://www.eol.ucar.edu/field_projects/haic-hiwc/

Field Catalog: Purpose

The field catalog is a service NCAR/EOL provides using web-based collaborative tools whose mission is:

- Project Documentation
- Collect supporting prods for context
- Post mission, campaign review
- Mission Planning
- Real-time communications
- Situational Awareness
- Real-time decision-making
- In-field data sharing

HAIC-HIWC Field Catalog
High Altitude Ice Crystals - High Ice Water Content Project

Home Reports Status Ops Products Model Products Research Products Missions Tools & Links Help

Latest Cloud Temperature

EFFECTIVE CLOUD TEMPERATURE
Mar 13, 2014 11:20 UTC

190 200 210 220 230 240 250 260 270 280 290 300 310

g: EFFECTIVE_CLOUD_TEMPERATURE MAR 13, 2014 11:20Z NASA LA

Project Time

UTC	Tues, July 29, 16:55 Z	Boulder	Tues, July 29, 9:55 AM
Darwin	Wed, July 30, 2:25 AM	Melbourne	Wed, July 30, 3:55 AM
Paris	Tues, July 29, 5:55 PM	Tokyo	Wed, July 30, 1:55 AM

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76 campaigns supported in 18 years

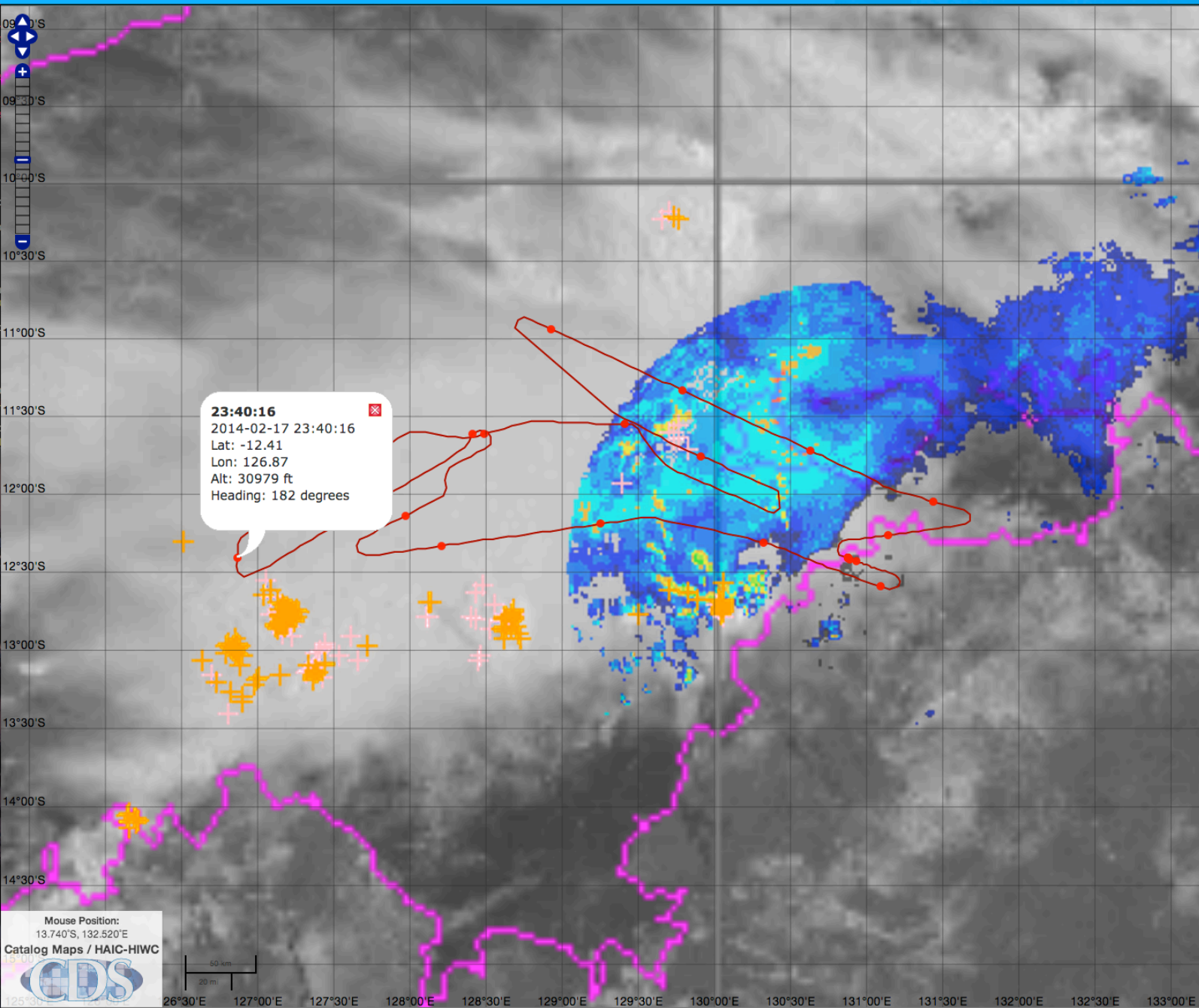


HAIC-HIWC Field Catalog

High Altitude Ice Crystals - High Ice Water Content Project



Flight	Takeoff Date/Time	Landing Date/Time	Weather Conditions	Catalog Products	Sat/Flight Track Plots	RASTA Plots	Summaries	Notes
F01	2014-01-16 02:10	2014-01-16 15:16	Squally showers and thunderstorms, convergent bands across the Timor sea, feeding into the tropical low. Strong westerly over the top end.	Satellite Radar Research - Aircraft	IR Overlay Vis Overlay	Whole Flight	Summary Reports	There were two main operation areas; one 200 km north-west of Darwin and another over the Van Diemen Gulf (between the Tiwis and east coast). The first area of operations had thin cirrus outflows. The second sampled area, the Van Diemen Gulf, contained shallow convective clouds with cloud tops of about 8 km with thick cirrus outflows. An approximated maximum ice water content of 0.25 g/m-3 was reported from this flight.
F02	2014-01-16 21:22	2014-01-17 00:01	A strong, growing MCS was located north of Broome. The flight plan was to sample the two regions in MCS, with diameter of over 100 nm. Both these regions showed evidence of strong overshooting tops.	Satellite Radar Research - Aircraft	IR Overlay Vis Overlay	Whole Flight	Summary Reports	The aircraft observed two notable convective cores along the flight. The first core had weak updrafts. The second system produced very strong updrafts at flight altitude; a maximum ice water content of above 2 g m-3 was observed for about 10-20 sec in this system. These deep convective towers were penetrating into the anvil outflows established by previous convections.
F03	2014-01-17 02:31	2014-01-17 04:55	The MCS to the north of Broome was still active and there was the potential opportunities of finding new grow deep convective clouds.	Satellite Radar Research - Aircraft	IR Overlay Vis Overlay	Whole Flight	Summary Reports	Small ice water content was recorded. There was damage to the aircraft nose and upper part of the wings. This was probably due to ice crystals.
F04	2014-01-18 21:51	2014-01-19 00:45	There were shallow loosely organised cells to the southwest of Darwin, along the coast. The convergent band was located at Joseph Bonaparte Gulf (250 km southwest of Darwin). There was a much stronger MSC located north of Broome (main target area) with a large region of --70 deg C cloud top.	Satellite Radar Research - Aircraft	IR Overlay Vis Overlay	Whole Flight	Summary Reports	At 22:23 UTC, 0.75 g m-3 of ice water content was detected on the route to the first point. This was most likely over the Joseph Bonaparte Gulf. For most times during the flight, the PLANET communication link was not working. The flight crew was unable to acquire vital information from ground control. As a compromise, the crew was advised to sample the Broome region by using the in-flight radar as a guidance and return to Darwin.
F05	2014-01-21 04:34	2014-01-21 07:12	The first target area was to the east of the Tiwi islands. This area had low winds and low sea waves with very clear conditions, which was suitable to calibrate the RASTA and hot-wire probes. The ground radar also showed evidence of some deep convective clouds popping along the Top End coast line and over the Tiwi Islands. This second region was used as a target area to sample for HIWC conditions as the flight returned to Darwin.	Satellite Radar Research - Aircraft	IR Overlay Vis Overlay	Whole Flight	Summary Reports	It was not a science flight but a technical flight for probe calibration. All calibration tests were reported to be successful. About 1 g m-3 of ICW was detected at -6 deg over the Tiwi Islands.
F06	2014-01-23 20:11	2014-01-23 23:20	Monsoon trough extends from the north Kimberly coast to the top end north coast. There was a convective blowup over the north Kimberly coast overnight, with enough lightning suggesting a possible target.	Satellite Radar Research - Aircraft	IR Overlay Vis Overlay	Whole Flight	Summary Reports	Good measurements of HIWC region over north Kimberly coast. At 22:35 UTC, 2.3 g m-3 of ice water content was detected, and 2 g m-3 were detected over a large area.



23:40:16 ✖
 2014-02-17 23:40:16
 Lat: -12.41
 Lon: 126.87
 Alt: 30979 ft
 Heading: 182 degrees

Mouse Position:
 13.740°S, 132.520°E
 Catalog Maps / HAIG-HIWC


Time Controls

Map Time: 2014-02-18 01:07 UTC

[Reset to Latest](#)

Time Step

⏪ back 1 minute ⏩ forward ⏸

Date / Time Select

📅 February 2014 📅

Su	Mo	Tu	We	Th	Fr	Sa
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	

Hour: 1 ⏴ ⏵ Minute: 7 ⏴ ⏵

[Date / Time Select](#)

Layer Controls

Latitude/Longitude Lines

Imagery

Lightning ⏴ ⏵
 © 2014-02-18 00:59 UTC

Lightning - Last 10 min ⏴ ⏵

N Aust Reflectivity ⏴ ⏵
 © 2014-02-18 00:59 UTC

N Aust Vert Int Liquid ⏴ ⏵
 Arafura Reflectivity ⏴ ⏵
 Arafura Velocity ⏴ ⏵
 Berrima Reflectivity ⏴ ⏵
 Berrima Velocity ⏴ ⏵
 Broome Reflectivity ⏴ ⏵
 Gove Reflectivity ⏴ ⏵
 Gulf of Carpentaria Reflectivity ⏴ ⏵
 Gunn Pt Reflectivity ⏴ ⏵
 Gunn Pt Velocity ⏴ ⏵
 Tindal Reflectivity ⏴ ⏵
 Weipa Reflectivity ⏴ ⏵
 CPOL Reflectivity ⏴ ⏵
 CPOL Velocity ⏴ ⏵
 CPOL KDP ⏴ ⏵
 CPOL NCP ⏴ ⏵
 CPOL PHIDP ⏴ ⏵
 CPOL RHOHV ⏴ ⏵

HAIC-HIWC DATASET MASTER LIST (ARCHIVE)






DATA BY CATEGORY

- Aircraft
- Ancillary
- Land Based
- Lightning
- Model
- Radar
- Satellite
- Upper Air

[Back to HAIC-HIWC](#)

Email comments & questions to codiac@ucar.edu

HAIC-HIWC Data Sets

Data Set Name (Responsible Group/PIs shown in parentheses)	Date Posted	Info
Aircraft		
Aircraft Meteorological Data Reports (AMDAR) and Aircraft Communications Addressing and Reporting System (ACARS) Data [(ESRL-GSD)]		
Aircraft: SAFIRE Falcon 20		
Cloud Imaging Probe (CIP) Data [(SAFIRE)]		
Isokinetic Probe (IKP) Total Water Concentration (TWC) Data [(SAFIRE)]		
Precipitation Imaging Probe (PIP) Data [(SAFIRE)]		
Cloud Droplet Probe (CDP) Data [(SAFIRE)]		
French Doppler Radar RASTA Data [(SAFIRE)]	New 2015-10-16	
French Falcon Flight Track Data (km) [(NCAR-EOL)]		
French Falcon Flight Track Data (txt) [(SAFIRE)]	2014-10-23	
French Falcon Isokinetic Evaporator Probe (IKP2) Data [Strapp, Walter (MetAnalytics Inc.)]	2014-10-08	
French Falcon Monitoring Data [(SAFIRE)]	2014-10-30	
French Falcon Total Water Content (TWC) Data [(SAFIRE)]	2014-10-23	
PLANET Total Water Concentration (TWC) and Temperature Data [(SAFIRE)]		
State and Navigation Data [(SAFIRE)]		
Two Dimensional Stereo Imaging Probe (2DS) Data [(SAFIRE)]		
Ancillary		

French Falcon Isokinetic Evaporator Probe (IKP2) Data

Summary

This dataset contains a quality controlled dataset of the Isokinetic Evaporator probe (IKP2) from the High Altitude Ice Crystals - High Ice Water Content (HAIC-HIWC) project. It operated by SAFIRE, during 22 of the 23 flights that were flown during the project. The steps used to prepare and quality control the data are specified in the documentation file.

Data access

[ORDER](#) data for delivery by FTP

Additional information

Related projects: [HAIC-HIWC](#)

Observational frequency: 1 second

Spatial type: point

Categories: [Aircraft](#)

Platforms: [Aircraft](#), [SAFIRE French Falcon](#)

Documentation: [Documentation-for-IKP-Version4-Data-Set-v2.pdf](#) [94 KB]

Restrictions: this dataset requires a password.

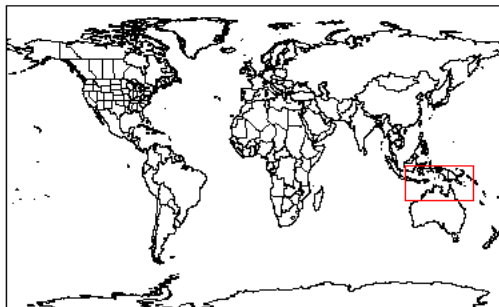
Temporal coverage

Begin datetime: 2014-01-16 00:00:00, End datetime: 2014-02-19 02:49:59

Spatial coverage

Minimum latitude: -20.000000, Minimum longitude: 110.000000

Maximum latitude: 0.000000, Maximum longitude: 160.000000



French Falcon Isokinetic Evaporator Probe (IKP2) Data

Order data and information

Use the following form to retrieve a subset of the **French Falcon Isokinetic Evaporator Probe (IKP2) Data** dataset, when your data order is finished being processed.

Data Set Specific Criteria

Data Set Output Specifications

- [Output File Format](#)
The only data format available is **Comma Separated Value (ASCII)**.
- [Output Archive/Compression Method](#)
- [Email Address](#) [\[privacy policy\]](#)
- [Affiliation](#)

Acknowledgement

Please acknowledge us in your publications with text such as:

Data provided by NCAR/EOL under sponsorship of the National Science Foundation. <http://data.eol.ucar.edu/>

HAIC-HIWC Expected or In Progress Datasets

(See online Darwin and Cayenne Master Lists for available datasets)

- ❖ ALPHA 2-input and 3-input Total HIWC Interest
- ❖ Vaisala GLD-360 Lightning Data
- ❖ Access-R Model Pressure and Surface Data in MDV
- ❖ Access-R Model Pressure and Surface Derived Data in MDV
- ❖ **Access-DN Model Pressure and Surface Data in NetCDF**
- ❖ MTSAT-2 and MTSAT-1R Rapid Scan Overshooting Tops Product in MDV
- ❖ Australian BoM High Vertical Resolution Rawinsonde Data
- ❖ N. Australia 3D Mosaic Radar Data (MDV), C-POL, and Individual Radars?
- ❖ NASA Langley MTSAT-2 Satellite Cloud Products and Derived Data in MDV
- ❖ NASA Langley MTSAT-1R Satellite Cloud Products Rapid Scan and Derived Data in MDV
- ❖ DOE/ARM Darwin Site Data
- ❖ Cloud Imaging Probe (CIP), Cloud Droplet Probe (CDP), Precipitation Imaging Probe (PIP) Data
- ❖ **MTSAT-1R Rapid Scan data in raw HRIT and NetCDF formats**
- ❖ Radar Data for Cayenne
- ❖ Falcon-20 Flight Track and Instrumentation Data for Darwin and Cayenne
- ❖ **Flight Tracks for Cayenne in kml**
- ❖ **Video Flight Data for Darwin and Cayenne**
- ❖ NRC Convair 580 Flight Track and Instrumentation Data for Cayenne
- ❖ Honeywell B757 Flight Track and Instrumentation Data for Cayenne

In Progress Datasets

Digital Object Identifiers (DOIs) for Datasets

- DOIs becoming functional for proper citation of datasets (similar to publications).
- Provide users with a simple, standard way to reference datasets.
- Allows for the unique tracking of metrics for individual datasets.
- Allows for linking of related datasets and publications.
- NCAR has established a process for creating DOIs (DataCite Registration)
- DOIs are considered “perpetual” and provides proper attribution.