Normal Cuda Program
512 288 60: 0.0137 s
922 518 60: 0.0349 s
1331 747 60: 0.0659 s
1740 976 60: 0.1076 s
2150 1205 60: 0.1602 s
2559 1434 60: 0.2215 s
2969 1663 60: 0.2948 s
3378 1892 60: 0.3742 s
3787 2121 60: 0.4614 s
4096 2160 60: 0.5159 s

All-Floats Cuda Program
512 288 60: 0.0144 s
922 518 60: 0.0350 s
1331 747 60: 0.0665 s
1740 976 60: 0.1090 s
2150 1205 60: 0.1600 s
2559 1434 60: 0.2240 s
2969 1663 60: 0.2920 s
3378 1892 60: 0.3770 s
3787 2121 60: 0.4676 s
4096 2160 60: 0.5035 s

Diffs:
512 288 60: 0.0144 - 0.0137 = 0.0007 s
922 518 60: 0.0350 - 0.0349 = 0.0001 s
1331 747 60: 0.0665 - 0.0659 = 0.0006 s
1740 976 60: 0.1090 - 0.1076 = 0.0014 s
2150 1205 60: 0.1600 - 0.1602 = -0.0002 s
2559 1434 60: 0.2240 - 0.2215 = 0.0025 s
2969 1663 60: 0.2920 - 0.2948 = -0.0028 s
3378 1892 60: 0.3770 - 0.3742 = 0.0028 s
3787 2121 60: 0.4676 - 0.4614 = 0.0062 s
4096 2160 60: 0.5035 - 0.5159 = -0.0124 s

- Mean difference: 0.0009 s
- Median difference: 0.0006 s

There does not seem to be any meaningful relationship between float vs double. In fact floats have 7 digits of precision, and doubles have 15, so this seems to be theoretically the opposite of what I'd expect.