

SQL QUERIES

SQL Queries:

#standardSQL

--1) Overall temperature over time

```
SELECT date,
DATE(
  DIV(date,10000),
  DIV(MOD(date,10000),100),
  MOD(date,100)
) as formatted_date,
AVG(cast(TAVG as float64)) as avg_temperature
FROM `i-multiplexer-406919.weather_data_historical.weather_data_historical_master`
where TAVG is not null
GROUP BY 1,2
ORDER BY formatted_date;
```

The screenshot shows a web-based SQL interface. At the top, there's a tab bar with several tabs, including 'Overall temperature - US trends'. Below the tabs, the SQL query is displayed in a text editor. The query is a standard SQL query to calculate the average temperature over time from a specific table. Below the query editor, there's a 'Query results' section. It includes a table with 10 rows of data. The table has columns for 'Row', 'date', 'formatted_date', and 'avg_temperature'. The data shows a range of dates from 2023-01-01 to 2023-01-10 with corresponding average temperatures. At the bottom of the interface, there's a 'Job history' section and a 'Results per page' dropdown set to 50.

Row	date	formatted_date	avg_temperature
1	20230101	2023-01-01	11.14643799472...
2	20230102	2023-01-02	-6.56998239436...
3	20230103	2023-01-03	-7.29660643455...
4	20230104	2023-01-04	-0.44008810572...
5	20230105	2023-01-05	7.254073095552...
6	20230106	2023-01-06	2.670624450307...
7	20230107	2023-01-07	0.222955145118...
8	20230108	2023-01-08	5.409070893879...
9	20230109	2023-01-09	10.57683839718...
10	20230110	2023-01-10	13.86153846153...

#standardSQL

--2) Total precipitation across each station in California across year

```
select extract(year from date_formatted) as year, station_name, SUM(total_precipitation) as
total_precipitation from
(SELECT DATE(
  DIV(date,10000),
  DIV(MOD(date,10000),100),
  MOD(date,100)
) as date_formatted, s.station_name, SUM(coalesce(PRCIP,0)) as total_precipitation
```

```

FROM `i-multiplexer-406919.weather_data_historical.weather_data_historical_master` w
join `i-multiplexer-406919.weather_data_historical.weather_data_station_mapping_california` s
on upper(concat('GHCND:',trim(w.station_id))) = upper(trim(s.station_id))
GROUP BY 1,2)
group by 1,2;

```

Search (/) for resources, docs, products, and more

California stations annual...ion

```

1 #standardSQL
2 --2) Total precipitation across each station in California across year
3 select extract(year from date_formatted) as year, station_name, SUM(total_precipitation) as total_precipitation from
4 (SELECT DATE(
5   DIV(date,10000),
6   DIV(MOD(date,10000),100),
7   MOD(date,100)
8 ) as date_formatted, s.station_name, SUM(coalesce(PRCP,0)) as total_precipitation
9 FROM `i-multiplexer-406919.weather_data_historical.weather_data_historical_master` w
10 join `i-multiplexer-406919.weather_data_historical.weather_data_station_mapping_california` s
11 on upper(concat('GHCND:',trim(w.station_id))) = upper(trim(s.station_id))
12 GROUP BY 1,2)
13 group by 1,2;
14

```

Query results

Row	year	station_name	total_precipitation
1	2020	CASTRO VALLEY 0.4 NNE	7674.0
2	2020	ALBANY 1.7 E	8308.0
3	2020	BERKELEY 0.9 SSE	8368.0
4	2020	JACKSON 0.8 SSE	19612.0
5	2020	CHICO 1.7 SW	10648.0
6	2020	WALNUT CREEK 1.4 SSE	7568.0
7	2020	HELM 2.7 NNE	5568.0
8	2020	FRESNO 7.2 NNE	7320.0
9	2020	MCKINLEYVILLE 7.3 ESE	38156.0
10	2020	FORTUNA 1.5 NW	18712.0

Results per page: 50 1 - 50 of 2218

Job history

```

--3) Avg temperature of non California weather stations with reports of no snow in December for 2022
SELECT w.station_id, AVG(cast (TAVG as FLOAT64)) as avg_temperature
FROM `i-multiplexer-406919.weather_data_historical.weather_data_historical_master` w
left join `i-multiplexer-406919.weather_data_historical.weather_data_station_mapping_california` s
on upper(concat('GHCND:',trim(w.station_id))) = upper(trim(s.station_id))
where (coalesce(SNOW,0) = 0 or SNOW is null)
and s.station_id is null
and DATE(
  DIV(date,10000),
  DIV(MOD(date,10000),100),
  MOD(date,100)
) between '2022-12-01' and '2022-12-31'
and TAVG is not null
GROUP BY 1
order by 2 desc;

```

Search (/) for resources, docs, products, and more

test_table x test_data x Overall temperature - US L...nds x *California stations annual...ion x *Non-California stations w...22 x Select stations temp >

Non-California stations wit...22 RUN SAVE QUERY SHARE SCHEDULE MORE This query will process 752.27 MB when run

```

1 --Avg temperature of non California weather stations with reports of no snow in December for 2022
2 SELECT w.station_id, AVG(cast (TAVG as FLOAT64)) as avg_temperature
3 FROM `i-multiplexer-406919.weather_data_historical.weather_data_historical_master` w
4 left join `i-multiplexer-406919.weather_data_historical.weather_data_station_mapping_california` s
5 on upper(concat('GHCND:',trim(w.station_id))) = upper(trim(s.station_id))
6 where (coalesce(SNOW,0) = 0 or SNOW is null)
7 and s.station_id is null
8 and DATE(
9     DIV(date,10000),
10    DIV(MOD(date,10000),100),
11    MOD(date,100)
12 ) between '2022-12-01' and '2022-12-31'
13 and TAVG is not null
14 GROUP BY 1
15 order by 2 desc;
16
17

```

Query results

SAVE RESULTS EXPLORE DATA

Row	station_id	avg_temperature
1	USW00022536	242.9677419354...
2	USR0000HMAK	239.7741935483...
3	USW00022521	239.6129032258...
4	USR0000HMAR	239.0322580645...
5	USR0000HKII	236.1290322580...
6	USW00022516	233.3870967741...
7	USR0000HKAN	231.1290322580...
8	USR0000HKAH	226.3870967741...
9	USW00012836	226.3548387096...
10	USR0000HMOL	225.4516129032...

Results per page: 50 1 - 50 of 2293

Job history REFRESH

#standardSQL

--4) Total precipitation and avg temperature for select stations for the year 2022

```

select LEFT(station_id,5) AS state_code,
AVG(cast(TAVG as float64)) as avg_temperature,
SUM(coalesce(cast(PRCP as float64),0) ) as total_precipitation
FROM `i-multiplexer-406919.weather_data_historical.weather_data_historical_master`
where DATE(
    DIV(date,10000),
    DIV(MOD(date,10000),100),
    MOD(date,100)
) between '2022-01-01' and '2022-12-31'
and TAVG is not null
GROUP BY 1;

```

test_table x test_data x Overall temperature - US t...nds x California stations annual...lon x Non-California stations w...22 x Select stations temperatu...022 x

Select stations temperature...022 [RUN](#) [SAVE QUERY](#) [SHARE](#) [SCHEDULE](#) [MORE](#) ✓ This query will process 832.04 MB when run.

```

1 #standardSQL
2 --Total precipitation and avg temperature for select stations for the year 2022
3 select LEFT(station_id,5) AS state_code,
4 AVG(cast(TAVG as float64)) as avg_temperature,
5 SUM(coalesce(cast(PRCP as float64),0)) as total_precipitation
6 FROM `i-multiplexer-406919.weather_data_historical.weather_data_historical_master`
7 where DATE[
8   DIV(date,10000),...
9   DIV(MOD(date,10000),100),...
10   MOD(date,100) ] between '2022-01-01' and '2022-12-31'
11 --and TAVG is not null
12
13 GROUP BY 1;

```

Query results [SAVE RESULTS](#) [EXPLORE DATA](#)

JOB INFORMATION		RESULTS	CHART	PREVIEW	JSON	EXECUTION DETAILS	EXECUTION GRAPH
Row	state_code	avg_temperature	total_precipitation				
1	USC00	60.24383561643...	4285.0				
2	US000	41.06524053176...	7707756.0				
3	USW00	128.8569873640...	2297916.0				
4	USR00	107.7438200106...	0.0				

Job history [REFRESH](#)

5. Yearly snowfall trends per country

```

SELECT country_code, EXTRACT(YEAR FROM PARSE_DATE('%Y%m%d', CAST(date AS STRING)))
as year, SUM(SNOW) as total_snow
FROM `i-multiplexer-406919.weather_data_historical.weather_data_historical_master`
WHERE SNOW IS NOT NULL
GROUP BY country_code, year;

```

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Explorer

Viewing resources.

SHOW STARRED ONLY

- California stations annual...
- Non-California stations wi...
- Overall temperature - US t...
- Select stations temperatu...
- Snowfall Trends
- External connections
- 2020
- staging
- weather_archive_2020da...
- weather_data_historical

SUMMARY

Try new code-management features of BigQuery Studio in Preview: version history, sharing with IAM, and creating Python notebooks with Colab.

ENABLE NOW DISMISS

Snowfall Trends

```

1 SELECT country_code, EXTRACT(YEAR FROM PARSE_DATE('%Y%m%d', CAST(date AS STRING))) as year, SUM(SNOW) as total_snow
2 FROM `i-multiplexer-406919.weather_data_historical.weather_data_historical_master`
3 WHERE SNOW IS NOT NULL
4 GROUP BY country_code, year;

```

Query results

JOB INFORMATION RESULTS CHART PREVIEW JSON EXECUTION DETAILS EXECUTION GRAPH

Row	country_code	year	total_snow
1	US	2021	7111303.0
2	US	2023	7555961.0
3	US	2020	8604391.0
4	US	2022	10430596.0

Job history

REFRESH

6. Find out the heavy snow and rainy days in the year.

SELECT date,

COUNT(IF(PRCP > 100, 1, NULL)) AS heavy_rainy_days,

COUNT(IF(SNOW > 50, 1, NULL)) AS heavy_snow_days

FROM `i-multiplexer-406919.weather_data_historical.weather_data_historical_master`

GROUP BY date;

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Explorer

Viewing resources.

SHOW STARRED ONLY

- California stations annual...
- Non-California stations wi...
- Overall temperature - US t...
- Select stations temperatu...
- Snowfall Trends
- External connections
- 2020
- staging
- weather_archive_2020da...
- weather_data_historical

SUMMARY

Try new code-management features of BigQuery Studio in Preview: version history, sharing with IAM, and creating Python notebooks with Colab.

ENABLE NOW DISMISS

Untitled

```

1 SELECT date,
2 COUNT(IF(PRCP > 100, 1, NULL)) AS heavy_rainy_days,
3 COUNT(IF(SNOW > 50, 1, NULL)) AS heavy_snow_days
4 FROM `i-multiplexer-406919.weather_data_historical.weather_data_historical_master`
5 GROUP BY date;

```

Query results

JOB INFORMATION RESULTS CHART PREVIEW JSON EXECUTION DETAILS EXECUTION GRAPH

Row	date	heavy_rain_days	heavy_snow_days
1	20230215	2043	1064
2	20230305	955	585
3	20230228	3509	1491
4	20230316	897	329
5	20231030	3667	75
6	20231129	2814	658

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Job history

REFRESH

7. Rainfall each weather station recorded on each day of the week.

```

SELECT station_id,
       FORMAT_DATE('%A', PARSE_DATE('%Y%m%d', CAST(date AS STRING))) AS weekday,
       SUM(PRCP) as total_precipitation
FROM `i-multiplexer-406919.weather_data_historical.weather_data_historical_master`
GROUP BY station_id, weekday
ORDER BY station_id, weekday;

```

The screenshot shows the Google Cloud BigQuery Studio interface. The top navigation bar includes the Google Cloud logo, the project name 'My First Project', and a search bar. The left sidebar contains an 'Explorer' panel with a search bar and a list of resources, including 'California stations annual...', 'Non-California stations wi...', 'Overall temperature - US t...', 'Select stations temperatu...', 'Snowfall Trends', 'External connections', '2020', 'staging', 'weather_archive_2020da...', and 'weather_data_historical'. The main editor area displays a SQL query in a file named 'Untitled'. The query is as follows:

```

1 SELECT station_id,
2       FORMAT_DATE('%A', PARSE_DATE('%Y%m%d', CAST(date AS STRING))) AS weekday,
3       SUM(PRCP) as total_precipitation
4 FROM `i-multiplexer-406919.weather_data_historical.weather_data_historical_master`
5 GROUP BY station_id, weekday
6 ORDER BY station_id, weekday;

```

Below the query editor, the 'Query results' section is visible, showing a table with the following data:

Row	station_id	weekday	total_precipitation
1	US10adam002	Friday	2976.0
2	US10adam002	Monday	2196.0
3	US10adam002	Saturday	4224.0
4	US10adam002	Sunday	2629.0
5	US10adam002	Thursday	2368.0
6	US10adam002	Tuesday	2580.0

The interface also includes a 'Job history' section at the bottom right, a 'SUMMARY' panel on the left, and a 'Try new code-management features of BigQuery Studio in Preview' notification.