

4-hr Seminar Outline

Using the Global Spatial Data Model (GSDM) I – Background

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- I. Introduction:
 - A. Goal for development of the GSDM – bridge gap between GPS & GIS
 - B. Assumptions inherent in use of 3-D spatial data – origin & constraints
 - C. Scope of applications - worldwide
- II. History and background:
 - A. Flat Earth and maps
 - B. Curved Earth and implications – big picture considerations
 - C. Map projections and uses – strictly 2-D
 - D. Impact of the Digital Revolution – total freedom within GPS birdcage
- III. Basic elements and conventions:
 - A. Coordinate systems – geodetic and rectangular
 - B. Units and distances – meter is world standard, flexibility for output
 - C. Spatial data conventions – right/left handed etc
- IV. Types of spatial data:
 - A. Absolute – location with respect to coordinate system
 - B. Relative - location with respect to another point
 - C. Reference frames provide context and meaning
- V. Generating spatial data:
 - A. Observation/sensing/measurement -
 - B. Design considerations – errorless data
 - C. Relative/absolute – how obtained and/or used
 - D. Quality of pieces – how good are they?
- VI. Models for spatial data manipulation:
 - A. Conventional 2-D and 1-D
 - B. Evolution of 3-D models - digital spatial data
 - C. Error propagation
 - D. Standards and specifications
- VII. Using spatial data
 - A. Point/location/inventory (absolute) - GIS
 - B. Direction/distance/differences (relative) – engineering and mapping
- VIII. Spatial data accuracy:
 - A. Establishing – Control points and quality of observations
 - B. Tracking – using error propagation procedures
 - C. Using – making better decisions