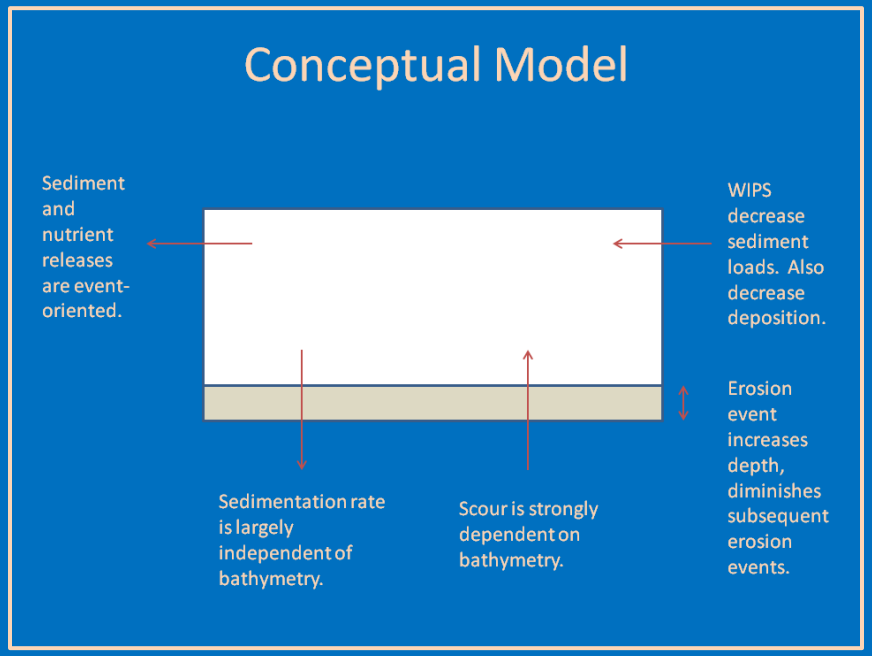
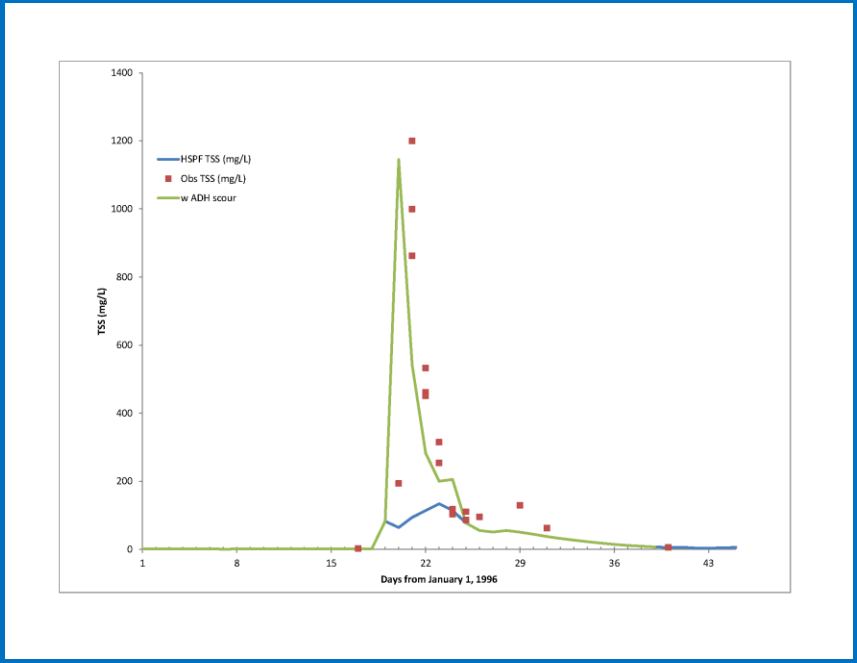
Conowingo Sedimentation



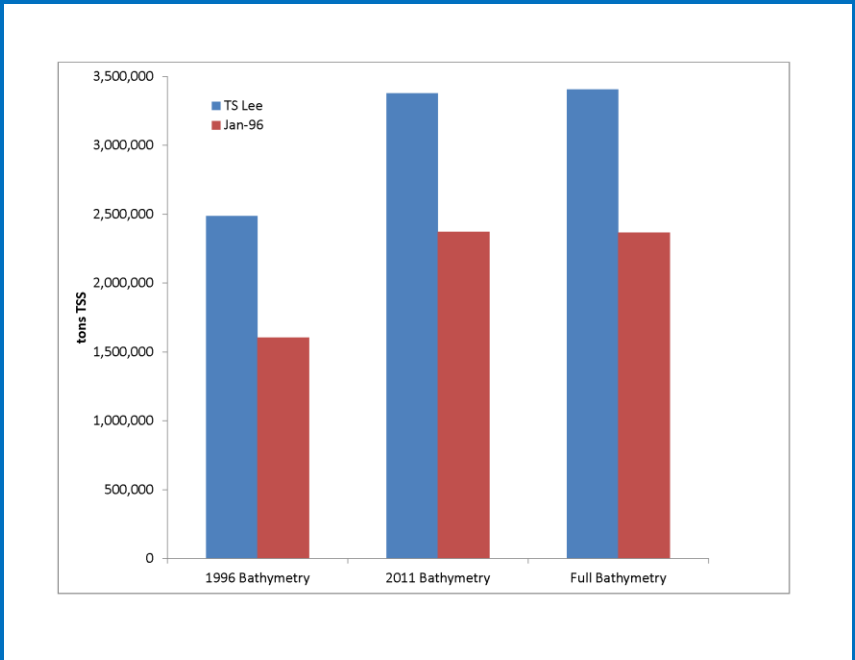
- This is an event-oriented system. Effects of sedimentation and bathymetry changes are most evident during scour events.
- Computations indicate little influence of bathymetry on solids discharge during non-storm periods.
- Our early runs with “no Conowingo” are less realistic and should be discounted.

Conowingo Sedimentation



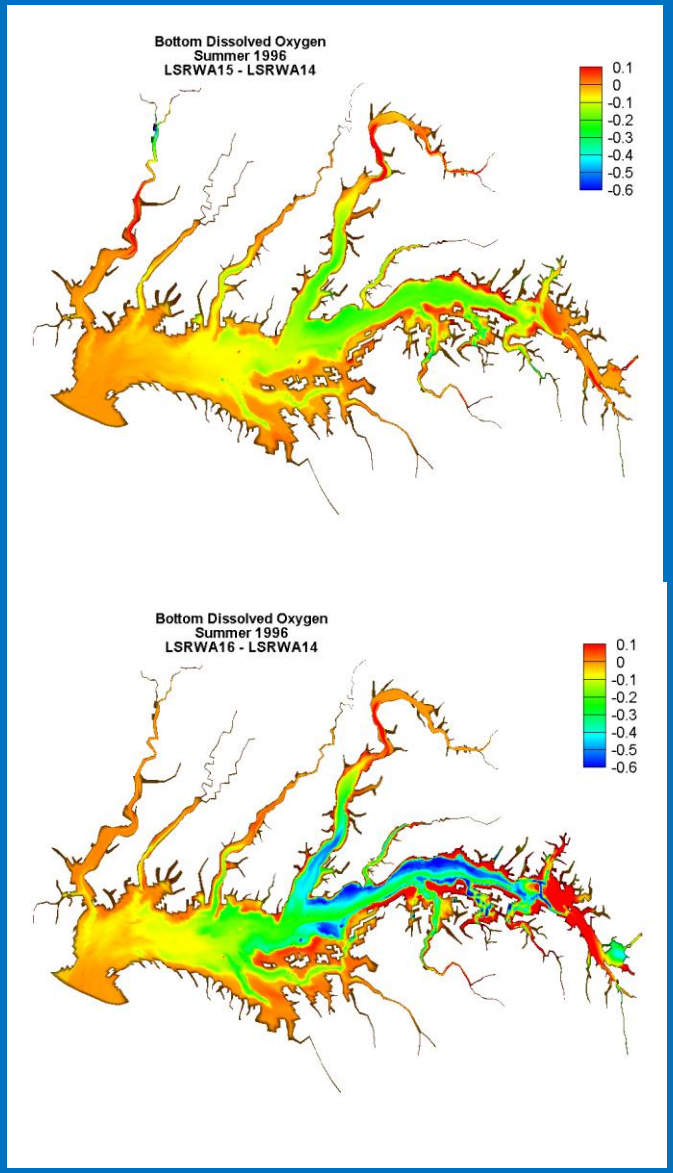
- Estimates of the effects of reservoir filling and of scour vary widely, depending on investigator, methodology, and available information. We can “scope” alternate estimates through one or more sensitivity runs.

Conowingo Sedimentation



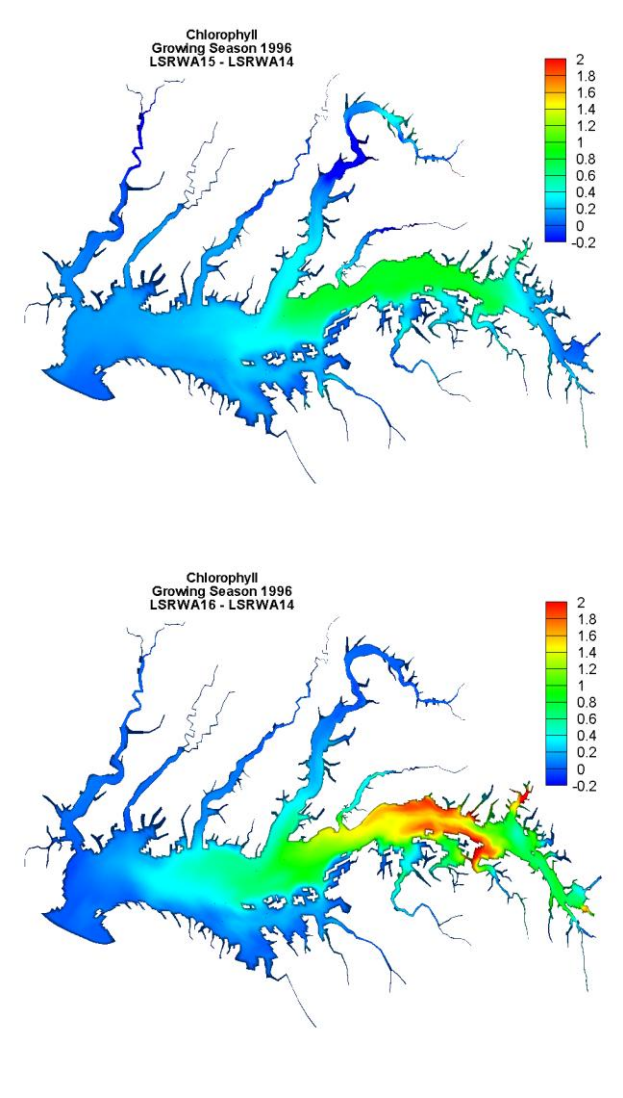
- Scour events are self-mitigating. Scour from a subsequent storm is diminished following a major event which scours the reservoir and increases volume.
- WIPs will reduce sediment accumulation and frequency of scour events.

Storm Events



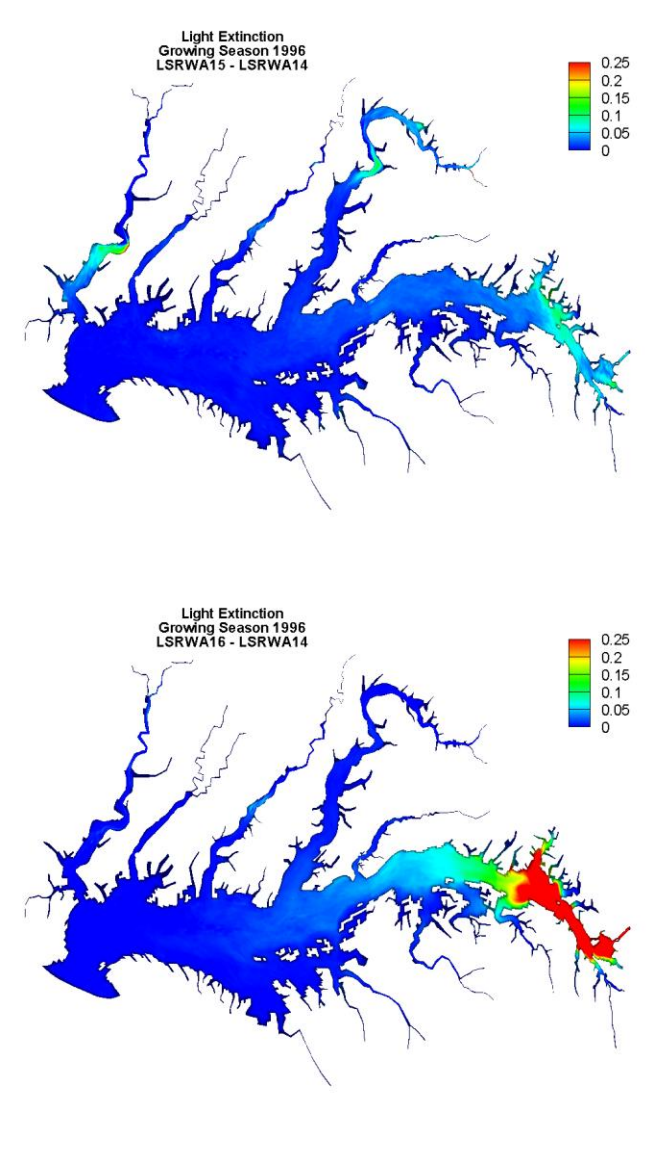
- The impact of storm events originates with two sources: the watershed and, potentially, scour.
- Timing is important. The “best” time for a storm is late fall or early winter. The worst time is early summer.
- A winter storm depresses summer-average DO by ≈ 0.3 mg/L. An early summer storm depresses summer-average DO by ≈ 0.6 mg/L.

Storm Events



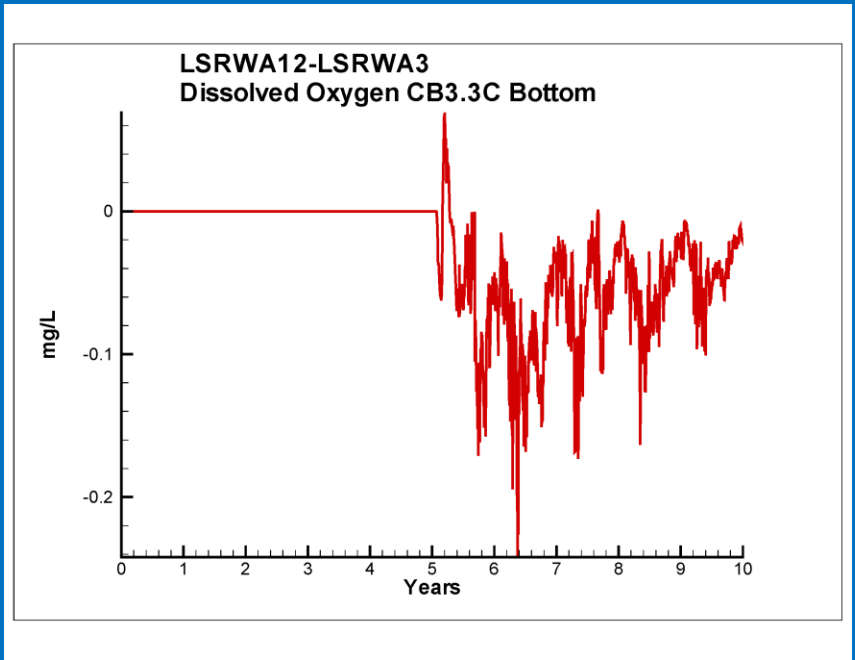
- A winter storm increases SAV growing season average Chl by ≈ 1 µg/L.
- An early summer storm increases SAV growing season average Chl by ≈ 2 µg/L. .

Storm Events



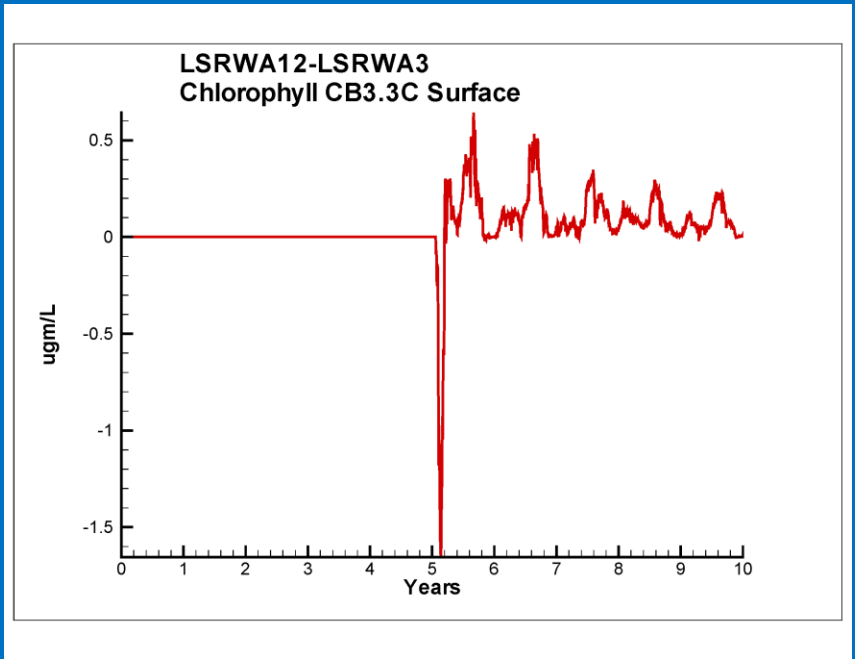
- A winter storm increases SAV growing season average KE by ≈ 0.1 /m.
- An early summer storm increases SAV growing season average Chl by ≈ 0.25 /m.

Scour Events



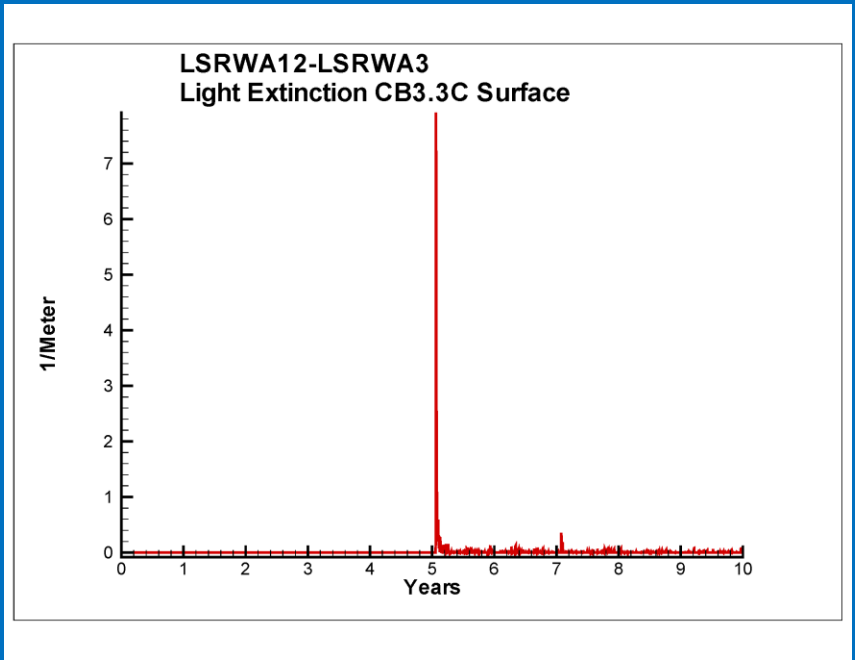
- The marginal effect of scour on DO is 0.1 to 0.2 mg/L in the deep trench where DO is critical.

Scour Events



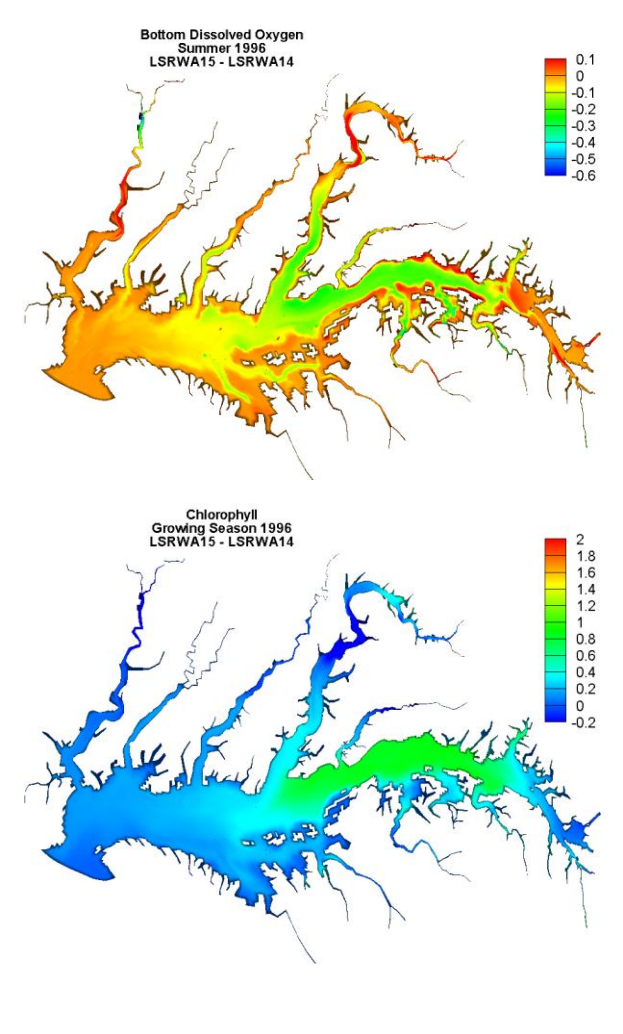
- The marginal effect of scour on Chl is 0.5 µg/L or less in the vicinity of the DO minimum.

Scour Events



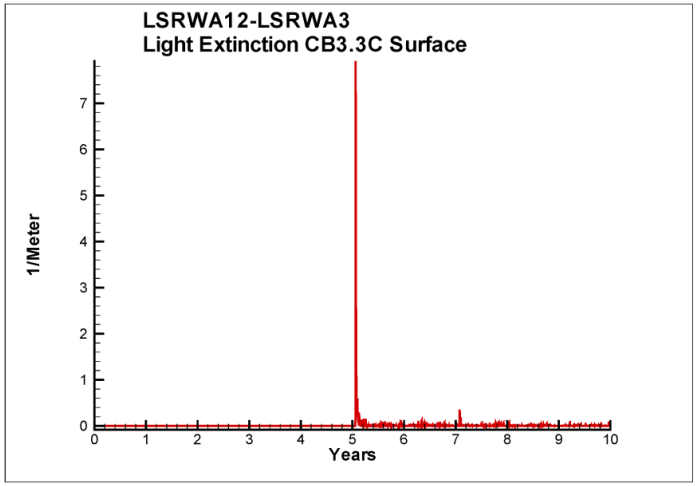
- The marginal effect of scour on KE can be immense but is short-lived and difficult to detect within a few days.
- Residual effects may be due to chlorophyll attenuation rather than solids loads.

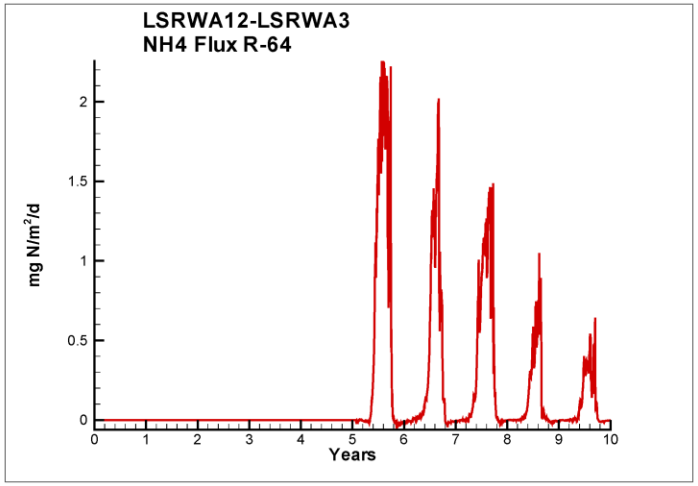
Storm Effects



- The impact of a storm on DO and chlorophyll are widespread, extending even into the Potomac River.

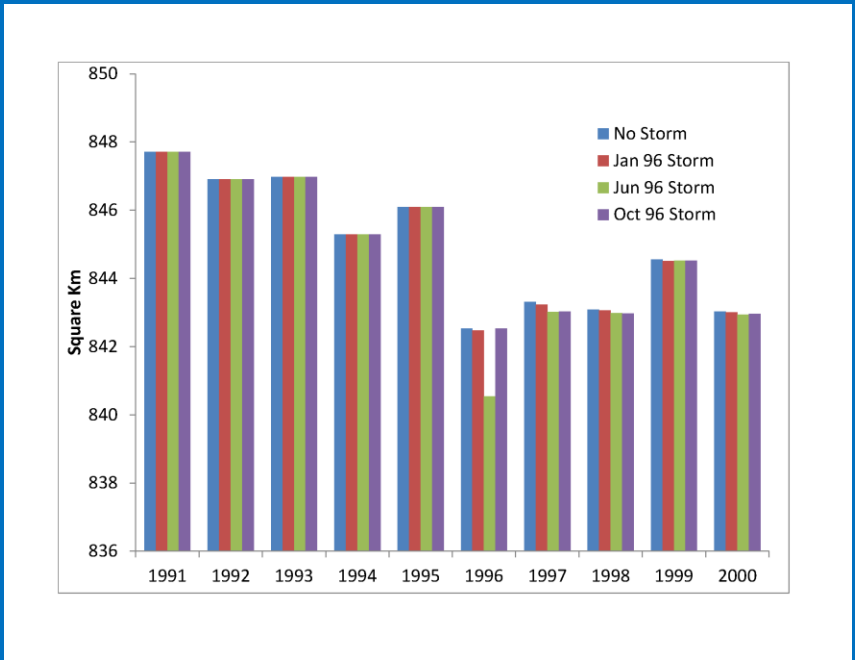
Storm Effects





- The effect of a storm-load on KE are short-lived. Solids settle out and are gone.
- The effects from a storm on nutrients are persistent. Nutrients settle into bottom sediments and are recycled.
- This is in contrast to my initial instinct that nutrient impacts would be negligible.

Submerged Aquatic Vegetation



- The model shows minimal impact of storms on SAV.
- This could be a model artifact
  - We quantify SAV area, not density or biomass
  - No computed effect of burial or physical damage.
  - We don't model propagation
- Or realistic
  - We emphasize TMDL conditions when solids loads are reduced.
  - Solids events are short-lived.