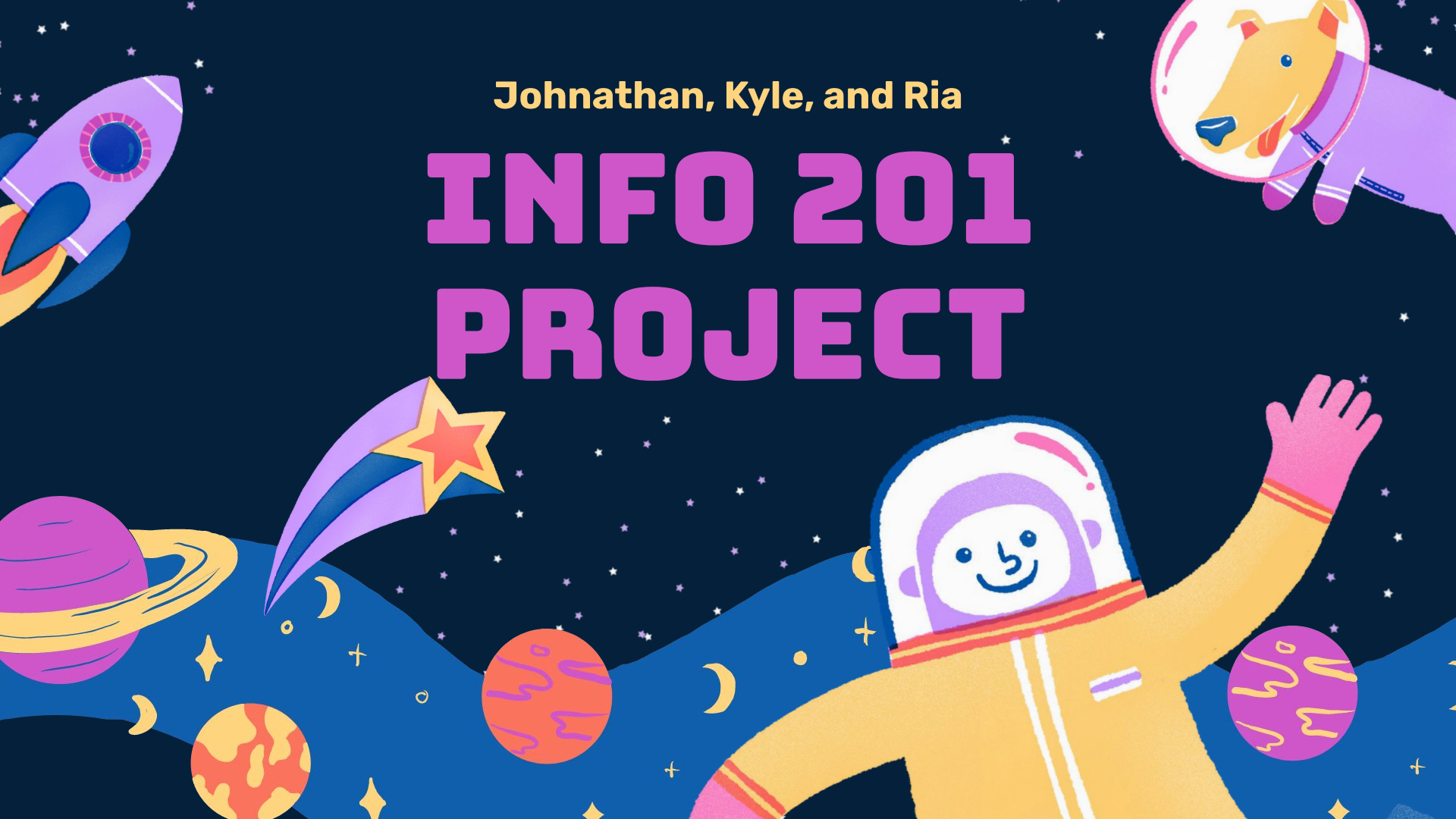
Johnathan, Kyle, and Ria

INFO 201 PROJECT

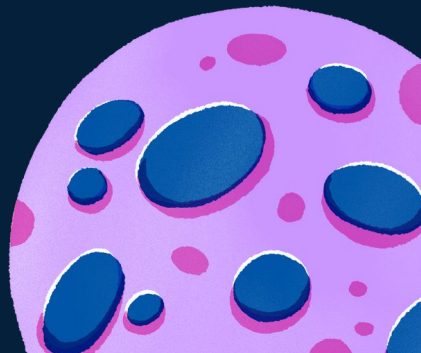


WHAT ARE METEORITE LANDINGS?

Meteorite landings occur when meteorites enter the atmosphere and survive the journey to impact the Earth's surface. They can land anywhere on Earth, but certain regions have a higher likelihood of receiving impact due to greater surface area (larger target area).

WHY ARE THEY IMPORTANT?

We will be looking at a meteorite landings dataset to explain the trajectories of these landings and where these regions of high impact landings are.



METEORITE LANDING DATASET

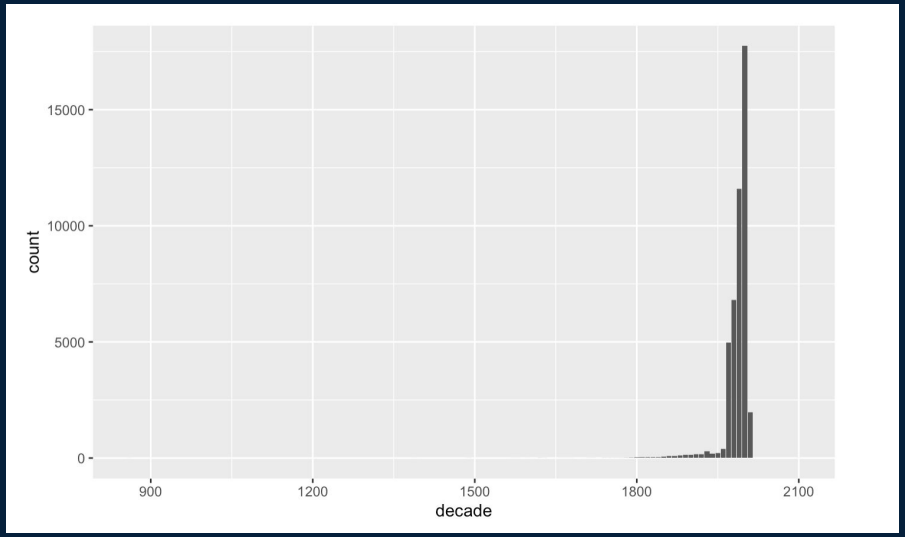
- Contains information about over 30,000 meteorite landings in the world
- The data was provided by The Meteoritical Society and is curated by Javier de la Torre
- The data is likely collected from a network of scientists, professionals, and enthusiasts across the world. Because this dataset is used by NASA and can be found on their website, we believe it to be reliable
- We found this dataset on Kaggle

QUESTION 1

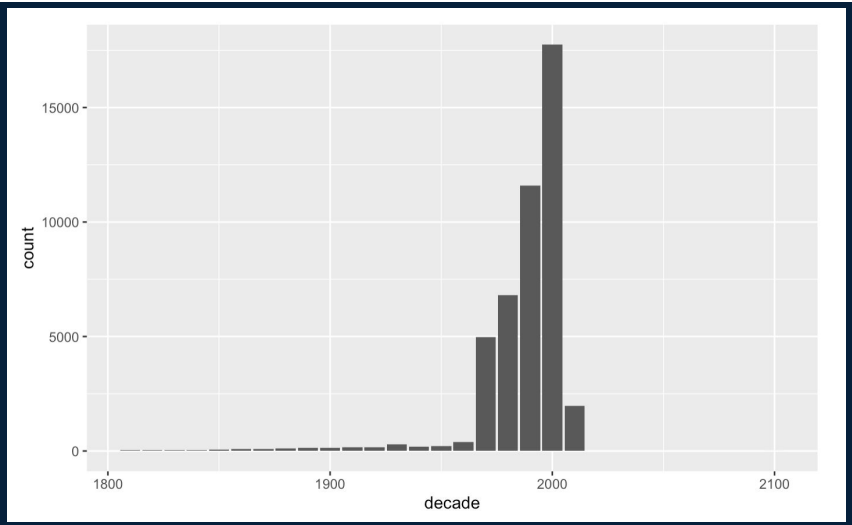
WHAT IS THE NAME OF THE HEAVIEST METEORITE THAT LANDED ON EARTH IN THE YEAR OF MOST IMPACTS?

Bar graph of number of impacts over time by decades to get an overview and verify with specific answer later

Then, manipulate the dataframe to find exact year of most impacts and isolate name of heaviest meteorite



- Number of impacts over timespan of entire dataset



- Narrowing to years above 1800 to get a closer glimpse of year of most impacts (general idea)

year <dbl>	impacts <int>
2003	3323
1979	3045
1998	2693
2006	2455
1988	2296

- Group by year, create variable impacts to sum each group, arrange in descending order by impacts
- Filter dataset to the year of most impacts (2003) and arrange in descending order of mass to find largest - Qijiaojing

name <chr>	id <dbl>	nametype <chr>	recclass <chr>	mass (g) <dbl>	fall <chr>	year <dbl>	reclat <dbl>	reclong <dbl>	GeoLocation <chr>
Qijiaojing	54610	Valid	Iron, ungrouped	160000.00	Found	2003	43.75000	92.91667	(43.75, 92.91667)
Santa Vitoria do Palmar	35478	Valid	L3	50400.00	Found	2003	-33.50944	-53.41083	(-33.50944, -53.41083)
Cumulus Hills 04069	32525	Valid	Pallasite	44700.00	Found	2003	*NA*	*NA*	*NA*
Sayh al Uhaymir 270	23443	Valid	H4-6	43508.20	Found	2003	20.72918	57.18900	(20.72918, 57.189)
Djebel Chaab 002	7654	Valid	LL6	30616.00	Found	2003	25.15592	0.82213	(25.15592, 0.82213)

QUESTION 2

HOW MANY METEORITES HAVE BEEN SIGHTED ON EACH CONTINENT AND HOW MANY WERE SEEN IN THE SKY OR FOUND ON THE GROUND?

This question is meant to answer where scientists should look if they want to find a specific type of meteor

Fell/Found

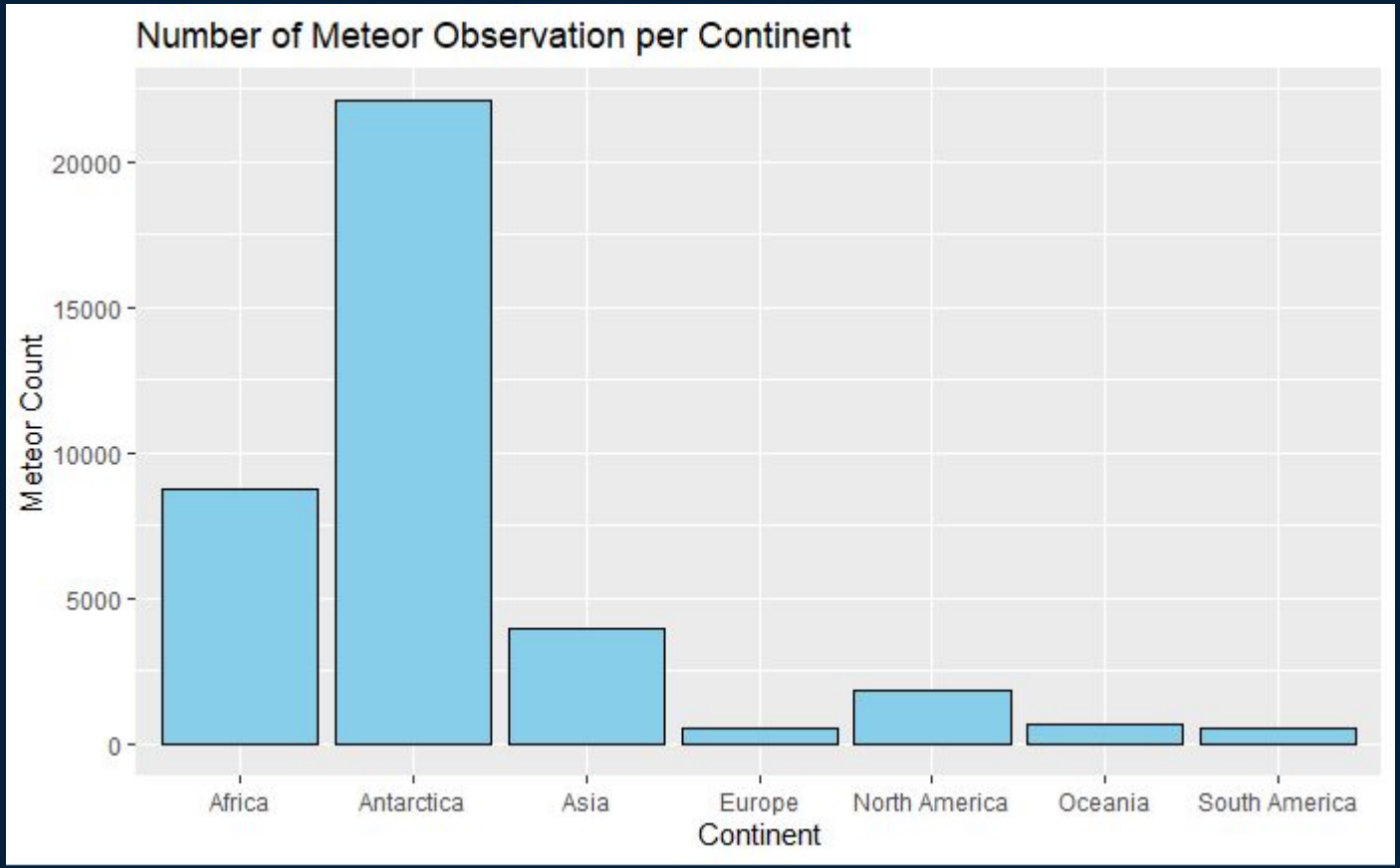
- Our data set counts if a meteor was seen in sky (Fell)
- Our data set also counts if a meteor was found on the ground (Found)

WHY IS THIS IMPORTANT?

This is important data to consider because scientists need to consider where they should search for meteors.

- This data should be used by scientists to consider where to look for meteors.
- They can use this data to consider where they should set up observation post if they're looking for falling (fell) meteors
- They can also use this data to determine where to find meteors that have fallen to Earth(found)
  - Scientists may want to find meteor samples for experiments
- This data set will help scientists determine how to effective use their limited funding to ensure that they have the highest chance of observing their desired meteor type

METEOR OBSERVATION PER CONTINENT

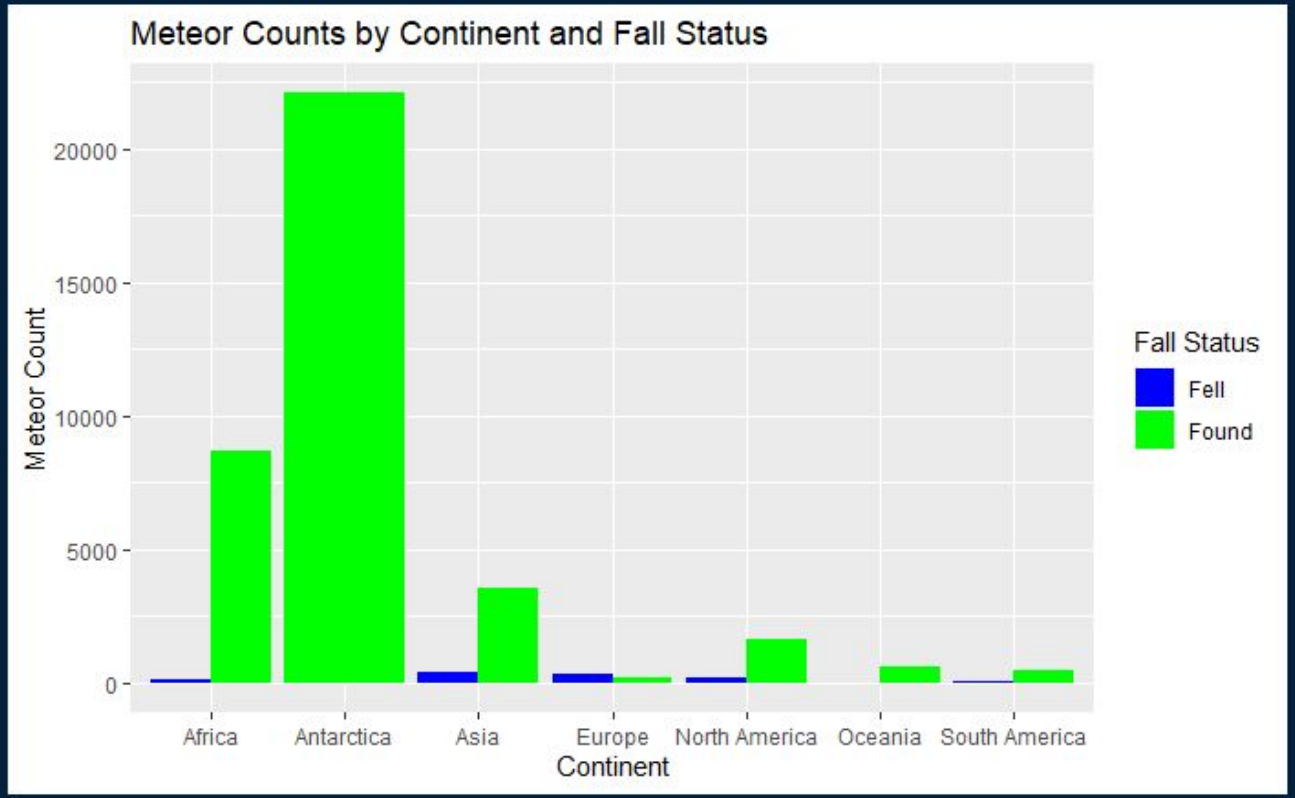


This shows the number of meteor observations by continent.

This shows us that for the highest chance of finding either a falling or found meteor, Africa and Antarctica has the highest chances.

This can help scientists determine to invest into observation equipment on those continents.

THE FALL/FOUND COUNT

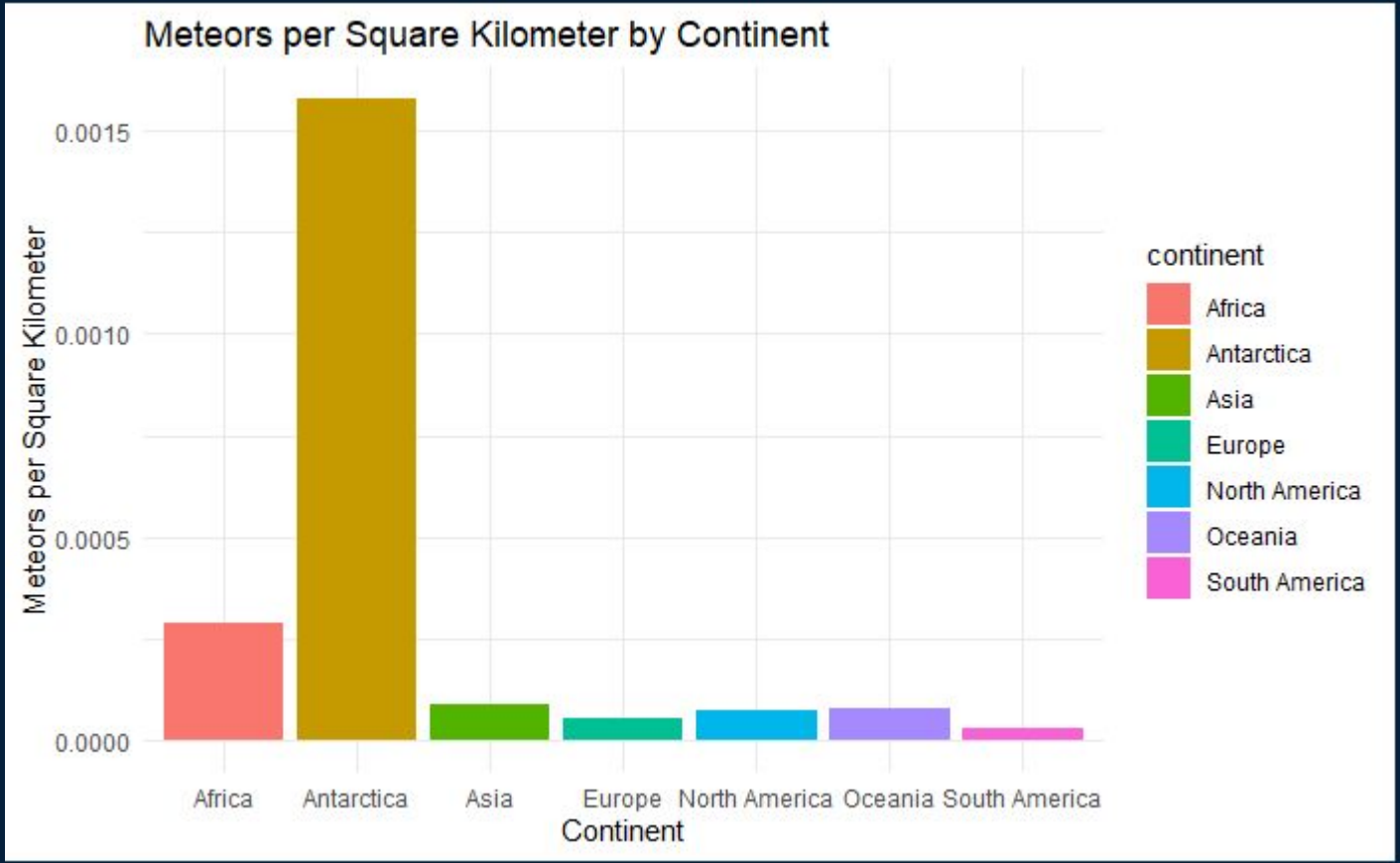


This shows how many meteors of each type fell on each continent

The green represents the meteors found on the ground

The blue represents the meteors seen in the sky

METEORS PER KM



This shows supports our previous findings.

A person is most likely to find a meteor in Antarctica or Africa.

RESULTS OF THE GRAPHS

Meteor Observation Per Continent

- This shows us that for the highest chance of finding either a falling or found meteor, Africa and Antarctica has the highest chances.
- This can help scientists determine to invest into observation equipment on those continents.

The Fall/Found Count

- This shows us the Antarctica has the most meteors on the ground. If scientists want to find fallen meteors, then they should attempt to conduct more research in Antarctica.
- But if they want to preserve the environment of Antarctica, Then they should conduct fallen meteor research in Africa.
- To conduct research on falling meteors it’s best to conduct this research in Africa as it has the second most fallen meteors

QUESTION 3

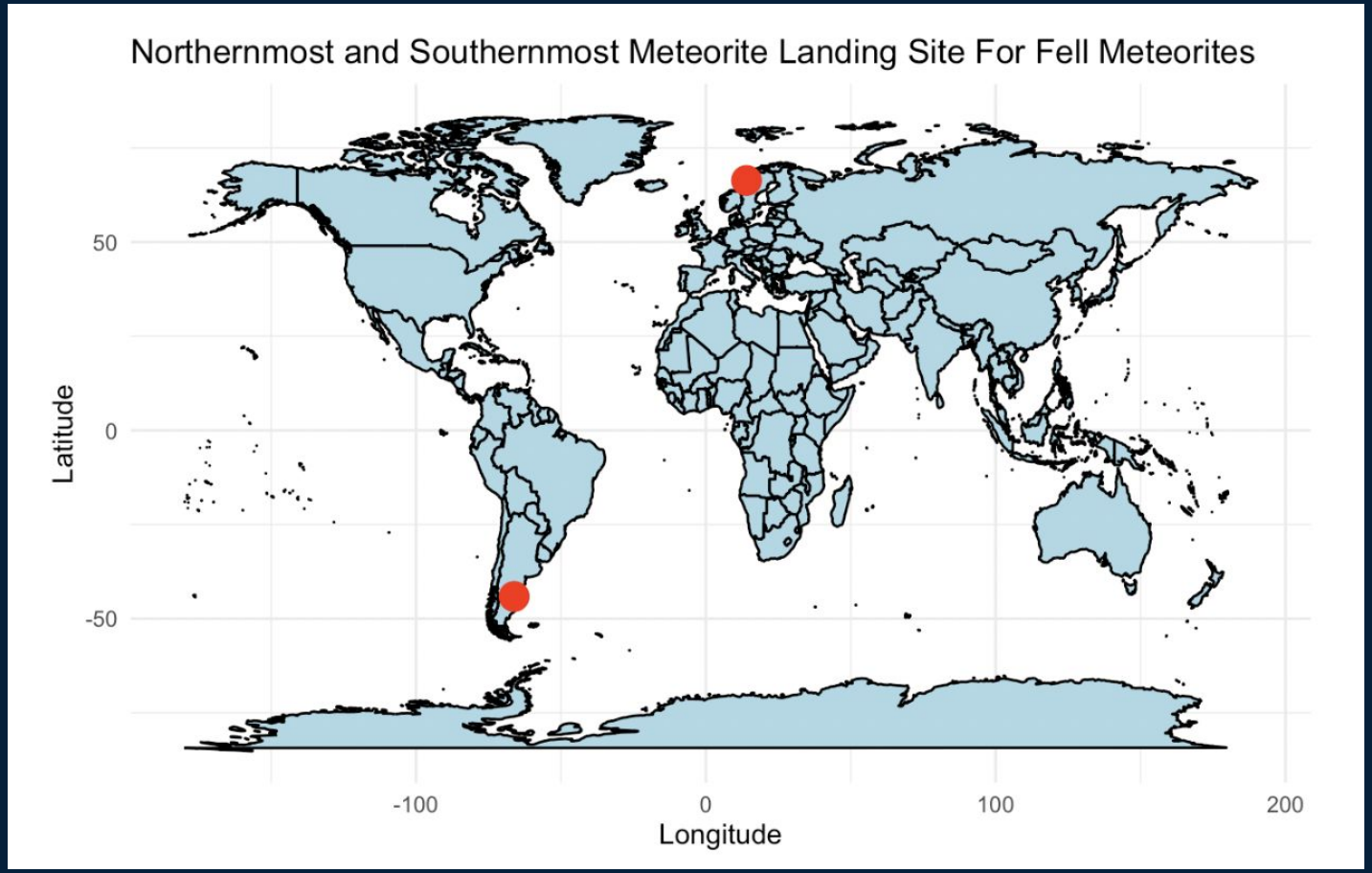
WHAT WAS THE NAME OF THE NORTHERNMOST AND SOUTHERNMOST FOUND AND FELL METEORITE, AND WHAT YEAR WERE THESE METEORITES FOUND?

Our data provides the coordinates of each meteorite landing

- Reclat: Latitude coordinates (need this one to determine northernmost and southernmost point)
- Reclong: Longitude coordinates

Fell/Found

- Our data set counts if a meteor was seen in sky (Fell)
- Our data set also counts if a meteor was found on the ground (Found)

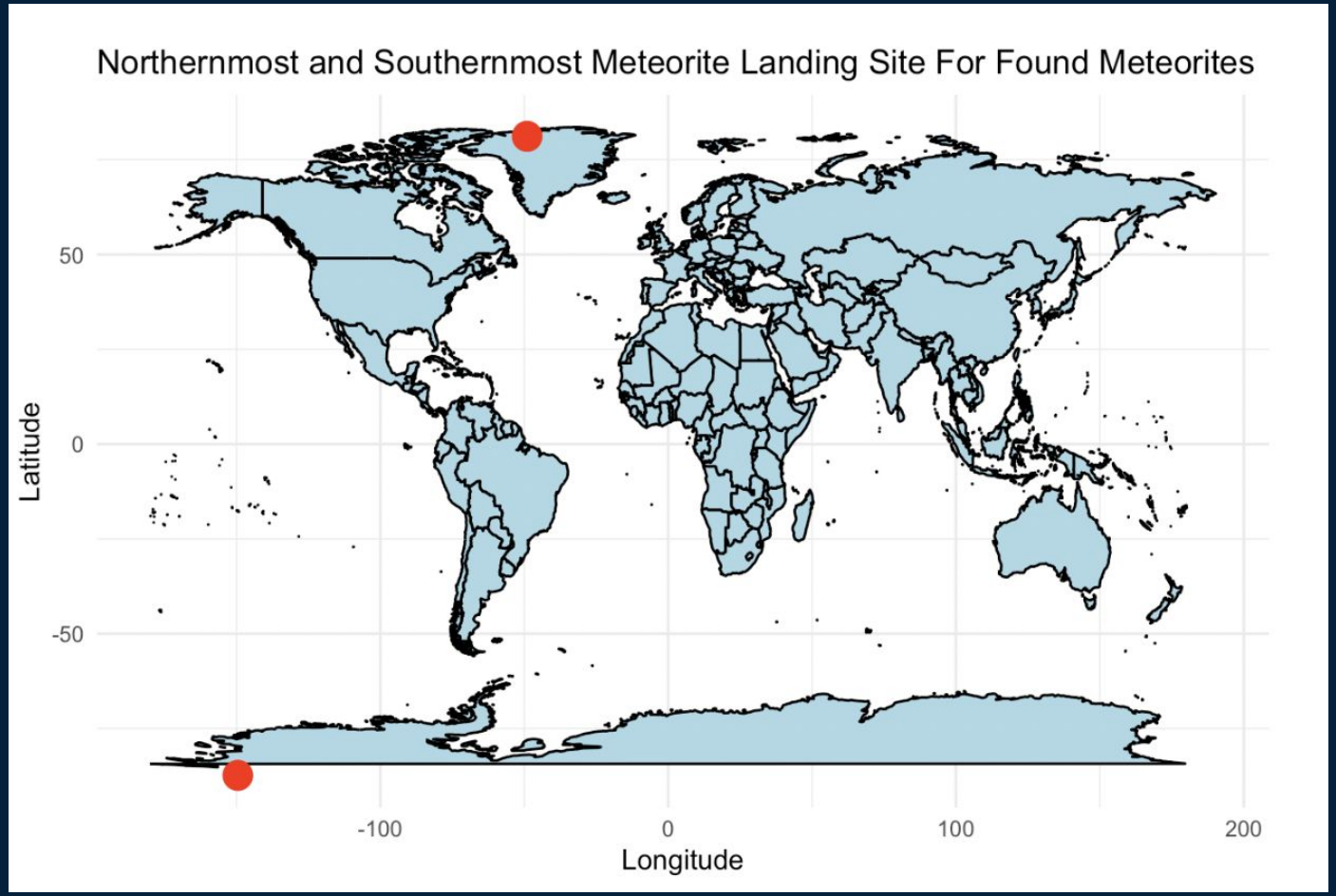


Northernmost Fell Meteorite:

- Name: Pollen
- Year Found: 1942

Southernmost Fell Meteorite:

- Name: Uzcudun
- Year Found: 1948



Northernmost Found Meteorite:

- Name: Ryder Gletcher
- Year Found: 1988

Southernmost Found Meteorite:

- Name: Mount Howe 88400
- Year Found: 1988

RESULTS

Fell Meteorites (meteor that was seen in the sky)

- The Northernmost point for a meteorite landing that fell was in Norway in 1942
- The Southernmost point for a meteorite landing that fell was in Argentina in 1948

Found Meteorites (meteor that was found on ground)

- The Northernmost point for a meteorite landing that was found was in Greenland in 1988
- The Southernmost point for a meteorite landing that was found was in Antarctica in 1988

WHY IS THIS IMPORTANT?

Identifying the northernmost and southernmost meteorite landing provides valuable geographic information about the distribution of meteorite impacts on Earth. It helps scientists understand the global distribution of meteorite falls, which is essential for studying impact patterns, celestial body compositions, and potential risks associated with meteorite impacts.

THANK YOU!