Backpacking Weather

Engineering Project

Route Example

El Capitan Hike:
- Min: Camp 4, 4000ft
- Max: El Capitan, 7573ft

Current Weather Camp 4: 41F
Current Weather El Capitan: 26F

Weather varies by altitude

Weather Predictions Change

Problem Statement

Multiple locations +

changing forecasts +

busy planning =

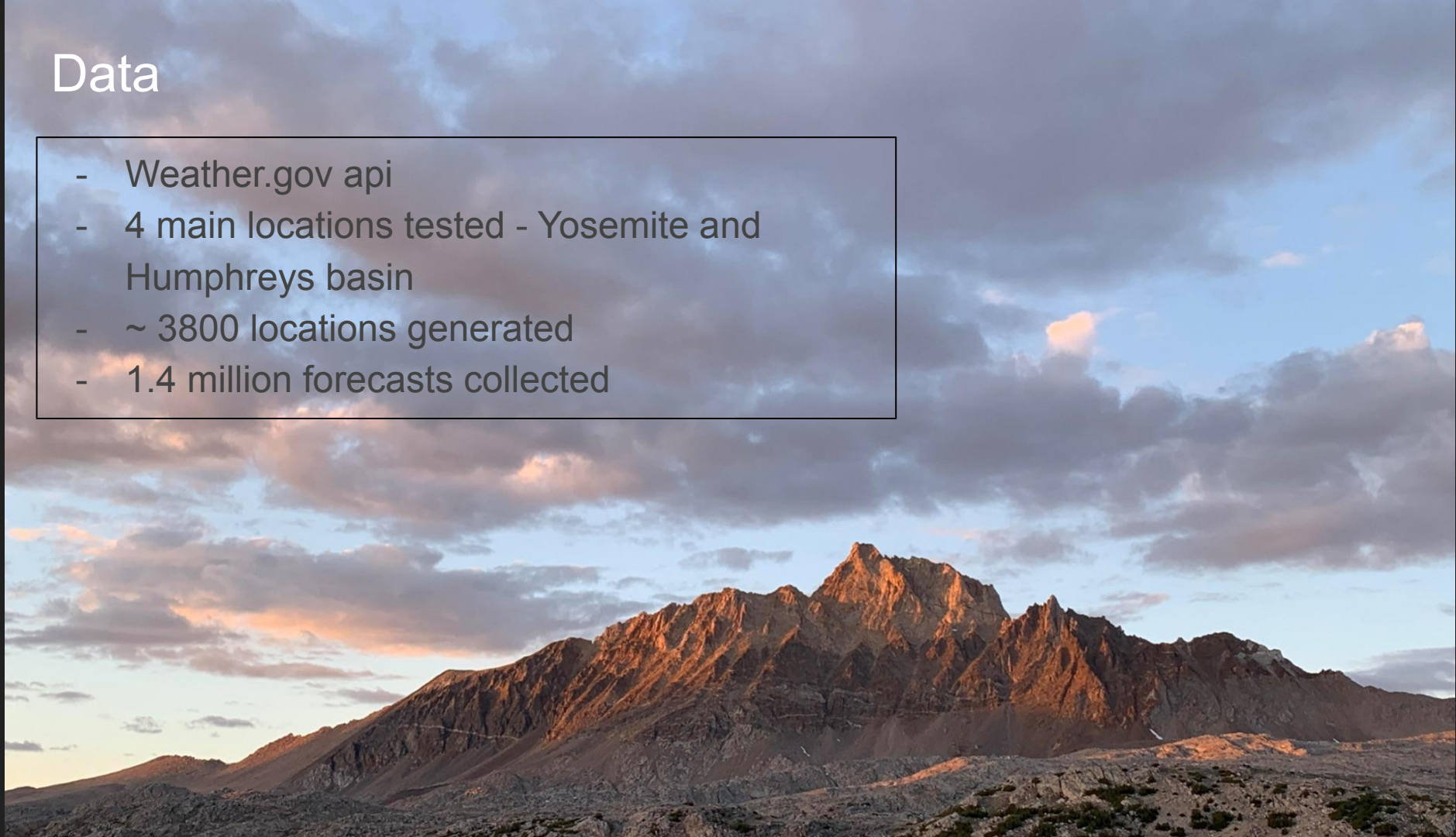Potential Danger

Solution
Monitor weather along route

- Enter Main Location(s)
- Generate points around main location
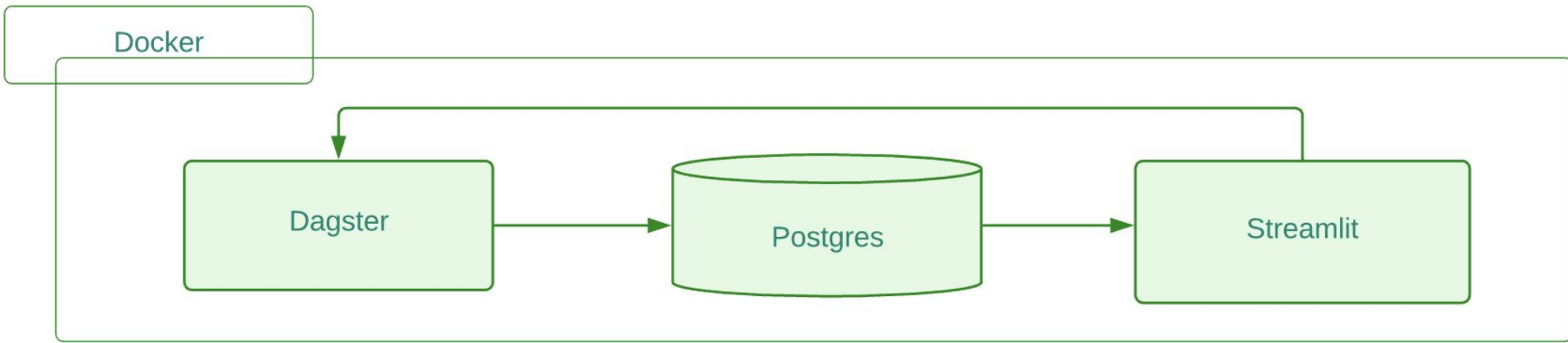- Scrape and Display latest available forecasts

Data

- Weather.gov api
- 4 main locations tested - Yosemite and Humphreys basin
- ~ 3800 locations generated
- 1.4 million forecasts collected

Job Structure

Docker

Dagster → Postgres → Streamlit

Handles collection & DB tasks

Locations table
Details table
Forecasts table

Presents Information to user

Dagster

Controls Scheduled Events

Locations generator
Daily or on trigger
Regenerates locations around
user inputted locations

New details job
Runs every hour OR on trigger
Grabs details for location,
including forecast link

Forecasts job
Gets forecasts for all availab[le]
locations
Runs once an hour on sched[uled]

Unscheduled Jobs
Base set up
Check state

APP

Backpacking Weather

Current Locations

	_id	name	lat	lon
0	https://api.weather.gov/point...	Humphreys Basin	37.2652	-118.7065
1	https://api.weather.gov/point...	Yosemite Falls	37.7567	-119.5968
2	https://api.weather.gov/point...	Yosemite	37.8651	-119.5383

Add New Location

Enter Location Name

Lat (4 decimal points)

Lon (4 decimal points)

Insert into Database

Delete Locations

Please Add Any Locations you would like to remove
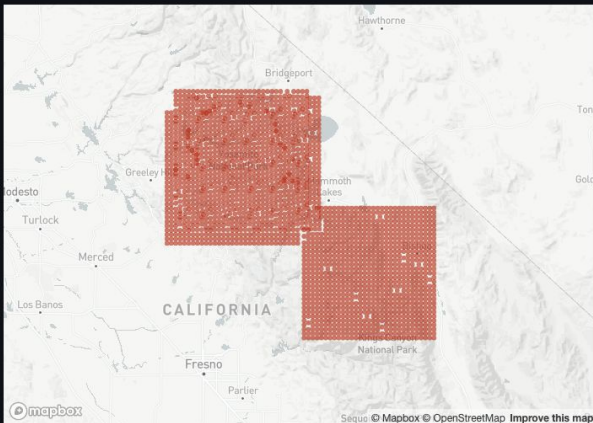
Choose an option ▾

You selected:

▸ []
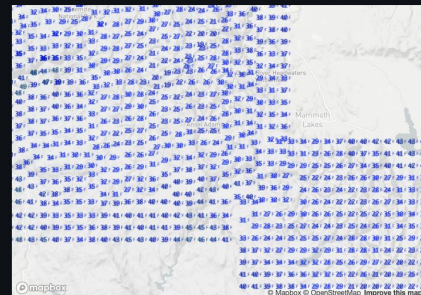
Confirm Delete

Backpacking Weather

	name	lat	lon
0	Humphreys Basin	37.2652	-118.7065
1	Yosemite	37.8651	-119.5383
2	Yosemite Falls	37.7567	-119.5968

Backpacking Weather

Latest Average Predicted Temp next 10 Days

Latest Prediction for Day
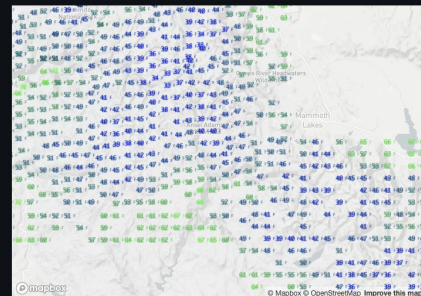
When do you start?

04/26/22

12/28/21   04/26/22

Predicted Day: 2022-04-26

Details

Latest Prediction for Day

When do you start?

04/18/22

12/28/21   04/26/22

Predicted Day: `2022-04-18`

© Mapbox © OpenStreetMap **Improve this map**

App Navigation

Latest Forecast ▼

General

Latest Forecast

Manage Locations

(Optional) Select Location to Center On

all | ▼

all

Humphreys Basin

Yosemite Falls

Yosemite

Delete Locations

Please Add Any Locations you would like to remove

Choose an option   ▼

Humphreys Basin

Yosemite Falls

Yosemite

Future Work

- Remove DB from container
- Pre-compute info displayed on a schedule
- Caching for Streamlit
- Historic vs current trip handling
- User error and map handling

State

Latest Average Predicted Temp next 10 Days

Better prepared people in pretty places

Fewer weather related mishaps