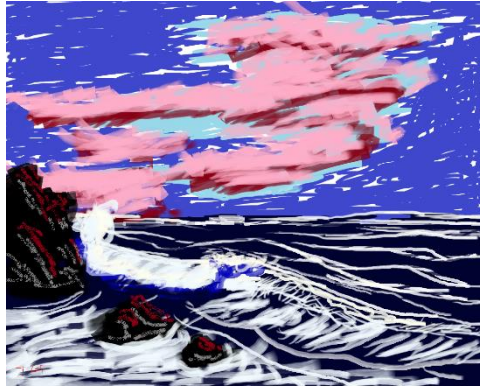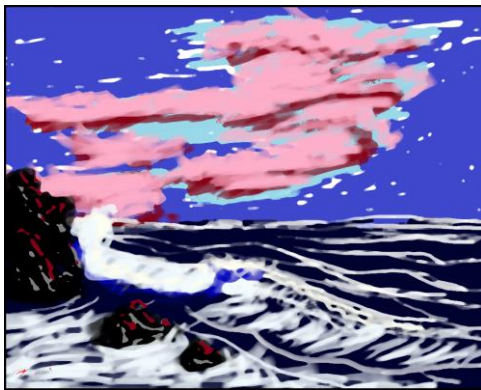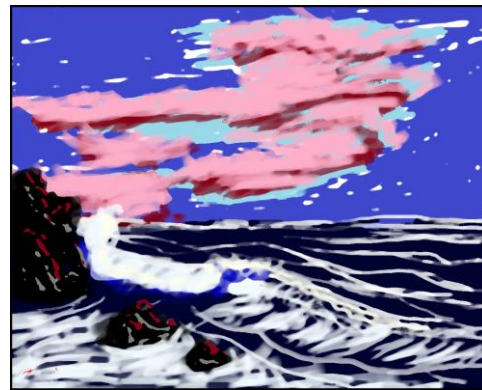# CIIC 4030/ICOM 3046 Programming Languages
Assignment #4

The Original Image

Sequential Result
(~17 Seconds)

Concurrent Result
(~9 Seconds)

The implementation of the Median Filter was an adapted version of the 2-Dimensional pseudocode available on the Wikipedia page referenced in the assignment document.

To make it concurrent, the image was split into 10 vertical regions, and the filter was run concurrently on said regions. Each of the median filter actors extends "ChopoActor" (which itself extends Actor). "ChopoActor" includes variables for two buffered images (before and after) and the median filter function. The function receives a "MedianRange" as an argument (an Integer, Integer pair) which defines what X Column to start and end at.

Due to the way the median filter works, there's a border of half the window width on either side, and half the window height on the top and bottom. Our window is 10x10, so there's a 5-pixel black border around the entire image. The ranges for the concurrent actor had to be adjusted to make sure the image didn't end up with 10-pixel wide bars down the middle.

Sample Program Output

```
Wilson has been created. He will request this picture to be processed
he received the system. Now he better do this.
I have received a system
Loading file
Time to start working on BobRossTIme.png
Starting to process range 0 to 1114
Starting to process range 0 to 116
Starting to process range 550 to 671
Starting to process range 217 to 338
Starting to process range 772 to 893
Starting to process range 106 to 227
Starting to process range 328 to 449
Starting to process range 883 to 1004
Starting to process range 661 to 782
Starting to process range 994 to 1114
Starting to process range 439 to 560
Beep boop, Concurrent is done:
Time for Concurrent: 9.3827114s
Saving C:\Users\igtam\IdeaProjects\ScalaHomeworkFromQuickstart\ConcurrentResult.png
Beep boop, Sequential is done:
Time for Sequential: 14.9873404s
Saving C:\Users\igtam\IdeaProjects\ScalaHomeworkFromQuickstart\SequentialResult.png

Process finished with exit code 0
```