

Florida Mercury TMDL Project

Atmospheric Deposition Monitoring:

Precipitation Monitoring at Supersites/Satellite Sites
Intensive Deposition Monitoring

Mercury TMDL Stakeholders Meeting

Tallahassee, Florida

January 4, 2011

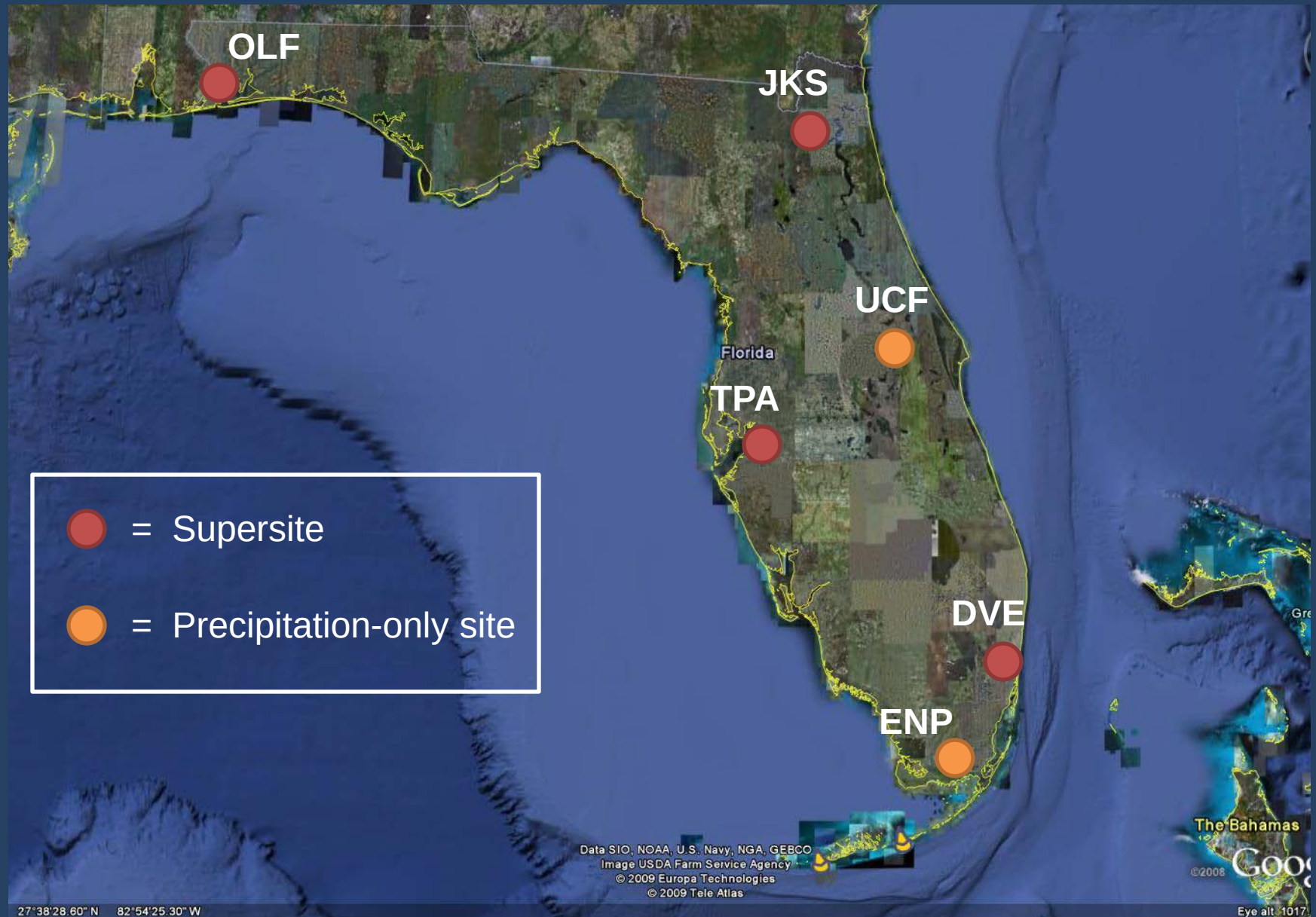
Overview

- Overall goals of the atmospheric monitoring effort:
 - Provide data to assess wet and dry loading estimates of mercury.
 - Provide data to assess source attribution for mercury.
 - Provide data to evaluate deterministic atmospheric models.

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Florida Hg TMDL Study – Atmospheric Monitoring



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Atmospheric Deposition Monitoring

Parameters Quantified

- Precipitation Amount
- Total mercury
- Trace elements (25+, eg. Pb, Zn, As, S, Cd, Ni, etc.)
- Major ions (sulfate, nitrate, chloride, etc.)

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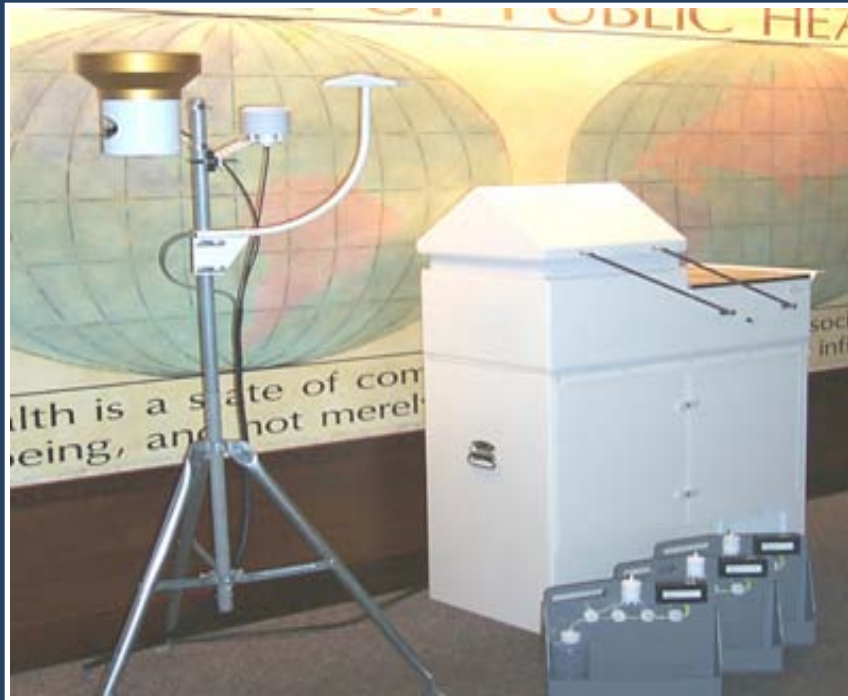
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Precipitation Monitoring

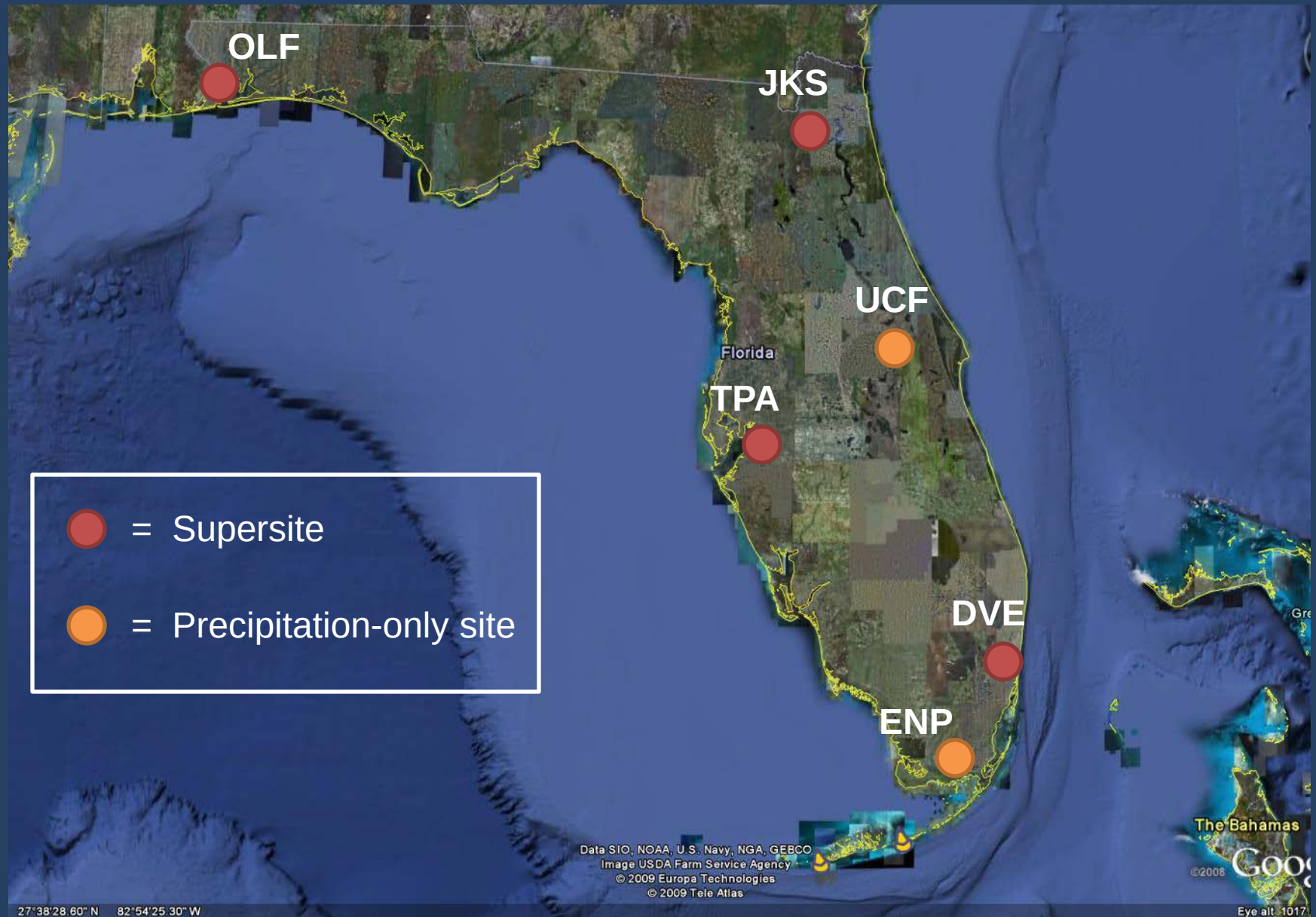
Supersites/Satellite Sites

UM Automated Sequential Precipitation Samplers (ASPS)

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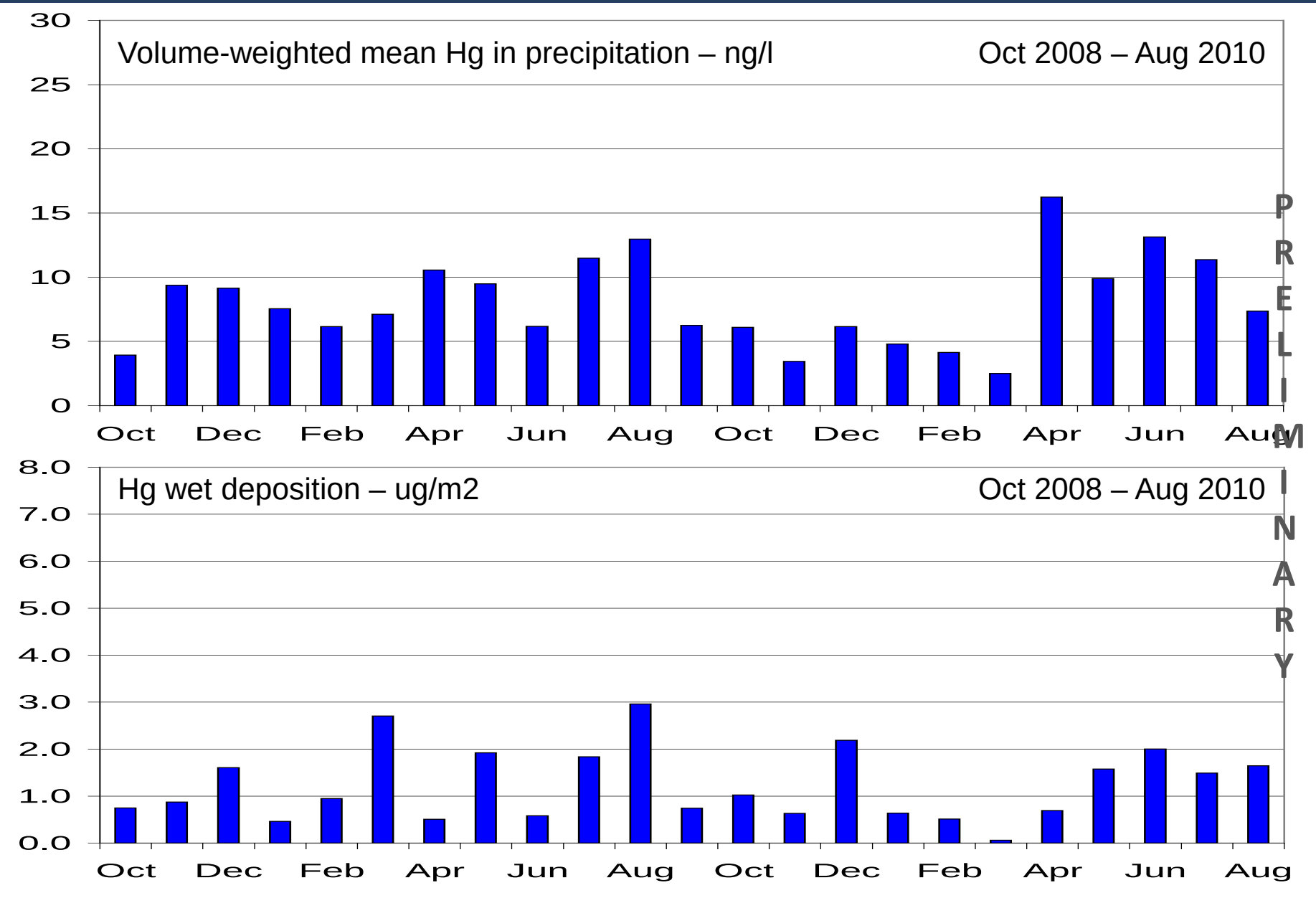


Florida Hg TMDL Study – Atmospheric Monitoring

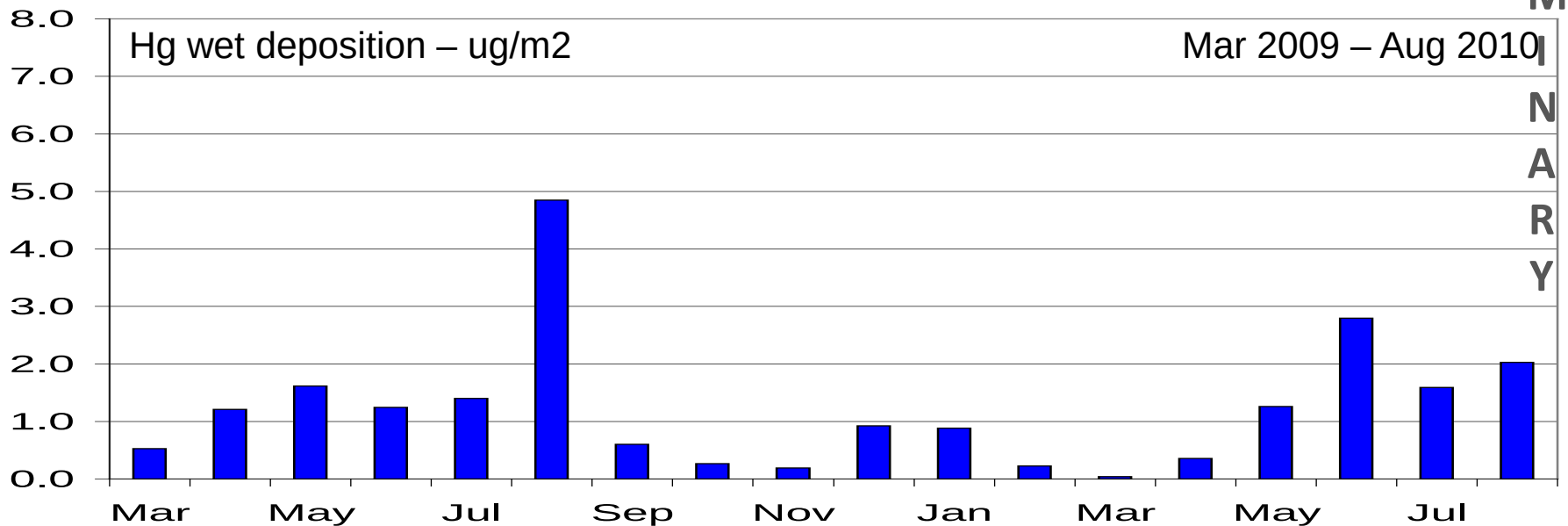
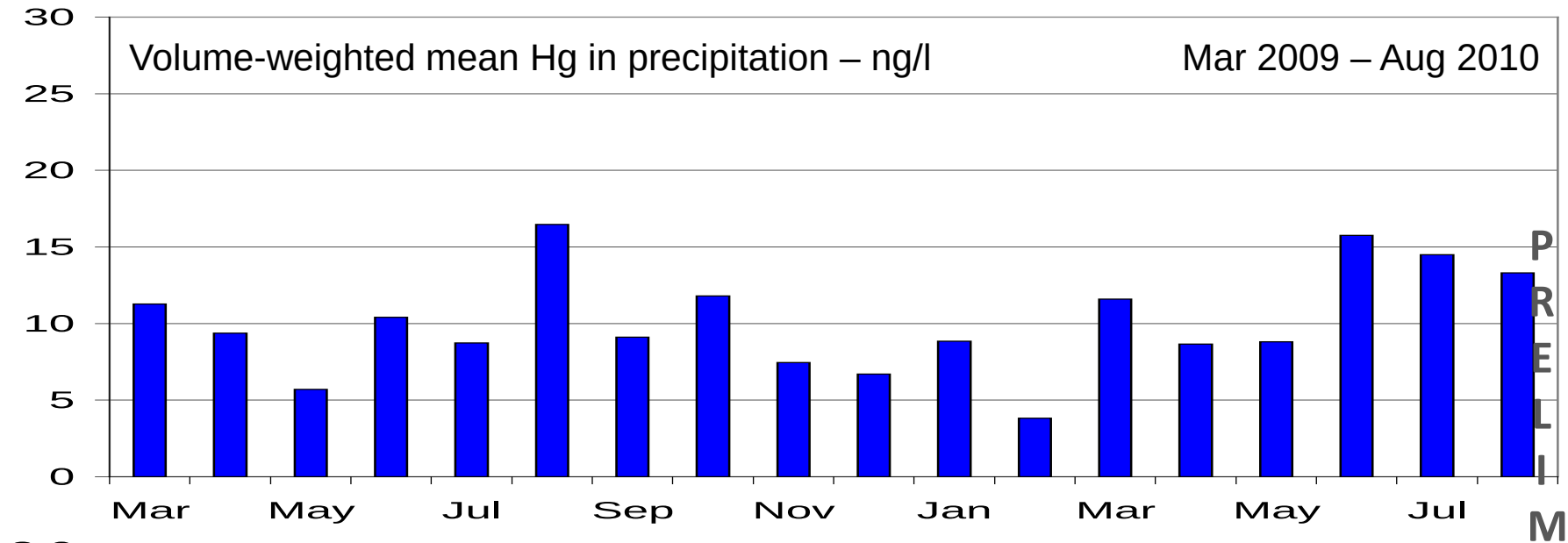


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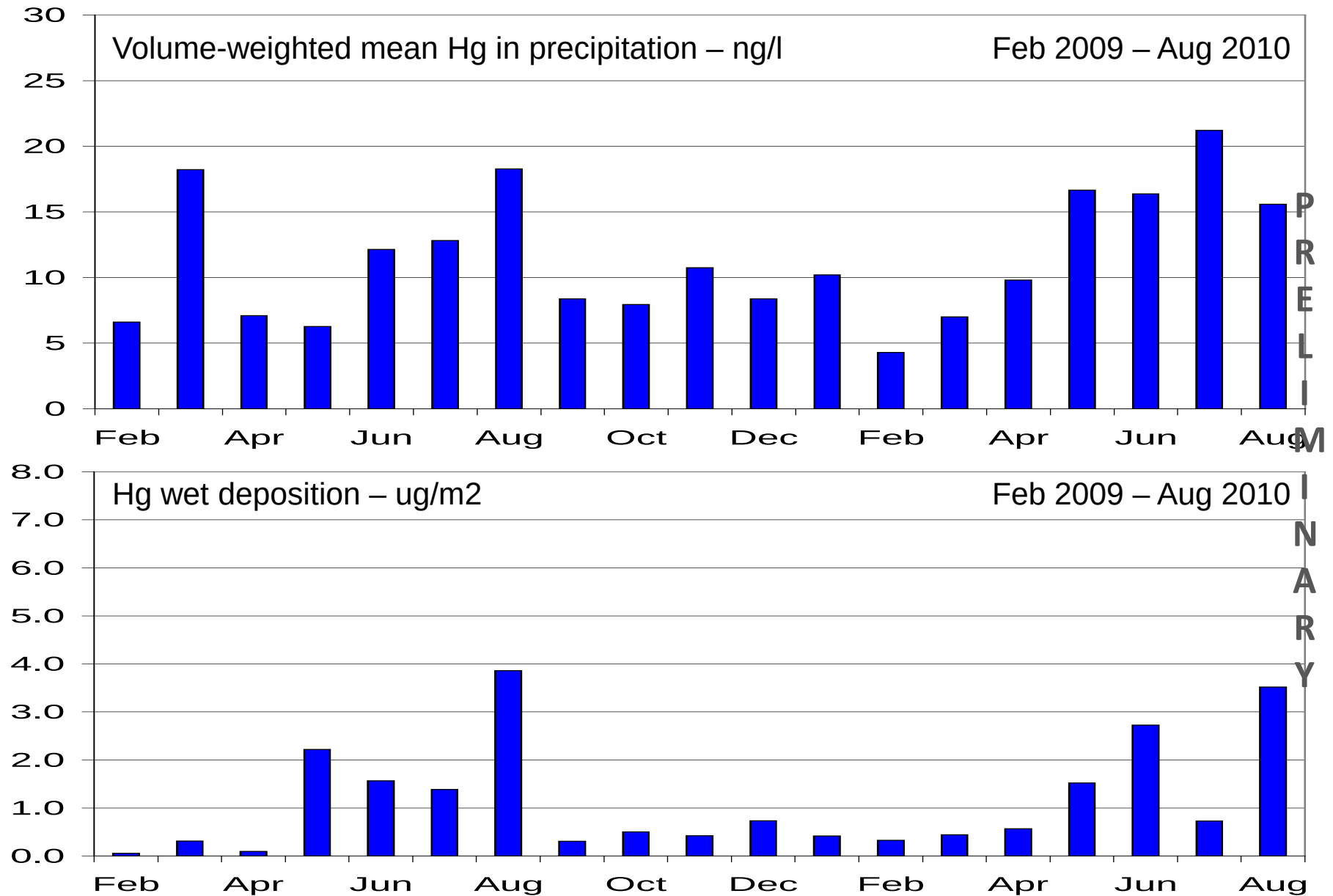
Pensacola (OLF) Hg - Monthly VWM & Wet Deposition



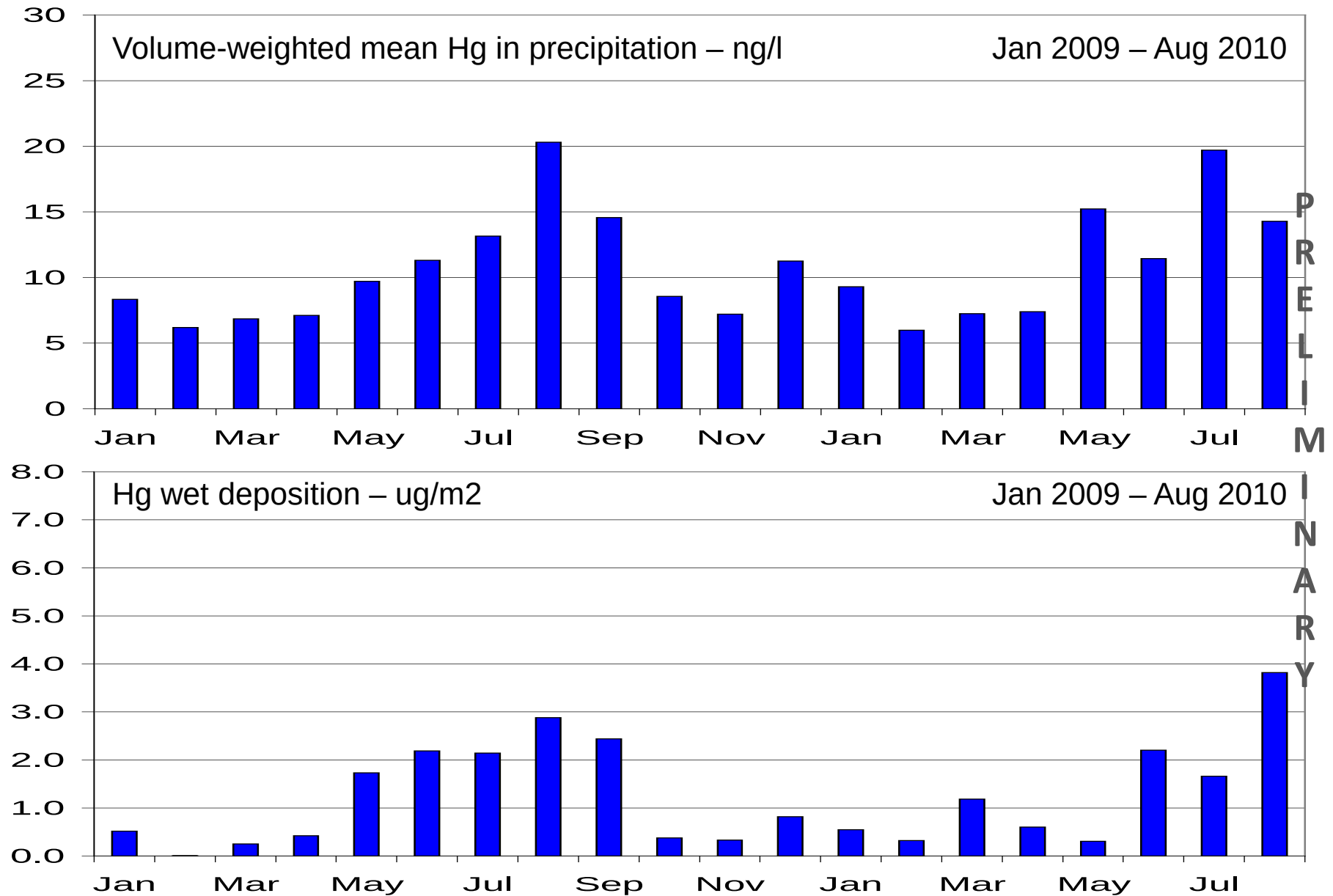
Jacksonville (JKS) Hg - Monthly VWM & Wet Deposition



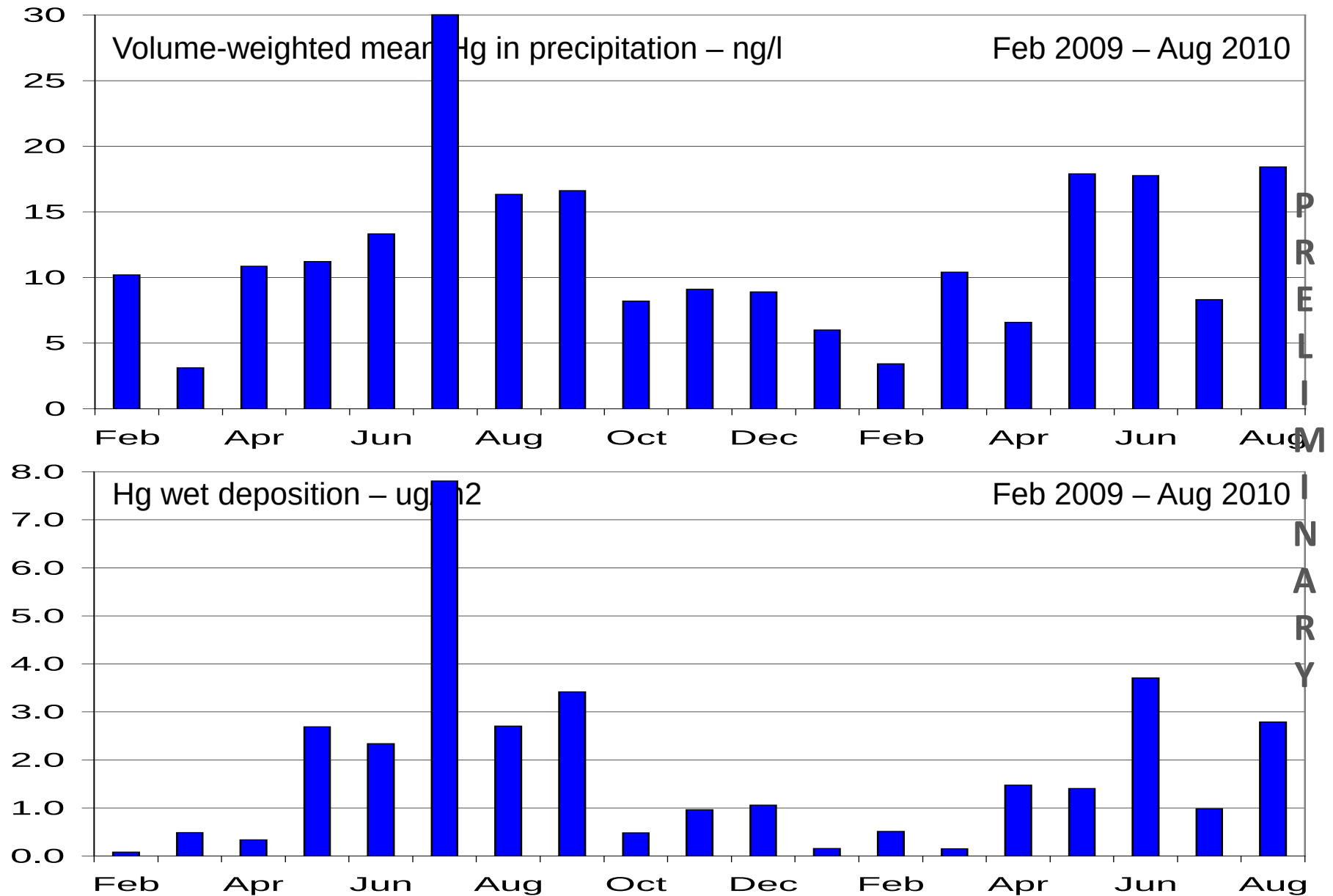
Orlando (UCF) Hg - Monthly VWM & Wet Deposition



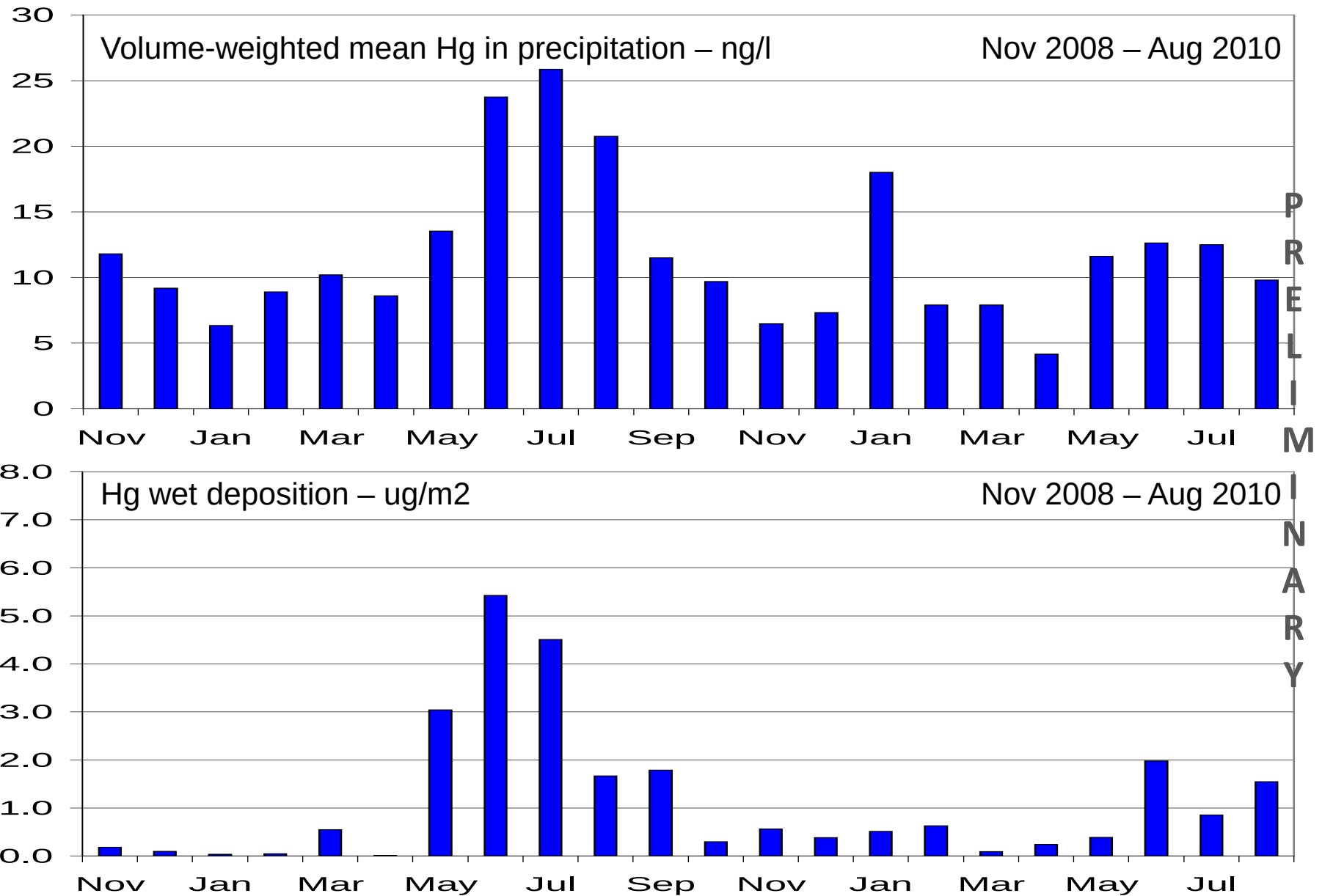
Tampa (TPA) Hg - Monthly VWM & Wet Deposition



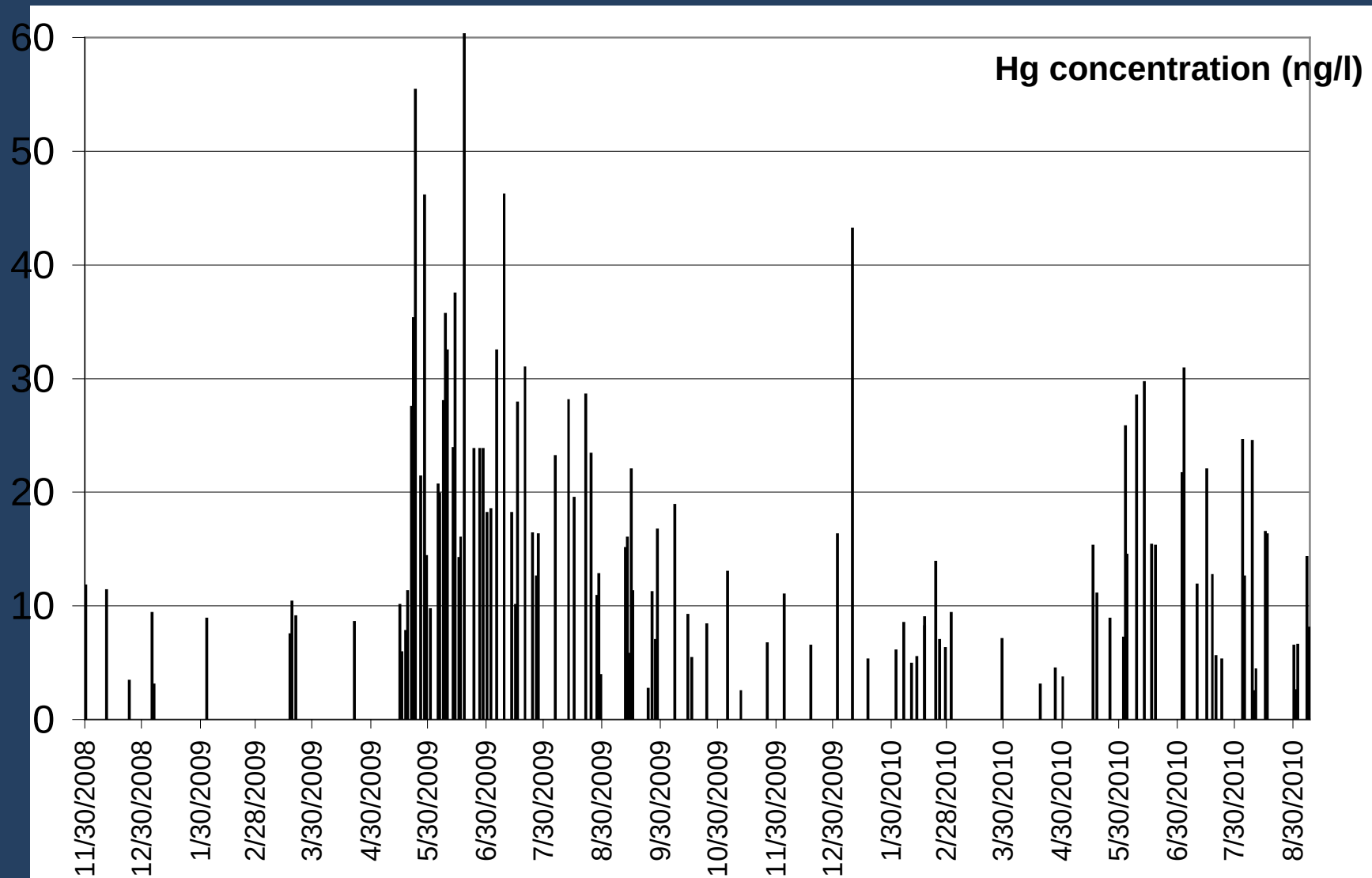
Davie (DVE) Hg - Monthly VWM & Wet Deposition



Everglades (ENP) Hg - Monthly VWM & Wet Deposition



PRELIMINARY RESULTS

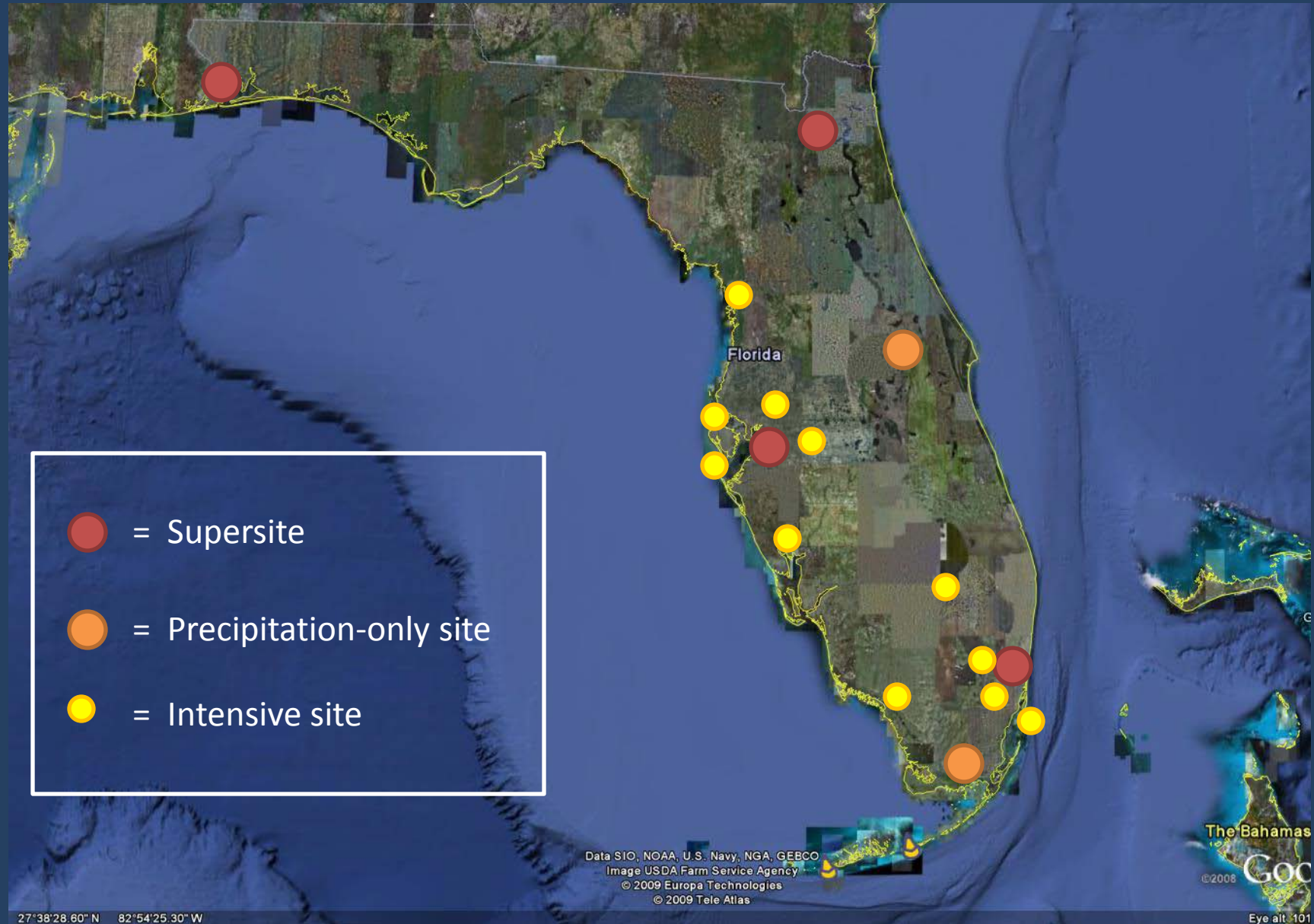


Routine Deposition Monitoring - Summary

- Seasonal variability observed (increases during summer months) in VWM Hg concentrations as well as Hg deposition – more pronounced at southern sites.
- North to south increases observed in Hg deposition (though less so during summer 2010).
- Significant temporal variability in Hg concentration observed on a *daily* basis.

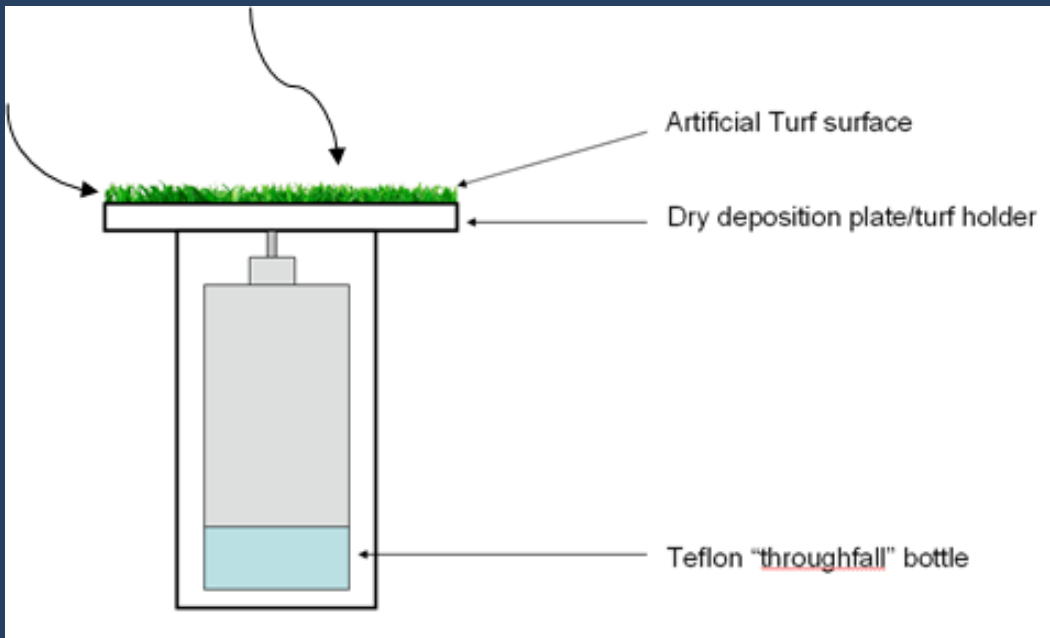
Florida Hg TMDL Study – Intensives 2009

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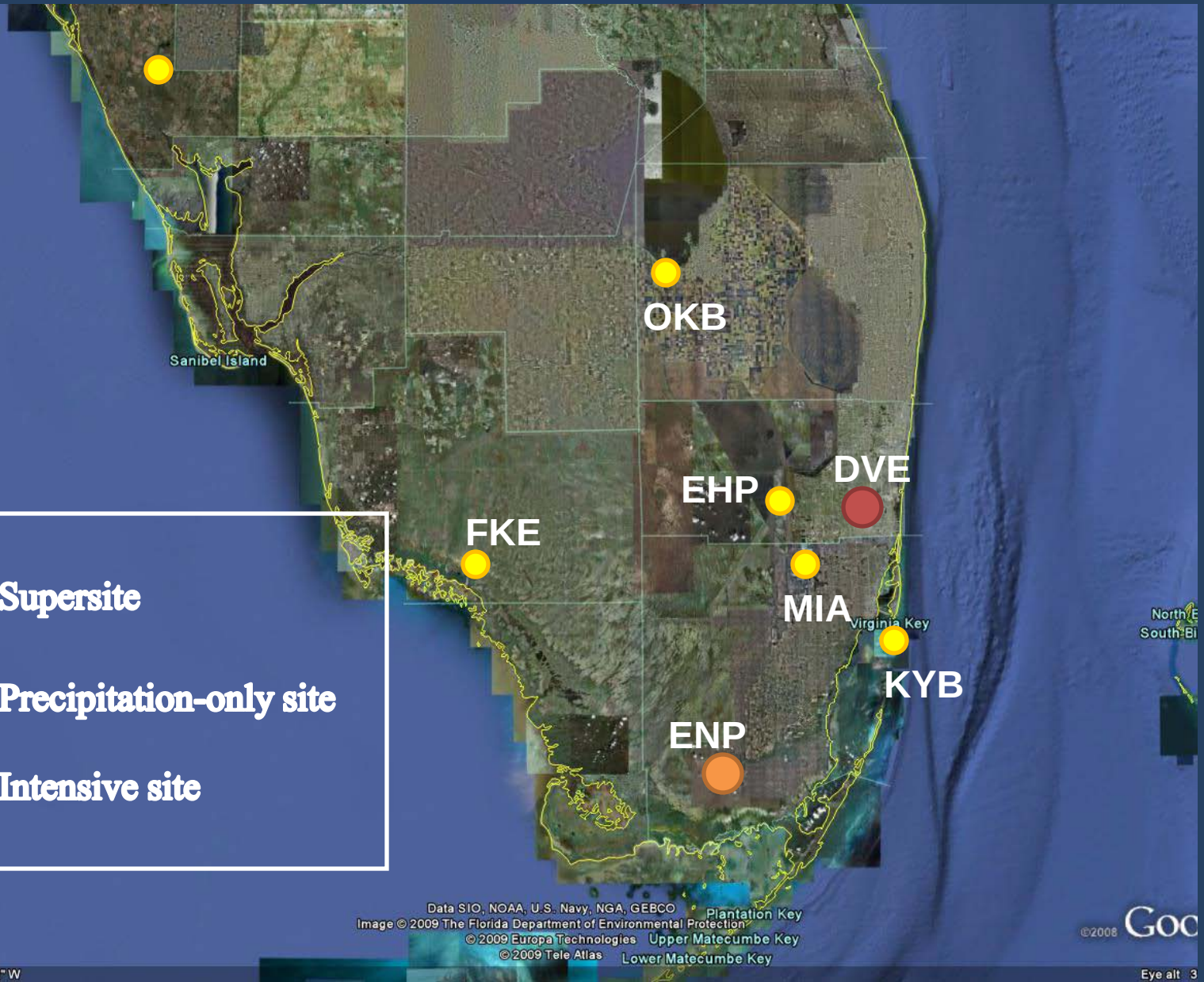
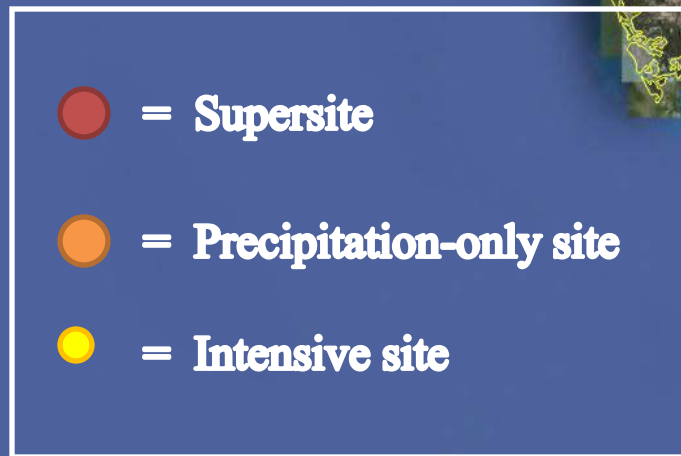
Intensive Deposition Monitoring at Supplemental Sites

Turf Surrogate Surface Sampler (dry deposition):



Florida Hg TMDL Study – Davie Intensive 2009

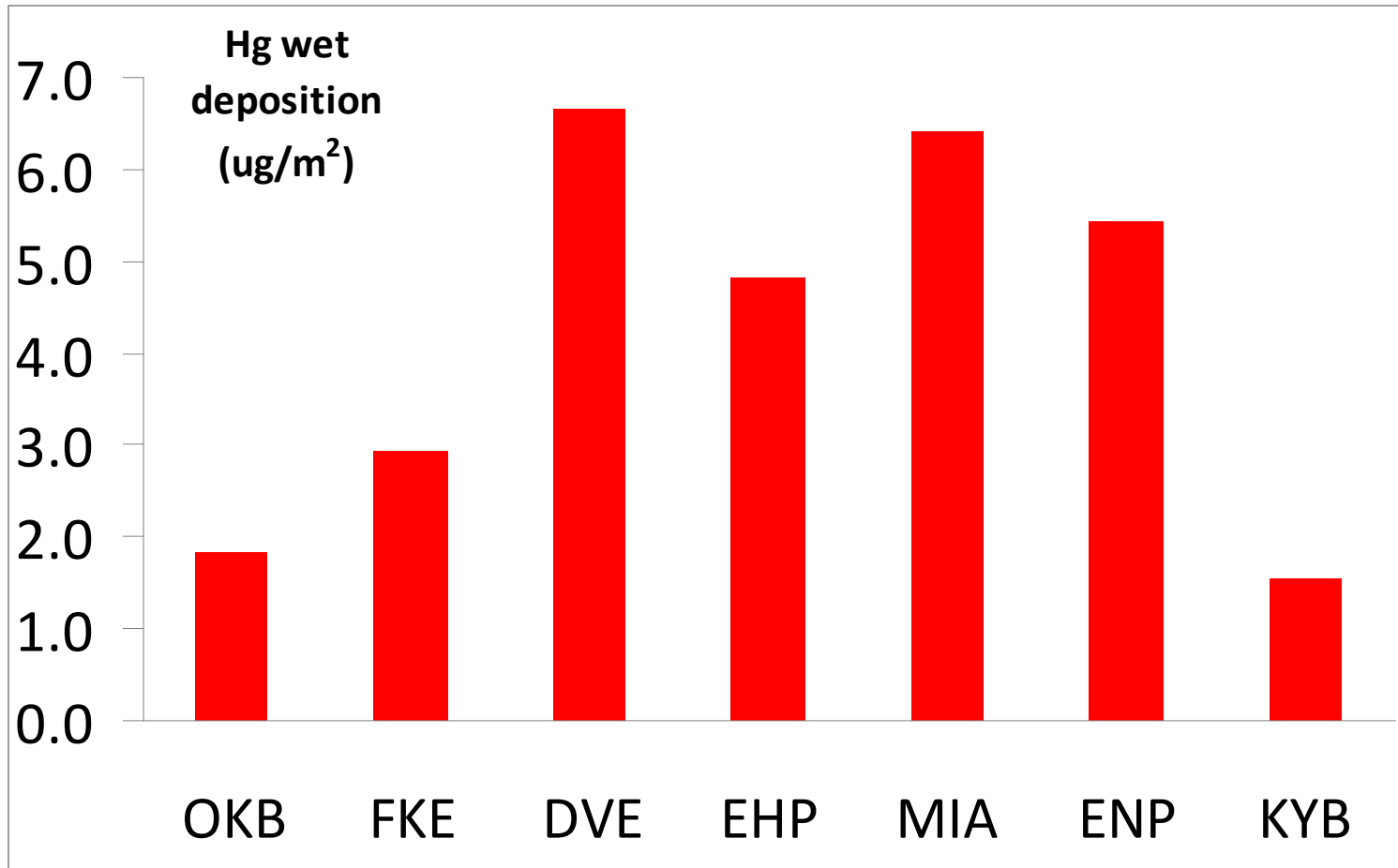
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Hg Wet Deposition – Davie Intensive

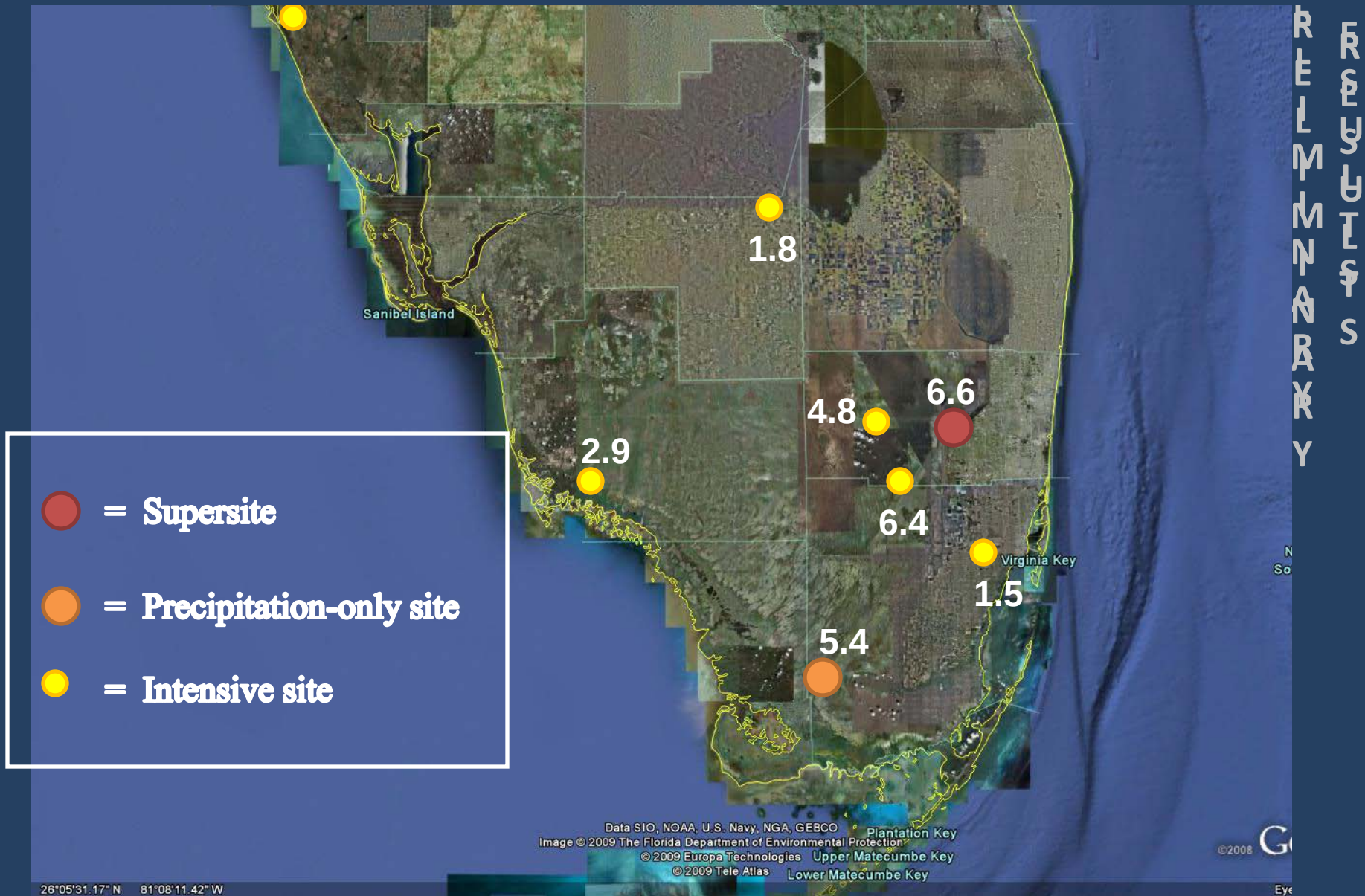
July 4 – August 4, 2009

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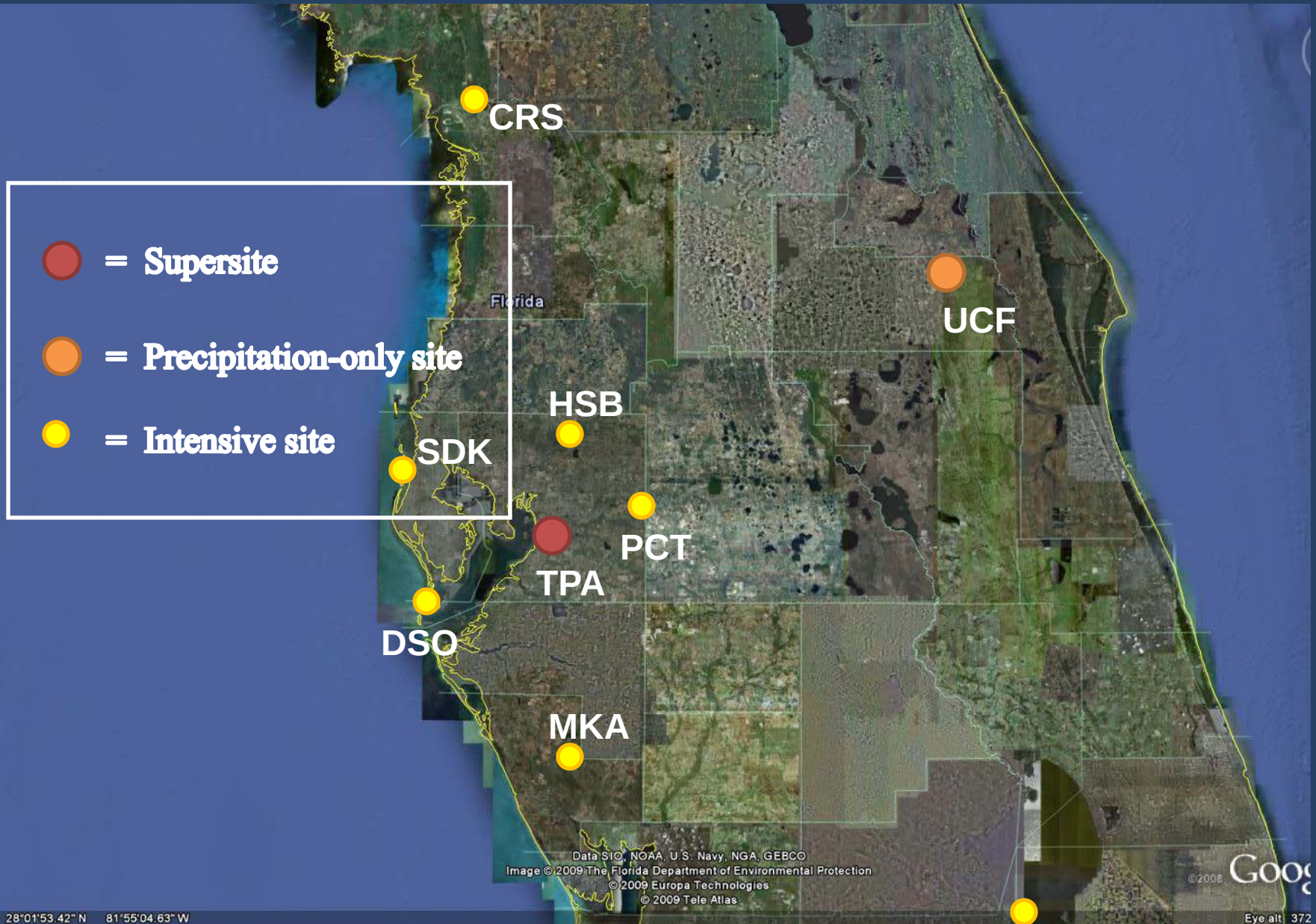
Hg Wet Deposition ($\mu\text{g}/\text{m}^2$) – Davie Intensive

July 4 – August 4, 2009



Florida Hg TMDL Study – Tampa Intensive 2009

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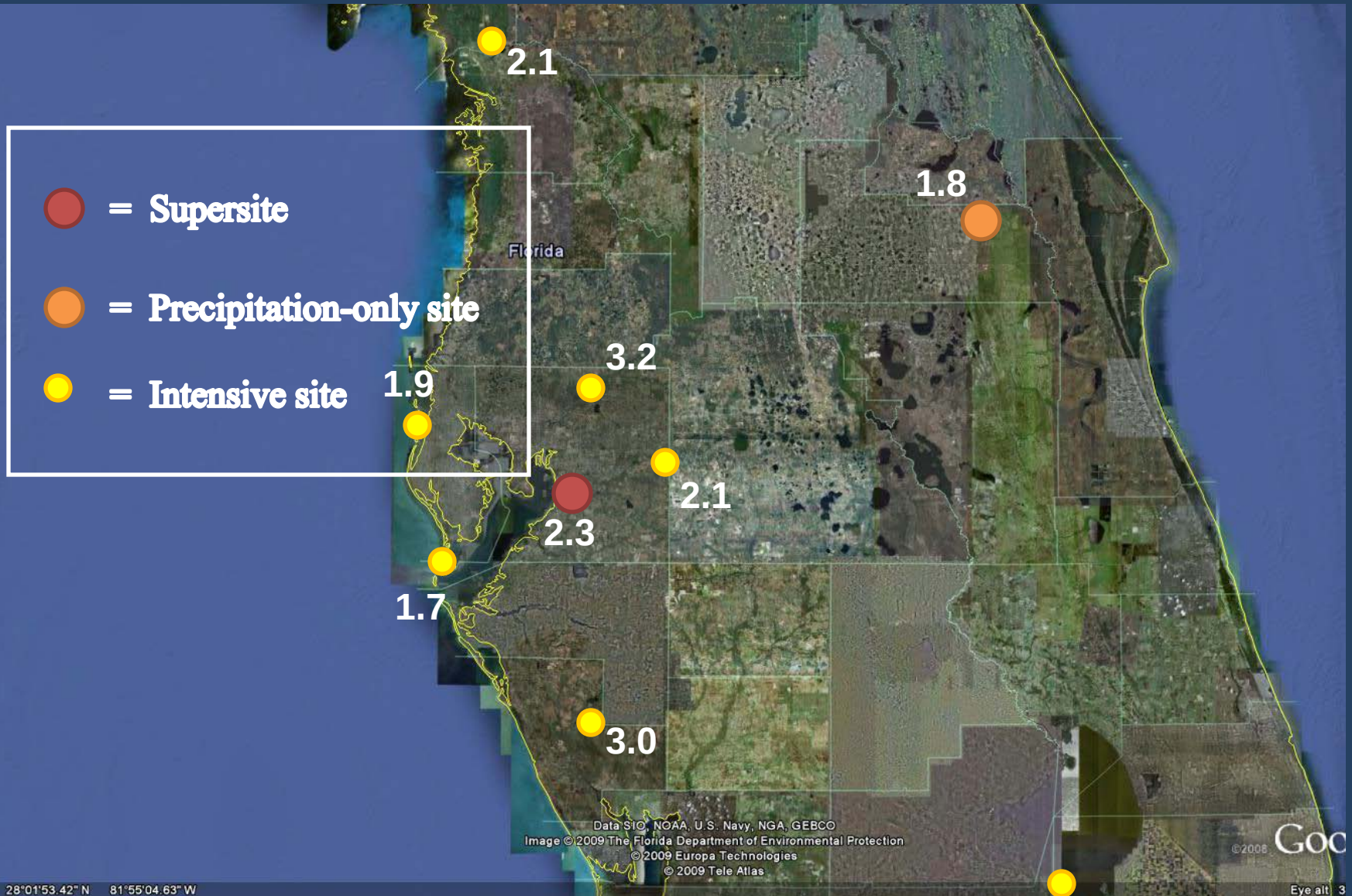


Hg Wet Deposition ($\mu\text{g}/\text{m}^2$) – Tampa Intensive

July 4 – August 4, 2009

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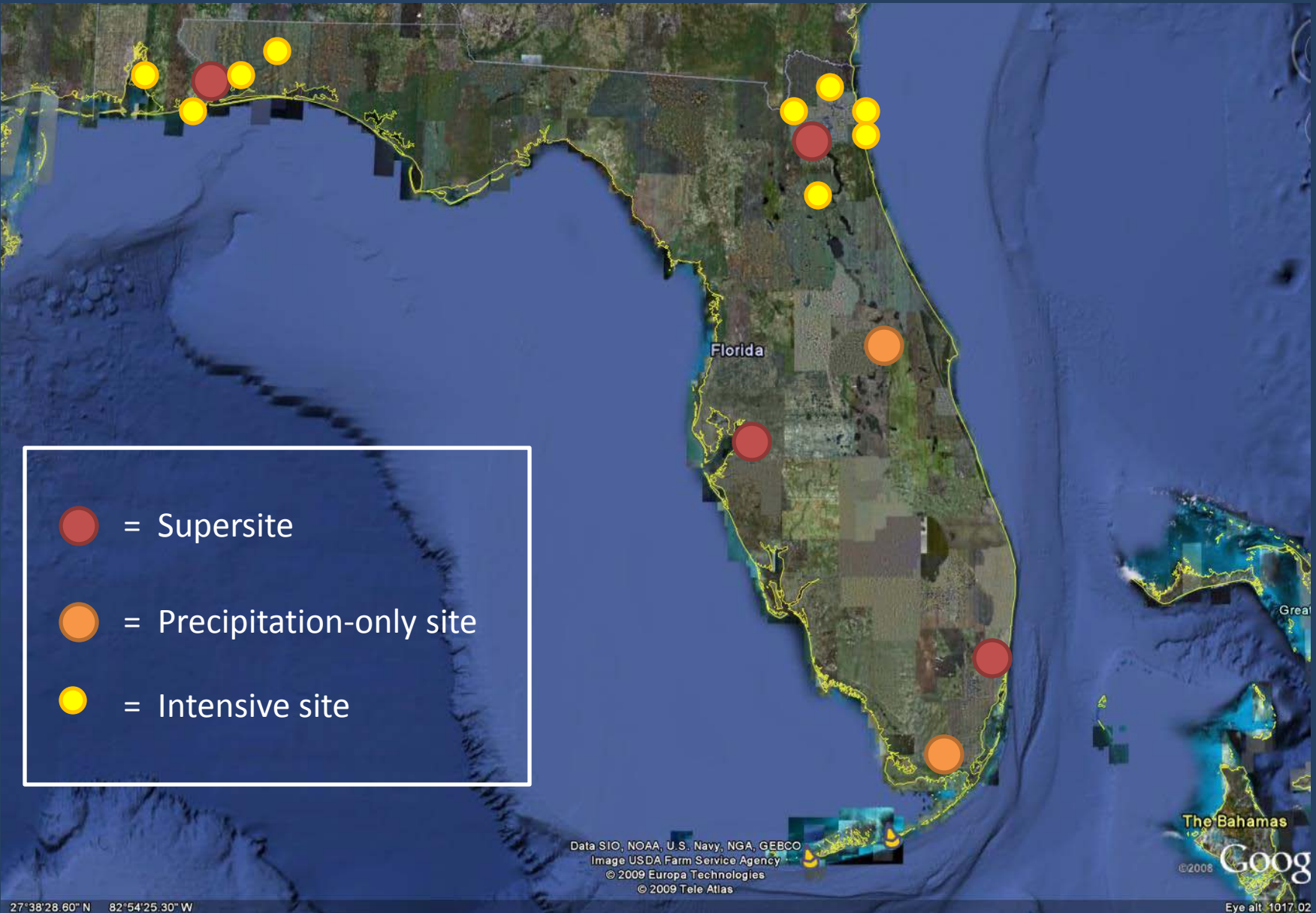
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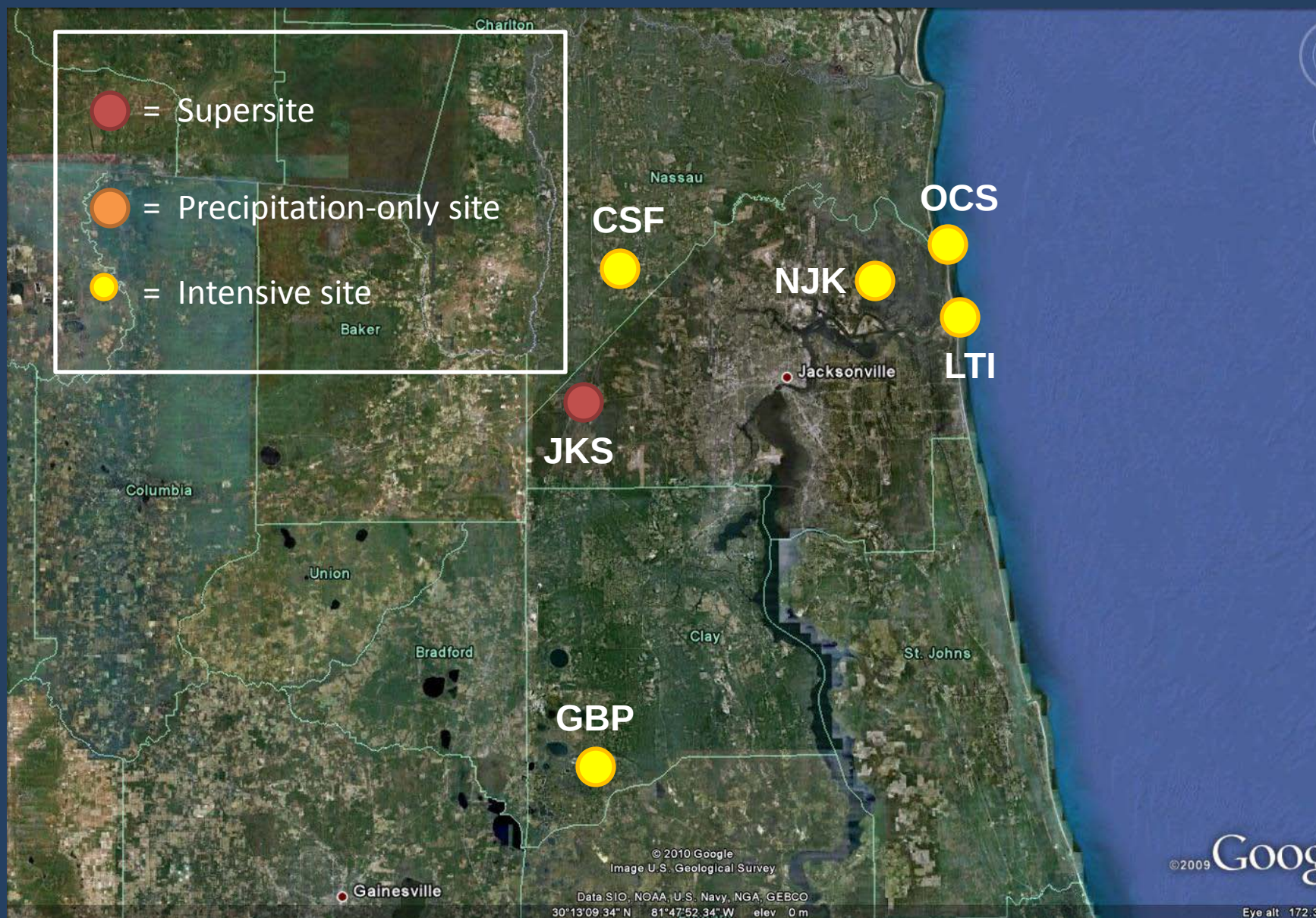
Florida Hg TMDL Study – Intensives 2010

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-  = Supersite
-  = Precipitation-only site
-  = Intensive site



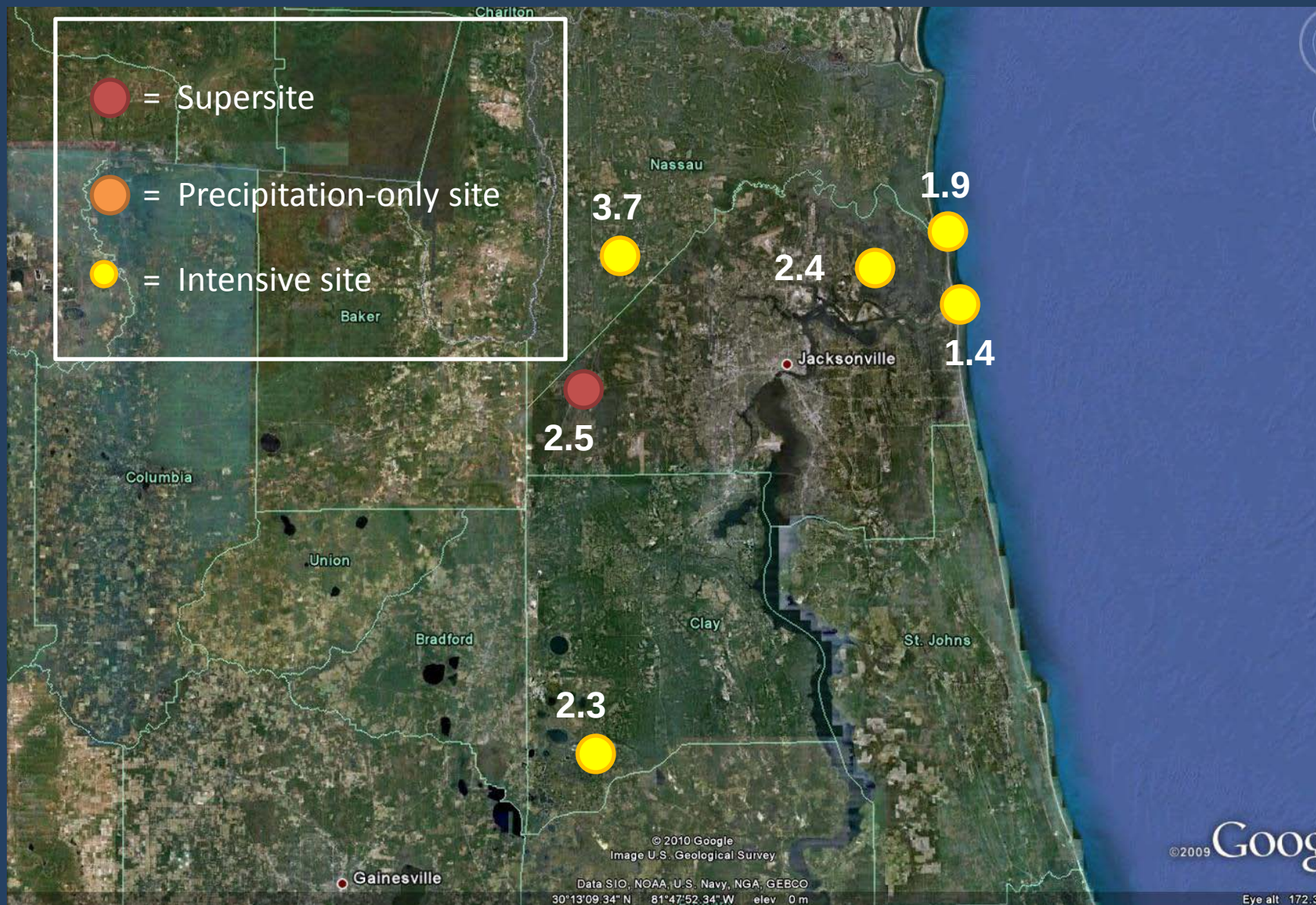
Florida Hg TMDL Study – Jacksonville Intensive 2010



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Hg Wet Deposition ($\mu\text{g}/\text{m}^2$) – Jacksonville Intensive

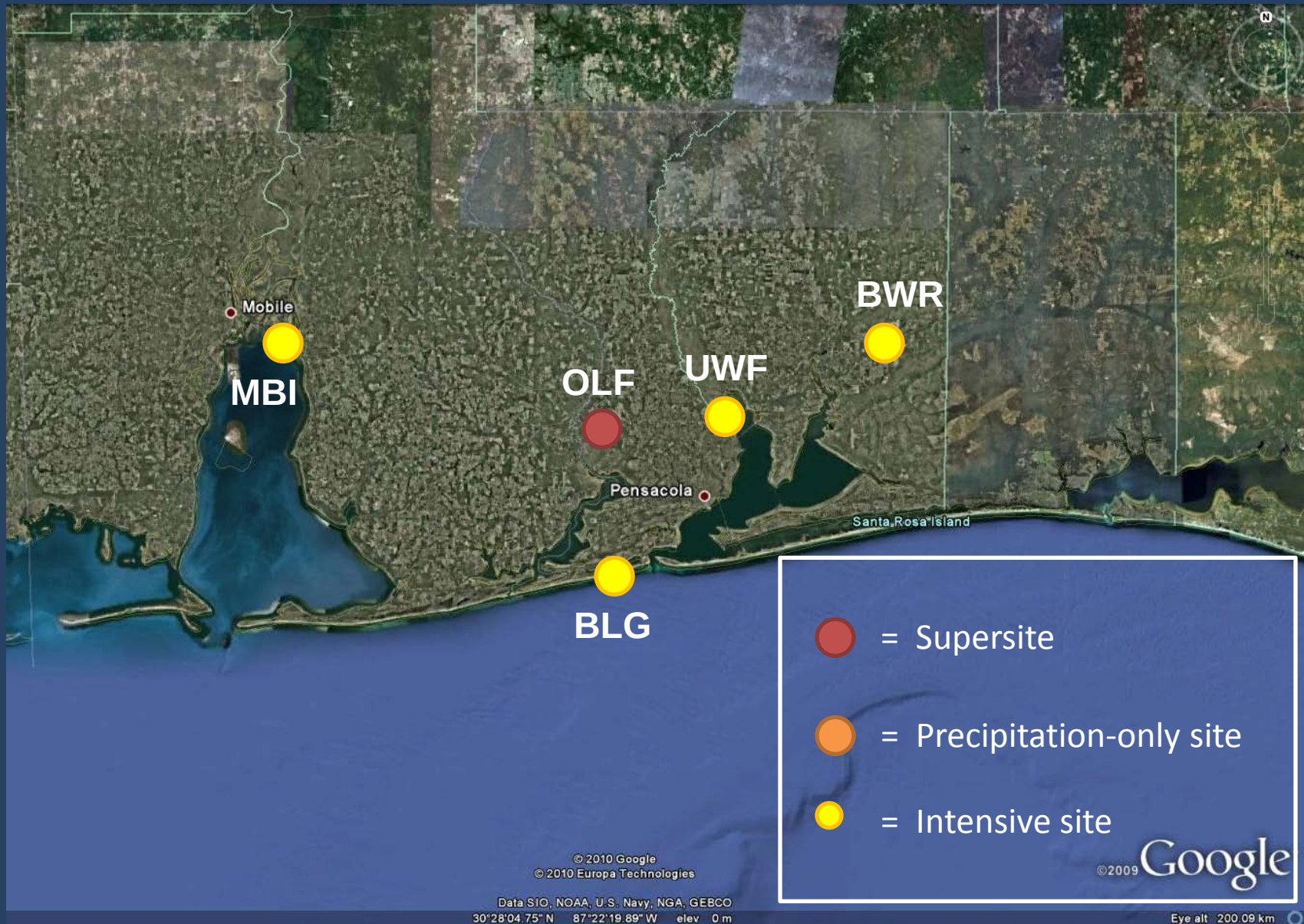
July 24 – August 23, 2010



PRELIMINARY

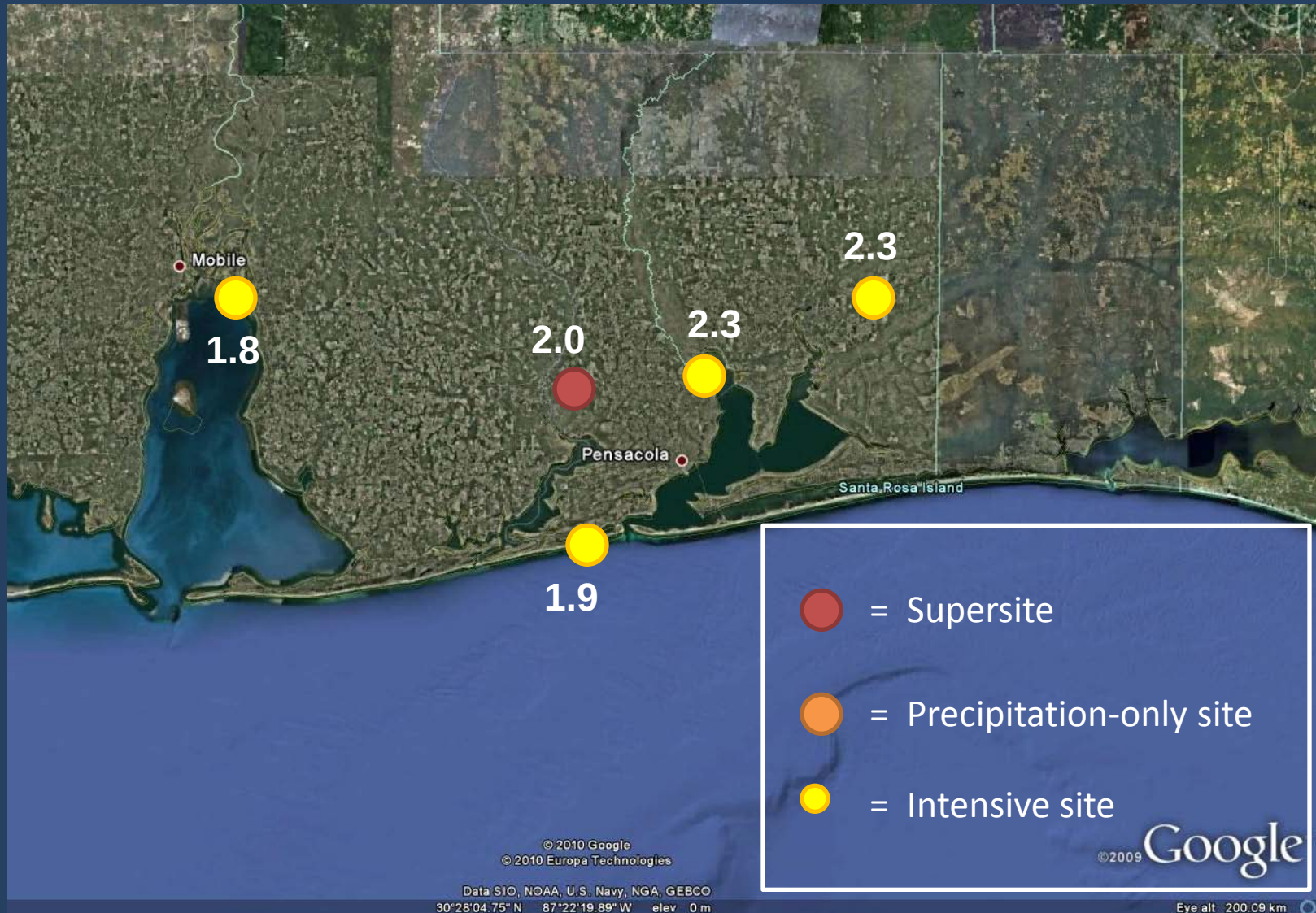
Florida Hg TMDL Study – Pensacola Intensive 2010

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Hg Wet Deposition ($\mu\text{g}/\text{m}^2$) – Pensacola Intensive

July 24 – August 23, 2010



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Intensive Deposition Monitoring - Summary

- Relatively large *monthly* spatial Hg deposition gradient observed in vicinity of Davie supersite.
- Smaller *monthly* spatial gradients observed in vicinities of other supersites.
- Less deposition observed at coastal sites across all four supersite vicinities.
- Significant spatial and temporal variability observed from site to site on *daily* basis in supersite vicinities.

Atmospheric Monitoring - Summary

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- Provide data to assess statewide mercury wet and dry deposition loadings.
- Provide data to assess emission source contributions to the measured mercury wet and dry deposition.
- Provide measurement data to evaluate and compare with deterministic models for:
 - Mercury Dry Deposition Loadings
 - Mercury Wet Deposition Loadings
 - Mercury Emission Source Contributions