Top Ten Elevation Concerns for Inundation Modeling

1. Point specifications (root mean square error, ground spacing) don't meet the intended application's needs.
    - Before using the elevation data for modeling inundation, users must make sure the elevation data set fits their needs. Is it accurate enough? Is it detailed enough?
2. Elevations in wrong datum (NAVD88, NGVD29, GRS80) or in differing units (meters, feet, survey feet).
    - The reference against which elevation is measured must be correct before inundation modeling. The effects of a 1-meter rise in sea level cannot be accurately modeled if the elevation surface is in the incorrect elevation to begin with. Also, is that value of 0.5 in feet or meters?
3. LAS files or digital elevation models (DEMs) are not hydro-enforced when needed.
    - Water floods from low to high. Hydro-enforcing is a process that removes elevation points that misrepresent the bare-earth surface (e.g., points on bridges or culverts), allowing water to flow in its correct path. If the DEMs are not processed correctly, water will not "flood" where it should.
4. Water classifications missing—water and waves remain in DEM.
    - Similar to point 3, the user does not want existing water improperly influencing the flow direction of additional water.
5. Features remain in data—not a bare earth data set.
    - Buildings, bridges, cars, trees, etc. should be removed from the elevation data set before inundation modeling. The presence of these features may artificially influence inundation direction and extents.
6. Not tidally controlled (collection performed at high tide).
    - A seamless topobathy (topography and bathymetry) data set is best created using tidally controlled data sets. If these sets are not tidally controlled, the land–water interface may cause errors during inundation modeling. In addition, if elevation data are collected during high tide, the land surface may be covered with water, and missed.
7. No metadata (partial or incorrect metadata).
    - Metadata details critical information about the data. Bad metadata may lead to improper use of the data.
8. No third-party quantitative and qualitative assessment.
    - Users must feel confident in the accuracy of their data before using it. A thorough accuracy assessment and review needs to be performed to ensure the data quality is adequate for the desired purposes.
9. Incomplete data coverage (e.g., no buffers or missing islands).
    - All areas that may flood, or prevent floods, need to be in the data set.
10. Hardware and software not sufficient to perform the task.

- Processing of elevation data and inundation modeling can be computationally taxing. Appropriate infrastructure must be in place to handle these tasks in an efficient manner.