Subject: Strange floating-point precision behavior
Posted by lloyd on Sat, 08 Feb 2003 23:33:21 GMT
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I have written a routine that converts Earth-Centered Inertial coordinates in x/y/z to geodetic latitude/longitude/altitude using the WGS84 standard. I have one issue, however, that I believe is affecting my calculations of altitude so that they are accurate only to 1-meter resolution. I am defining the ECI coordinates as double-precision:

```
IDL> boulder={x:-1283388.8693d0, $
y:-4713016.9053d0, $
z:4090191.0471d0} ;Boulder, CO, GPS station
```

and yet IDL seems to be storing the data incorrectly:

```
IDL> print,boulder,format='(3f20.10)'
-1283388.8692999999 -4713016.9052999998 4090191.0471000001
```

What am I doing wrong? I am fairly certain that this behavior is responsible for my calculations yielding 1674.6658 m as the altitude of the Boulder GPS station, and not 1674.7428 m (the actual altitude). This is on IDL 5.6 for Mac OS X.

Thanks,
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