

Heather AH7RF's “DXpedition” to Lāna‘i

Astronomy Outreach
Telebridge ISS contact with students
First SOTA activations on Lāna‘i

Heather AH7RF - HARC Nov 2023

A photograph of a building with solar panels and a 'WELCOME TO LANAI' sign. The sign is yellow with red lettering and is mounted on a metal frame. The building has a corrugated metal roof. A tall, grey pole is visible on the right side of the image. The background is a clear blue sky.

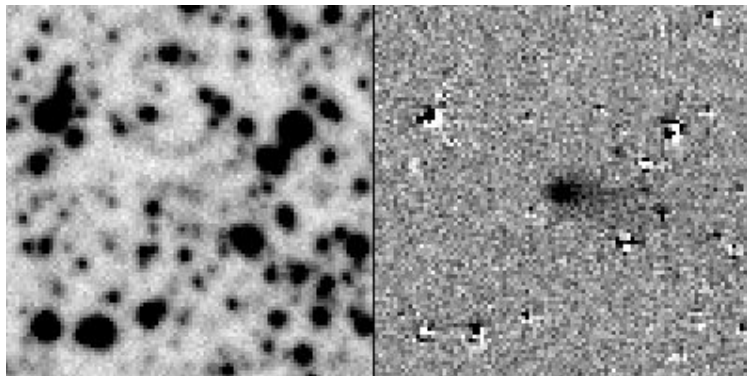
WELCOME TO LANAI

A bit about Heather ...

- From Texas, BS Physics, University of Texas, 2001
- Physics PHD, University of Michigan, 2009
- Moved to Hawaii in 2009
 - Built and designed the Pan-STARRS database (2016)
 - Discovered a comet in 2019 while working for ATLAS
 - Got an asteroid named after me in 2020
 - Currently working for Canada France Hawaii Telescope as an instrument support scientist for megacam
 - I can give tours of the telescope to friends!



Comet C/2019 D1 (Flewelling)

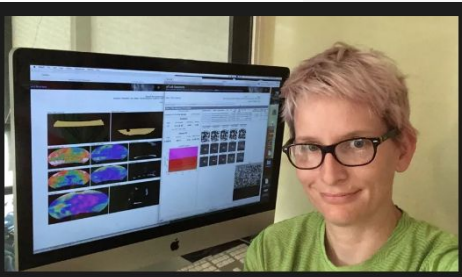


Discovery image on left, with the comet visible on the right after subtracting off the background stars

LOCAL NEWS

Comet named after Hawaii researcher

by: Web Staff
Posted: Mar 25, 2019 / 11:09 PM HST
Updated: Mar 26, 2019 / 01:14 AM HST



Comet spotted from Haleakala telescope

Space object named after Hawaii-based woman researcher

LOCAL NEWS

MAR 24, 2019

The Maui News



In work to defend the planet against asteroids, a Hawaii-based researcher has used a Haleakala telescope to spot a comet, which was recently named after her.

Heather A. Flewelling, who has her doctorate in physics, works for the Institute for Astronomy, part of the University of Hawaii. Her title is “*planetary defense researcher*” and she is tasked with working on ATLAS, an asteroid impact early-warning system being developed by the University of Hawaii and funded by NASA.

ATLAS uses a set of 0.5-meter telescopes, one atop Haleakala and one on Big Island’s Maunaloa, to search the sky for new asteroids. Sometimes it finds comets and artificial satellites. To date, it has found 283 near-Earth asteroids, 31 potentially hazardous asteroids, 16 comets and 3,082 supernovas.

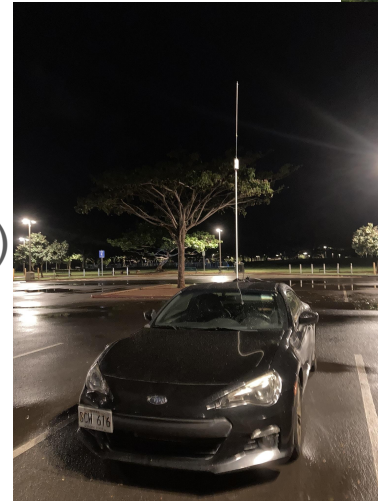
On the morning of the comet discovery, Flewelling was searching through the previous night’s data.

“To report the comet, I noted that it had a tail, measured it (the size, brightness, and position), compared it to nearby stars and submitted the observations to the Minor Planet Center with a message that I detected cometary activity,” she said in an interview with Ham Radio Hawaii, an amateur radio website. “Once submitted, it was listed on the Potential Comet Confirmation Page, and other astronomers did follow up observations to confirm.”

The International Astronomical Union Minor Planet Center named the comet “*Comet Flewelling*” on Thursday.

A bit about Heather AH7RF

- Licensed in 2018 - a cheap SDR was all it took to discover that ham radio was alive and active
- First SOTA (VHF) in 2018 on koko crater
- VHF “DX” from Oahu to Maunakea repeater (5w baofeng)
- Condo ham!
- Started learning morse code in 2021 - CW Academy
- Started making DX contacts in 2022 (HQP!)
- QRP ham - hiking / parks



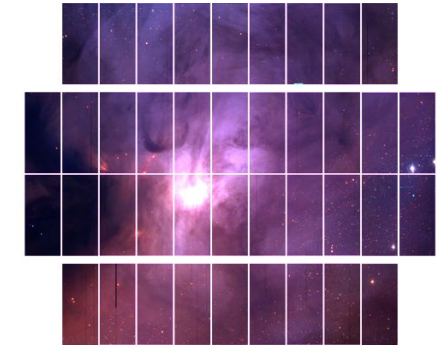
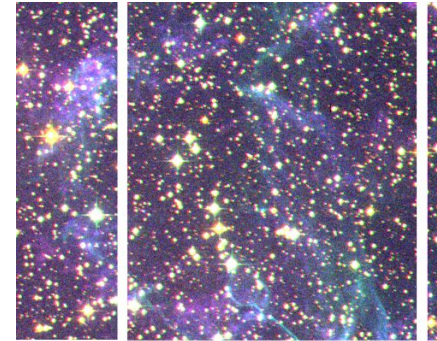
My current job and how I ended up on Lānaʻi

Primarily: Instrument Support Scientist for Megacam at CFHT

But also: mauna kea scholars / outreach / mentoring students / answering ham radio questions sent to mauna kea observatories

One of the maunakea scholars teachers reached out to CFHT - she had just been awarded an attempt for ARISS / ISS - school ham radio contact. CFHT does astro outreach there, and suggested I would be perfect to help! (they get astro and ham!)

If I can get to Lānaʻi, can I also get to the summit (and activate it??) [hard]



From Wikipedia, the free encyclopedia

Coordinates: 20°49′30″N 156°55′12″W﻿ / ﻿

For the architectural element, see [Lanai \(architecture\)](#). For the city, see [Lanai City, Hawaii](#).

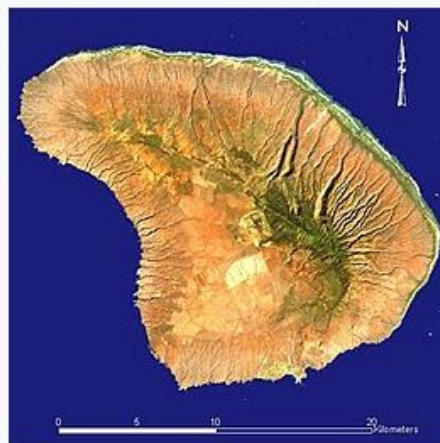
Lanai (Hawaiian: *Lānaʻi*, Hawaiian: [laːˈneʔi, naːˈneʔi], [ləˈnai, laːˈnɑːi],^[2] also US: [lɑːˈnaɪ, ləˈnɑːi],^{[3][4]}) is the sixth-largest of the [Hawaiian Islands](#) and the smallest publicly accessible inhabited island in the chain.^[5] It is colloquially known as the Pineapple Island because of its past as an island-wide [pineapple plantation](#).^[6] The island's only settlement of note is the small town of [Lanai City](#). As of 2012, the island was 98% owned by [Larry Ellison](#), co-founder and chairman of [Oracle Corporation](#),^[7] the remaining 2% is owned by the state of Hawaii or is privately owned homes.^{[8][9]}

Lanai is a roughly [apostrophe](#)-shaped island with a width of 18 miles (29 km) in the longest direction. The land area is 140.5 square miles (364 km²), making it the [43rd largest island in the United States](#).^[10] It is separated from the island of [Molokaʻi](#) by the [Kalohi Channel](#) to the north, and from [Maui](#) by the [Auʻau Channel](#) to the east. The [United States Census Bureau](#) defines Lanai as [Census Tract 316](#) of [Maui County](#). Its total population rose to 3,367 as of the [2020 United States census](#),^[1] up from 3,193 as of the [2000 census](#)^[11] and 3,131 as of the [2010 census](#).^{[12][13]} As visible via satellite imagery, many of the island's landmarks are accessible only by dirt roads that require a [four-wheel drive](#) vehicle due to the lack of paved roadways.

There is one school, [Lanai High and Elementary School](#), serving the entire island from [kindergarten](#) through [12th grade](#). There is also one hospital, Lanai Community Hospital, with 24 beds, and a community health center providing primary care, dental, behavioral health and selected specialty services in Lanai City.^{[14][15]} There are no [traffic lights](#) on the island.

Lanai

Nickname: The Pineapple Isle



Landsat satellite image of Lanai



Outreach on Lānaʻi

- Hard to get to there (small Cessna from Honolulu, ferry from Maui, limited hours)
- Hard to stay there (\$2k a night, some air b&bs)
- I stayed with the teacher, and offered anything ham related and astronomy related
 - Guest of honor at a star party
 - Classroom visits (most of elem, about 140 students)
 - 2 science club visits
 - Ham radio (intro to ham from boy scouts)
 - Astronomy (make an astrolabe)



Lānaʻi Outreach - Ham radio

- Danyel Erickson (5th grade teacher) - submitted the proposal in March 2022
- Mary Beth connected me to Danyel in May 2022
- Decisions about the equipment plan (direct or telebridge)
- Education components (I helped here)
- Students submit questions / get selected - Jan 2023
- Lots of practice (logistics, practicing asking the questions - Feb/Mar 2023)
- Ham radio contact - Mar 2023!



Radio Contacts with the ISS



Astronaut Sunita Williams, KD5PLB, talking to students from the ISS ham radio station.

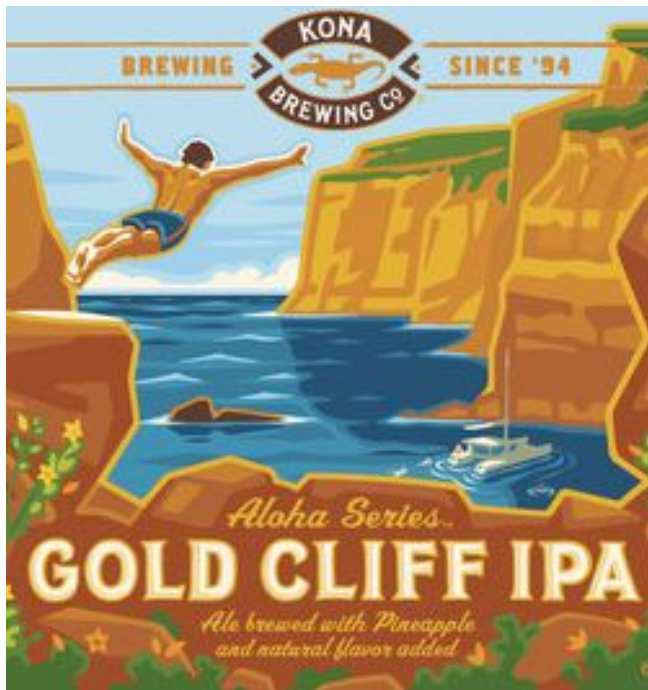
Scheduled ARISS Amateur Radio contacts with the ISS are conducted either by direct contact, or by telebridge contact. The method used will depend on the radio station equipment and experienced radio amateur volunteers available to support the contact as well as technical issues related to the orbit of the ISS over the contact location.

Because the ARISS program supports the testing and installation of amateur radio stations aboard the ISS, astronauts have the equipment available to also make unscheduled ham radio contacts with radio amateurs all around the world on a one-to-one basis during their personal time. With a very limited investment in amateur radio equipment, licensed hams, *including students who have access to amateur radio stations in a classroom*, can make individual contact with astronauts aboard the ISS by learning to follow the published orbital schedule and practice some basic amateur radio contact techniques.

Lanai's contact

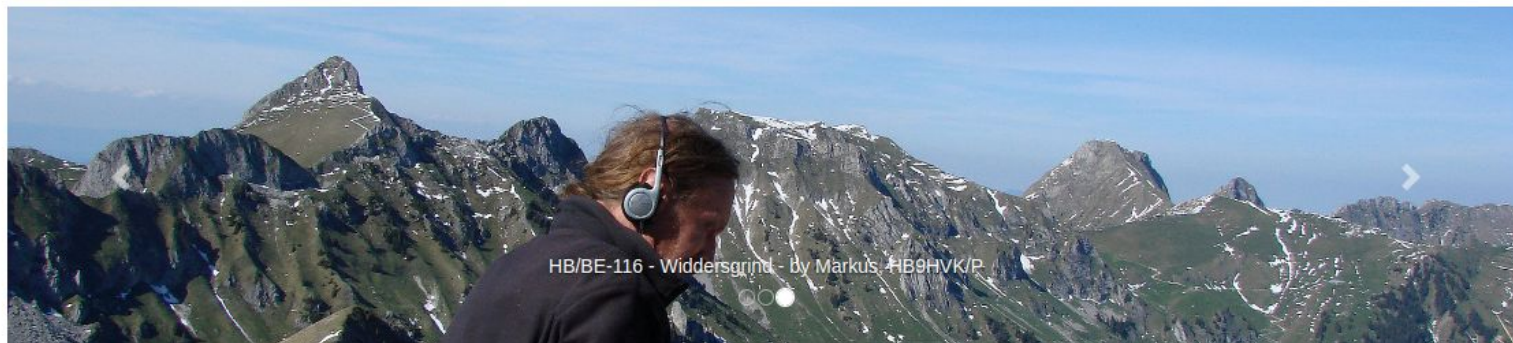
- First ARISS contact with a Hawaii school in 20 years (last was Punahou, 2003)
- Decided to be a telebridge (the ham station was located in Belgium)
- Initially knew it was going to be between Jan - Mar, dates narrowed down as we got closer, more details as we got closer
- Students came up with questions, best ones were picked (2nd - 11th)
 - the astronaut knew the questions ahead of time
- https://www.youtube.com/watch?v=q_rQF1Gf-ZU

Visited gold cliff!



I brought my radio :)





Welcome to **Summits on the Air!**

SOTA is an award scheme for radio amateurs that encourages portable operation in mountainous areas.

Quick links: [Joining In](#) | [SOTAwatch](#) | [Database](#) | [Summit Listings](#) | [Shop](#) | [Mapping](#) | [Donate to SOTA](#)

New to SOTA?

SOTA has been carefully designed to make participation possible for all Radio Amateurs and Shortwave Listeners - this is **not just for mountaineers!** There are awards for activators (those who ascend to the summits) and chasers (who either operate from home, a local hilltop or are even Activators on other summits).

See the '[Joining In](#)' section of the website for lots of information, advice, rules, guidelines and our FAQs.



Latest SOTA Spots

20:46	K8ITU on W8V/PH-037	10.1100 CW
20:44	K6KM on W6/NC-516	14.059 CW
20:43	K7JRO on W7W/MC-073	14.288 ssb
20:41	K6KM on W6/NC-516	18.096 CW
20:41	KD7DUG on W6/CT-217	21.0619 CW
20:39	VA2NM/W7 on W7W/KG-126	14.0600 CW
20:36	K6KM on W6/NC-516	21.063 CW
20:34	K8ITU on W8V/PH-037	7.0650 CW

Lana'ihale

[+ Alert](#)[+ Spot](#)

 KH6 USA - Hawaii / LN Lana'i - 001

KH6/LN-001 | 3366 ft | **4** points |  3 activations



Mountains of Lānaʻi, Hawaiʻi

Coordinates: **20.8122, -156.87318**

[Open](#)[Copy](#)

Locator: **BL10nt**

First activation: **AH7RF** on 16 Dec 2022

Resources (+ Article)

 Wikipedia: [Lānaihale](#)

 Google: [Lana'ihale](#)



Photos



SOS only 8:52 PM

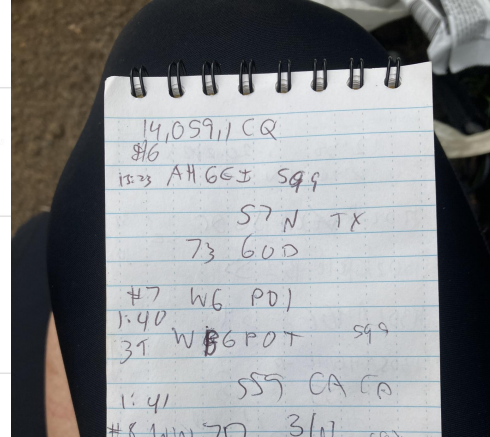
☰ HamAlert ↻

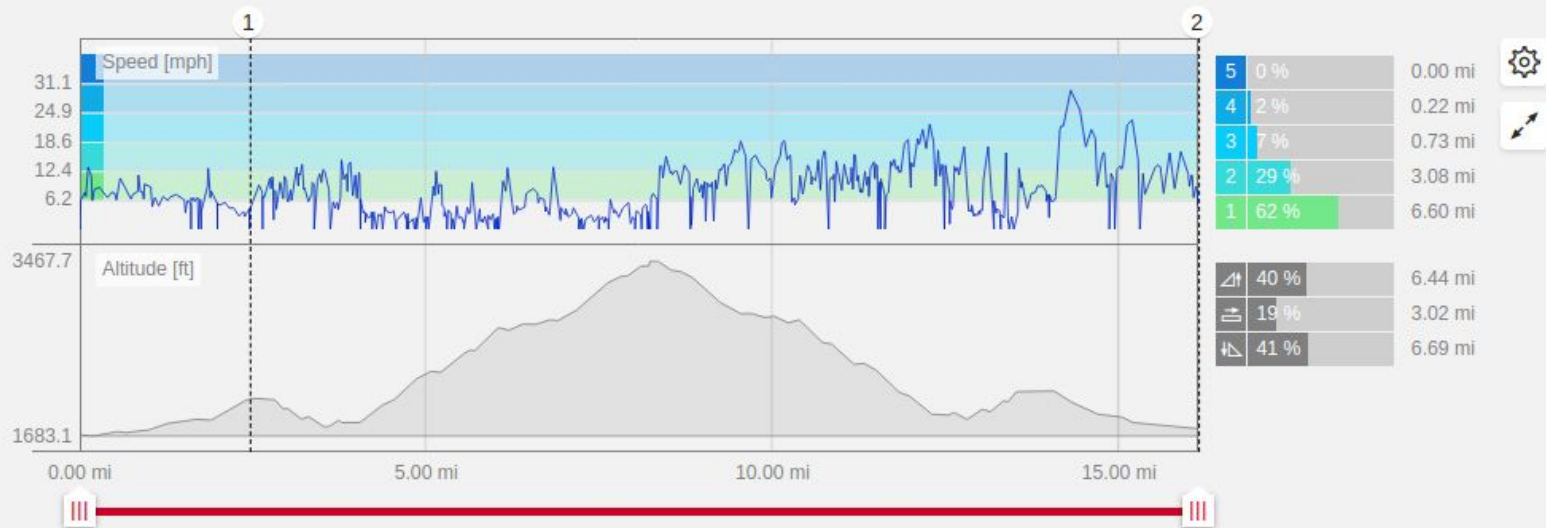
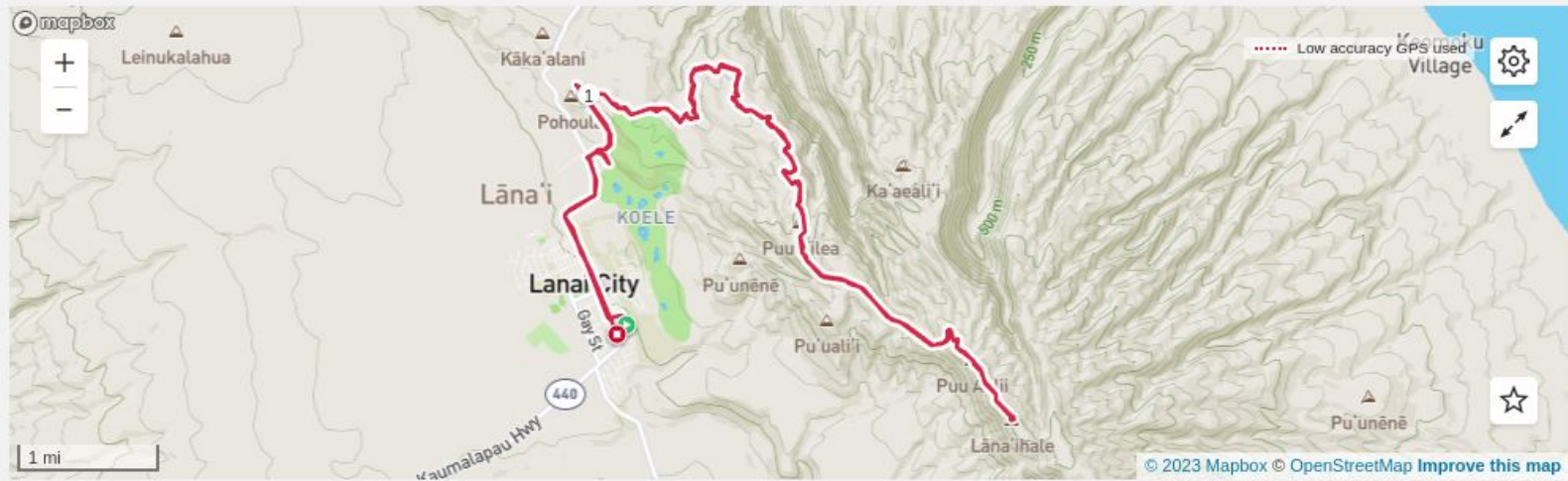
01:46Z **AH7RF** on KH6/LN-001 (14.0594 CW)
SOTA
 Lana'ihale, 1026m, 4pt: [RBNHole]
 at W3OA 20 WPM 12 dB SNR

01:45Z **AH7RF** (14.0594 CW)
RBN
 DX de W3OA-#: 14059.4 AH7RF CW
 12 dB 20 WPM CQ 0145Z

01:35Z **AH7RF** on KH6/LN-001 (14.0595 CW)
SOTA
 Lana'ihale, 1026m, 4pt: [RBNHole]
 at W6WZ 19 WPM 7 dB SNR

01:34Z **AH7RF** (14.0595 CW)
RBN
 DX de W6WZ-#: 14059.5 AH7RF





2 attempts and 3 summit activations

- First attempt - mountain bike with pedal assist, 2022-12-16
 - 3 local contacts (40 meters)
- Second attempt - mountain bike, 2023-03-20
 - 5 20m CW
 - 6 40m SSB
 - (and when it crossed into the next UTC date)
 - 5 20m CW
 - 1 2m FM

All with my KX2, endfed, and varying amounts of mud and rain.



