Visualization 2

What can we learn from the visualization?

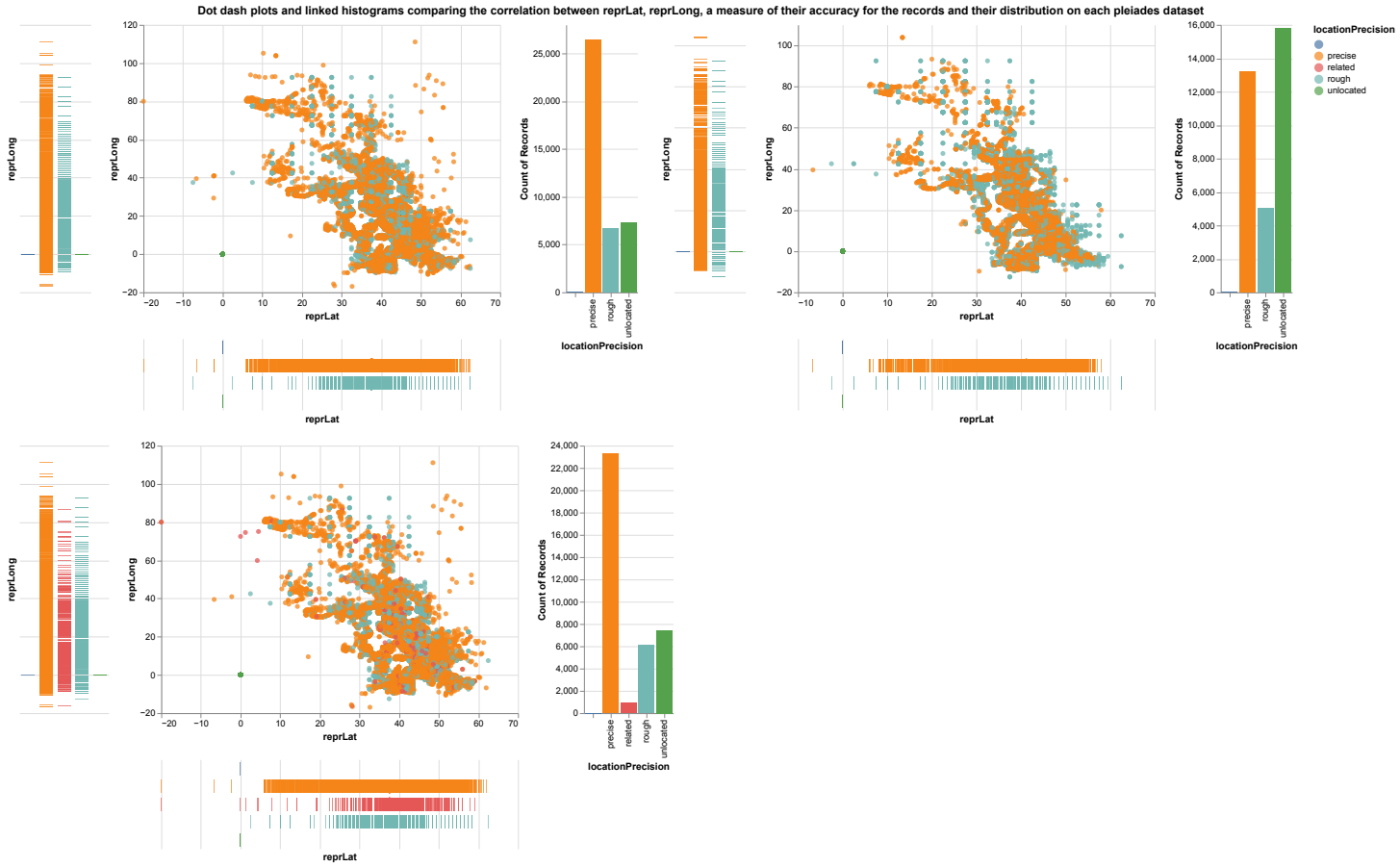
To understand the correlation between the latitude and longitude coordinates across each pleiades dataset and the precision of the coordinates

What is the name for the type of visualization(s) used?

Dot Dash Plot with linked histogram

```
import altair as alt

locations = ('https://raw.githubusercontent.com/SwanseaU-TTW/csc337_coursework1/master/
names = ('https://raw.githubusercontent.com/SwanseaU-TTW/csc337_coursework1/master/plei
places = ('https://raw.githubusercontent.com/SwanseaU-TTW/csc337_coursework1/master/ple

brush = alt.selection_interval()
tick_axis = alt.Axis(labels=False, domain=False, ticks=False)

def scatter(source):
    return (
        alt.Chart(source).mark_circle(opacity=0.75).encode(
            x='reprLat:Q',
            y='reprLong:Q',
            color=alt.condition(brush, 'locationPrecision:N', alt.value('lightgray')),
            tooltip=['title:N', 'reprLatLong:N', 'minDate:N', 'maxDate:N']
        ).add_selection(brush)
    )

def xTicks(source):
    return alt.Chart(source).mark_tick().encode(
        alt.X('reprLat:Q', axis=tick_axis),
        alt.Y('locationPrecision:N', title='', axis=tick_axis),
        color=alt.condition(brush, 'locationPrecision:N', alt.value('lightgrey')),
    ).add_selection(brush)

def yTicks(source):
    return alt.Chart(source).mark_tick().encode(
        alt.X('locationPrecision:N', title='', axis=tick_axis),
        alt.Y('reprLong:Q', axis=tick_axis),
        color=alt.condition(brush, 'locationPrecision:N', alt.value('lightgrey'))
    ).add_selection(brush)

def histo(source):
    return (
        alt.Chart(source).mark_bar().encode(
            x='locationPrecision:N',
            y='count(locationPrecision):Q',
            color='locationPrecision:N',
            tooltip=['count(locationPrecision):N']
        ).transform_filter(
            brush
        ).interactive()
    )

def dotDashPlot(sources):
    return yTicks(sources) | (scatter(sources) & xTicks(sources)) | histo(sources)

alt.vconcat(
    (dotDashPlot(locations) | dotDashPlot(names)),
    dotDashPlot(places)
```

```
).properties(
    title='Dot dash plots and linked histograms comparing the correlation between reprLa
).configure_title(orient='top', anchor='middle').configure_view(stroke=None)
```



What are all visual mappings used?

For each pleiades dataset,

scatter plot

x position: reprLat

y position: reprLong

color: conditionally locationPrecision or lightgray

tooltip: title, reprLatLong, minDate, maxDate

x-axis strip plot

x position: reprLat

y position: locationPrecision

color: conditionally locationPrecision or lightgray

y-axis strip plot

x position: locationPrecision

y position: reprLong

color: conditionally locationPrecision or lightgray

histogram

x position: locationPrecision

y position: count of locationPrecision records

color: locationPrecision

tooltip: count of locationPrecision records

Was there any special data preparation done?

Linked brushing is set up such that when an area on a scatter plot is highlighted, corresponding areas on the other scatter plots are highlighted and the connected strip plot and histogram for each are dynamically updated. Clicking on any space on any scatter plot besides a data point resets the visualization.

What are the limitations of your design?

The visualization could be improved by adding input elements such as checkboxes, dropdowns and/or radio buttons to allow the ability to choose what coordinates to display based on a selected precision. A line of best fit might also be beneficial in understanding the correlation betwen the latitude and longitude data channels.