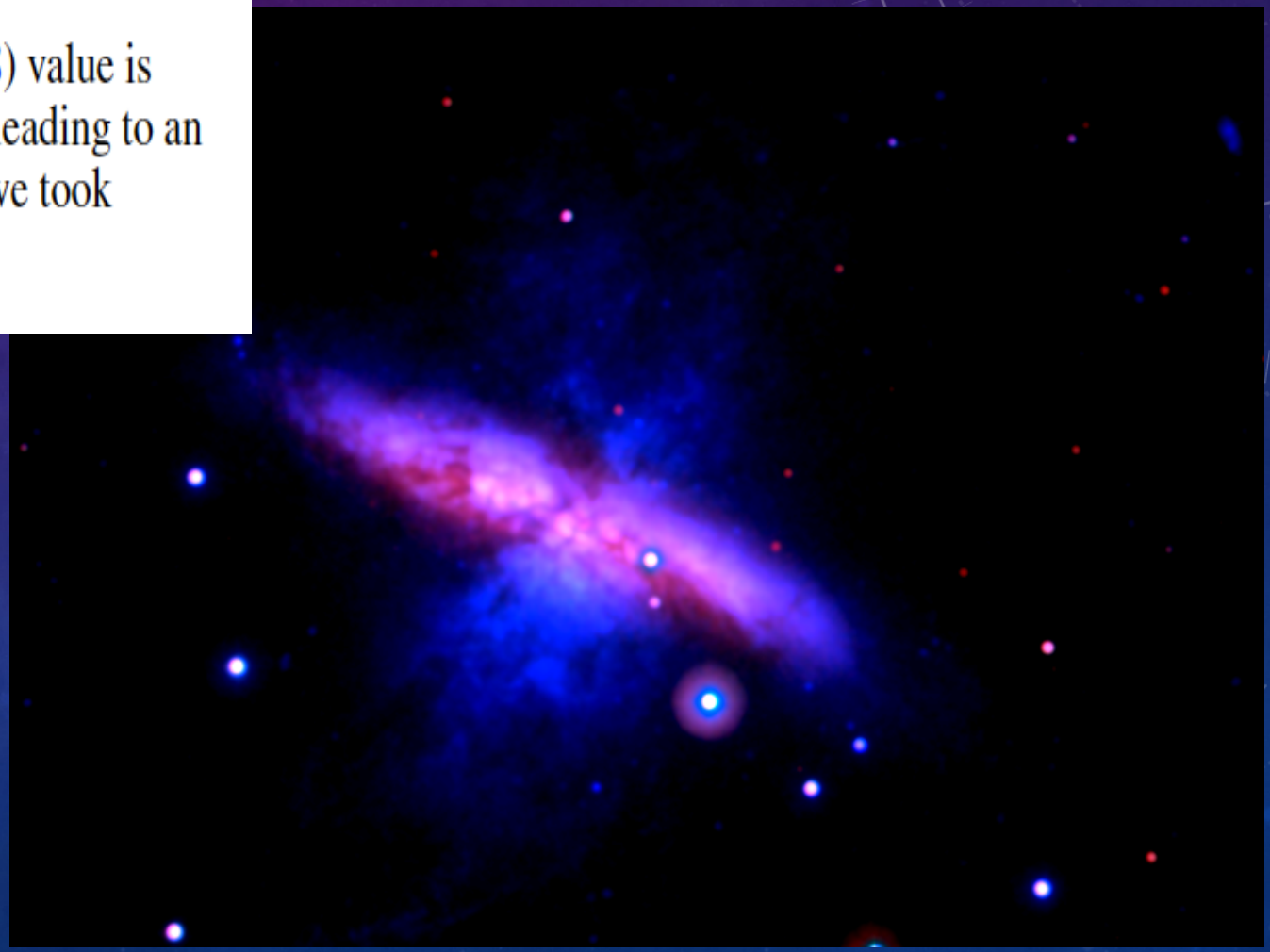
HOW WELL DO WE KNOW THE MILKY WAY REDDENING?

TATE WALKER FOR DR. PETER BROWN

CORRECTING FOR DUST EXTINCTION IS IMPORTANT TO UNDERSTANDING THE LUMINOSITY OF DIFFERENT ASTRONOMICAL OBJECTS

DALCANTON ET AL. (2009) WARNS US THAT THE SCHLEGEL ET AL. (1998) DUST MAP ISN'T CORRECT FOR M82

[23] The one exception is M82, for which the Schlegel et al. (1998) value is clearly contaminated by point source emission from M82 itself, leading to an erroneously high foreground extinction ($A_B = 0.685$). Instead, we took $A_B = 0.25$, based upon regions immediately adjacent to M82.



WHAT OTHER NEARBY GALAXIES MIGHT BE CONTAMINATING THE DUST MAPS?

PROCESS

```
71
72  def tableFill(dam, ra, dec, appender,nme):
73      t = Table(None)
74      Am = Column(name = 'Arcminute')
75      North = Column(name = 'North')
76      East = Column(name = 'East')
77      South = Column(name = 'South')
78      West = Column(name = 'West')
79      t.add_columns([Am,North, East, South, West])
80      tA_v = []
81      curVal = [None] *4 #n = 0, e = 1, s = 2, w = 3
82      coord = [None] *4 #n = 0, e = 1, s = 2, w = 3
83      #get values for each arcminute
84      for j in range(0,dam+1):
85          fourCoord(j, ra, dec, coord)
86          t.add_row()
87          t[j][0]=j
88          for i in range(0,4):
89              C = coordinates.SkyCoord(coord[i])
90              table = IrsaDust.get_extinction_table(C.fk5, show_progress = False)
91              curVal[i] = (table['A_SandF'][2])
92              t[j][i+1] = curVal[i]
93              curVal = curVal[:]
94          tA_v.append(curVal)
95      t.add_row()
96      for i in range(0,5): #this adds a blank line to the table to separate queries
97          t[j+1][i] = None
98      n = [nme]
99      namesTable = Table([n], names=('n'))
100     final_name = namesTable.to_pandas()
101     final_vals = t.to_pandas()
102     from pandas import ExcelWriter
103     with open('A_v Values.csv', appender) as f:
104         final_name.to_csv(f, header =False, index = False)
105     appender = 'a'
106     with open('A_v Values.csv', appender) as f:
107         final_vals.to_csv(f, header =True, index = False, sep = ',')
108     return(tA_v)#gets the data from IRSA database and stores A_v in array
109
110 def grabImage(ra,dec):
111     imagelist = IrsaDust.get_image_list(SkyCoord(ra,dec).fk5, image_type="100um", radius=2*u.degree)
112     image_file = download_file(imagelist[0],cache=True)
113     image_data.append(fits.getdata(image_file, ext=0)) #gets image from IRSA database
```

```
Welcome to A_v Calculator!

Created by: Tate Walker for Dr. Peter Brown at Texas A&M University

Enter [1] to enter galaxies by hand. Enter [2] to import a .txt file of names. Enter [q] to quit.
```

TateWalker / Galactic-Data

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Program to get various values from NED and IRSA Databases — Edit

Add topics

32 commits | 3 branches | 0 releases | 1 contributor | Apache-2.0

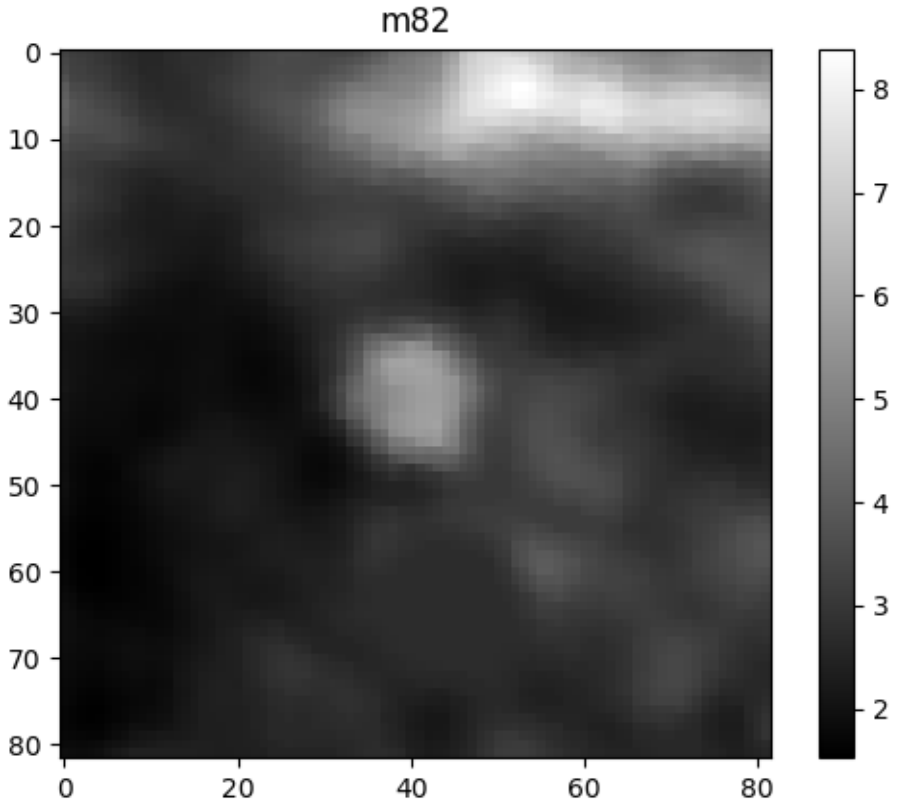
Branch: master | New pull request | Create new file | Upload files | Find file | Clone or download

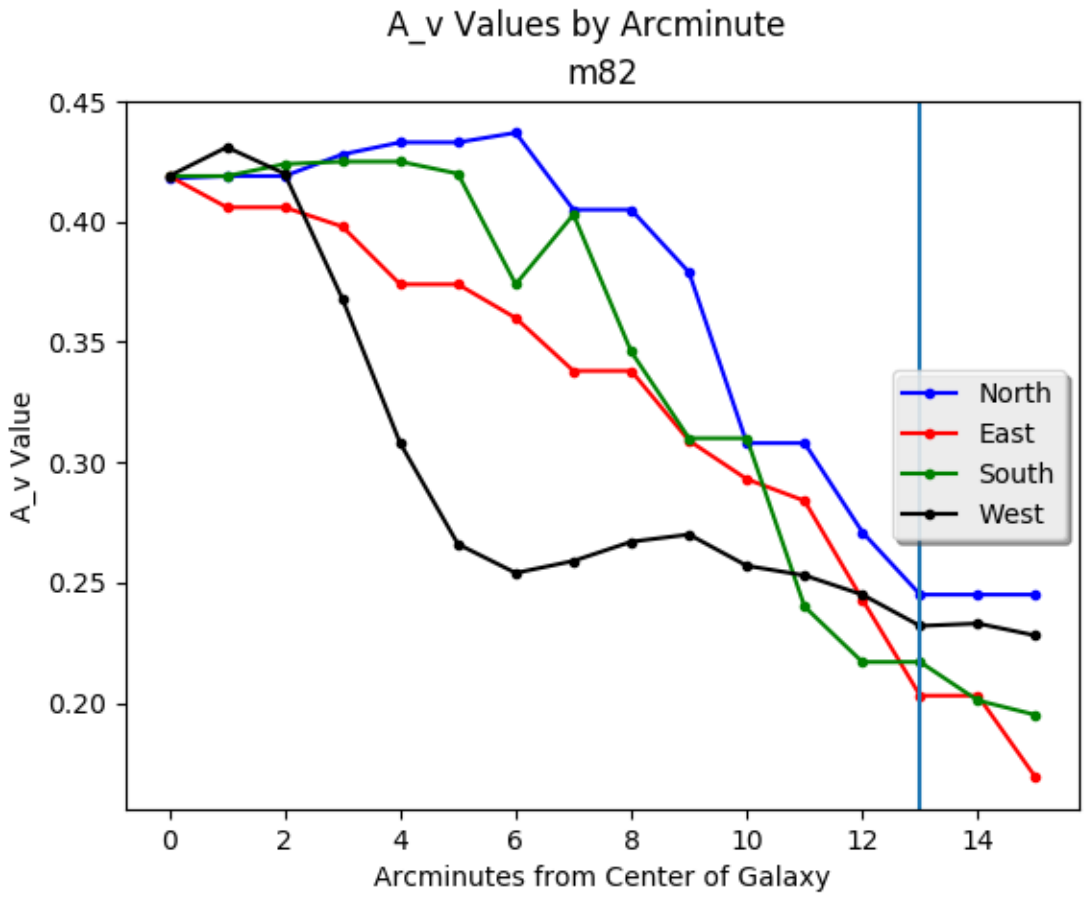
Tate Walker added customization for photo and graph output — Latest commit 3667639 on Jul 19

.gitignore	changed gitignore	2 months ago
LICENSE	Initial commit	2 months ago
README.md	Update README.md	2 months ago
comparator.py	added ned scraping to grab velocities	2 months ago
input.txt	added diameter values and graphed them with A_v vals	a month ago
irsa.py	added customization for photo and graph output	a month ago
ned.py	added ned query capabilities	2 months ago
velocities.py	added diameter values and graphed them with A_v vals	a month ago

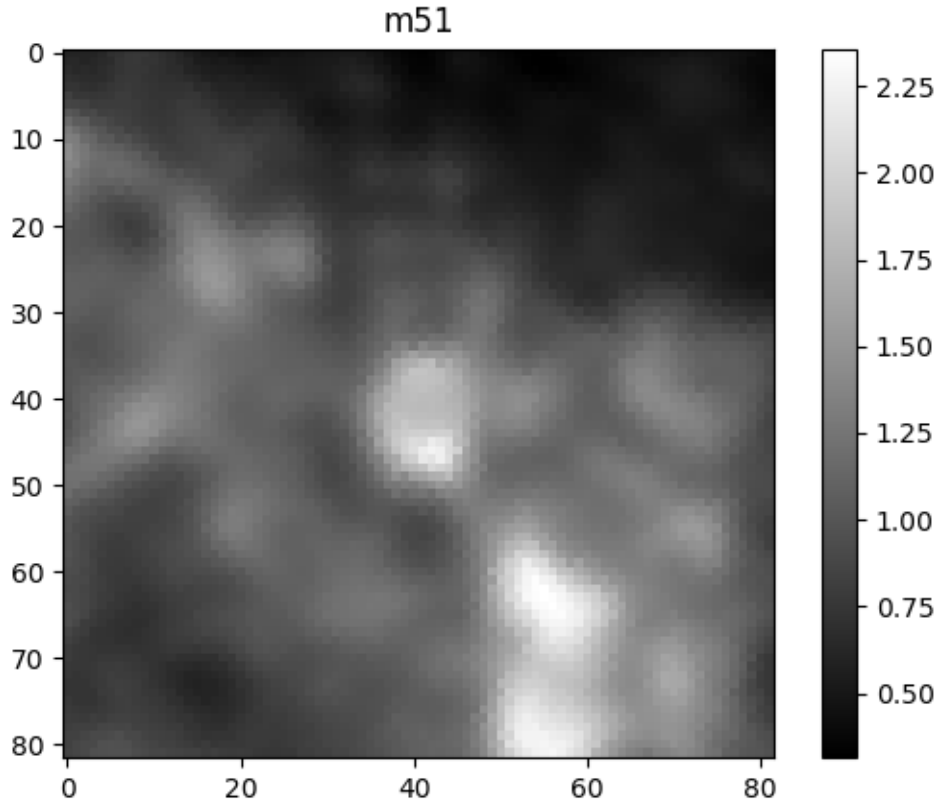
https://github.com/TateWalker/Galactic-Data

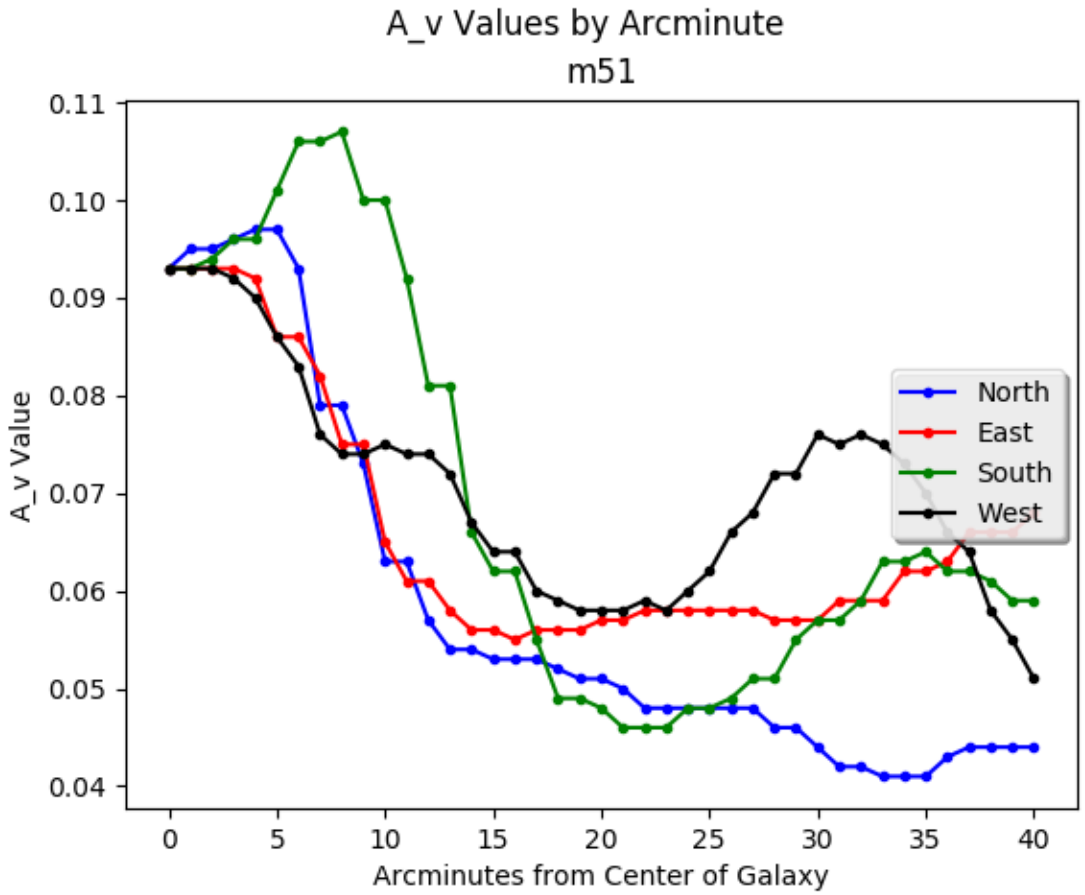
M82


m82
0
10
20
30
40
50
60
70
80
0
20
40
60
80
8
7
6
5
4
3
2

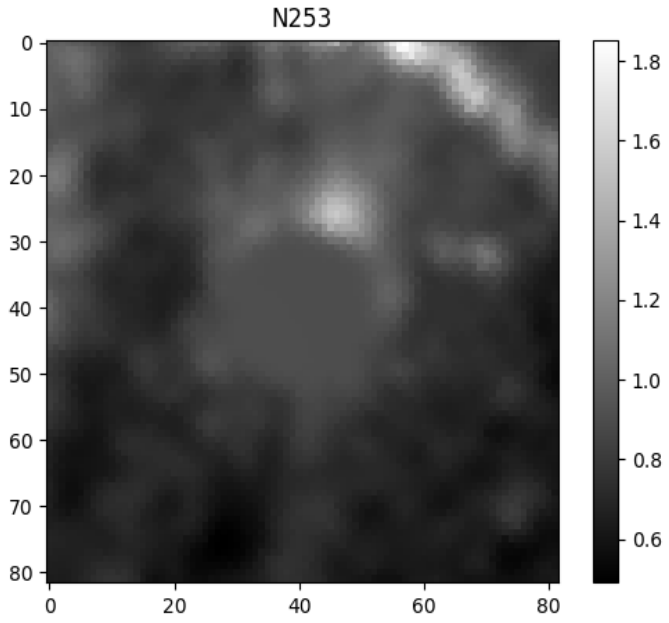

A_v Values by Arcminute
m82
A_v Value
0.45
0.40
0.35
0.30
0.25
0.20
0
2
4
6
8
10
12
14
Arcminutes from Center of Galaxy
North
East
South
West

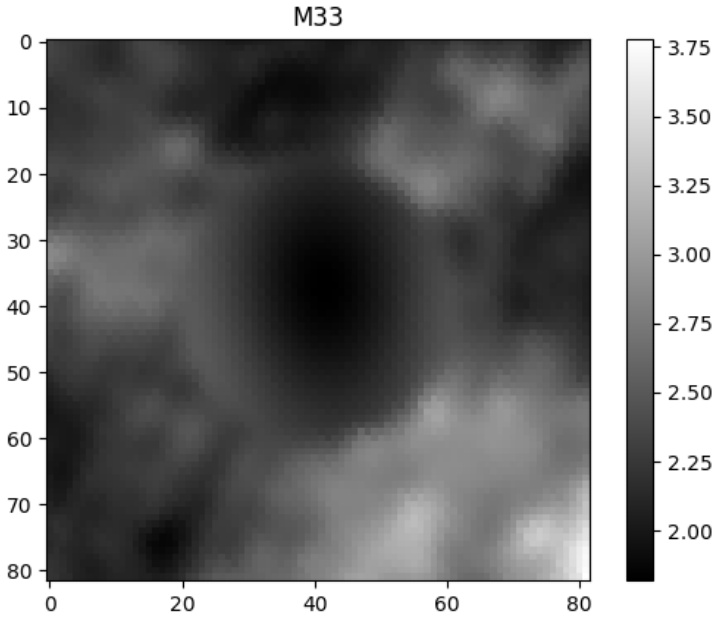
M51 (WHIRLPOOL / NGC5195A)

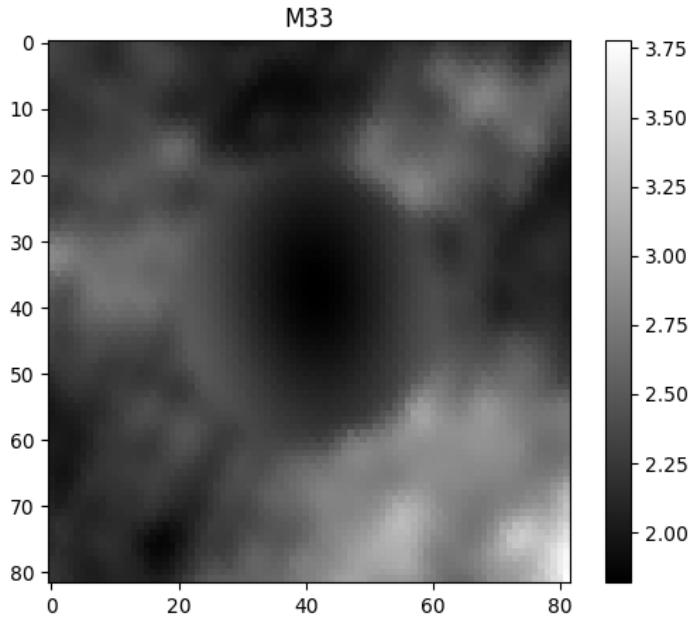




SOME SOURCES ARE REMOVED







CONCLUSIONS

1. We are compiling a list of more appropriate Milky Way reddening values for nearby galaxies
2. Don’t assume you can just pull values from NED without understanding where they originally came from and the uncertainties involved