X3D Geospatial Working Group of Web3D Consortium

Mike McCann – mccann@mbari.org, @MBARIMike
X3D

• Declarative 3D Graphics
  – Simplifies 3D for content creators
  – Integrated with the HTML5 DOM (X3DOM)
  – Extensible
  – Open
Geospatial Component

Must deal with many coordinate systems

- Geographic (latitude, longitude, elevation)*
- Geocentric – Cartesian, “ECEF”, “GCC”
- Local X3D – may be offset, may be rotated

* X3D supports other other spatial reference systems via the geoSystem attribute, e.g. “UTM”
Geospatial Component

\( \lambda \) - Geographic longitude
\( \phi \) - Geographic latitude

R - Mean earth radius
X, Y, Z - Geocentric coordinate system
O - Geocenter
Geospatial Component

Makes it easy to use Geo in X3D

• Geo content provided in lat, lon, elev
• Computer graphics works in X, Y, Z
• Numerical precision issues
• Navigation, e.g. “fly” expects +Y to be “up”
X3D Geospatial Component

Handles all the transformations and precision calculations needed to work with geographic data.
Join Our Community!

• Visit the Web3D Consortium at booth #755
  – x3d-public mailing list
  – geospatial mailing list*
  – Strong liaison with Open Geospatial Consortium

• Contribute to open source projects
  – X3DOM
  – STOQS
  – ...

* Members only