Temporal changes in dissolved organic carbon in Tempe Town Lake
Megan Kelly¹ and Hilairy Hartnett¹²

Introduction
Dissolved Organic Carbon (DOC) is an important factor in an aquatic system’s health.
Sources and reactivity of DOC in urban aquatic systems are not well understood.

Background
Tempe Town Lake is a man-made lake created by two inflatable dams on the Salt River.
DOC concentrations vary seasonally:
- Highest DOC in winter during high flow
- Lowest DOC in spring and summer period
- Spike in DOC during summer monsoon

Methods
- Bromide sampling at Tempe Town Lake
  - pH, conductivity, dissolved oxygen, and water temperature
  - 1 L of water filtered for ion chromatography, inductively coupled plasma mass spectrometry (ICP-MS), Iatroscan analysis, Bulk DOC analysis, and ESI-MS
- ESI-MS analysis completed for six samples from three seasons in 2005

Results
Water chemistry, 2005-2006

ESI-MS Sample Dates and Characteristics

Future Plans
- CDMS work on more sample to get higher temporal resolution
- Analysis of Lake George data for climate comparison
- Experiments to assess DOC composition in Tempe Town Lake

References

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*Continued monitoring in Tempe Town Lake*
- Have also begun studying Lake George, a small lake in downtown Saint Cloud, MN.

**Studying Lake George will allow for a comparison between an urban lake in an acid climate and one in a basic climate.**
- We have been analyzing the suite of organic compounds present in Tempe Town Lake and how that suite changes over time.

To investigate other sources of carbon and processes occurring in the lake, (for example, photosynthesis, respiration, and photooxidation) molecular-level information is necessary.

To examine the composition of the DOC, we use electrospray ionization mass spectrometry (ESI-MS).

**Work to date:**
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