

CFH Launches at the ARM Southern Great Plains Site (SGP) at Lamont, Oklahoma

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ARM CFH Mission

- **P**rovide launches of balloon-borne cryogenic frost-point hygrometer as a humidity baseline measurement.
- **H**oward Diamond, through NOAA funds CFH launch hardware.
- **A**RM provides mentorship oversight and ‘manpower’ for the efforts associated with the CFH sonde preparation and launches.
- **I**mprove and evaluate the procedures for CFH launches at the SGP facility.
- **E**valuate CFH launch logistics for use at other ARM launch sites (i.e. Barrow, Alaska) in the future.



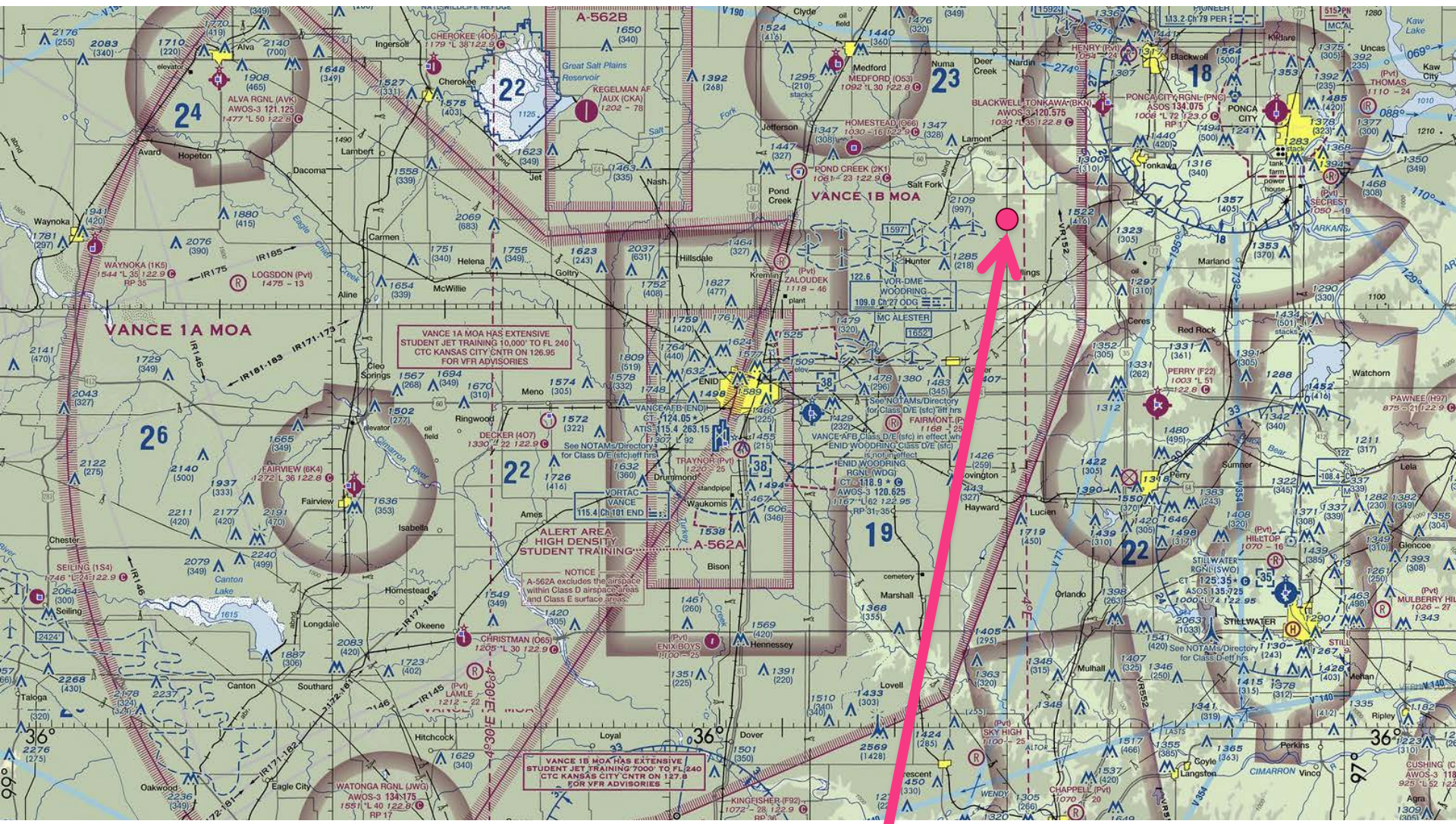
Site location and Launch history



- Lamont, OK, $36^{\circ} 36'18.0''$ N, $97^{\circ} 29'6.0''$ W, 320 m a.s.l.
- Launch procedures from GRUAN Lead Center
- Eleven launches so far since
 - Sept. 11, 2014
- CFH are checked and adjusted with CFH setup
- Aim for Monthly Launches



Site Airspace Location



ARM SGP Launch Site within Military Operating Area

Airspace Access Request

Dear Vance AFB personnel,

We are planning an exempt stratospheric balloon-sonde launch for atmospheric sampling on 4/22/2016, launching at ~1330 GMT (0830 CDT). The launch location will be from the ARM Climate Research Facility near Lamont, OK (36.608, -97.488).

The sonde meets the requirements of CFR 14 Part 101. No waiver is needed.

We will telephone Vance ATC (580-213-6765) at launch, 24kft, burst, 24kft (descent) and landing.

Predictor flight path for tomorrow, 4/22/2016 shows: from the Central Facility the balloon will travel South, crossing over Highway 412, then turn east and travel north of Perry and along Highway 64, bursting near Highway 177. The package will descend by parachute, continuing SE and landing just South of the Cimarron Turnpike Spur in Payne County.

Launch Details:

Date: 4/22/2016

Time: 1330 GMT, 0830 CDT

Location: 36.608, -97.488

Balloon Type/Color: 1200g White Latex

Maximum Altitude: 110,000 ft.

Ascent Rate: 5 m/s

Descent Rate: 5-10 m/s

Payload Weight: Less than 2 pounds

Payload Color: Red/Blue/White

Federal Aviation Regulations

§ 101.31 — Applicability.

§ 101.33 — Operating limitations.

§ 101.35 — Equipment and marking requirements.

§ 101.37 — Notice requirements.

§ 101.39 — Balloon position reports.

Please contact me at the number below if you have questions or need additional information.

Regards,

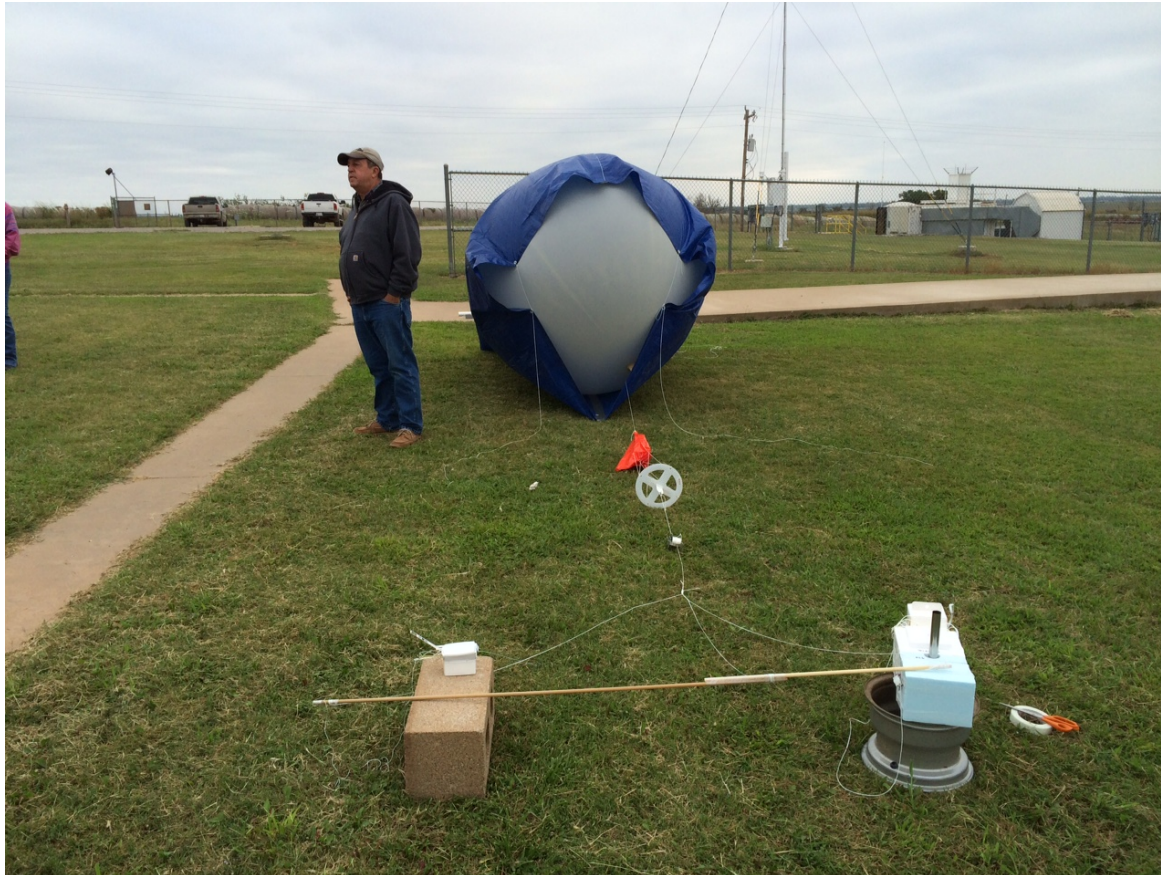
Chris Martin

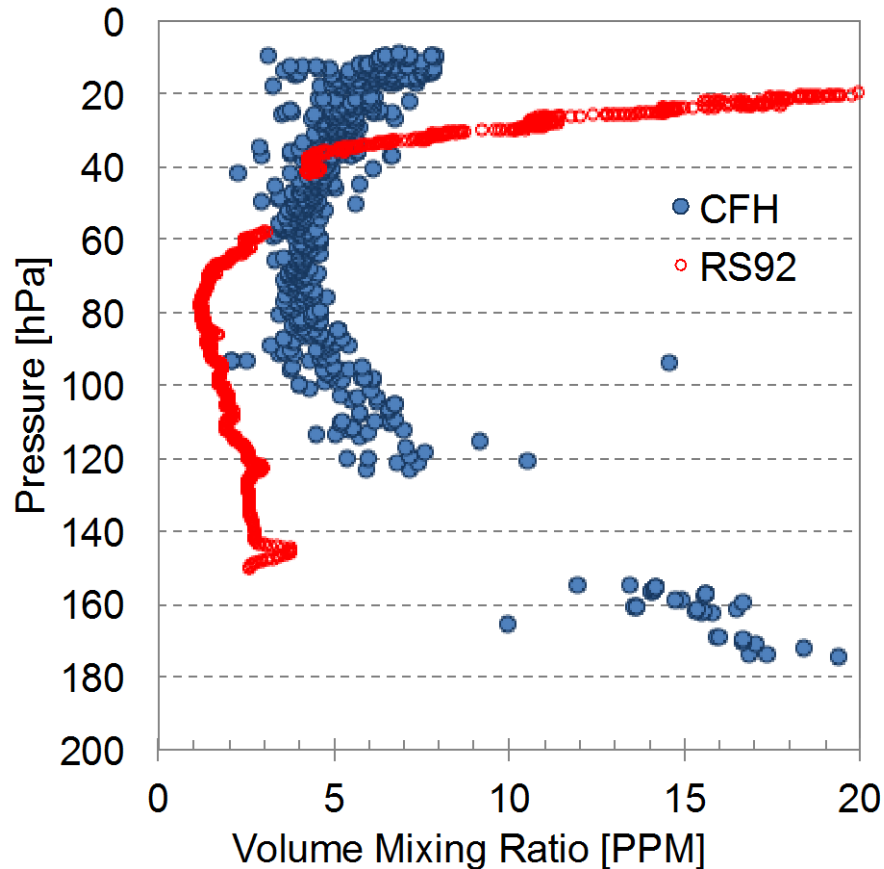
(331) 318-3354



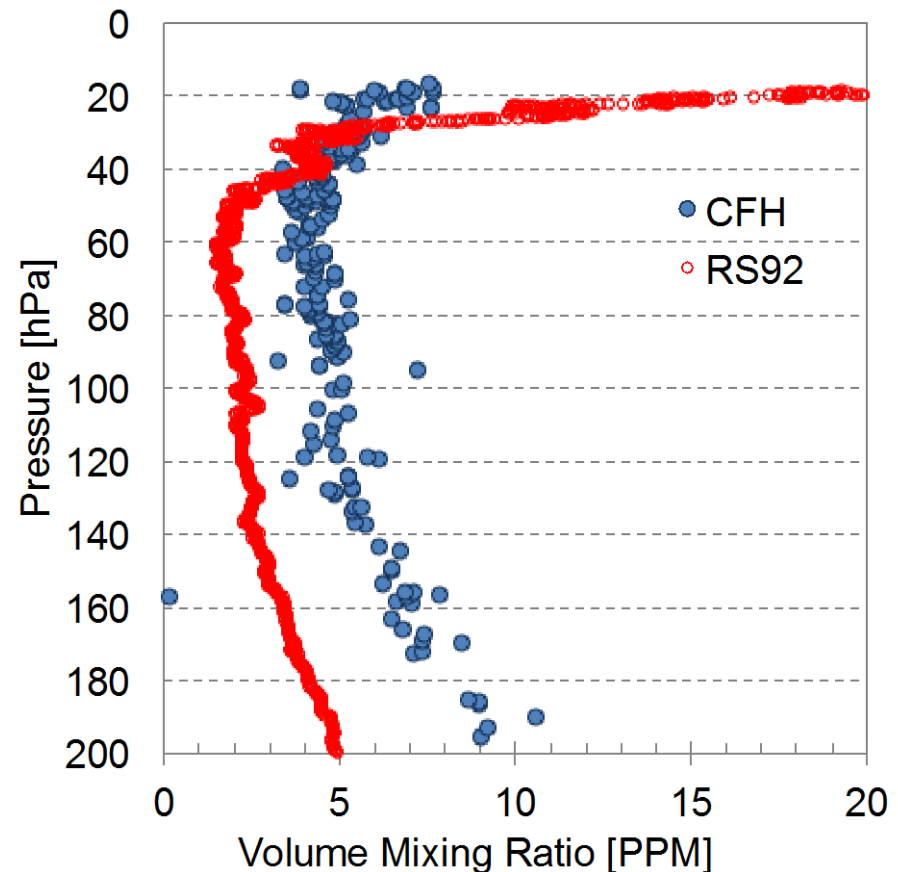
Launch package

- Cryogenic Frostpoint Hygrometer from JH Acquisition LLC
(EnSci is in the process of becoming JH Acquisition LLC)
- InterMet IMet1 RSB
- Vaisala RS92 radiosonde, ground check with Vaisala GC25 prior to each launch





2015-09-15: CFH (blue) versus RS92 (red)



2015-10-27: CFH (blue) versus RS92 (red)

Burst altitudes typically exceed 10 hPa

Launch times in the mornings, except 10/27/15 – NPP overpass

Lessons Learned

- CFH instruments are fragile. Re-Using the CFH did not work out so far.
 - small crack in cryogen compartment
 - CFH-setup impossible due to slightly loose circuit board
 - 'wiggling' the tube changes the settings
 - electronics are fragile causing shortcut during package release
 - removing and re-inserting the tube is tricky
 - mirror heating failed during the ascend




Next Steps

- Data ingest: ARM DMF ↔ GRUAN RS launch client
- Data processing
- Refine launch procedures for ARM operators
- Refurbish old CFH instruments
- Move to RS41-CFH package
- Produce ARM Baseline CFH humidity measurements
- GRUAN certification



ARM Frostpoint IOP



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ARM.gov >> Campaigns >> Propose a Campaign

Propose a Campaign : Preproposal Form

Before you begin, read the [guidelines for submitting proposals for AMF or AAF deployments](#), which includes availability of facilities and an outline of the proposal process. Guidelines for smaller campaigns (e.g., deployment of a guest instrument at an ARM site) are also available. See the proposal review schedule for when campaigns will be approved.

Note: Expectations for investigators, associated with approved campaigns, include:

- >> A final report.
- >> Delivery of data from guest instruments.
- >> May also include a science and operations plan depending on the complexity of the campaign.

If you are preparing your preproposals locally on your computer, please note that some translation problems from Microsoft Word to the form have been experienced. Before copying your text from Word to the online form, please copy and paste it into a text editor first. This will help eliminate hidden code from being carried over from Word. If you would like to include scientific characters or any other special characters, please use the [ISO 8859-1 standard](#) for HTML conversion or spell it out. For assistance with characters conversion, contact the [administrators](#).

*** Indicates required field.**

Lead Scientist *

Enter last name to search.

| Not in ARM people directory? [Register](#).

[NONE SELECTED]

Guidelines

- >> Overview
- >> Annual Facility Call
- >> Small Field Campaigns
- >> Review Criteria
- >> Expectations for Principal Investigators

Forms

- >> [Propose a Campaign](#)
- >> [Instrument Support Request \(ISR\) Form](#) (Word, 89KB)

Documentation

- >> [Steps for Submitting Field Campaign Data and Metadata](#)
- >> [Field Campaign Guidelines](#) (PDF, 574KB)



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- Michael Sommer – GRUAN Lead Center

