GLEN architecture

Each part is its own repository and deployment on NRP Nautilus, so apps, models, data tools and data can change independently.

INTERACTIVE

STATIC SITE IN THE BROWSER

GLEN apps

The map, the chat and the agent loop run in the browser. Each app is a small repo of config, prompt and model list.

```
catalog STAC catalog URL
titiler_url raster tile server
mcp_url MCP servers
collections layers to show
```

high-seas · global-30x30 · ca-30x30 · tpl · wetlands · ca-wolves · cacao · coasts · wyoming · + 14 more

SchmidtDSE/glen · glen-template

chat and tool schemas

LLM proxy

DEPLOYMENT

Keeps provider keys off the browser and logs every call.

boettiger-lab/open-llm-proxy

routes by model id

Models

EXTERNAL

Open models on NRP, commercial APIs through OpenRouter, and DSE GPUs.

MCP tool calls

MCP servers

DEPLOYMENTS

geo-query	SQL over hex parquet, guided by STAC
hexsdm	species distribution models
+ any server	listed in the app's config

Tile servers

DEPLOYMENTS

TiTiler	COG to raster tiles
geo-query	hex parquet to vector tiles

The map fetches tiles from the servers named in the app's config.

boettiger-lab/nautilus

STAC and PMTiles read directly

STAC metadata and hex parquet

COG and hex parquet; tiles go to the map

BUCKETS ON NRP CEPH

STAC and S3

A STAC catalog over cloud-native spatial collections

STAC catalog · GeoParquet · PMTiles · COG · H3 hex parquet

write data and metadata

ASYNCHRONOUS

CRONJOBS

Scheduled work

- Dataset updates daily to yearly
- Weekly backup and public mirror

geo-workflows

REPO

One reviewed recipe per dataset.

boettiger-lab/geo-workflows

generates Job YAML

geo-ingest

PARALLEL JOBS

Converts sources to cloud-native formats on the H3 grid.

boettiger-lab/geo-ingest