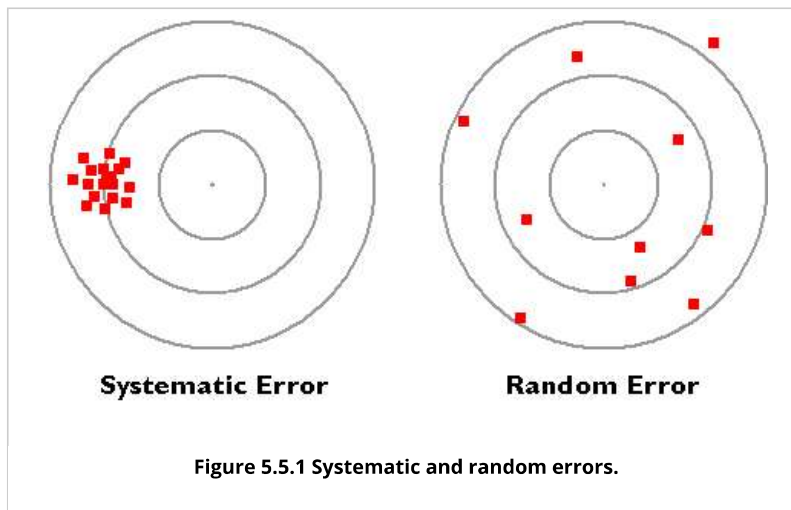


4. Systematic vs. Random Errors [Print](#)

The diagram below illustrates the distinction between **systematic** and **random** errors. Systematic errors tend to be consistent in magnitude and/or direction. If the magnitude and direction of the error is known, accuracy can be improved by additive or proportional corrections. **Additive correction** involves adding or subtracting a constant adjustment factor to each measurement; **proportional correction** involves multiplying the measurement(s) by a constant.

Unlike systematic errors, random errors vary in magnitude and direction. It is possible to calculate the average of a set of measured positions, however, and that average is likely to be more accurate than most of the measurements.



In the sections that follow, we compare the accuracy and sources of error of two important positioning technologies: land surveying and the Global Positioning System.

[◀ 3. Error and Uncertainty](#)
[up](#)
[5. Survey Control ▶](#)

The Nature of Geographic Information

Chapters

- ▶ [Chapter 1: Data and Information](#)
- ▶ [Chapter 2: Scales and Transformations](#)
- ▶ [Chapter 3: Census Data and Thematic Maps](#)
- ▶ [Chapter 4: TIGER, Topology and Geocoding](#)
- ▼ [Chapter 5: Land Surveying and GPS](#)
 - 1. Overview
 - 2. Geospatial Data Quality
 - 3. Error and Uncertainty
 - **4. Systematic vs. Random Errors**
 - 5. Survey Control
 - 6. Measuring Angles
 - 7. Measuring Distances
 - 8. Horizontal Positions
 - 9. Traverse
 - 10. Triangulation
 - 11. Trilateration
 - 12. Vertical Positions
 - 13. Global Positioning System
 - 14. Space Segment

- 15. Control Segment
- 16. User Segment
- 17. Satellite Ranging
- 18. GPS Error Sources
- 19. User Equivalent Range Errors
- 20. Dilution of Precision
- 21. GPS Error Correction
- 22. Differential Correction
- 23. Real-Time Differential Correction
- 24. Post-Processed Differential Correction
- 25. Summary
- 26. Bibliography
- ▶ [Chapter 6: National Spatial Data Infrastructure I](#)
- ▶ [Chapter 7: National Spatial Data Infrastructure II](#)
- ▶ [Chapter 8: Remotely Sensed Image Data](#)
- ▶ [Chapter 9: Integrating Geographic Data](#)

Navigation

- [login](#)
- [Search](#)

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- [Resources](#)
- [Services](#)
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