

General Coordinates Network

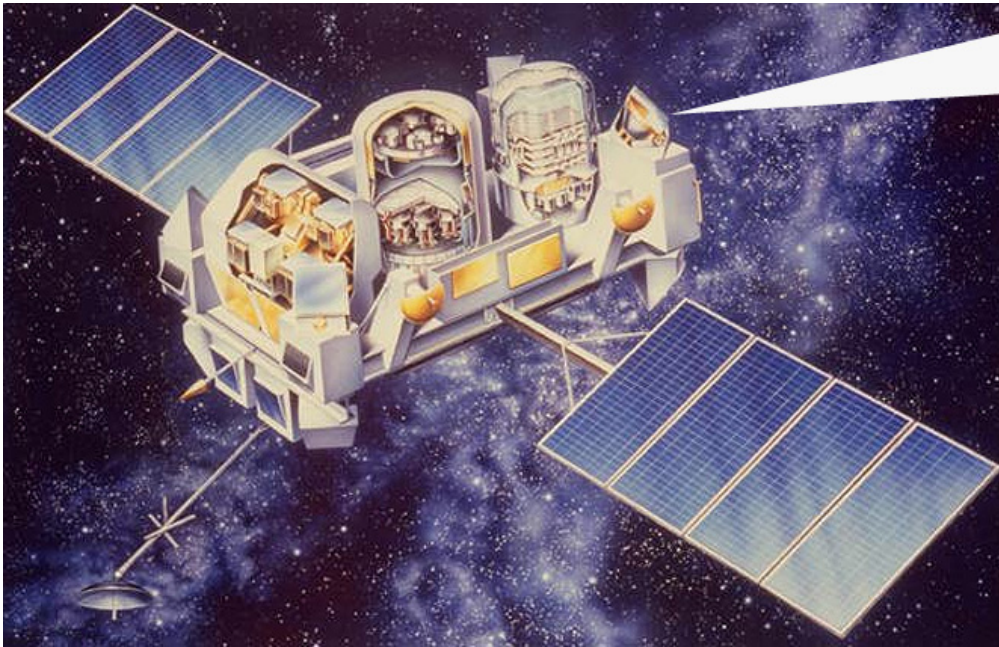
NASA's Next Generation Time-Domain and Multimessenger Alert System

A service of the [Astrophysics Science Division](#) at NASA's [Goddard Space Flight Center](#)

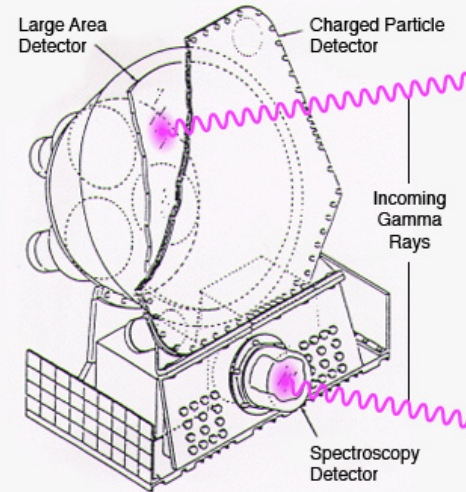
<https://gcn.nasa.gov>

Gamma-ray Coordinates Network

Realtime Alerts Born of Necessity

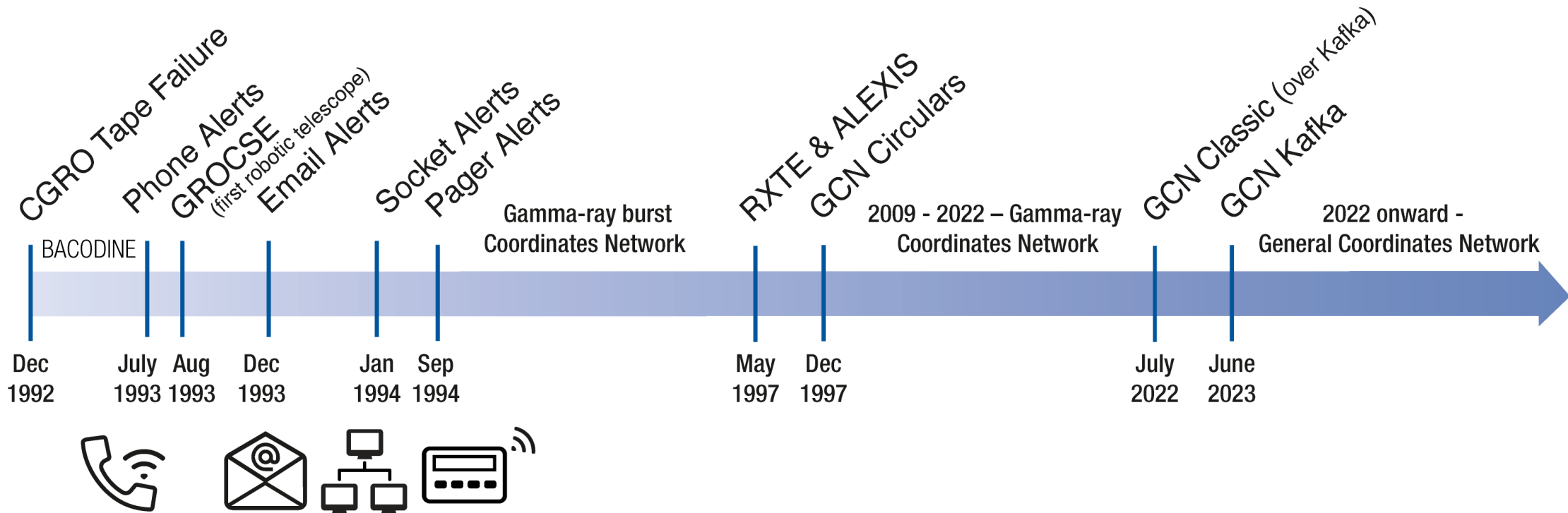


BATSE Detector Module (1 of 8)



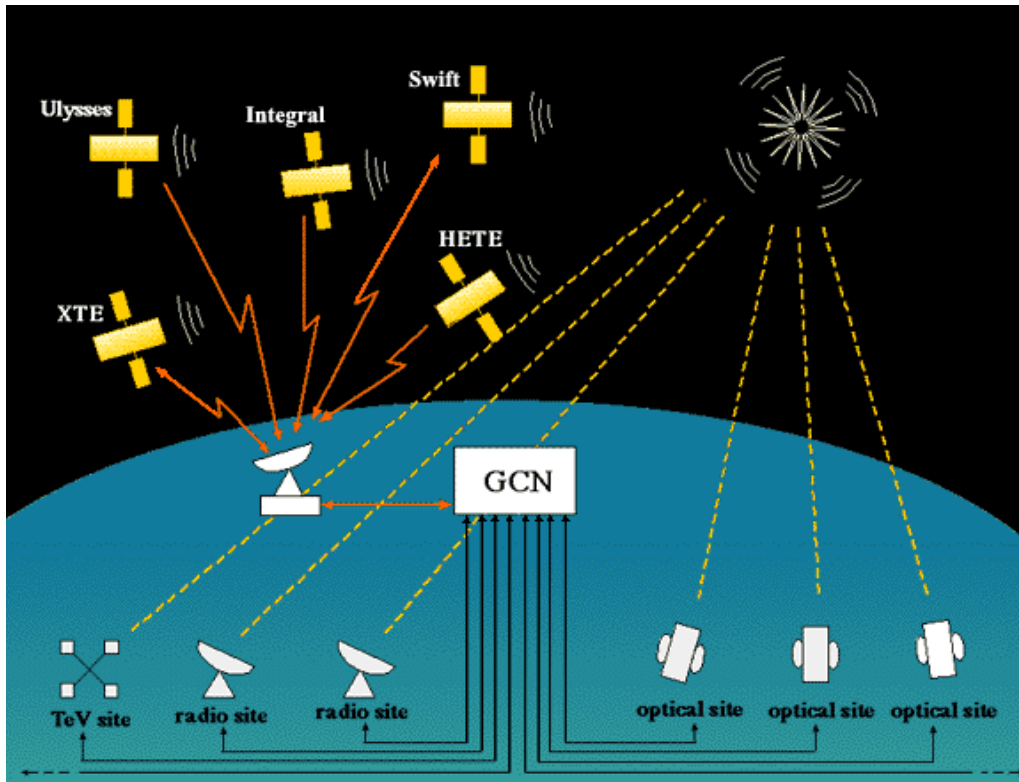
- The Compton Gamma-Ray Observatory's onboard recorder failed in 1992
- The need to downlink events as they occurred created an opportunity for realtime follow-up
- BATse COordinates DIstribution NETwork (BACODINE) was built to receive and distribute those alerts worldwide

Early History of GCN



- BACODINE provided new alert formats (phone, email, socket, and pager)
- New instruments and transient types led to the Gamma-ray Coordinates Network

GCN Enabled Seminal Breakthroughs in Astrophysics



The GCN community enabled worldwide follow-up observations that revealed the nature of gamma-ray bursts:

- Afterglows and redshifts confirmed their distant, extragalactic origin
- Supernova-GRBs established massive stellar deaths as the cause of long GRBs
- Afterglow and host studies established neutron star mergers as the cause of short GRBs

There are two kinds of GCN data products:

GCN NOTICES

```
TITLE: GCN/FERMI NOTICE
NOTICE_DATE: Wed 26 Aug 20 22:10:07 UT
NOTICE_TYPE: Fermi-GBM Flight Position
RECORD_NUM: 45
TRIGGER_NUM: 620172587
GRB_RA: 296.300d {+19h 45m 12s} (J2000),
296.250d {+19h 45m 00s} (current),
296.416d {+19h 45m 40s} (1950)
GRB_DEC: +71.817d {+71d 49' 00"} (J2000),
+71.868d {+71d 52' 03"} (current),
+71.693d {+71d 41' 35"} (1950)
GRB_ERROR: 5.50 [deg radius, statistical plus systematic]
GRB_INTEN: 1078 [cnts/sec]
DATA_SIGNIF: 22.80 [sigma]
INTEG_TIME: 1.024 [sec]
GRB_DATE: 19087 TJD; 239 DOY; 20/08/26
GRB_TIME: 79782.72 SOD {22:09:42.72} UT
GRB_PHI: 20.00 [deg]
GRB_THETA: 150.00 [deg]
DATA_TIME_SCALE: 1.0240 [sec]
HARD_RATIO: 0.54
LOC_ALGORITHM: 3 (version number of)
MOST_LIKELY: 93% GRB
2nd_MOST_LIKELY: 4% Generic Transient
DETECTORS: 0,0,0, 0,1,1, 0,0,0, 0,0,0, 0,0,
SUN_POSTN: 156.00d {+10h 24m 01s} +10.00d {+09d 59' 51"}
SUN_DIST: 94.05 [deg] Sun_angle= -9.3 [hr] (East of Sun)
MOON_POSTN: 258.31d {+17h 13m 14s} -22.27d {-22d 15' 56"}
MOON_DIST: 97.64 [deg]
MOON_ILLUM: 63 [%]
GAL_COORDS: 103.87, 21.63 [deg] galactic lon,lat of the burst (or transient)
ECL_COORDS: 41.25, 79.40 [deg] ecliptic lon,lat of the burst (or transient)
LC_URL: http://heasarc.gsfc.nasa.gov/FTP/fermi/data/gbm/triggers/2020/bn200826923/
COMMENTS: Fermi-GBM Flight-calculated Coordinates.
COMMENTS: This trigger occurred at longitude,latitude = 209.65,1.28 [deg].
COMMENTS: The LC_URL file will not be created until -15 min after the trigger.
```

- By and for machines
- Fixed, predefined format
- Schema specific to each notice type

GCN CIRCULARS

```
TITLE: GCN CIRCULAR
NUMBER: 28298
SUBJECT: GRB 200826B: Fermi GBM detection
DATE: 20/08/27 21:10:30 GMT
FROM: Christian Malacaria at NASA-MSFC/USRA <cmalacaria@usra.edu>
```

C. Malacaria (NASA-MSFC/USRA) and C.Meegan (UAH)
report on behalf of the Fermi GBM Team:

"At 22:09:42.72 UT on 26 August 2020, the Fermi Gamma-Ray Burst Monitor (GBM) triggered and located GRB 200826B (trigger 620172587 / 200826923).

The on-ground calculated location, using the GBM trigger data, was reported in GCN 28292.

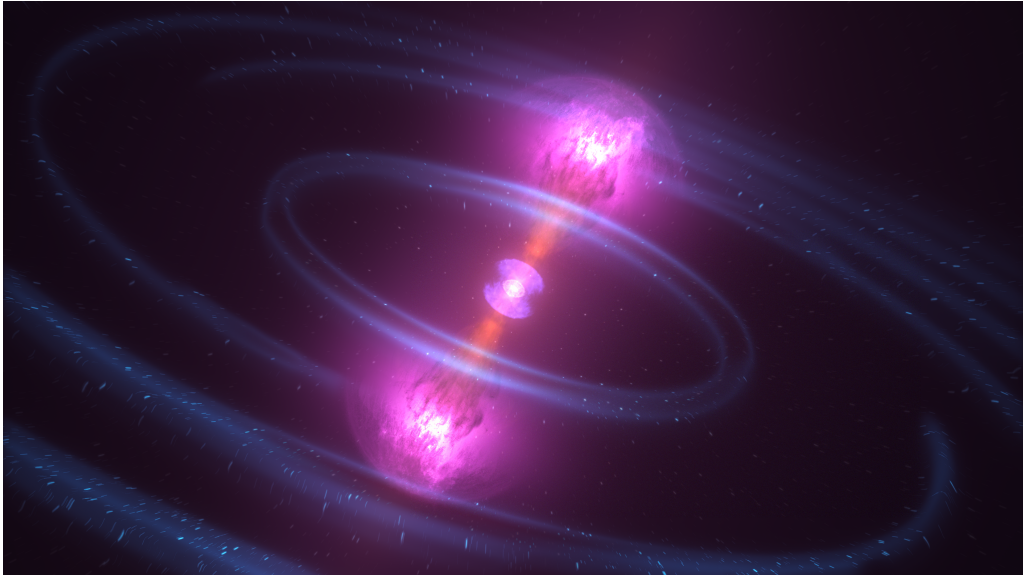
The GBM light curve shows an exceptionally bright long GRB with a duration (T90) of about 7.4 s (50-300 keV). The time-averaged spectrum from T0-0.003 s to T0+ 12.544 s is best fit by a Band function with Epeak = 410.3 +/- 5.6 keV, alpha = -0.64 +/- 0.01, and beta = -2.52 +/- 0.04. The event fluence (10-1000 keV) in this time interval is (1.414 +/- 0.006)E-04 erg/cm^2. The 1.024-sec peak photon flux measured starting from T0+5.1 s in the 10-1000 keV band is 110.1 +/- 0.7 ph/s/cm^2.

The spectral analysis results presented above are preliminary; final results will be published in the GBM GRB Catalog:
<https://heasarc.gsfc.nasa.gov/W3Browse/fermi/fermigbrst.html>

For Fermi GBM data and info, please visit the official Fermi GBM Support Page:
<https://fermi.gsfc.nasa.gov/ssc/data/access/gbm/>

- By and for humans (some automated)
- Freeform text (with established style)
- Citable (but not peer-reviewed)

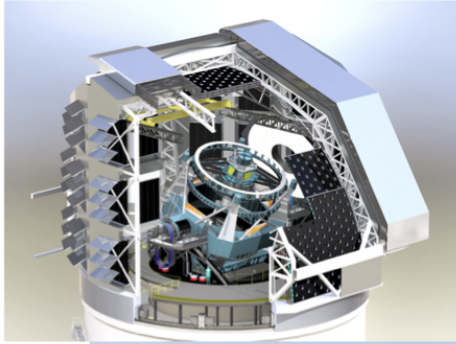
The Changing Scientific Landscape



GCN is constantly evolving to serve new transients, messengers, and observatories:

- Gravitational wave events (GW150914, GW170817)
- High-energy neutrinos (IC170922A)
- Tidal disruption events (Swift J1644+57)
- Magnetar giant flares (200415A)

The Changing Technological Landscape

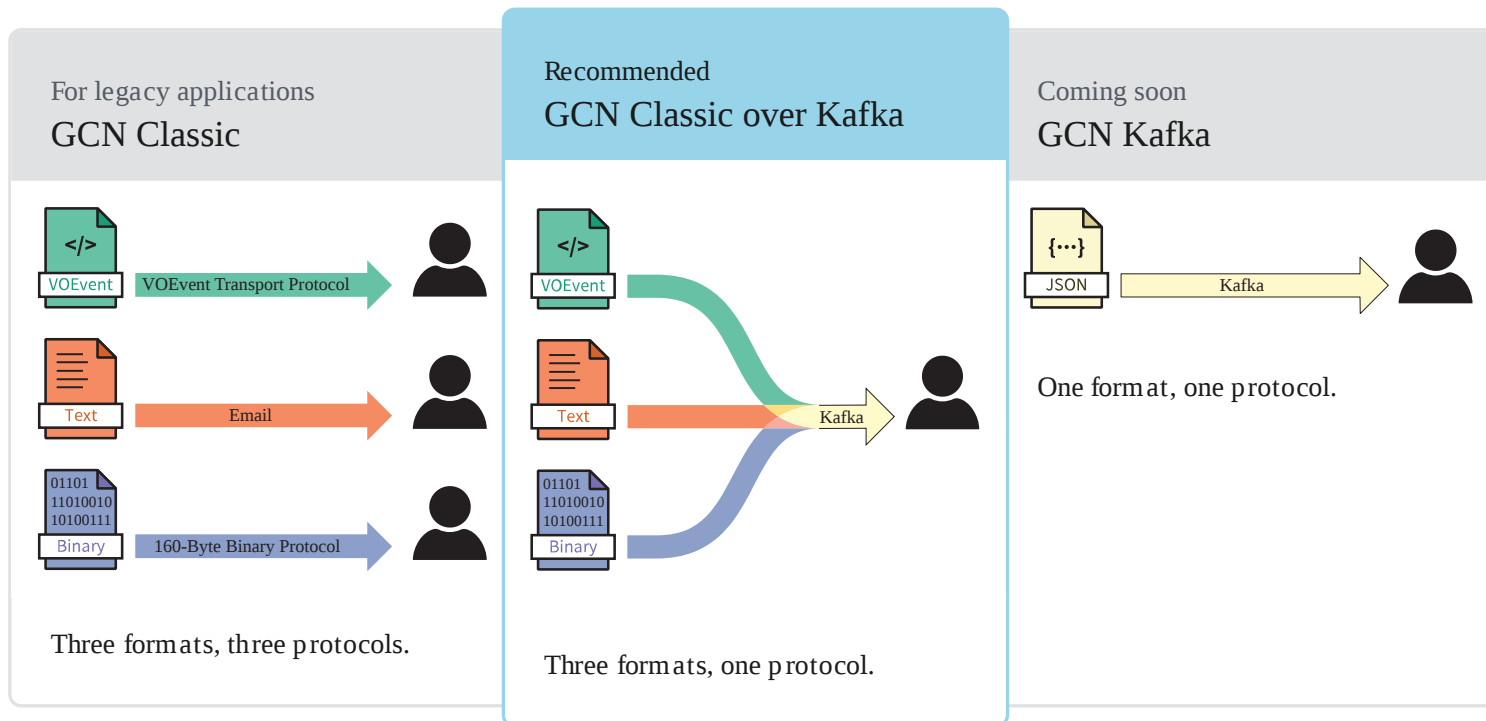


Rubin Observatory/NSF/AURA

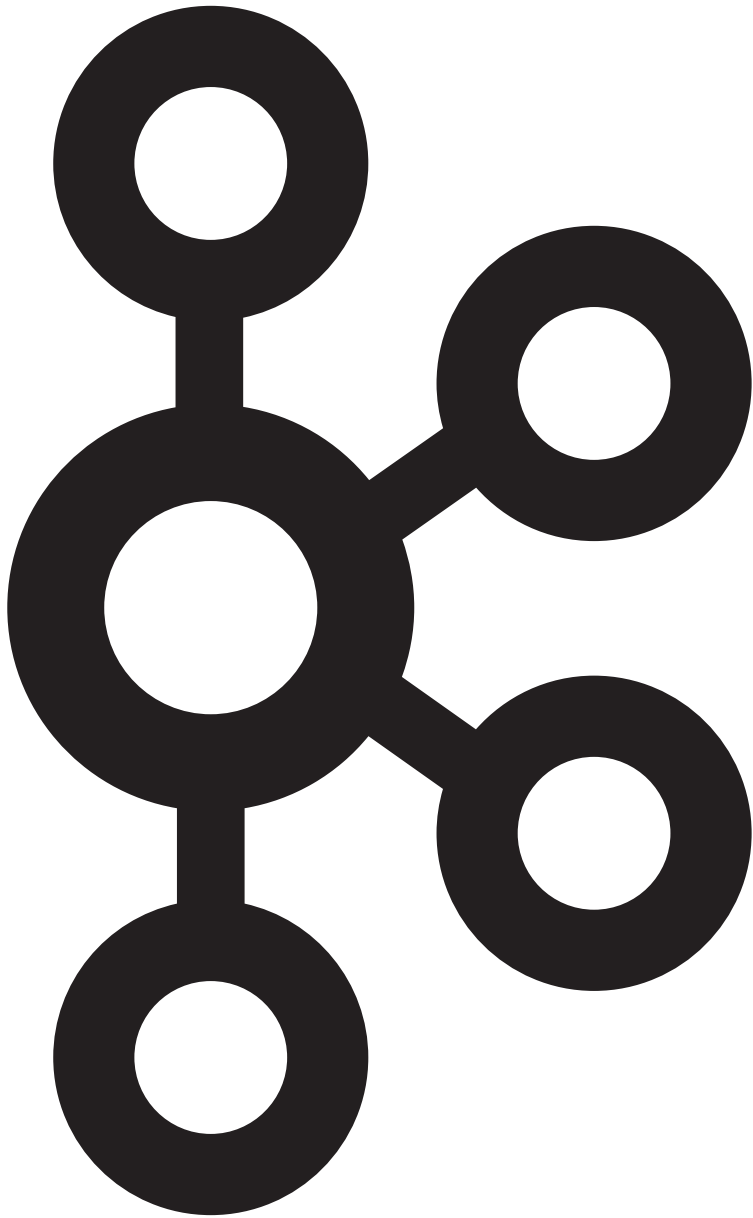
- Internet standards have led to new, better ways to serialize astronomy data ([VOEvent](#), JSON, [Avro](#), etc.)
- Encryption is necessary on the modern Internet (e.g. https)
- Industry has developed general time-series databases and streaming frameworks
- The [Vera C. Rubin Observatory](#) will use Apache Kafka to distribute [transient alerts as its primary data product](#)
- Many other experiments are following suit: [Zwicky Transient Facility](#), [LIGO/Virgo/KAGRA](#)

Introducing the new GCN

The New GCN is built on Kafka



- **GCN Classic** provides three formats over *three custom protocols*
- **GCN Classic over Kafka** provides all three formats over *one standard protocol*: Apache Kafka
- **GCN Kafka** will transition over the next few years to streaming all data in JSON format over Kafka (Notices and Circulars)



What is Kafka?

Apache Kafka is an open-source distributed event streaming platform used by thousands of companies for high-performance data pipelines, streaming analytics, data integration, and mission-critical applications.

— from <https://kafka.apache.org/>

Kafka is widely used at NASA

- Existing Kafka applications at NASA include:
 - GCN (Goddard Space Flight Center)
 - Complex Event Processor - Deep Space Network (Jet Propulsion Laboratory)
 - Enterprise Business Information Services (Jet Propulsion Laboratory)
 - Federated Airspace Management Framework (Ames Research Center)
- ...plus many other applications in other Federal agencies
- All Federal agencies are using self-managed Kafka brokers, either Apache Kafka or Confluent Platform
- GCN is sponsoring [FedRAMP](#) authorization for [Confluent Cloud](#) to make it easy for NASA and other federal agencies to deploy Kafka software-as-a-service

What is special about GCN's Kafka cluster?






It's special because it's so ordinary! It's a plain 3-broker Kafka cluster

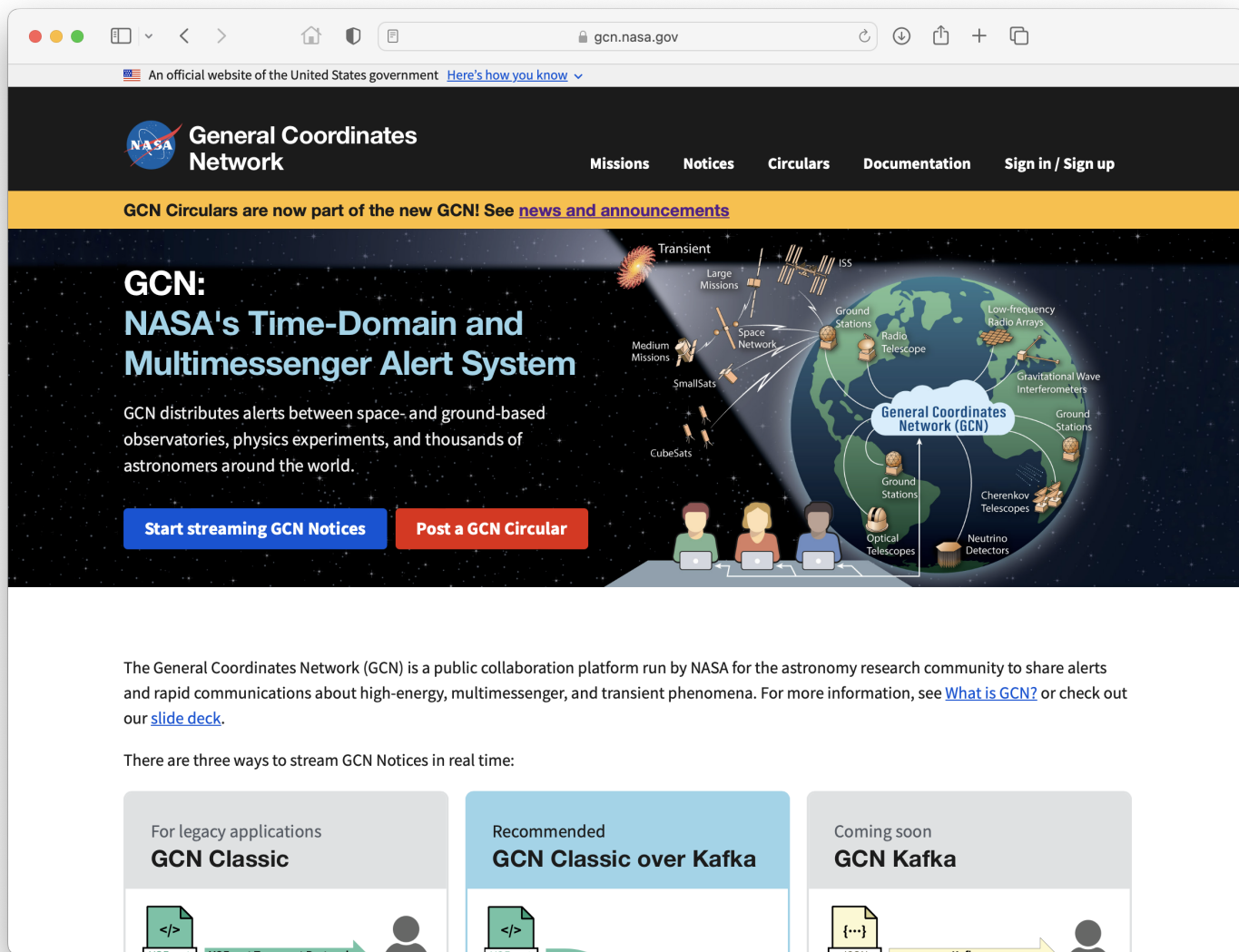
- No custom auth extensions to side-load into the server
- No vendor lock-in: we use [Confluent Platform](#), but we could use open-source [Apache Kafka](#) or fully managed solutions like [Confluent Cloud](#) or [Amazon MSK](#)

We use standard [OpenID Connect \(OIDC\)](#) for single sign-on

- We use [Amazon Cognito](#), one of many off-the-shelf OIDC auth solutions
- We use the same auth system across our web site and our Kafka broker
- We have a straightforward path to adopting [SciTokens](#) (an HPC single sign-on infrastructure based on OpenID Connect, adopted by LIGO)

Why switch to the new GCN?

	GCN Classic	GCN Classic over Kafka
 Self-service	NO. Users need to contact administrator in order to make account and subscription changes	YES. Manage your own account and subscription settings through the web site
 Open standards	NO. Notices are sent using three custom protocols	YES. Notices are sent using one standard protocol, Apache Kafka
 Open source	NO. Custom software needed to receive notices	YES. Receive notices using open-source software
 Highly available	NO. Notices are broadcast by a single server	YES. Notices are broadcast by a cluster of highly-available Kafka brokers in the cloud
 Secure	NO. Notices are sent as plaintext	YES. Notices are protected with SSL/TLS

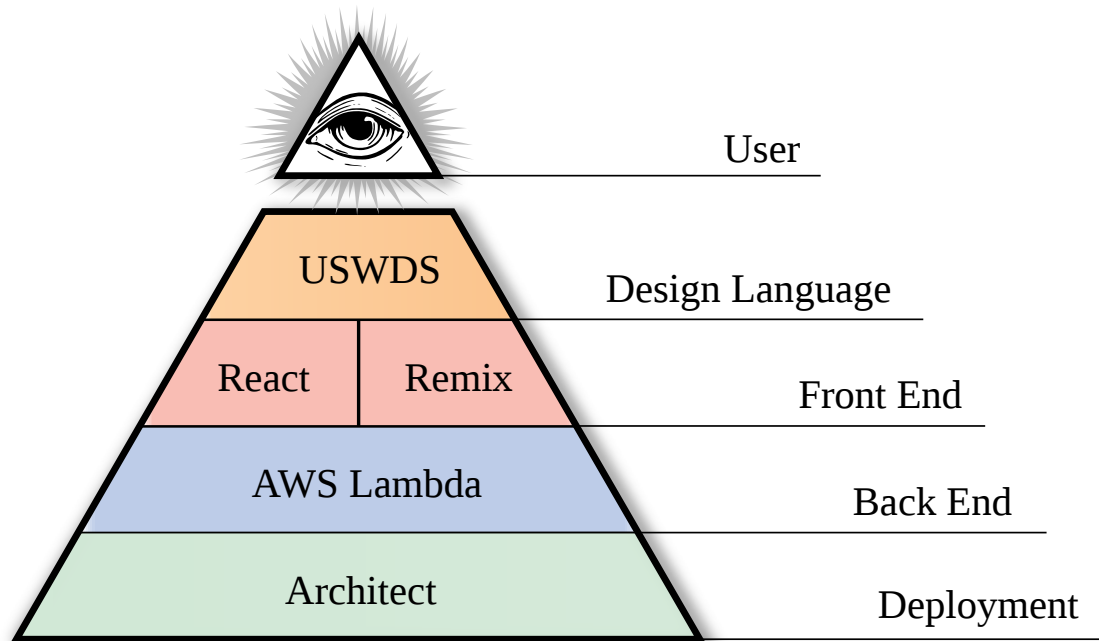


New GCN web site

at <https://gcn.nasa.gov>

- Updated look and feel
- More accessible, based on [US Web Design System](#)
- Single sign on with:
 - email and password
 - Google
 - Facebook
 - LaunchPad (for NASA employees and affiliates)

What is our tech stack?



- **NASAWDS** style framework, based on the **US Web Design System**
 - Emphasizes accessibility
 - Used by most Federal agencies
- 100% **TypeScript**
 - Asynchronous & scalable
 - Single codebase for server & client
- Early adopters of **Remix**, a full-stack **React** framework
- Continuously deployed on **AWS Lambda** using **GitHub Actions** and **Architect**
- 100% open source — contributions welcome! <https://github.com/nasa-gcn/gcn.nasa.gov>

The screenshot shows a web browser window at the URL `gcn.nasa.gov/user/email/edit`. The page header includes the NASA logo and the text "General Coordinates Network". Navigation links for "Missions", "Notices", "Circulars", "Documentation", and a user profile "leo.p.singer@nasa.gov" are visible. A yellow banner below the header reads: "Self-service email notifications for GCN Notices are here! See [news and announcements](#)".

The main content area is titled "Email Notifications" and contains the following fields and options:

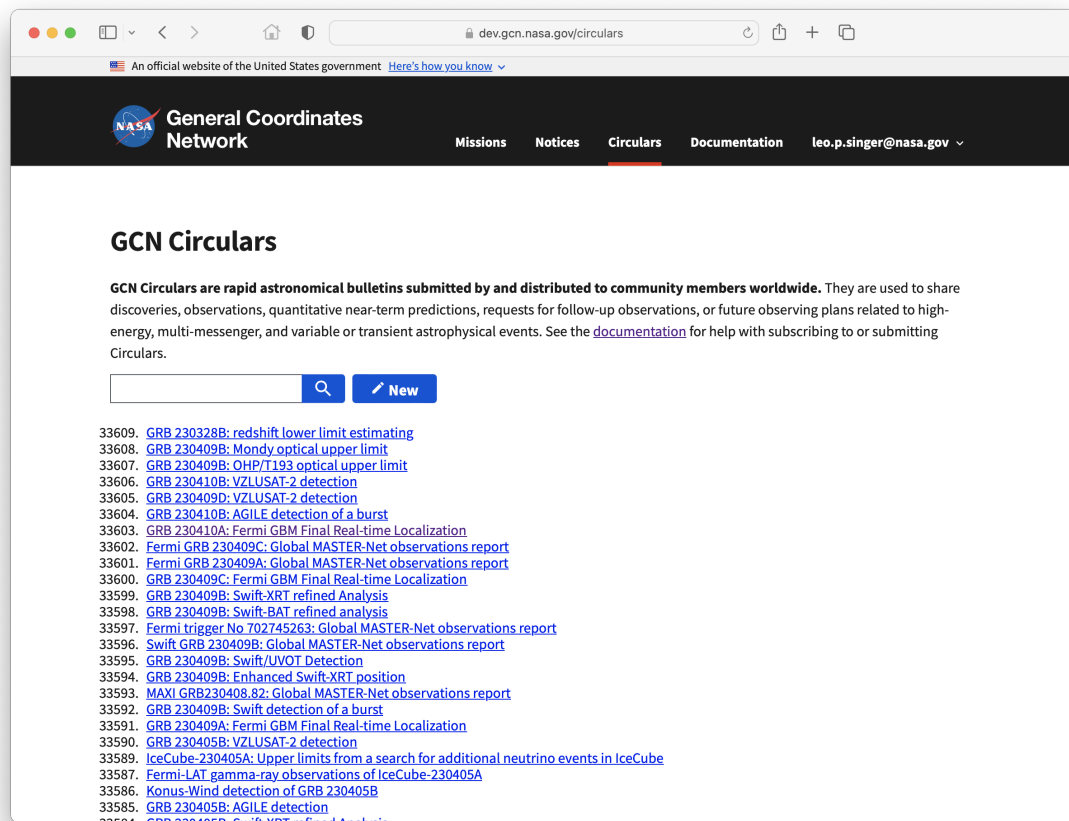
- Name***: A text input field containing "Demo".
- Recipient***: A text input field containing "leo.p.singer@nasa.gov".
- Format**: Three buttons labeled "Text", "VOEvent", and "Binary". The "Text" button is currently selected.
- Types**: A list of checkboxes with labels and links to details pages:
 - Agile ([Details](#))
 - AMON ([Details](#))
 - Calet ([Details](#))
 - Fermi ([Details](#))
 - IceCube ([Details](#))
 - INTEGRAL ([Details](#))

Below the "Types" list, there is a note: "Plain text key: value pairs separated by newlines."

Self-service email alerts

Email is still the most popular way to receive GCN Notices.

- Previously, users had to contact the GCN Team to create or modify their subscriptions manually.
- Now, you can manage your email subscriptions yourself through our new web site.
- **Note:** to cancel legacy email subscriptions on the old web site, [contact us](#).



New and improved:

✨ GCN Circulares ✨

at <https://gcn.nasa.gov/circulars>

- Browse and search our new [archive](#).
- Manage your own email subscriptions.
- Enroll yourself and your colleagues to submit Circulares with arXiv-style peer endorsements.
- Submit Circulares with our [new Web form](#), or continue to submit by email.

(skip ahead for more on GCN Circulares)

What's staying the same?

GCN Classic is not going away any time soon. The following are still fully supported:

- GCN Notices legacy delivery mechanisms (email, socket, VOEvent Transport Protocol) of all current notice types
- GCN Circulars submission and delivery via email
- The old GCN Classic web site, <https://gcn.gsfc.nasa.gov>
- The live archives of [GCN Notices](#) on the old web site

However, new features and notice types are only available on the new web site and GCN Kafka.

Streaming GCN Notices in Python

Private < > gcn.nasa.gov

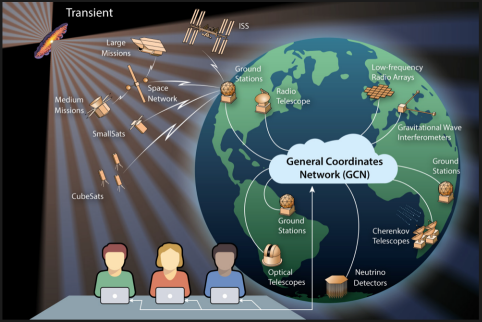
An official website of the United States government [Here's how you know](#)

NASA General Coordinates Network Missions Notices Circulars Documentation Sign in / Sign up

The new GCN: Multimessenger astronomy alerts delivered over Kafka

GCN distributes alerts between space- and ground-based observatories, physics experiments, and thousands of astronomers around the world.


[Start streaming GCN Notices](#)




The General Coordinates Network (GCN) is a public collaboration platform run by NASA for the astronomy research community to share alerts and rapid communications about high-energy, multimessenger, and transient phenomena. For more information, see [What is GCN?](#)

There are three ways to stream GCN Notices in real time:


For legacy applications
GCN Classic



Recommended
GCN Classic over Kafka



Coming soon
GCN Kafka

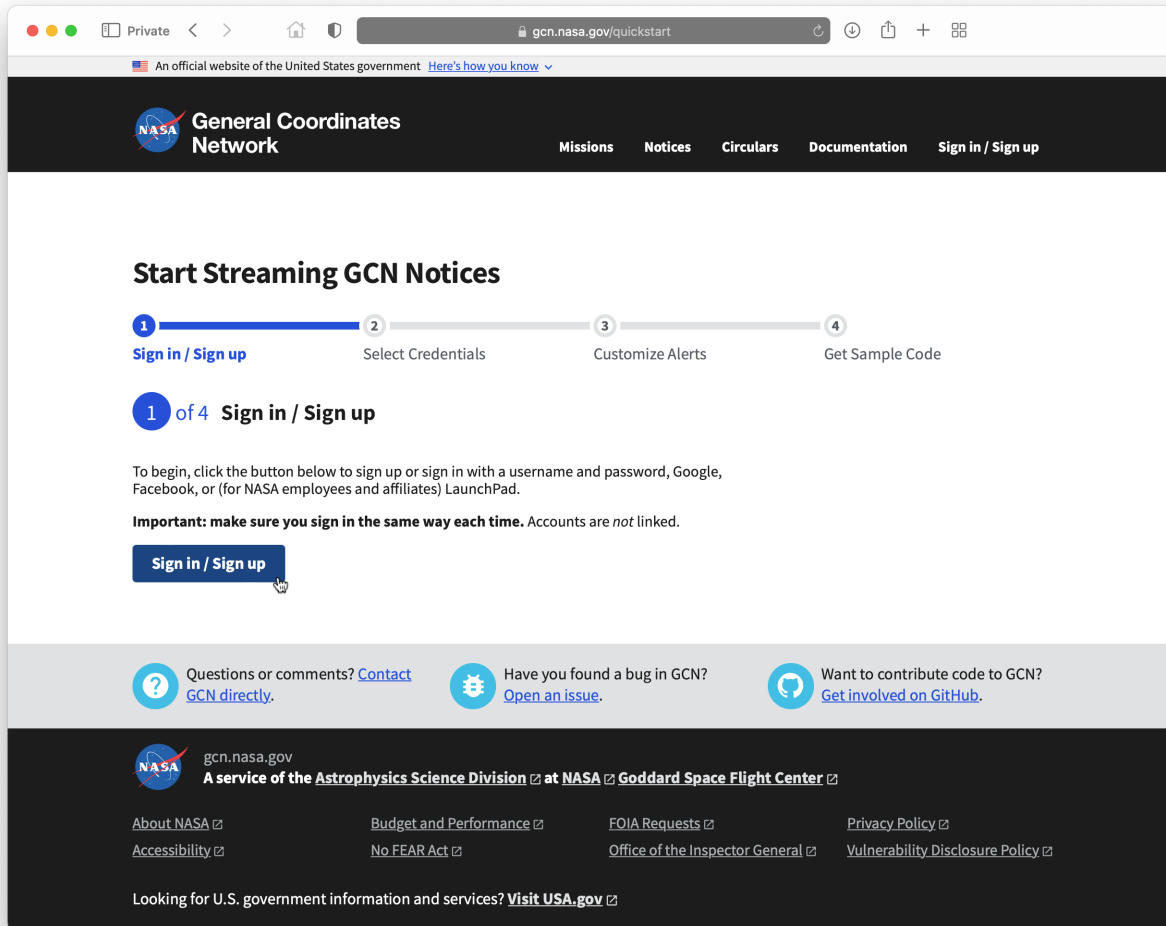


One format, one protocol

Launch quick start

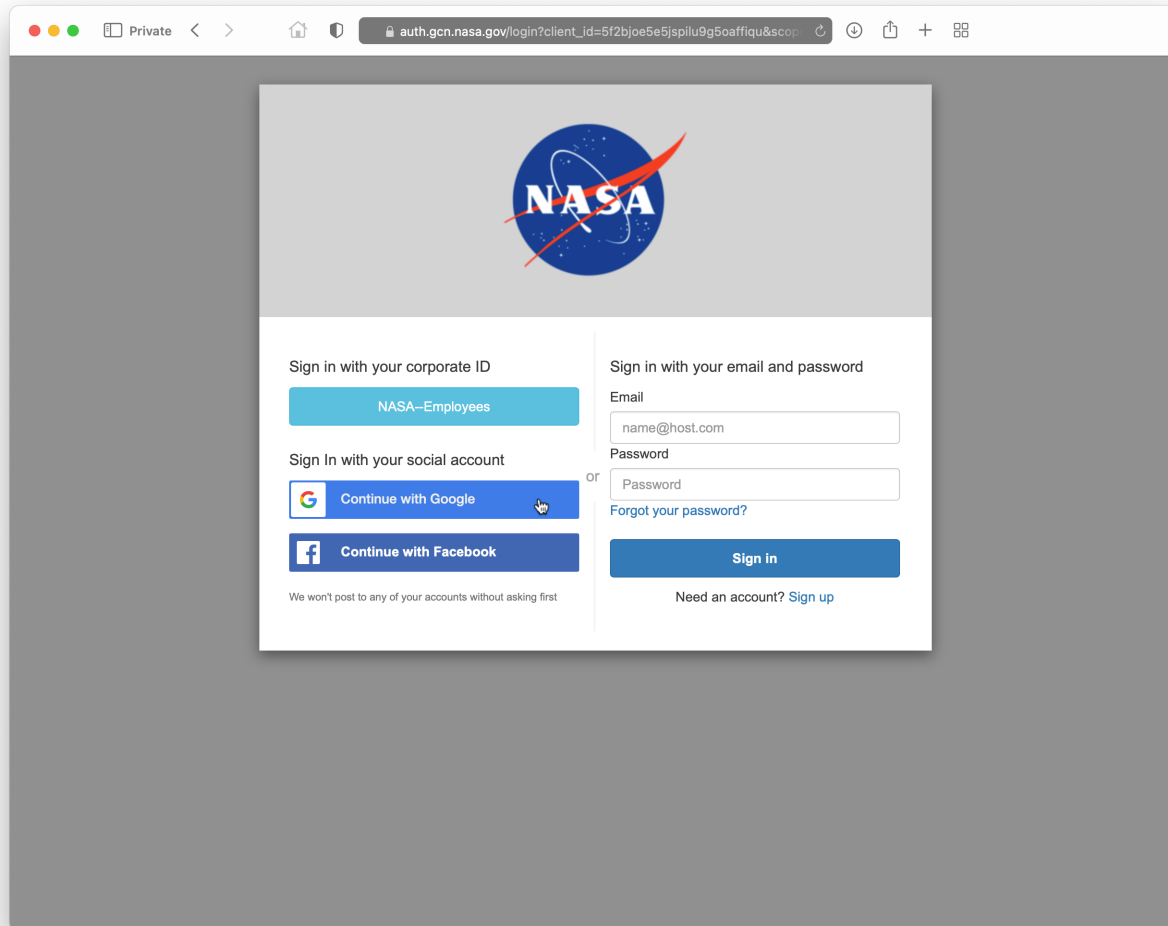
Go to <https://gcn.nasa.gov> and click Start streaming GCN Notices

(skip past demo)



Step 1: Sign in / Sign up

Click "Sign in / Sign up" to create a GCN account.

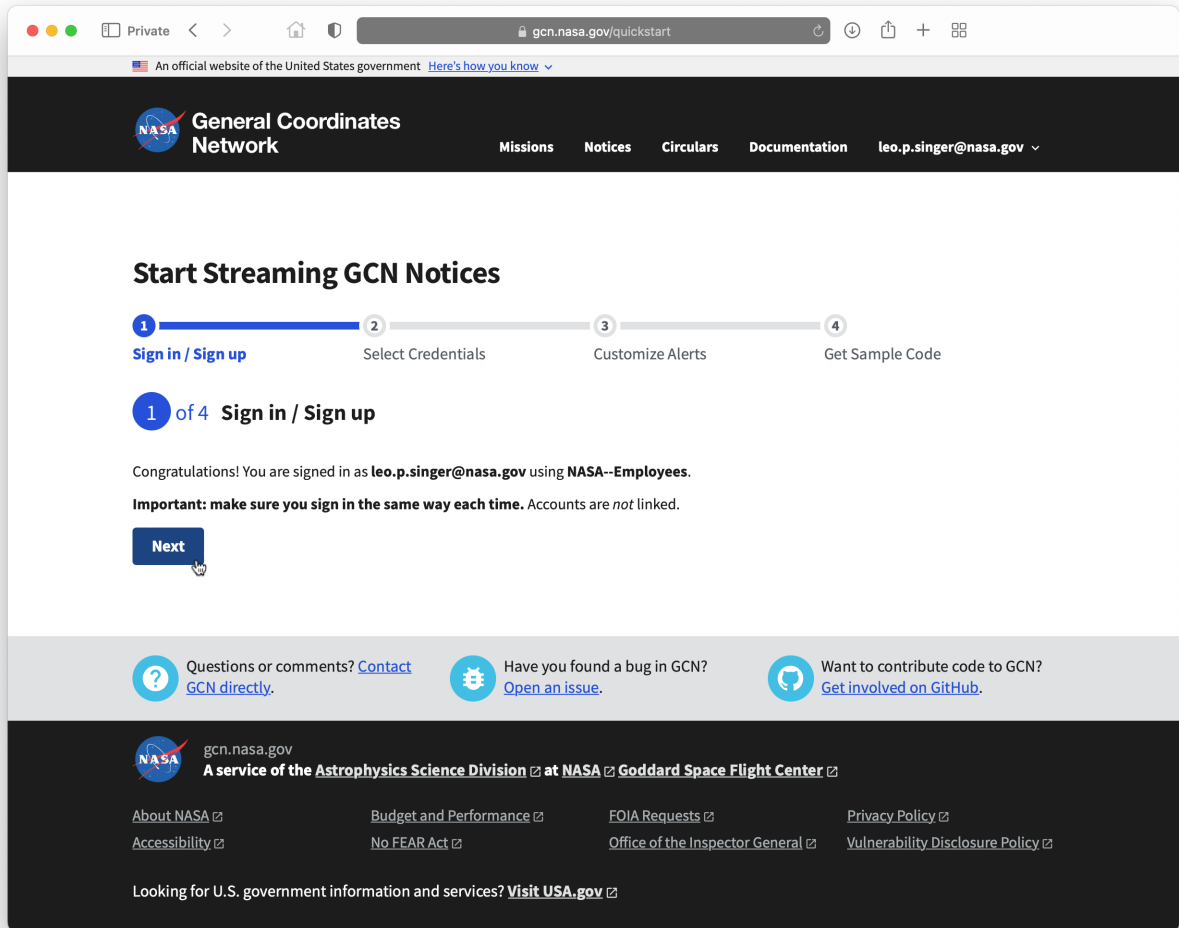


Choose how to sign up

Choose any one of the following methods to sign up:

- Email and password
- Google
- Facebook
- (for NASA employees and affiliates) LaunchPad

Important: make sure you sign in the same way each time. Accounts are *not* linked.



Step 1 is done

Click "Next" to continue

The screenshot shows a web browser window at gcn.nasa.gov/quickstart/credentials. The page is titled "Start Streaming GCN Notices" and features a progress bar with four steps: 1. Sign in / Sign up, 2. Select Credentials (current step), 3. Customize Alerts, and 4. Get Sample Code. Below the progress bar, the text reads "2 of 4 Select Credentials". The main content area explains that client credentials allow scripts to interact with GCN on the user's behalf and prompts the user to choose a name for the new credential. The name field contains "Work laptop". The scope is set to "gcn.nasa.gov/kafka-public-consumer". A reCAPTCHA "I'm not a robot" checkbox is checked. At the bottom, there are "Back" and "Create New Credentials" buttons.

gcn.nasa.gov/quickstart/credentials

An official website of the United States government [Here's how you know](#)

General Coordinates Network Missions Notices Circulars Documentation leo.p.singer@nasa.gov

Start Streaming GCN Notices

1 Sign in / Sign up 2 **Select Credentials** 3 Customize Alerts 4 Get Sample Code

2 of 4 **Select Credentials**


Client credentials allow your scripts to interact with GCN on your behalf.

Choose a name for your new client credential.

The name should help you remember what you use the client credential for, or where you use it. Examples: "My Laptop", "Lab Desktop", "GRB Pipeline".

Name

Scope

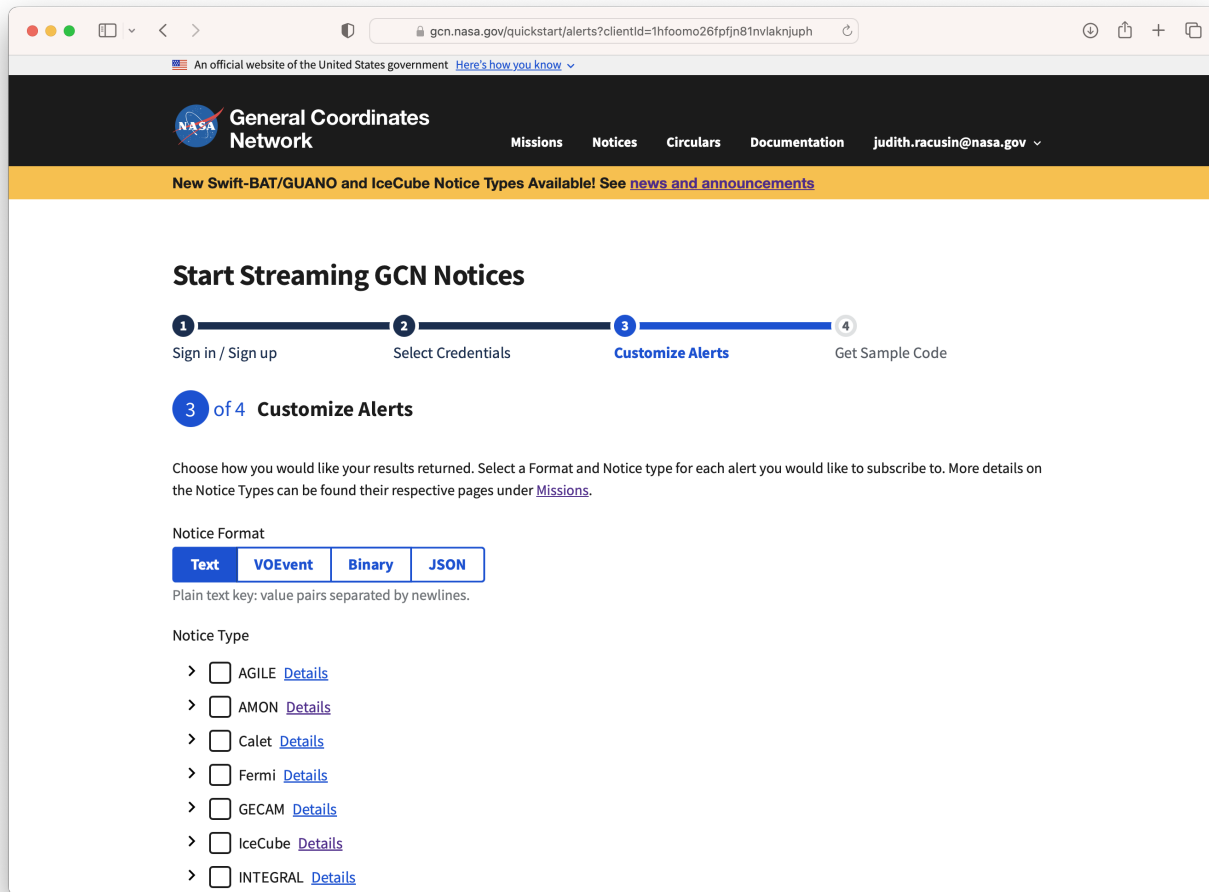
I'm not a robot  reCAPTCHA Privacy - Terms

[Back](#) [Create New Credentials](#)

Step 2: Select Credentials

Client credentials allow your scripts to interact with GCN on your behalf.

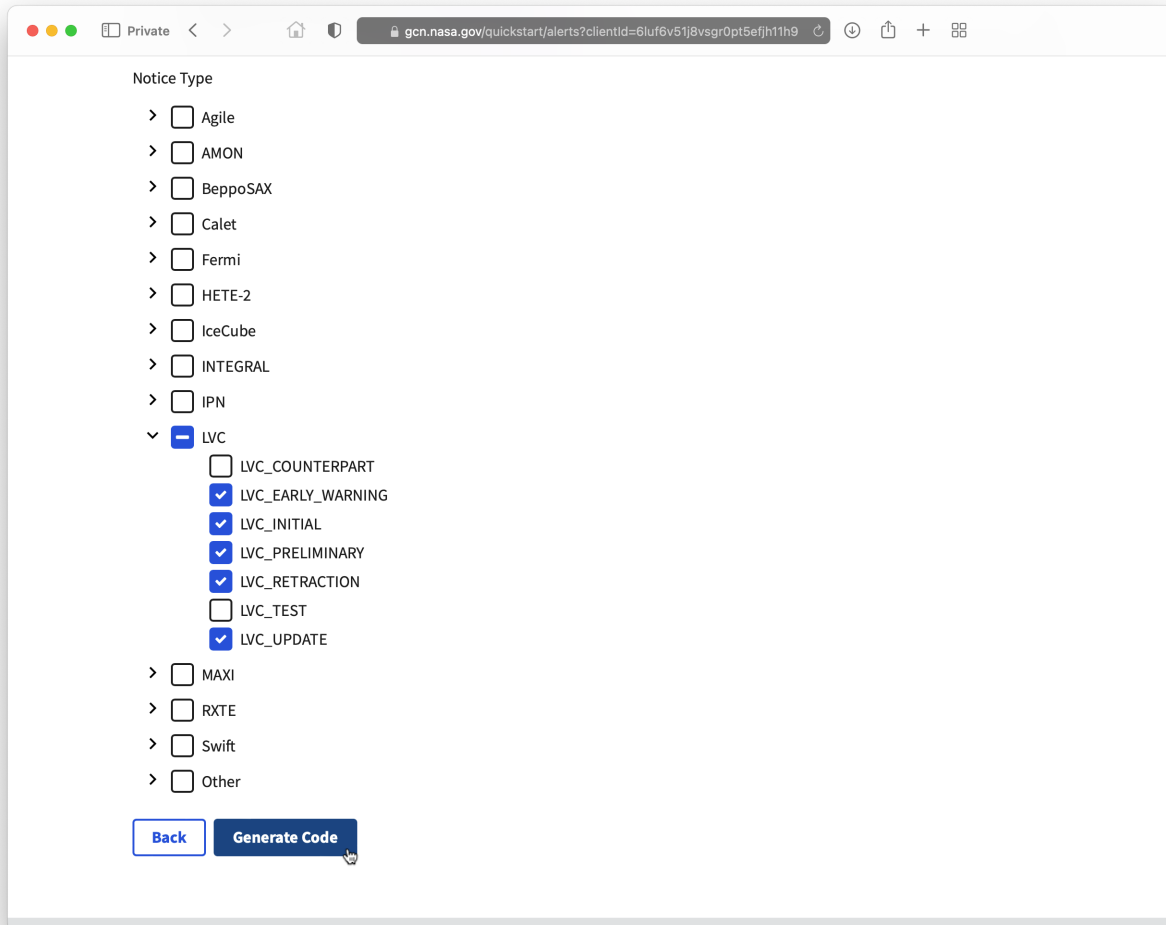
1. Choose a name for your credential.
2. Complete the CAPTCHA.
3. Click "Create New Credentials" to go to the next step.



Step 3: Customize Alerts

Select one of these alert formats.

- Text: plain text key-value pairs separated by newlines.
- VOEvent: [VOEvent XML](#).
- Binary: 160-byte binary format. Field packing is [specific to each notice type](#).
- JSON: key-value pairs and arrays, allows embedding attachments.



Step 3 Continued: Choose Notice Types

Select the missions that you want to subscribe to. Expand a mission to fine-tune notice types.

The screenshot shows a web browser window at gcn.nasa.gov/quickstart/code?noticeFormat=text&LVC_INITIAL=0. The page is titled "Start Streaming GCN Notices" and features a progress bar with four steps: 1. Sign in / Sign up, 2. Select Credentials, 3. Customize Alerts, and 4. Get Sample Code. The fourth step is currently active. Below the progress bar, there are tabs for different programming languages: Python, Node.js (ESM), Node.js (CommonJS), C/C++, and C#. The Python tab is selected, showing instructions to install the 'gcn-kafka' package using pip or conda, and a code block for a Python consumer script.

```
from gcn_kafka import Consumer
# Connect as a consumer.
# Warning: don't share the client secret with others.
consumer = Consumer(client_id='4bu1kph141cmsi7ef11saa1iro',
                    client_secret='1iq5lc4gc2ritfncujb30hk7dh3gb2bhnu2rr42e8i17vjeqkibj')
# Subscribe to topics and receive alerts
```

Step 4: Get Sample Code

Copy and paste Python client code or download it to your computer to run.

Client sample code is also available in Node.js (ESM or CommonJS), C/C++, C#.

Install Python client

Run this command to install with [pip](#):

```
pip install gcn-kafka
```

or this command to install with [conda](#):

```
conda install -c conda-forge gcn-kafka
```

Connect to Kafka

```
from gcn_kafka import Consumer

consumer = Consumer(
    client_id='fill me in',
    client_secret='fill me in'
)
```

Subscribe to topics and receive alerts

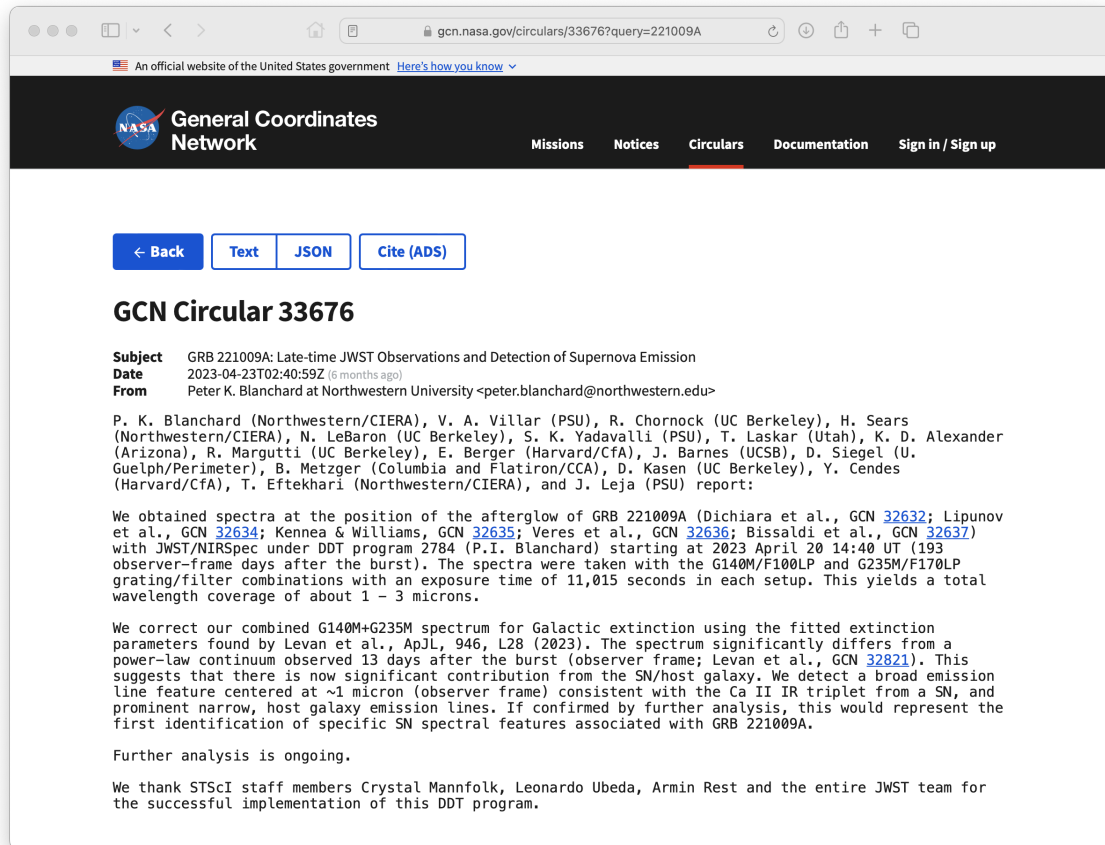
```
consumer.subscribe([
    'gcn.classic.text.LVC_INITIAL',
    'gcn.classic.text.LVC_PRELIMINARY',
    'gcn.classic.text.LVC_RETRACTION',
    'gcn.classic.text.LVC_UPDATE'
])
while True:
    if message.error():
        print(message.error())
        continue
    for message in consumer.consume(timeout=1):
        print(message.value())
```

The New GCN Circulars

Improvements to Circulars

The new GCN Circulars are:

- **Self service:** Manage your own subscriptions and settings.
- **More inclusive:** It's easy to join the community and submit a GCN Circular.
- **Fast:** Email notifications are distributed in parallel to all users within seconds.
- **Robust:** Circulars run on highly available, distributed cloud services.
- **Sustainable:** GCN Circulars are robustly funded by NASA and are part of the open source GCN project.



The screenshot shows a web browser displaying the GCN Circular 33676 page. The browser address bar shows the URL: gcn.nasa.gov/circulars/33676?query=221009A. The page header includes the NASA logo and the text "General Coordinates Network". Navigation links for "Missions", "Notices", "Circulars", "Documentation", and "Sign in / Sign up" are visible. Below the header, there are buttons for "< Back", "Text", "JSON", and "Cite (ADS)". The main content area is titled "GCN Circular 33676" and contains the following text:

Subject GRB 221009A: Late-time JWST Observations and Detection of Supernova Emission
Date 2023-04-23T02:40:59Z (6 months ago)
From Peter K. Blanchard at Northwestern University <peter.blanchard@northwestern.edu>

P. K. Blanchard (Northwestern/CIERA), V. A. Villar (PSU), R. Chornock (UC Berkeley), H. Sears (Northwestern/CIERA), N. LeBaron (UC Berkeley), S. K. Yadavalli (PSU), T. Laskar (Utah), K. D. Alexander (Arizona), R. Margutti (UC Berkeley), E. Berger (Harvard/CfA), J. Barnes (UCSB), D. Siegel (U. Guelph/Perimeter), B. Metzger (Columbia and Flatiron/CCA), D. Kasen (UC Berkeley), Y. Cendes (Harvard/CfA), T. Eftekhari (Northwestern/CIERA), and J. Leja (PSU) report:

We obtained spectra at the position of the afterglow of GRB 221009A (Dichiara et al., GCN 32632; Lipunov et al., GCN 32634; Kennea & Williams, GCN 32635; Veres et al., GCN 32636; Bissaldi et al., GCN 32637) with JWST/NIRSpec under DDT program 2784 (P.I. Blanchard) starting at 2023 April 20 14:40 UT (193 observer-frame days after the burst). The spectra were taken with the G140M/F100LP and G235M/F170LP grating/filter combinations with an exposure time of 11,015 seconds in each setup. This yields a total wavelength coverage of about 1 – 3 microns.

We correct our combined G140M+G235M spectrum for Galactic extinction using the fitted extinction parameters found by Levan et al., ApJL, 946, L28 (2023). The spectrum significantly differs from a power-law continuum observed 13 days after the burst (observer frame; Levan et al., GCN 32821). This suggests that there is now significant contribution from the SN/host galaxy. We detect a broad emission line feature centered at ~1 micron (observer frame) consistent with the Ca II IR triplet from a SN, and prominent narrow, host galaxy emission lines. If confirmed by further analysis, this would represent the first identification of specific SN spectral features associated with GRB 221009A.





Further analysis is ongoing.

We thank STScI staff members Crystal Mannfolk, Leonardo Ubeda, Armin Rest and the entire JWST team for the successful implementation of this DDT program.

Migrating GCN Circulars from GCN Classic

On April 17, 2023, GCN Circulars moved from the old site to the new one. If you had an account on the old system, then you already have an account on the new one!

GCN CIRCULARS MIGRATION CHEAT SHEET

	Old	New
 Web archive	https://gcn.gsfc.nasa.gov/gcn3_archive.html	https://gcn.nasa.gov/circulars
 Emails come from	gcncirc@capella2.gsfc.nasa.gov	no-reply@gcn.nasa.gov
 Submit Circulars by email to	gcncirc@capella2.gsfc.nasa.gov	gcncirc@capella2.gsfc.nasa.gov circulars@gcn.nasa.gov (recommended)
 Submit Circulars by web form	(not supported)	https://gcn.nasa.gov/circulars/new

Tutorial:

Receiving GCN Circulars

dev.gcn.nasa.gov

An official website of the United States government [Here's how you know](#)

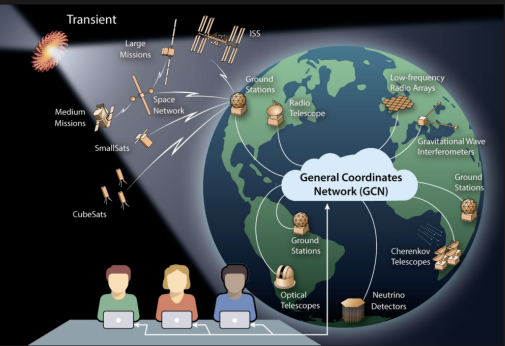
NASA General Coordinates Network

Missions Notices Circulars Documentation **Sign in / Sign up**

The new GCN: Multimessenger astronomy alerts delivered over Kafka

GCN distributes alerts between space- and ground-based observatories, physics experiments, and thousands of astronomers around the world.

[Start streaming GCN Notices](#)



The diagram illustrates the General Coordinates Network (GCN) as a central hub connecting various astronomical observatories and missions. The central hub is labeled "General Coordinates Network (GCN)". It is connected to several categories of observatories and missions: "Transient" (Large Missions, Medium Missions, SmallSats, CubeSats), "Space Network" (ISS, LRO, etc.), "Ground Stations", "Radio Telescope", "Low-Frequency Radio Arrays", "Gravitational Wave Interferometers", "Ground Stations", "Cherenkov Telescopes", "Neutrino Detectors", and "Optical Telescopes". The diagram shows a globe with these observatories distributed across it, and arrows indicating the flow of data and alerts between them and the central GCN hub. Below the globe, three people are shown sitting at a desk with laptops, representing the astronomers who receive these alerts.

The General Coordinates Network (GCN) is a public collaboration platform run by NASA for the astronomy research community to share alerts and rapid communications about high-energy, multimessenger, and transient phenomena. For more information, see [What is GCN?](#)

There are three ways to stream GCN Notices in real time:

- For legacy applications
GCN Classic
- Recommended
GCN Classic over Kafka
- Coming soon
GCN Kafka

Step 1: Sign in / Sign up

Click "Sign in / Sign up" to sign in to your GCN account or to sign up.

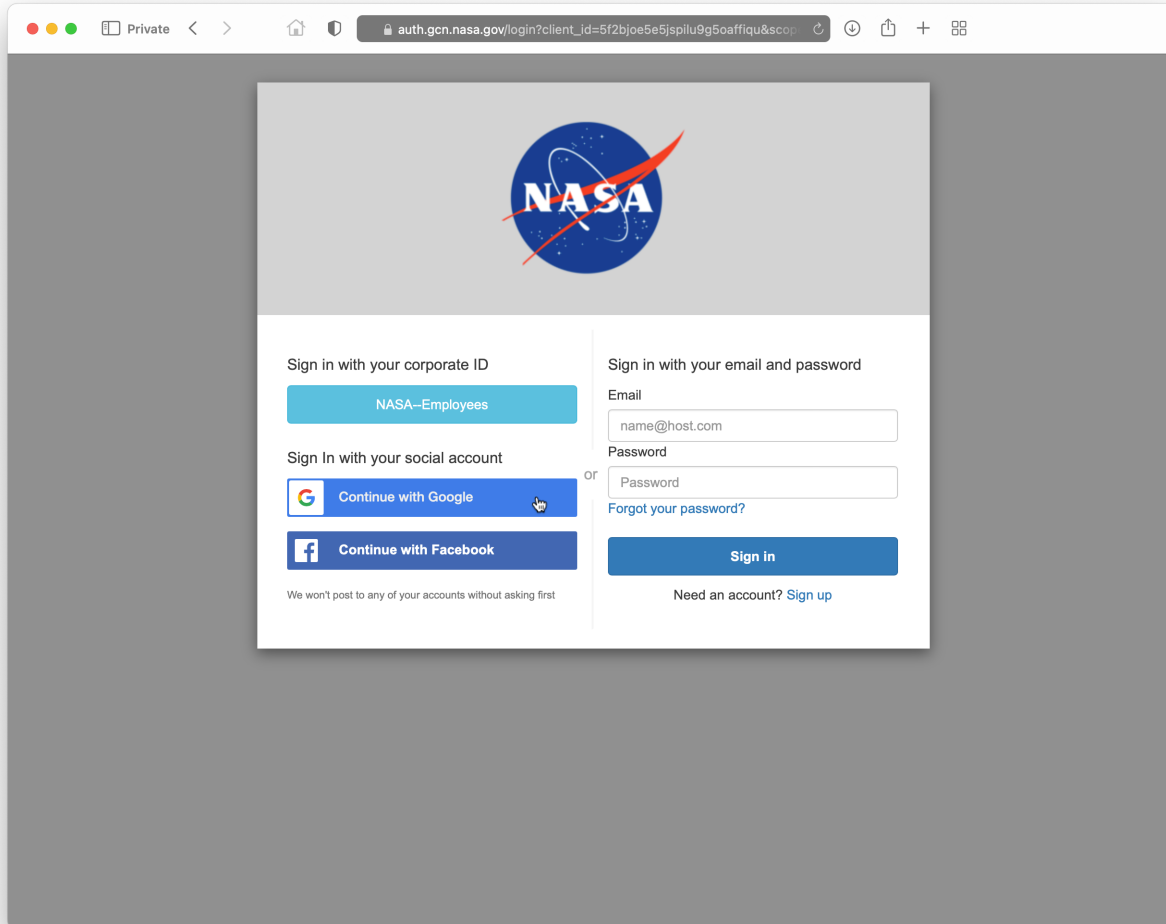
Choose how to sign up

Choose any one of the following methods to sign up:

- Email and password
- Google
- Facebook
- (for NASA employees and affiliates) LaunchPad

Important: make sure you sign in the same way each time. Accounts are *not* linked.

Legacy GCN Classic Circulars users: Select “Sign up” not “Sign in” on first login to migrate your settings.



dev.gcn.nasa.gov

An official website of the United States government [Here's how you know](#)

NASA General Coordinates Network

Missions Notices Circulars Documentation leo.p.singer@nasa.gov ^

Profile
Peer Endorsements
Client Credentials
Email Notifications
Sign Out

The new GCN: Multimessenger astronomy alerts delivered over Kafka

GCN distributes alerts between space- and ground-based observatories, physics experiments, and thousands of astronomers around the world.

[Start streaming GCN Notices](#)

The General Coordinates Network (GCN) is a public collaboration platform run by NASA for the astronomy research community to share alerts and rapid communications about high-energy, multimessenger, and transient phenomena. For more information, see [What is GCN?](#)

There are three ways to stream GCN Notices in real time:

- For legacy applications
GCN Classic
- Recommended
GCN Classic over Kafka
- Coming soon
GCN Kafka

Step 2: Go to Email Notifications settings

- Select the user menu from the navigation bar.
- Choose **Email Notifications** from the user menu.

Step 3: Toggle Email Notifications

Toggle Circulares **On** or **Off** to enable or disable email notifications.

- Circulares are sent to the email address that is associated with your GCN account.
- **Users migrated from GCN Classic:** If you were subscribed to GCN Circulares in the old system, then you are subscribed in the new system automatically.

The screenshot shows a web browser window at the URL `dev.gcn.nasa.gov/user/email`. The page header includes the NASA logo and the text "General Coordinates Network". A navigation bar contains links for "Missions", "Notices", "Circulares", and "Documentation", along with a user profile dropdown menu showing "leo.p.singer@nasa.gov".

The main content area is titled "Email Notifications" and includes a sidebar with links for "Profile", "Peer Endorsements", "Client Credentials", "Email Notifications" (which is highlighted), and "Sign Out".

The "Email Notifications" section contains the following information:

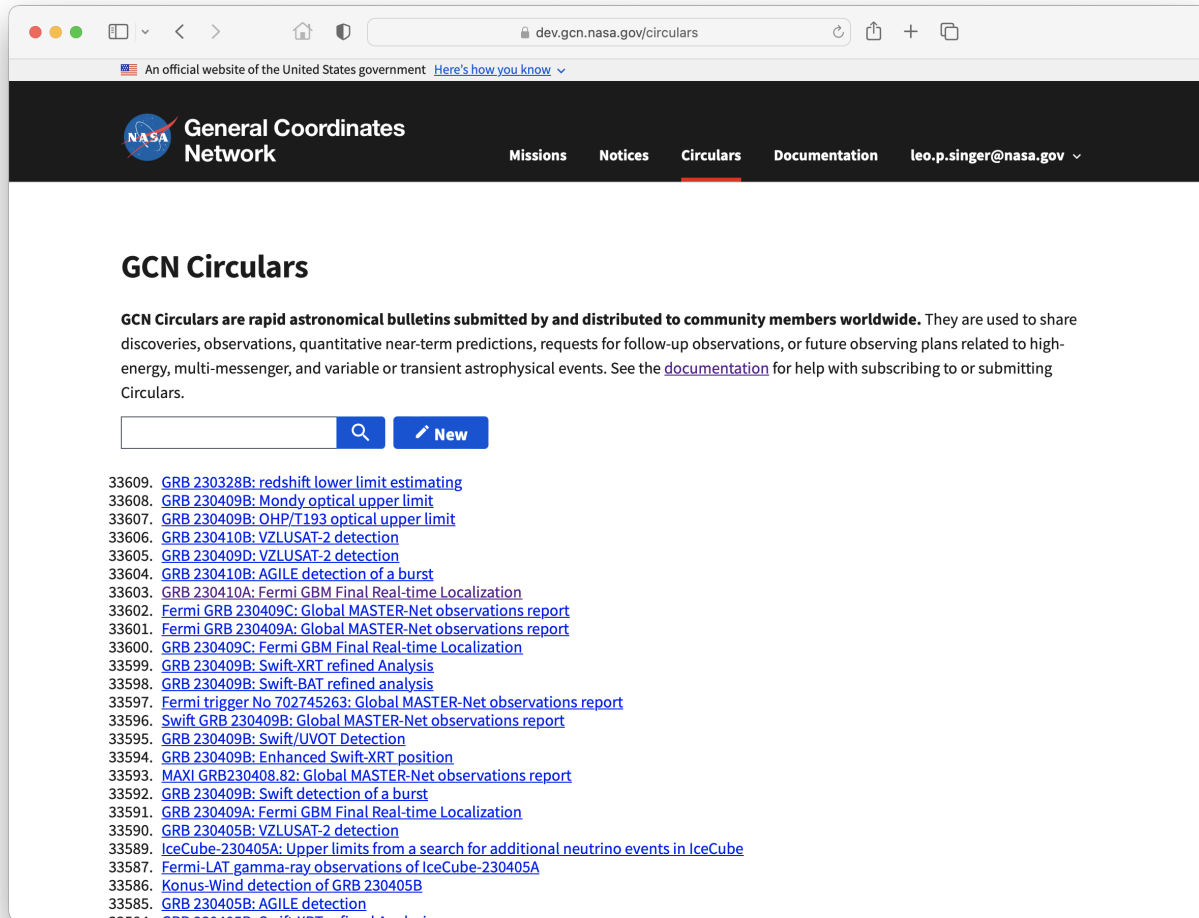
- Email Notifications:** Create and manage email subscriptions to GCN Circulares and Notices here.
- Circulares:** A toggle switch is currently set to "On". A "Saved" indicator is visible to the left of the toggle.
- Notices:** A "+ Add" button is present.

Below the "Notices" section, there is a note: "You can create as many **Notice** subscription alerts as you like. To create a new alert, click the 'Add' button. Once you have created an alert, you can click the 'Test Message' button to send a test email to the listed recipient, to verify that the emails will make it into your inbox."

A note at the bottom states: "Note that your preferences here do not affect prior subscriptions on the old web site, <https://gcn.gsfc.nasa.gov/>. To change your GCN Classic Notice subscriptions, please [send us a message](#)."

A "Test" notification card is displayed at the bottom, showing details for a test message sent 3 days ago to the user's email address. The card includes buttons for "Test Message", "Edit", and "Delete".

Tutorial: **Submitting GCN Circulars**

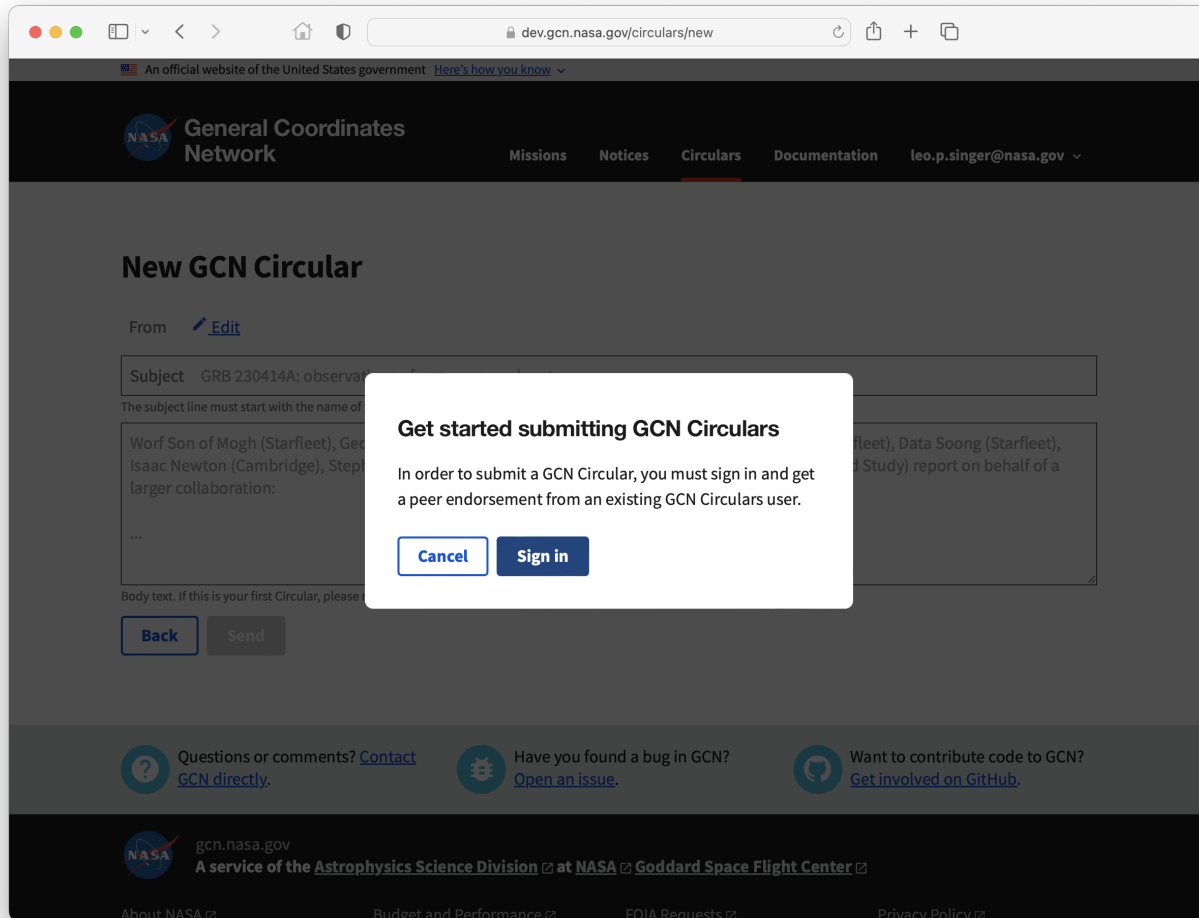


Step 1: Go to New Circular web form

1. Navigate to the GCN Circulars archive by tapping on **Circulars** in the navigation bar.
2. Tap the **New** button.

—or—

Go to
<https://gcn.nasa.gov/circulars/new>



Step 2: Sign in / Sign up

If you are not already signed in, then you will be prompted to sign in.

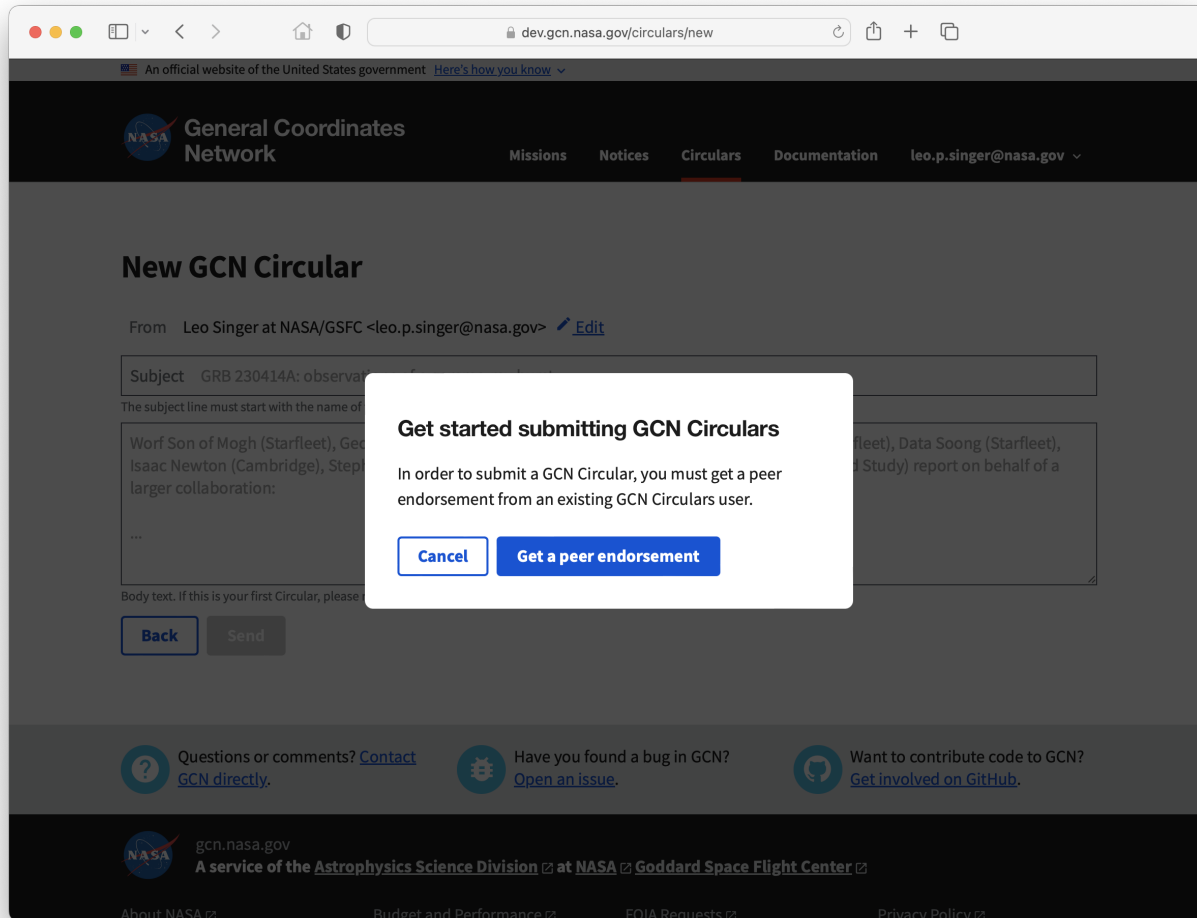
Tap **Sign in**, then follow the instructions to create a GCN account or sign in with an existing one.

(These are the same accounts used for receiving GCN Circulars, using Kafka, etc.)

Step 3: Get a Peer Endorsement

New users: once you have signed in to GCN, you will be prompted to start the peer endorsement process. Tap **Get a peer endorsement**.

Users migrated from GCN Classic: If you were authorized to submit GCN Circulars in the old system, then you are already authorized to submit Circulars and can endorse others once you have signed in to the new web site.



Step 4: Find a Peer Endorser

Find an endorser by name or email.

This should be someone who you know and who knows you: a fellow researcher, an advisor, or instructor.

Note: Endorsers are users who already can submit Circulars *and* have logged in to the new GCN system at least once.

Contact us at <https://gcn.nasa.gov/contact> if you can't find an endorser.

dev.gcn.nasa.gov/user/endorsements

An official website of the United States government [Here's how you know](#)

NASA General Coordinates Network

Missions Notices Circulars Documentation leo.p.singer@nasa.gov

Profile

Peer Endorsements

Client Credentials

Email Notifications

Sign Out

Peer Endorsements

Anyone can become a [GCN Circulars](#) submitter by receiving a *peer endorsement* from an existing submitter. An endorsement vouches that the user is in good standing with the astronomy community.

Peer endorsements (inspired by [arXiv](#)) help us to grow the GCN community sustainably while protecting the research integrity of GCN Circulars. We welcome submitters of diverse backgrounds including professional astronomers, amateurs, educators, and students.

Request Endorsements

You are not yet a GCN Circulars submitter. Use the form below to request an endorsement from an existing GCN Circulars user. This should be someone who you know and who knows you: a fellow researcher, an advisor, or an instructor.

If you don't find anyone who you recognize, then [contact us for help](#).

dak

Dakota Dutko at NASA <dakota.c.dutko@nasa.gov>

Request

Questions or comments? [Contact GCN directly](#).

Have you found a bug in GCN? [Open an issue](#).

Want to contribute code to GCN? [Get involved on GitHub](#).

The screenshot shows a web browser window with the URL `dev.gcn.nasa.gov/user/endorsements`. The page header includes the NASA logo and the text "General Coordinates Network". A navigation bar contains links for "Missions", "Notices", "Circulars", "Documentation", and a user profile dropdown for "leo.p.singer@nasa.gov".

On the left side, there is a sidebar menu with the following items: "Profile", "Peer Endorsements" (highlighted with a blue bar), "Client Credentials", "Email Notifications", and "Sign Out".

The main content area is titled "Peer Endorsements". It contains the following text:

Anyone can become a [GCN Circulars](#) submitter by receiving a *peer endorsement* from an existing submitter. An endorsement vouches that the user is in good standing with the astronomy community.

Peer endorsements (inspired by [arXiv](#)) help us to grow the GCN community sustainably while protecting the research integrity of GCN Circulars. We welcome submitters of diverse backgrounds including professional astronomers, amateurs, educators, and students.

Request Endorsements

You are not yet a GCN Circulars submitter. Use the form below to request an endorsement from an existing GCN Circulars user. This should be someone who you know and who knows you: a fellow researcher, an advisor, or an instructor.

If you don't find anyone who you recognize, then [contact us for help](#).

Below the text is a form with a text input field containing "Dakota Dutko at NASA <dakota.c.dutko@nasa.gov>" and a blue "Request" button.

At the bottom of the page, there are three links with icons:

- Questions or comments? [Contact GCN directly](#).
- Have you found a bug in GCN? [Open an issue](#).
- Want to contribute code to GCN? [Get involved on GitHub](#).

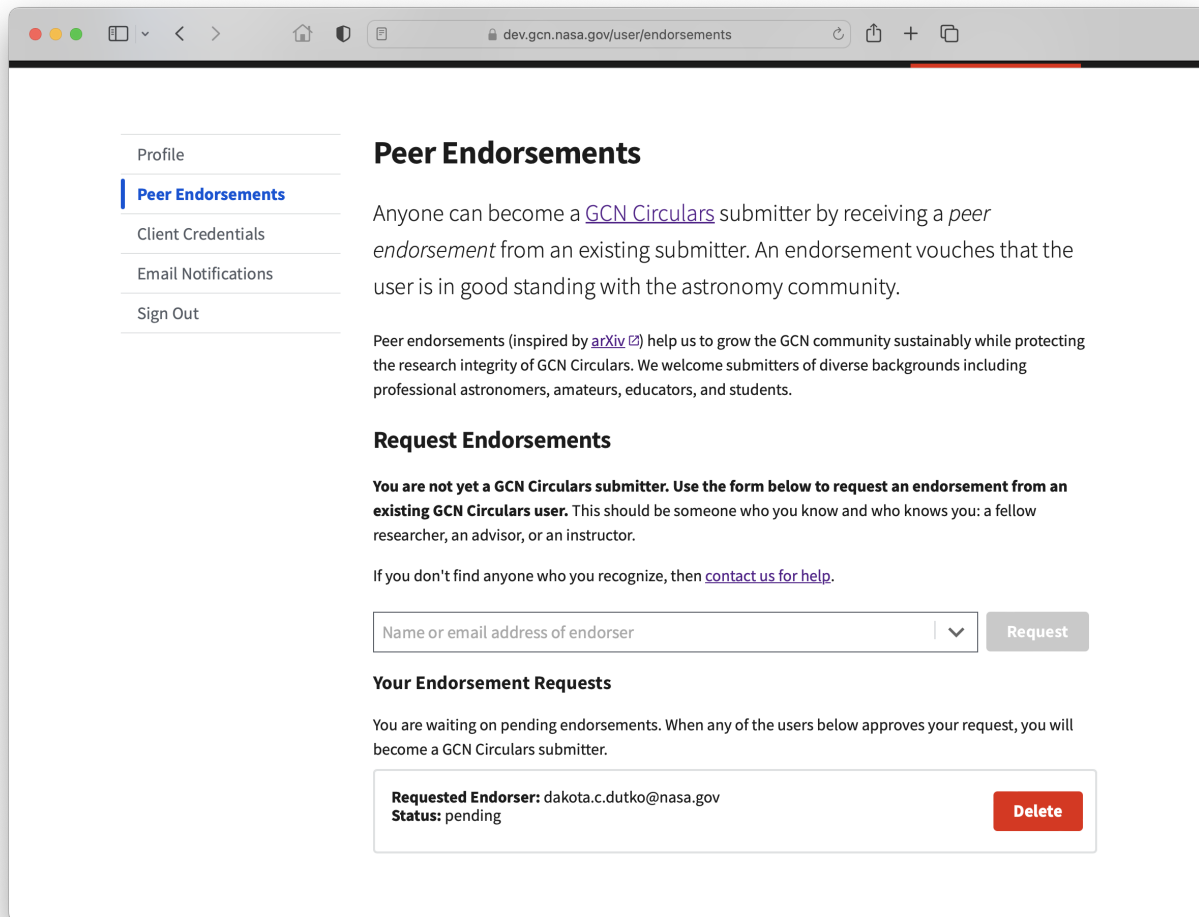
Step 5: Submit Peer Endorsement Request

Tap Request.

Step 5 (continued)

You can find this page again to see the status of your requests by tapping **Peer Endorsements** in the user menu.

- Both you and the person that you selected will receive an email notification for the request.
- When your selected endorser approves your request, you will be notified again.



The screenshot shows a web browser window with the URL `dev.gcn.nasa.gov/user/endorsements`. The page has a left sidebar with a menu containing: Profile, Peer Endorsements (highlighted), Client Credentials, Email Notifications, and Sign Out. The main content area is titled "Peer Endorsements" and contains the following text:

Peer Endorsements

Anyone can become a [GCN Circulars](#) submitter by receiving a *peer endorsement* from an existing submitter. An endorsement vouches that the user is in good standing with the astronomy community.

Peer endorsements (inspired by [arXiv](#)) help us to grow the GCN community sustainably while protecting the research integrity of GCN Circulars. We welcome submitters of diverse backgrounds including professional astronomers, amateurs, educators, and students.

Request Endorsements

You are not yet a GCN Circulars submitter. Use the form below to request an endorsement from an existing GCN Circulars user. This should be someone who you know and who knows you: a fellow researcher, an advisor, or an instructor.

If you don't find anyone who you recognize, then [contact us for help](#).

Form fields: "Name or email address of endorser" (with a dropdown arrow) and a "Request" button.

Your Endorsement Requests

You are waiting on pending endorsements. When any of the users below approves your request, you will become a GCN Circulars submitter.

Request list item: "Requested Endorser: dakota.c.dutko@nasa.gov" and "Status: pending" with a "Delete" button.

The screenshot shows a web browser window with the URL `dev.gcn.nasa.gov/user/endorsements`. The page header includes the NASA logo and the text "General Coordinates Network". A navigation menu contains "Missions", "Notices", "Circulars", and "Documentation". The user's email address, `leo.p.singer@nasa.gov`, is displayed in the top right.

On the left side, there is a sidebar menu with the following items: "Profile", "Peer Endorsements" (highlighted), "Client Credentials", "Email Notifications", and "Sign Out".

Peer Endorsements

Anyone can become a [GCN Circulars](#) submitter by receiving a *peer endorsement* from an existing submitter. An endorsement vouches that the user is in good standing with the astronomy community.

Peer endorsements (inspired by [arXiv](#)) help us to grow the GCN community sustainably while protecting the research integrity of GCN Circulars. We welcome submitters of diverse backgrounds including professional astronomers, amateurs, educators, and students.

Approve Endorsements

You are a GCN Circulars submitter. You can [submit GCN Circulars](#), and other users can request peer endorsements from you. You may take any of the following actions for peer endorsement requests:

1. **Approve** if you know the user and you can vouch that they are in good standing.
2. **Reject** if you do not know the user or cannot vouch for them.
3. **Reject and Report** if you believe that the request is spam or is from a bot.

Requests awaiting your review

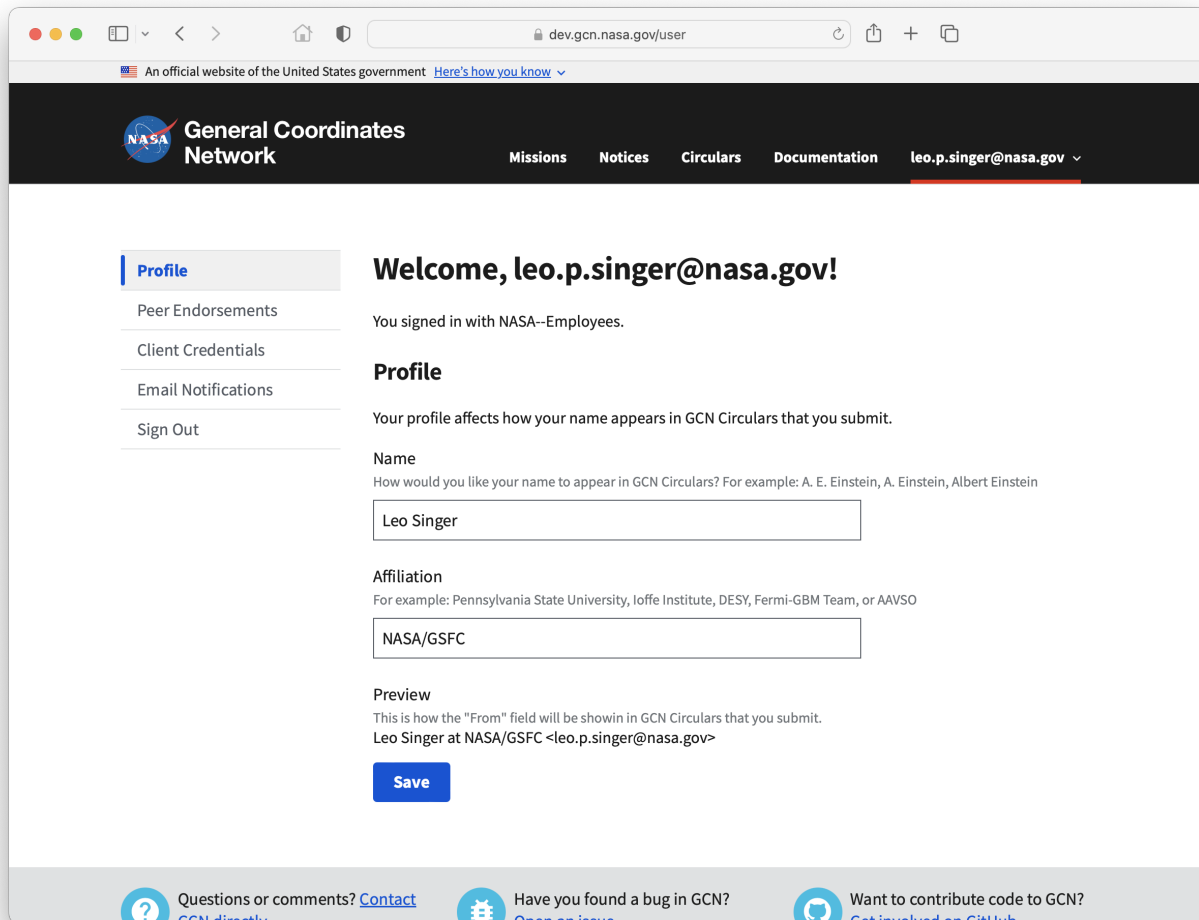
`dakota.c.dutko@nasa.gov`

[Approve](#) [Reject](#) [Reject and Report](#)

Step 6: Approve Peer Endorsements Yourself

Congratulations! Now you can post GCN Circulars and you can also approve new users yourself.

When a new user requests an endorsement from you, the request will appear on this same page.



Step 7: Update your Profile and Review the Style Guide

Prepare to submit your first Circular:

- Review the community's [Circulars style guide](#).
- Update your name and optional affiliation as they will appear in Circulars by selecting **Profile** from the user menu.

The screenshot shows a web browser window at gcn.nasa.gov/circulars/new. The page is titled "New GCN Circular" and is part of the "General Coordinates Network" website. The form includes a "From" field with the email "Leo P. Singer at NASA/GSFC <leo.p.singer@nasa.gov>" and an "Edit" link. The "Subject" field contains "GRB 231017A: observations of a gamma-ray burst". Below the subject field, there is a note: "The subject line must contain (and should start with) the name of the transient, which must start with one of the [known keywords](#)". There are "Edit" and "Preview" buttons. The main text area contains the following text: "Worf Son of Mogh (Starfleet), Geordi LaForge (Starfleet), Beverly Crusher (Starfleet), Deanna Troi (Starfleet), Data Soong (Starfleet), Isaac Newton (Cambridge), Stephen Hawking (Cambridge), and Albert Einstein (Institute for Advanced Study) report on behalf of a larger collaboration:". Below the text area, there is a "Body text" instruction: "Body text. If this is your first Circular, please review the [style guide](#). References to Circulars, DOIs, arXiv preprints, and transients are automatically shown as links; see [syntax](#)". At the bottom of the form, there are "Back" and "Send" buttons. The footer of the page includes links for "Questions or comments? [Contact GCN directly](#)", "Have you found a bug in GCN? [Open an issue](#)", and "Want to contribute code to GCN? [Get involved on GitHub](#)".

Step 8: Post a Circular

Submit a Circular in exactly *one* of the following ways:

- By web form: click **New** button on the GCN Circulars archive
- By email: send to circulars@gcn.nasa.gov
- By email (legacy): send to gcncirc@capella2.gsfc.nasa.gov

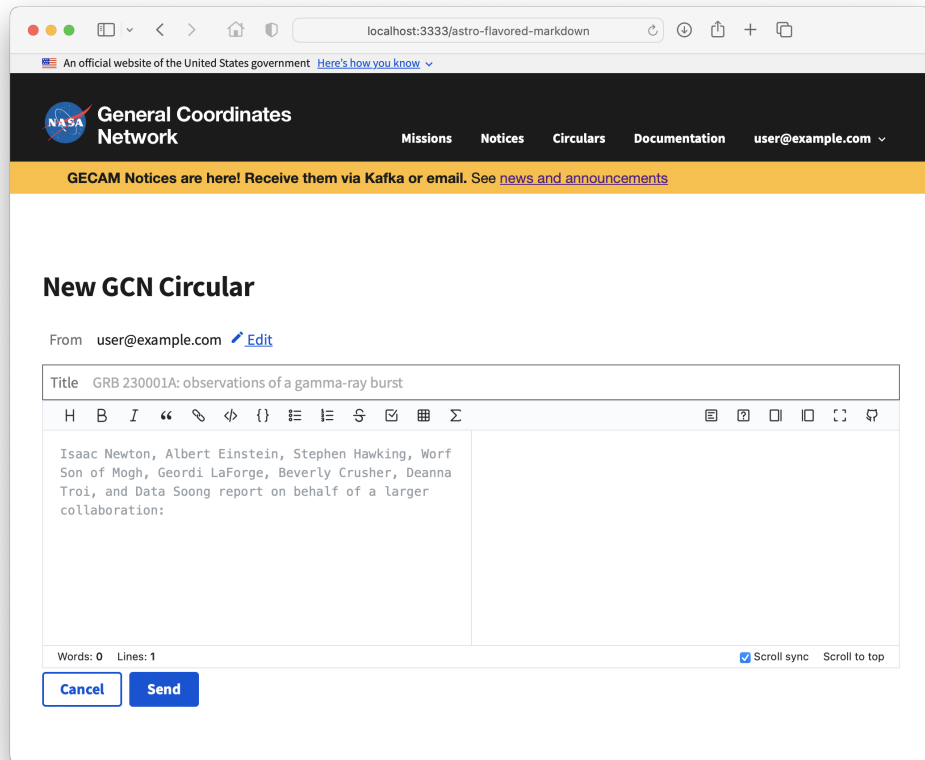
Important: do *not* Cc: both submission addresses!

What's next for GCN?

Coming soon to GCN Circulars

We're planning lots of enhancements soon to make GCN Circulars even better:

- Receive Circulars over Kafka
- Real-time integration with [SAO/NASA Astrophysics Data Service \(ADS\)](#)
- Link multiple emails with your account
- Link your [ORCID](#) to your account
- DOIs and BiBTeX entries for all Circulars
- Browse Circulars by event and source class
- Data extraction via Natural Language Models
- Embed tables, coordinates, images, and styled text in Circulars with “Astro Flavored Markdown”



More enhancements are coming to GCN:

- New alert types and alerts from new missions and facilities
 - New Kafka-only notices for Swift-BAT/GUANO and IceCube
 - Many others in development including Glowbug, BurstCube, Super-K, Fermi-GBM, AMON
- Unified schema and alert format for GCN Kafka
- Integrated, searchable database of Notices and Circulars (GCN Viewer)
- Interoperability with other transient Kafka brokers (e.g. [SCiMMA](#))

The screenshot shows a web browser window with the URL gcn.nasa.gov/docs/noti. The page is titled "New Notice Producers" and is part of the "General Coordinates Network" website. The navigation menu includes "Missions", "Notices", "Circulars", "Documentation", and "judith.racusin@nasa.gov". A yellow banner at the top reads "New GCN Circulars features for September 2023! See [news and announcements](#)".

New Notice Producers

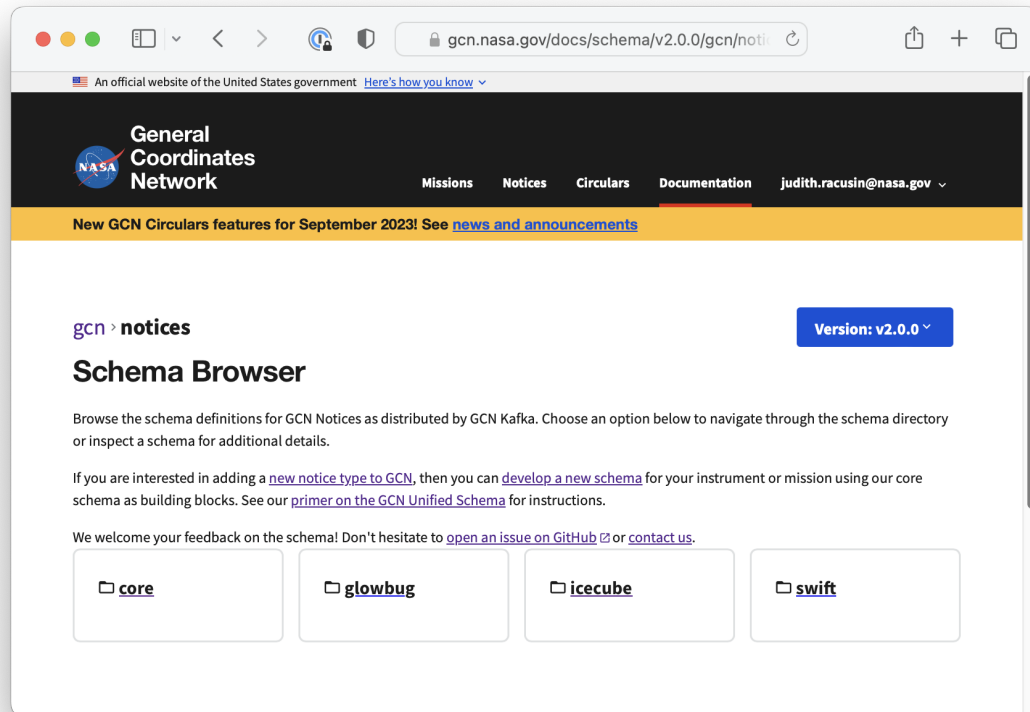
The following steps guide new instrument, mission, or observatory producers into setting up new notices streams that are distributed to the user community via [Kafka](#). This process requires interaction with the [GCN Team](#) to enable accounts and Kafka topics creation on the GCN Kafka broker. The GCN Team is also happy to work with the mission teams to help construct your alerts.

Start Producing Alerts

- 1 Sign in / Sign up**
Decide which of your team members will have programmatic access to produce your alerts. Make sure that they have all signed in at least once to the [GCN website](#) and the [GCN test website](#).
- 2 Name Your Kafka Topics**
Names of Kafka topics follow the format `gcn.notices.mission.notice_type`. Pick a prefix for your Kafka topic names, `mission.*`.
- 3 Contact the GCN Team**
Send the [GCN Team](#) your list of team members from Step 1 and your chosen Kafka topic prefix from Step 2. The GCN Team will reply after they have configured producer permissions for your team.
- 4 Draft Your Schema**
As a GCN Notice producer, you can create your own instrument-specific schema. Please contribute your schema to our [GitHub repository](#), placing it in a folder under `gcn/notices/mission` and submit a pull request for the GCN Team to review. For details, please refer to the [schema documentation](#).
- 5 Build Producer Code**
 - Log out and log back in.
 - Go through the [Start Streaming GCN Notices](#) process.
 - On Step 2, choose the scope `gcn.nasa.gov/kafka-mission-producer`.
 - Your producer code will look very similar to the [client example code](#) and Step 4 of [Start Streaming GCN Notices](#). `client_id` and `client_secret` can be found in Step 4 client example code.
 - Start from this and adjust the `client_id`, `client_secret`, `topic` and `data` content:

Create new Notice types

- All new notice topics will only be distributed by GCN Kafka
- See [step-by-step instructions](#)
- Preferred notice format is JSON
- [Unified JSON schema](#) provides common core




Unified schema and alert format for GCN Kafka


- JSON schema with common core fields
- Instrument/mission/observatory specific fields where needed
- Schema development documentation
- Schema Browser
- GitHub project: [nasa-gcn/gcn-schema](#)


Thanks for listening!

Web site: <https://gcn.nasa.gov>

This presentation: <https://nasa-gcn.github.io/gcn-presentation/>

 Questions or comments? [Contact GCN directly](#)

 Have you found a bug in GCN? [Open an issue](#)

 Want to contribute code to GCN? [Get involved on GitHub](#)