Yearly average air temperature analysis fo years 2013-2015

In [4]:

```
import matplotlib.pyplot as plt
import numpy as np
import pandas as pd
```

In [5]:

```
def get_df(year):
    return pd.read_csv('Environmental_Data_Deep_Moor_{}.csv'.format(year))
```

In [6]:

```
def monthly_avg_calc(month, column):
    return df[df['date'].str.contains('201[2345]_[0]?' + str(month))][column].mean
```

In [9]:

```
def yearly_avg(category):
    return list(map(lambda m: monthly_avg_calc(m, category), range(1,13)))
```

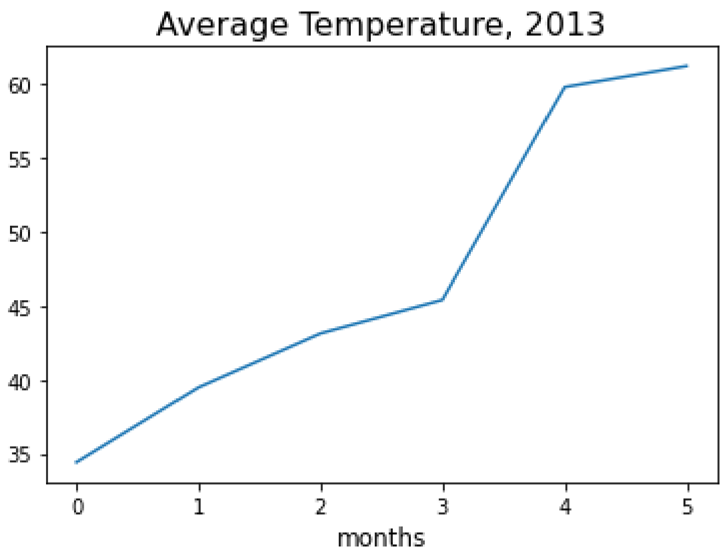
In [10]:

```
df = get_df('2013')
```

Average monthly temperature, year 2013

In [18]:

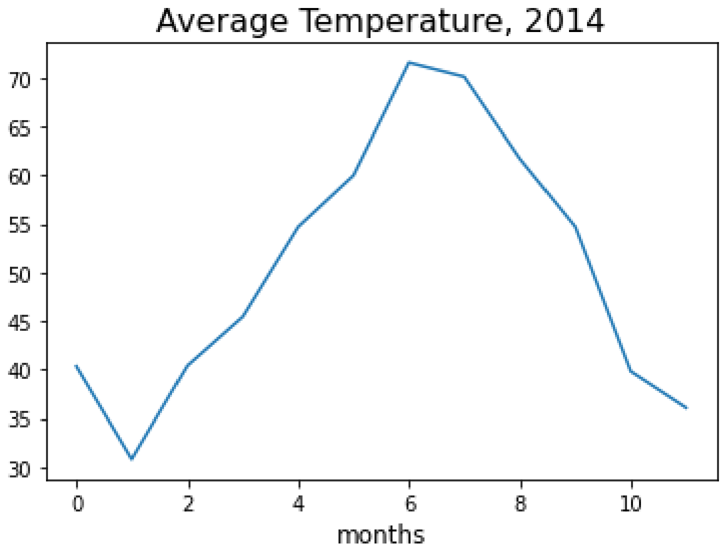
```
plt.plot(yearly_avg('Air_Temp'))
plt.title('Average Temperature, 2013',fontsize=16)
plt.xlabel('months', fontsize=12)
plt.show()
```



Average monthly temperature, year 2014

In [16]:

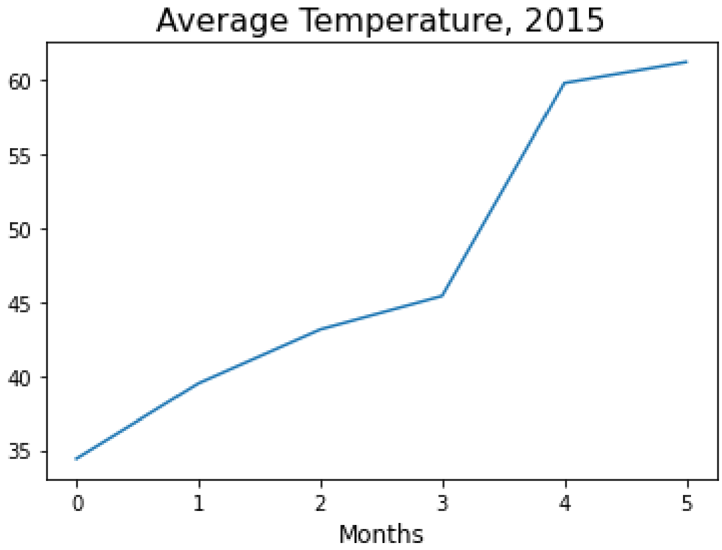
```
df = get_df('2014')
plt.plot(yearly_avg('Air_Temp'))
plt.title('Average Temperature, 2014',fontsize=16)
plt.xlabel('Months', fontsize=12)
plt.show()
```



Average monthly temperature, year 2015

In [20]:

```
df = get_df('2015')
plt.plot(yearly_avg('Air_Temp'))
plt.title('Average Temperature, 2015',fontsize=16)
plt.xlabel('Months', fontsize=12)
plt.show()
```



In [21]:

```
def get_years(arr_years):
    newarr=[];
    for i in arr_years:
        df = get_df(i)
        newarr.append(df)
    return newarr
```

In [22]:

```
arr = [2013, 2014, 2015]
```

In [23]:

```
heights = [year['Air_Temp'].mean() for year in get_years(arr)]
```

In [24]:

```
def max_temp(s):
    return s[s['Air_Temp']==s['Air_Temp'].max()]
def min_temp(s):
    return s[s['Air_Temp']==s['Air_Temp'].min()]
```

In [25]:

```
def min_man_temps(arr):
    return [(max_temp(s)['Air_Temp'].values[0],
             max_temp(s)['date'].values[0],
             min_temp(s)['Air_Temp'].values[0],
             min_temp(s)['date'].values[0]
        ) for s in get_years(arr)]
```

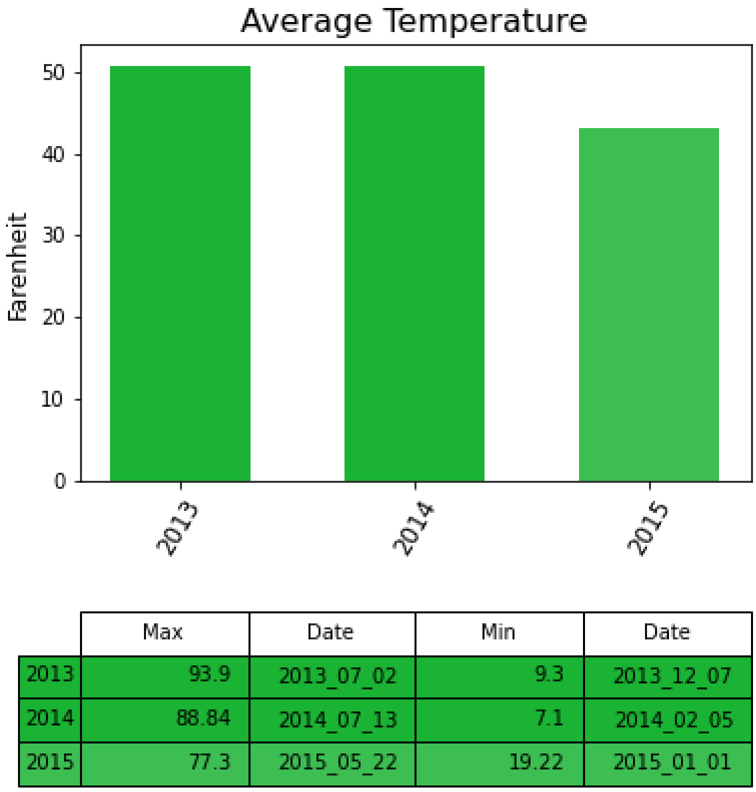
2013-2015 year average air temperature with maximum and minimum temperature information

In [47]:

```
alphas = [height/max(heights) for height in heights]
# RGBA TUPLE (.1,.7,.2,.5)
colors = [(.1,.7,.2,a) for a in alphas]
plt.bar(arr, heights, .6, color=colors)

plt.ylabel('Farenheit', fontsize=12)
plt.title('Average Temperature', fontsize=16)
plt.xticks(np.arange(2013,2016,1), rotation=60, fontsize=12)
columns = ['Max', 'Date', 'Min', 'Date']
plt.table(cellText=min_man_temps(arr), bbox=[0, -0.7, 1, 0.4],
          rowLabels=arr,
          colLabels=columns,
          rowColours=colors,
          cellColours=[[c]*4 for c in colors])

plt.show()
```



	Max	Date	Min	Date
2013	93.9	2013_07_02	9.3	2013_12_07
2014	88.84	2014_07_13	7.1	2014_02_05
2015	77.3	2015_05_22	19.22	2015_01_01

In [ ]:

In [ ]: