EPA-CPG Modeling Meeting (1) – 9/26/13

CPG Presentation: Surface sediment COPC mapping approach

1st part of presentation focuses on RM1-7:
Channel divisions in groups depends on USACE dredging, because compared 1949-2010 bathymetry. There wasn't much dredging in RM1-7 after 1949? Check this.

High surf sed concs associated with areas of >1ft erosion in 1995-2012.

Purpose:
- calibration (comparing data to model results)
- initial condition definition

Group divisions are arbitrary.

Above RM7, used Thiessen polygonsInfinity@@@

Targeted remedy evaluation is based on:
- average concentrations in target zones
- Targeted areas are 130 acres of >500ppt

CPG tried other extrapolation methods:
- Restricting Thiessen polygon extent to distance of spatial correlation (based on variograms)
    - Variograms said data within 400ft have similar variability as population of data, while distances <400ft have more variability. So used 400ft as limit to influence of each data point. Then used average beyond 400ft of any data point.
    - This produced a "measles chart". Didn't look believable.
- IDW
    - Doesn't care about how far data points are either, so didn't represent improvement over Thiessen.
    - Actually worse than Thiessen, because Thiessen only goes ½ way between points to interpolate, while IDW can grab 2 data points far apart.
- Kriging
    - Requires global average be same over distance being Krigged, so broke river up into bins.
    - Requires normal distribution, so did Kriging in log space, need to convert back into arithmetic space.

- Krigging smoothes data. Produces lower hot spot values than Thiessen.
- Krigging does not reproduce probability distribution shape of data – but could this be because comparing grid vs. data points?

- Natural neighbor:
  - Has same smoothing feature as Kriging, so doesn't offer

- Kept groupings as basis for analysis
- CPG uncomfortable with EPA approach of averaging within geomorphic approaches

EPA presentation

- Group boundaries keep close data points from being used to more robustly define concentrations in an area.

EPA presentation on geomorphology, CPG comments:
- can you rely solely on 2008 bathymetry to define areas? Won't they change with deposition/erosion over time?