In [5]:
```
import matplotlib.pyplot as plt
from mpl_toolkits.basemap import Basemap

# Create the Basemap instance for China with a specific latitude and longitude rang
fig, ax = plt.subplots(figsize=(10, 8))

m = Basemap(projection='ortho', lat_0=35.8617, lon_0=104.1954)  # Orthographic proj

# Draw the Blue Marble image with some custom color changes
m.drawmapboundary(fill_color='aqua')  # Change ocean color to aqua
m.fillcontinents(color='lightgreen', lake_color='aqua')  # Change land color to lig

# Display the map with the title
plt.title('Blue Marble View of China', fontsize=15, color='navy')

# Show the map
plt.show()
```

In [ ]:
```
```

In [7]:
```
# Import necessary libraries
from mpl_toolkits.basemap import Basemap
import matplotlib.pyplot as plt
```

```
# Create a Basemap instance for the whole world using the Robinson projection
map = Basemap(projection='robin', resolution='c',
              lon_0=0,  # Central meridian
              llcrnrlon=-180, urcrnrlon=180,
              llcrnrlat=-60, urcrnrlat=90)

# Draw map boundary and fill continents with simple colors
map.drawmapboundary(fill_color='aqua')  # Simple ocean color
map.fillcontinents(color='lightgreen', lake_color='aqua')  # Simple land and lake c

# Draw coastlines and countries
map.drawcoastlines()
map.drawcountries()

# Mark China with a red dot
china_lat = 35.8617
china_lon = 104.1954
x, y = map(china_lon, china_lat)  # Convert latitude and longitude to map projectio
map.plot(x, y, 'ro', markersize=10)  # 'ro' means red color and circle marker

# Add a label for China
plt.text(x, y, ' China', fontsize=12, ha='left', color='red')

# Add a title
plt.title("World Map with China Marked", fontsize=15, color='navy')

# Display the map
plt.show()
```

In [ ]:

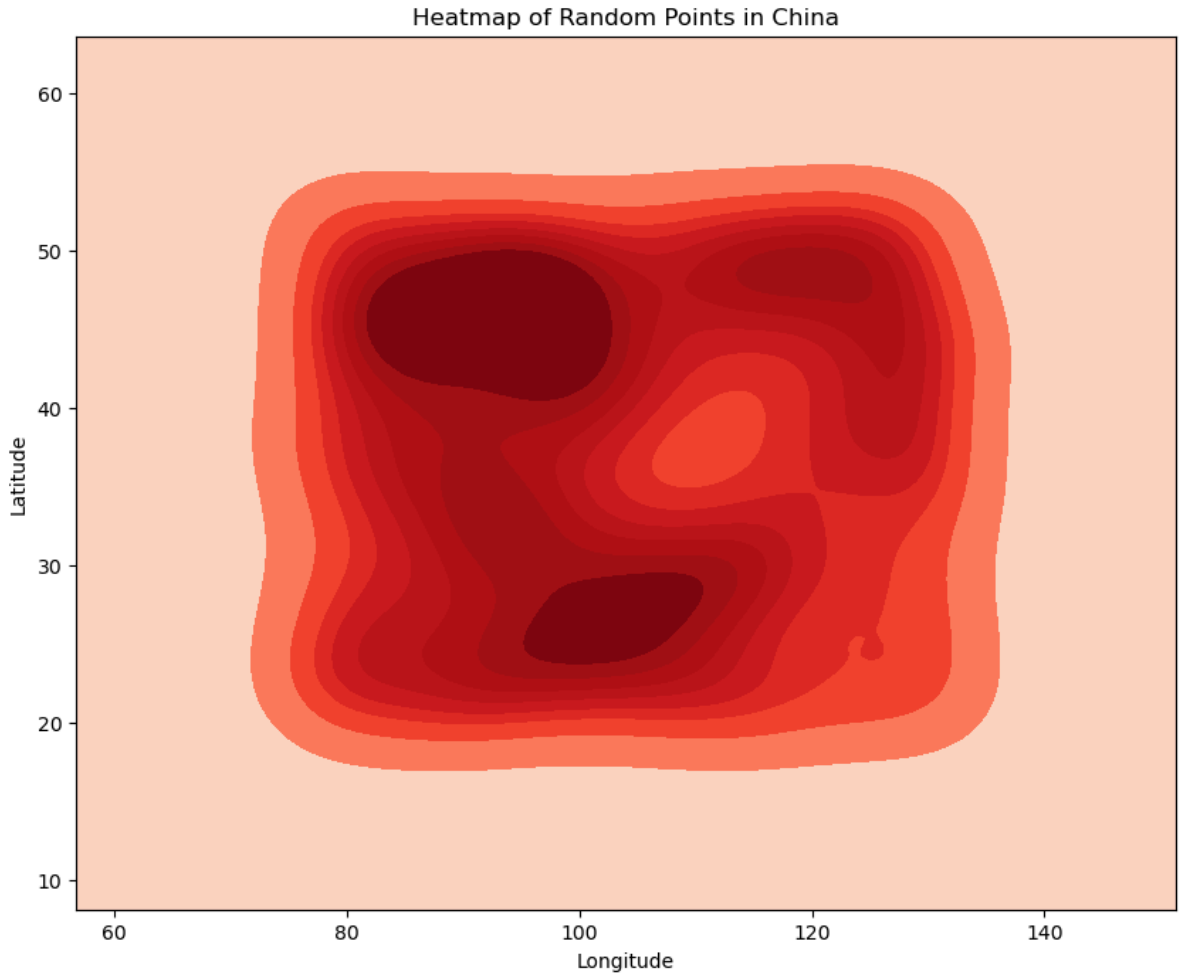
In [9]:
```
# Import necessary libraries
from mpl_toolkits.basemap import Basemap
import matplotlib.pyplot as plt

# Create a Basemap instance for China
map = Basemap(llcrnrlon=73.66, llcrnrlat=18.17, urcrnrlon=134.77, urcrnrlat=53.56,
              resolution='i', projection='tmerc', lat_0=35.8617, lon_0=104.1954)

# Draw map boundary and fill continents
map.drawmapboundary(fill_color='lightblue')
map.fillcontinents(color='lightgreen', lake_color='lightblue')

# Draw coastlines and countries
```

```
map.drawcoastlines(color='black', linewidth=1.5)
map.drawcountries(color='darkgray', linewidth=1.5)

# Example locations with annotations
locations = {
    'Beijing': (116.4074, 39.9042),
    'Shanghai': (121.4737, 31.2304),
    'Guangzhou': (113.2644, 23.1291),
    'Chengdu': (104.0665, 30.5728)
}

# Plot locations with custom markers
for city, (lon, lat) in locations.items():
    x, y = map(lon, lat)
    map.plot(x, y, 'bo', markersize=8)  # Blue dots for cities
    plt.text(x, y, city, fontsize=12, ha='right', color='darkred')

# Add a title
plt.title("Map of China with Major Cities Marked", fontsize=15, color='navy')

# Display the map
plt.show()
```

In [10]:

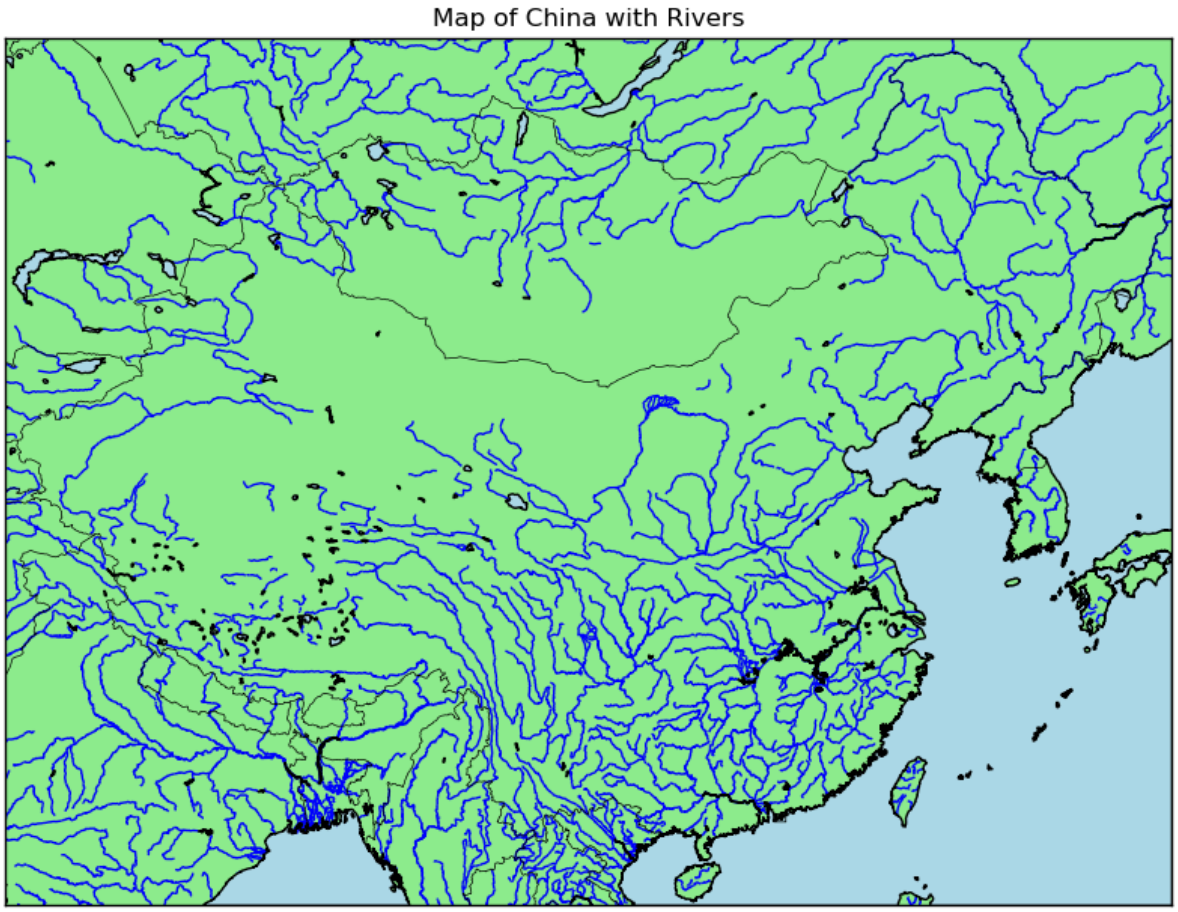
```
import numpy as np
import seaborn as sns
import matplotlib.pyplot as plt

# Sample data: Random points in China
np.random.seed(0)
x = np.random.uniform(73.5, 134.5, 1000)  # Longitude range for China
y = np.random.uniform(18.2, 53.6, 1000)  # Latitude range for China

# Create a heatmap
plt.figure(figsize=(10, 8))
sns.kdeplot(x=x, y=y, cmap='Reds', fill=True, thresh=0)  # Changed the color to Red
plt.title('Heatmap of Random Points in China')
plt.xlabel('Longitude')
```

```
plt.ylabel('Latitude')
plt.show()
```



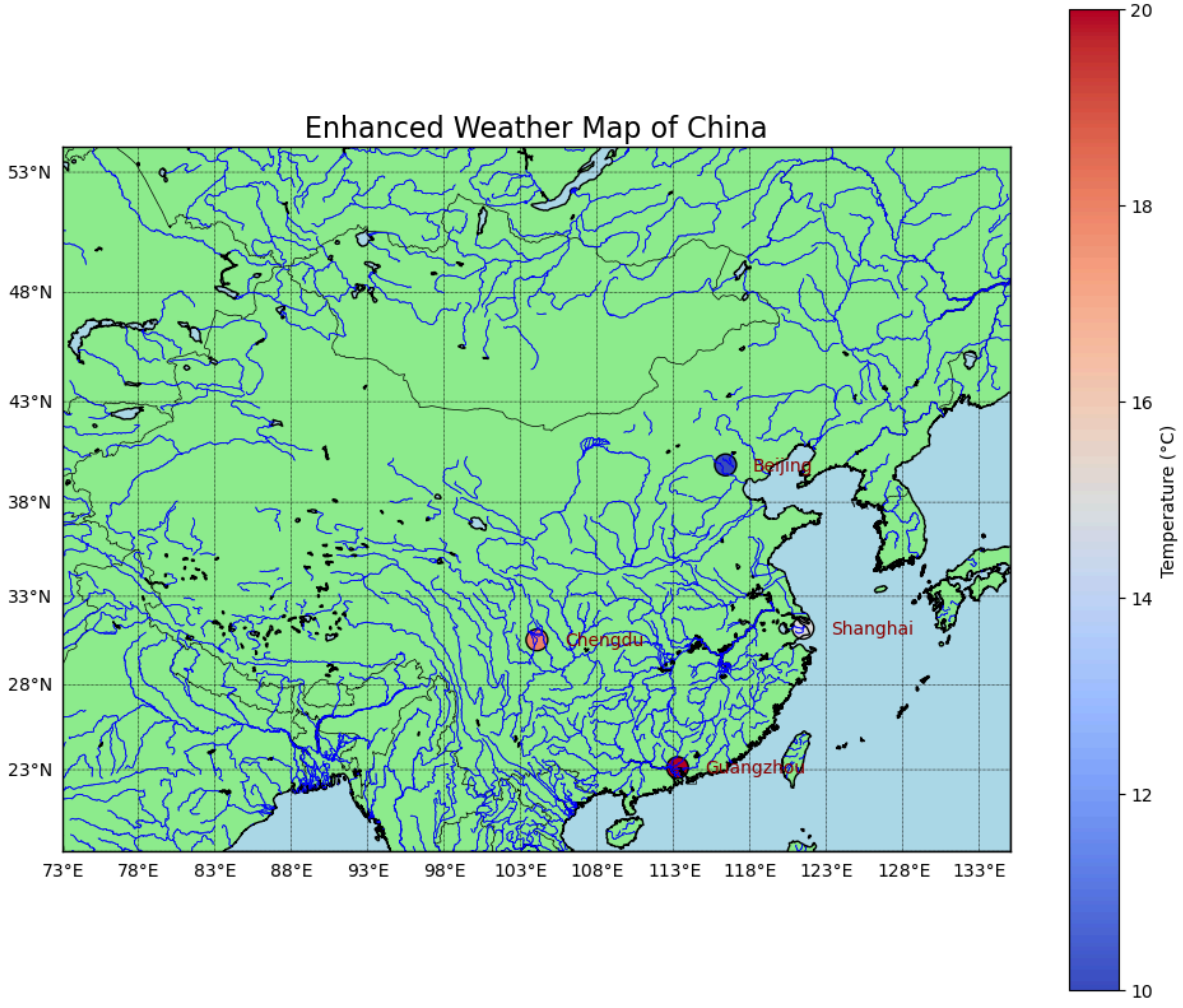
In [ ]:

In [12]:
```
from mpl_toolkits.basemap import Basemap
import matplotlib.pyplot as plt

# Create a map focused on China
plt.figure(figsize=(10, 8))
m = Basemap(
    projection='merc',
    llcrnrlat=18.0,  # Lower-left corner latitude
    urcrnrlat=54.0,  # Upper-right corner latitude
    llcrnrlon=73.0,  # Lower-left corner longitude
    urcrnrlon=135.0, # Upper-right corner longitude
    resolution='i'   # Resolution: 'c', 'l', 'i', 'h', 'f'
)

# Draw rivers, map boundaries, coastlines, and countries
m.drawrivers(color='blue', linewidth=1)
m.drawcoastlines()
m.drawcountries()
m.drawmapboundary(fill_color='lightblue')
m.fillcontinents(color='lightgreen', lake_color='lightblue')

# Add a title
plt.title('Map of China with Rivers')

# Show the plot
plt.show()
```



In [13]:
```
from mpl_toolkits.basemap import Basemap
import matplotlib.pyplot as plt
import numpy as np

# Sample weather data (latitude, longitude, temperature in Celsius) for China
weather_data = {
    "locations": [(39.9042, 116.4074), (31.2304, 121.4737), (23.1291, 113.2644), (3
    "temperature": [10, 15, 20, 18],  # Sample temperatures
    "cities": ["Beijing", "Shanghai", "Guangzhou", "Chengdu"]
}

# Create a map focused on China
plt.figure(figsize=(12, 10))
m = Basemap(
    projection='merc',
    llcrnrlat=18.0,  # Lower-left corner latitude
    urcrnrlat=54.0,  # Upper-right corner latitude
    llcrnrlon=73.0,  # Lower-left corner longitude
    urcrnrlon=135.0, # Upper-right corner longitude
    resolution='i'
)

# Draw map features
m.drawcountries()
m.drawcoastlines()
m.drawrivers(color='blue', linewidth=0.5)
m.drawmapboundary(fill_color='lightblue')
m.fillcontinents(color='lightgreen', lake_color='lightblue')

# Convert latitude and longitude to map coordinates
lats, lons = zip(*weather_data["locations"])
x, y = m(lons, lats)

# Plot weather data (temperature as color-coded dots)
```

```
sc = plt.scatter(x, y, c=weather_data["temperature"], cmap='coolwarm', s=150, edgec
plt.colorbar(sc, label='Temperature (°C)')

# Add city names next to their points
for i, city in enumerate(weather_data["cities"]):
    plt.text(x[i] + 200000, y[i], city, fontsize=10, ha='left', va='center', color=

# Add parallels and meridians
m.drawparallels(np.arange(18, 55, 5), labels=[1, 0, 0, 0], linewidth=0.5, fontsize=
m.drawmeridians(np.arange(73, 136, 5), labels=[0, 0, 0, 1], linewidth=0.5, fontsize

# Highlight rivers
m.drawrivers(color='blue', linewidth=0.5)

# Add a title
plt.title('Enhanced Weather Map of China', fontsize=16)

# Show the plot
plt.show()
```



In [ ]:

In [ ]: