SiteLog Manager 2.0

International GNSS Service (IGS)
IGS Workshop 2022 – Splinter Session

Robert Khachikyan

29 June 2022

What is the SiteLog Manager?

- The SiteLog Manager (SLM) is a software ecosystem that was developed to assist the station operators update their station specific ASCII sitelogs at their convenience.
- SLM systematically parsed an uploaded ASCII sitelogs and detected any errors.
  - Prompted the users to correct without Network Coordinator's intervention
- Allowed users to save partial information and submit when data was confirmed.
- Upon succession, the metadata was saved in SQL database.
- Station operators no longer have to be main keepers of IGS sitelogs
- SQL Database eases the use of generating products, e.g., IGS.SNX, IGSNetwork.json, rcvr_ant.json, downloadable high resolution images of the network, etc.

IGS INTERNATIONAL GNSS SERVICE

Example of ASCII SiteLog – ABPO00MDG

```
3.9  Receiver Type            : SEPT POLARX5
     Satellite System         : GPS+GLO+GAL+BDS+QZSS
     Serial Number            : 3013358
     Firmware Version         : 5.4.0
     Elevation Cutoff Setting : 0 deg
     Date Installed           : 2021-01-29T21:25Z
     Date Removed             : CCYY-MM-DDThh:mmZ
     Temperature Stabiliz.    : none
     Additional Information   :
```

https://files.igs.org/pub/station/log

```
4.2  Antenna Type             : ASH701945G_M    SCIT
     Serial Number            : CR6200342009
     Antenna Reference Point  : BPA
     Marker->ARP Up Ecc. (m)  : 0.0083
     Marker->ARP North Ecc(m) : 0.0000
     Marker->ARP East Ecc(m)  : 0.0000
     Alignment from True N    : 0 deg
     Antenna Radome Type      : SCIT
     Radome Serial Number     :
     Antenna Cable Type       : Hutton LMR400
     Antenna Cable Length     : 50 m
     Date Installed           : 2018-05-15T07:30Z
     Date Removed             : CCYY-MM-DDThh:mmZ
     Additional Information   : Antenna aligned to
true North
```

IGS INTERNATIONAL GNSS SERVICE

SiteLog Manager Stats

148 Registered Agencies

750+ Stations

Active, Former, Proposed

Operating Systems (Top 10) - Full list/Versions - Unknown

Operating Systems	Pages	Percent	Hits	Percent
Android	1,496	37.7 %	13,031	39.9 %
Windows	1,399	35.3 %	12,624	38.6 %
Macintosh	846	21.3 %	1,639	5 %
iOS	94	2.3 %	4,702	14.4 %
Linux	70	1.7 %	581	1.7 %
Unknown	56	1.4 %	56	0.1 %
Unknown Unix system	1	0 %	1	0 %

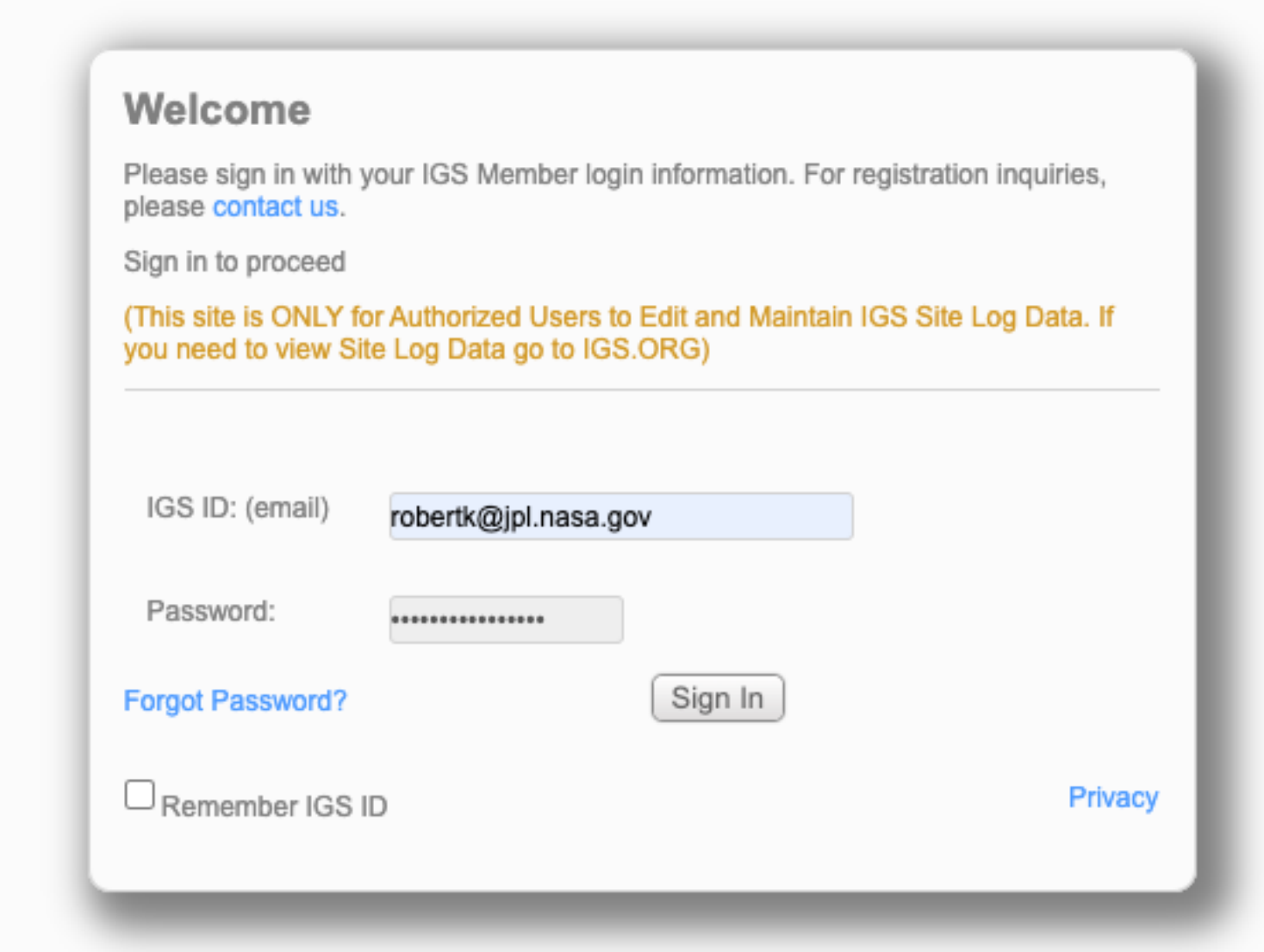
Visitors domains/countries (Top 10) - Full list

Domains/Countries		Pages	Hits	Bandwidth
Unknown	ip	4,251	16,482	253.69 MB
Non-Profit Organizations	org	1,560	1,591	32.19 MB
USA Military	mil	924	1,083	3.10 MB
Commercial	com	735	2,582	31.50 MB
New Zealand	nz	345	410	1.60 MB
Network	net	343	2,939	47.63 MB
India	in	51	787	11.80 MB
Japan	jp	29	123	1.54 MB
Germany	de	15	118	1.72 MB
British Indian Ocean Territory	io	8	8	14.84 KB
Others		61	1013	16.62 MB

Browsers (Top 10) - Full list/Versions - Unknown

Browsers	Grabber	Pages	Percent	Hits	Percent
Google Chrome	No	3,555	89.7 %	26,014	79.7 %
Firefox	No	176	4.4 %	1,409	4.3 %
Safari	No	154	3.8 %	4,978	15.2 %
Netscape	No	52	1.3 %	52	0.1 %
MS Internet Explorer	No	14	0.3 %	118	0.3 %
Edge	No	5	0.1 %	51	0.1 %
Unknown	?	4	0.1 %	4	0 %
IPhone (PDA/Phone browser)	No	1	0 %	7	0 %
Mozilla	No	1	0 %	1	0 %

IGS INTERNATIONAL GNSS SERVICE



https://slm.igs.org

Users authorized by Network Coordinator

Station List

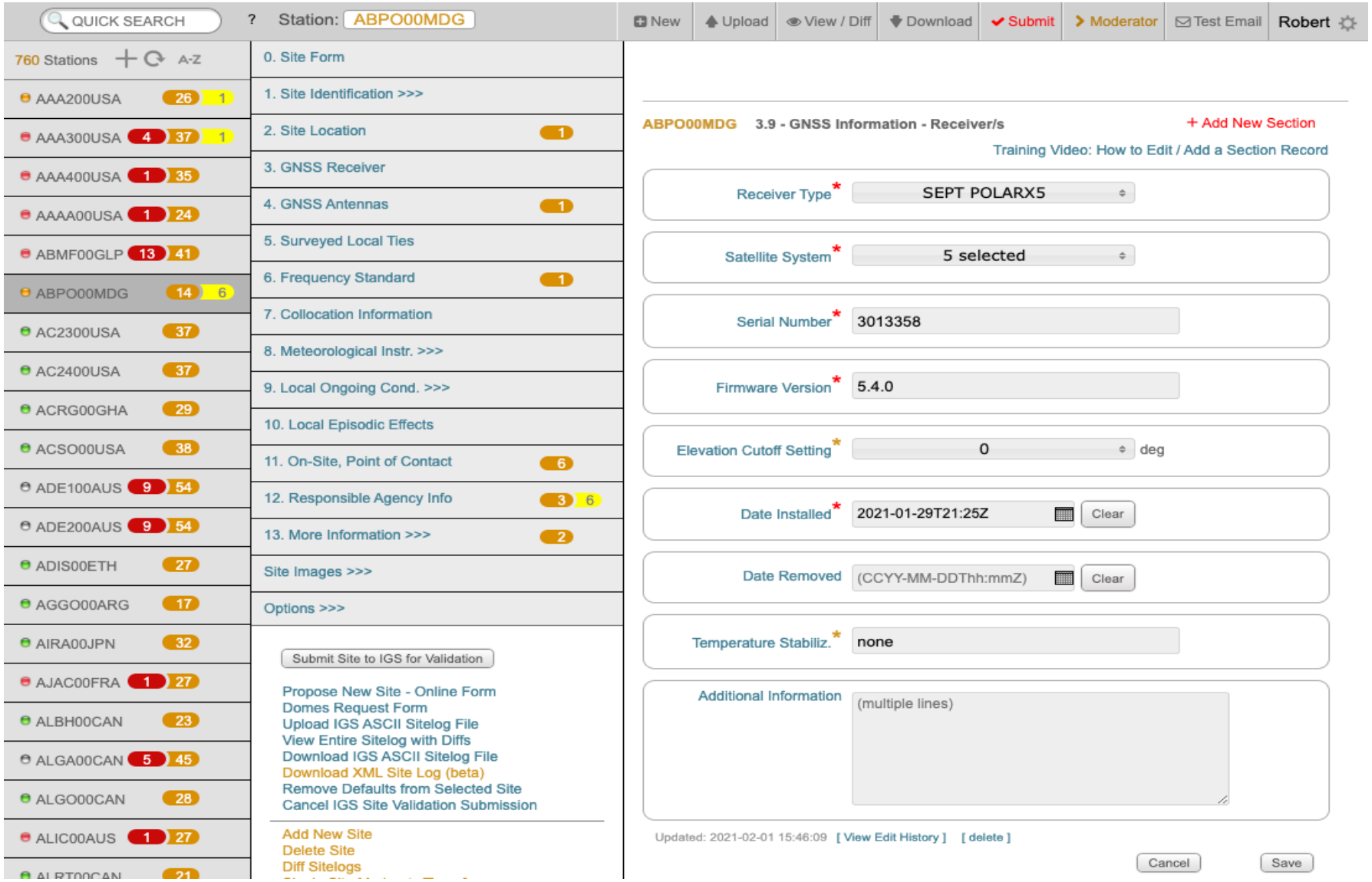
Section Headers

Metadata

Error

Preferred
-Empty-

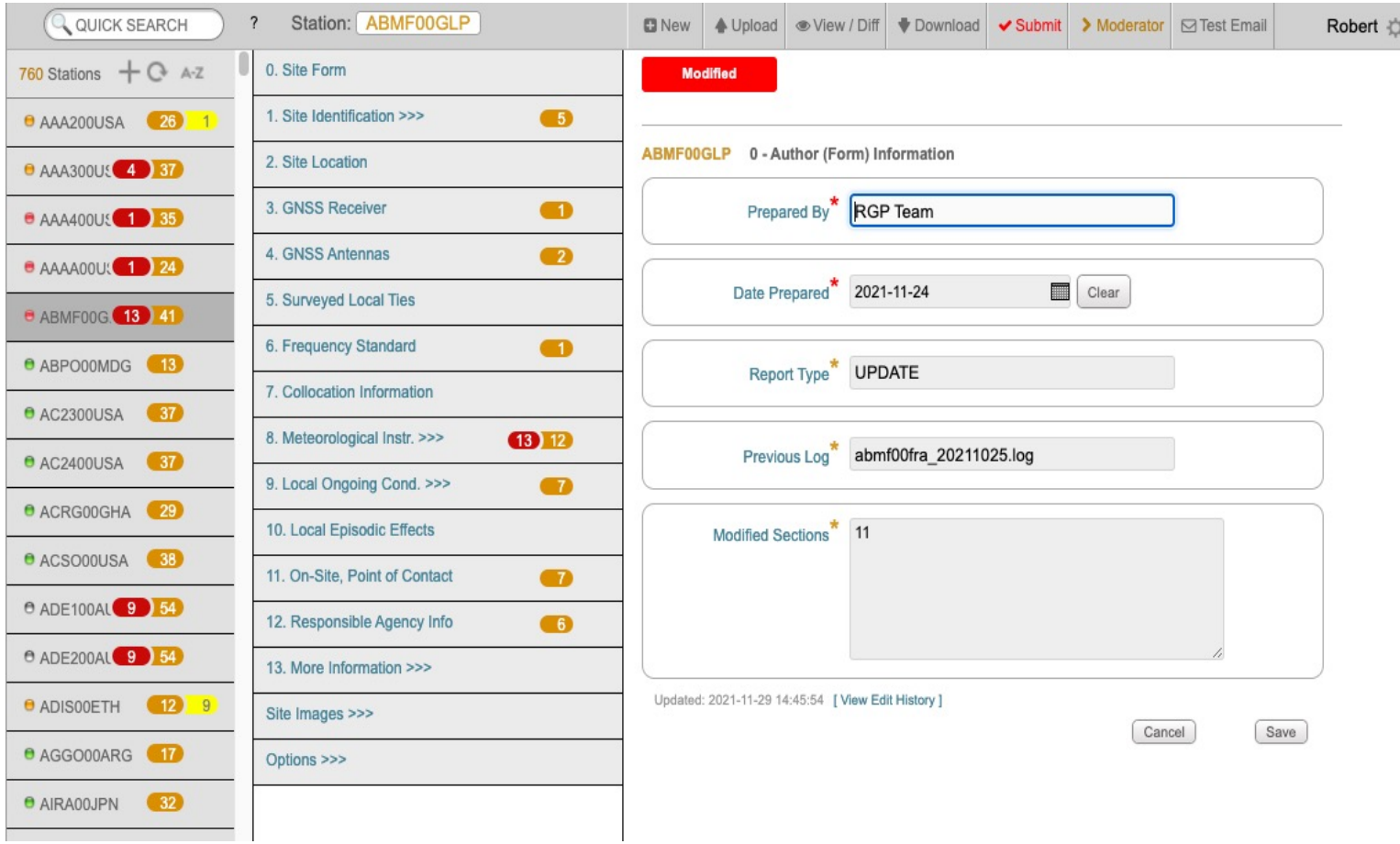
Modified
yet to be submitted



IGS INTERNATIONAL GNSS SERVICE

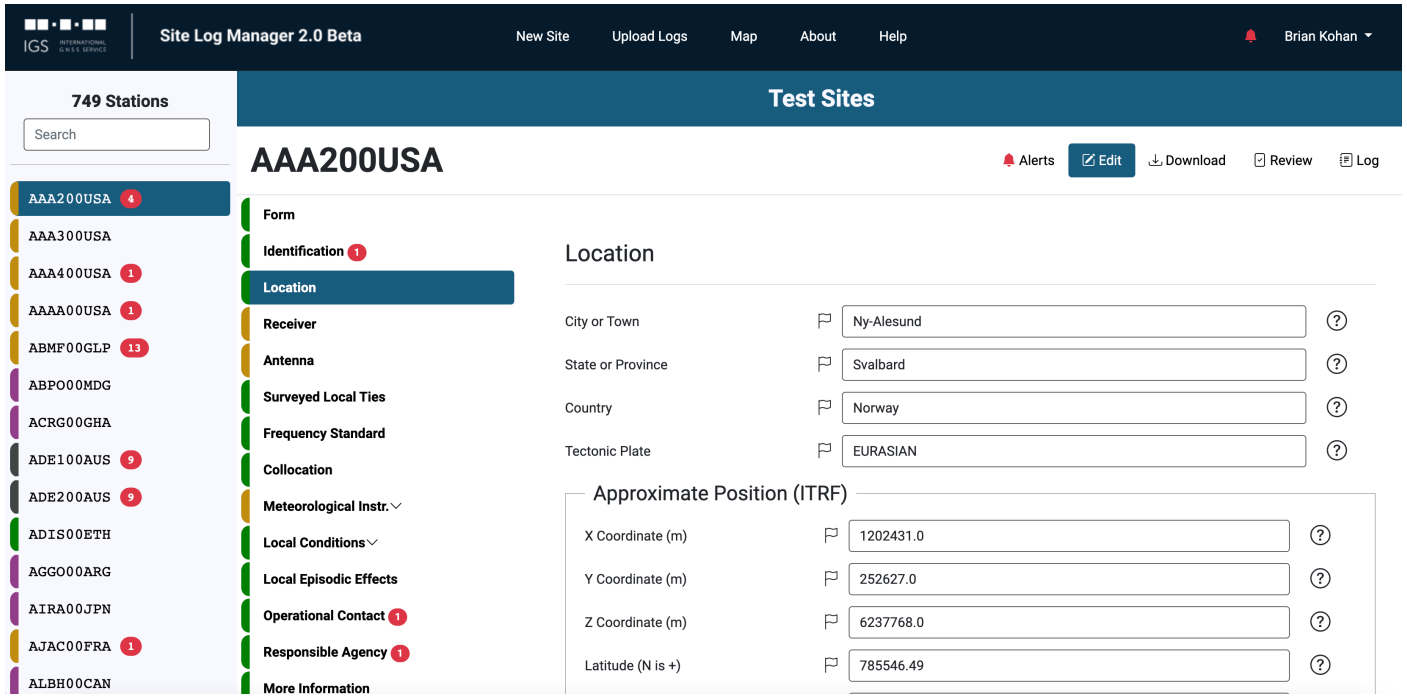
SiteLog Manager 1.0 - Issues

- Custom build for PHP 5.0
- PHP5 End-Of-Life – 1st January, 2019
- PHP5 functions/calls no longer supported in PHP versions 7 or 8.
- Original developer no longer available
- CB patched some vulnerable functions, however, extremely inefficient to patch all deficiencies.
- No support for interoperability.
- No support GeodesyML (or JSON)
- No command line API



Introducing SLM 2.0

- Primary Goal
  - *Maximize the **reliability**, **accuracy** and **searchability** of site log meta information.*
- How to get there?
  - Easy Moderation & Review
  - Automation
    - Validation
    - Usage (Structured APIs)
  - Structured Data:
    - Self validating interchange formats (GeodesyML)
    - Easy to use renderings (JSON)
  - Broad Adoption
    - Open Source
    - Extendable



Under the Hood

- Built on state of the art web tooling
  - No-fork modification - easy to override/extend
  - Can pip install
  - https://github.com/International-GNSS-Service/
- Site log meta information is stored in a relational database:
  - Rendering to any format: GeodesyML, JSON, legacy ASCII log format
  - Arbitrarily complex automated validation routines
  - Data model is defined in python code allowing maintainers to avoid any SQL - changes to the data model are easy
- Participates in python dependency management ecosystem using Poetry build tools

Structured Edit & Public APIs

Api Root / Station Map List

Station Map List

A view for returning a site list as a geojson set of poin

```
GET /api/public/map/
```

```
HTTP 200 OK
Allow: GET, HEAD, OPTIONS
Content-Type: application/json
Vary: Accept

{
    "type": "FeatureCollection",
    "features": [
        {
            "id": 1,
            "type": "Feature",
            "geometry": {
                "type": "Point",
                "coordinates": [
                    11.515433999999999,
                    78.554649
                ]
            },
            "properties": {
                "name": "AAA200USA"
            }
        },
        {
            "id": 5,
            "type": "Feature",
            "geometry": {
                "type": "Point",
                "coordinates": [
                    -61.313911,
                    16.154429999999998
                ]
            },
            "properties": {
                "name": "ABMF00GLP"
            }
        },
        {
```

Api Root / Station List List

Station List List

```
GET /api/public/stations/
```

```
HTTP 200 OK
Allow: GET, HEAD, OPTIONS
Content-Type: application/json
Vary: Accept

{
    "data": [
        {
            "name": "AAA200USA",
            "agencies": [
                {
                    "name": "Test Sites",
                    "country": "NULL"
                }
            ],
            "registered": "2022-06-20 08:08:22
            "last_publish": "2022-06-23T16:37:
            "latitude": 785546.49,
            "longitude": 115154.34
        },
        {
            "name": "AAA300USA",
            "agencies": [
                {
                    "name": "Test Sites",
                    "country": "NULL"
                }
            ],
            "registered": "2022-06-20 08:08:22
            "last_publish": "2021-07-19T17:30:
            "latitude": null,
            "longitude": null
        },
        {
            "name": "AAA400USA",
```

Api Root

Api Root

The default basic root view for DefaultRouter

```
GET /api/edit/
```

```
HTTP 200 OK
Allow: GET, HEAD, OPTIONS
Content-Type: application/json
Vary: Accept

{
    "stations": "http://localhost:8080/api/edit/stations/",
    "profile": "http://localhost:8080/api/edit/profile/",
    "siteform": "http://localhost:8080/api/edit/siteform/",
    "siteidentification": "http://localhost:8080/api/edit/siteidentification/",
    "sitelocation": "http://localhost:8080/api/edit/sitelocation/",
    "sitereceiver": "http://localhost:8080/api/edit/sitereceiver/",
    "siteantenna": "http://localhost:8080/api/edit/siteantenna/",
    "sitesurveyedlocalties": "http://localhost:8080/api/edit/sitesurveyedlocalties/",
    "sitefrequencystandard": "http://localhost:8080/api/edit/sitefrequencystandard/",
    "sitecollocation": "http://localhost:8080/api/edit/sitecollocation/",
    "sitehumiditysensor": "http://localhost:8080/api/edit/sitehumiditysensor/",
    "sitepressuresensor": "http://localhost:8080/api/edit/sitepressuresensor/",
    "sitetemperaturesensor": "http://localhost:8080/api/edit/sitetemperaturesensor/",
    "sitewatervaporradiometer": "http://localhost:8080/api/edit/sitewatervaporradiometer/",
    "siteotherinstrumentation": "http://localhost:8080/api/edit/siteotherinstrumentation/",
    "siteradiointerferences": "http://localhost:8080/api/edit/siteradiointerferences/",
    "sitemultipathsources": "http://localhost:8080/api/edit/sitemultipathsources/",
    "sitesignalobstructions": "http://localhost:8080/api/edit/sitesignalobstructions/",
    "sitelocalepisodiceffects": "http://localhost:8080/api/edit/sitelocalepisodiceffects/",
    "siteoperationalcontact": "http://localhost:8080/api/edit/siteoperationalcontact/",
    "siteresponsibleagency": "http://localhost:8080/api/edit/siteresponsibleagency/",
    "sitemoreinformation": "http://localhost:8080/api/edit/sitemoreinformation/",
    "logentries": "http://localhost:8080/api/edit/logentries/",
    "alerts": "http://localhost:8080/api/edit/alerts/",
    "map": "http://localhost:8080/api/edit/map/"
}
```

SLM 2.0 Phases

- Phase 1 (nearing completion):
  - Edit/Moderation/Publish Functionality
  - Automated validation infrastructure
  - Basic API functionality
  - Sitelog upload/download
  - Demo will soon be live at https://slmdemo.igs.org
- Phase 2:
  - More robust automated validation
  - Full support for GeodesyML and JSON formats
  - Fully searchable APIs