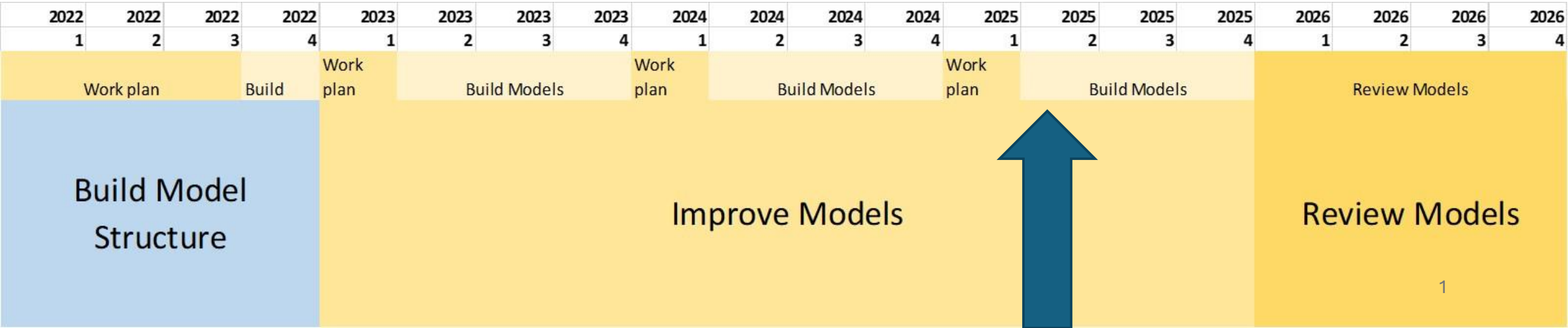
CBP Watershed Model Plan for 2025

1 Average Loads
2 Sensitivities
3 Calibration
4 Machine Learning

CBPO Staff

4/1/2025



CalCast informs CAST; CAST constrains the DM

Phase 7 CAST Structure

Average Load
+
ΔInputs * Sensitivity
*
BMPs
*
Acres
*
Land to Water
*
River Delivery

Load by land-river segment and land use

Inform

CalCAST

Average Load
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Δ Inputs * Sensitivity
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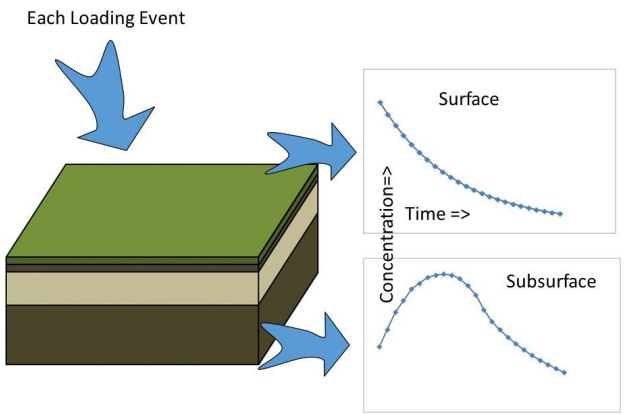
Load by land-river segment and land use

Constrain

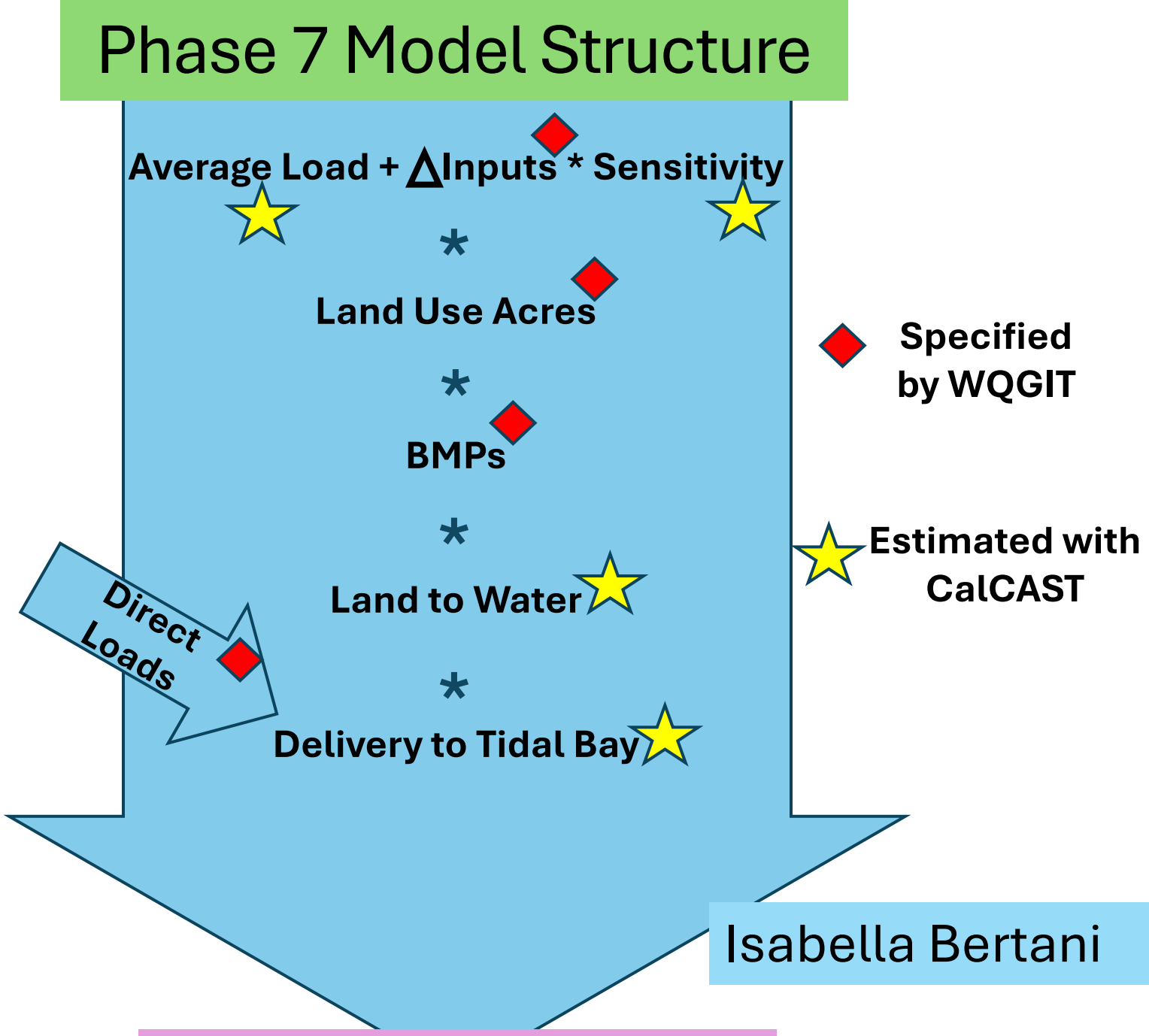
Dynamic Model



CAST model documentation; section 1
https://cast.chesapeakebay.net/Documentation/ModelDocumentation

Phase 7
CalCAST

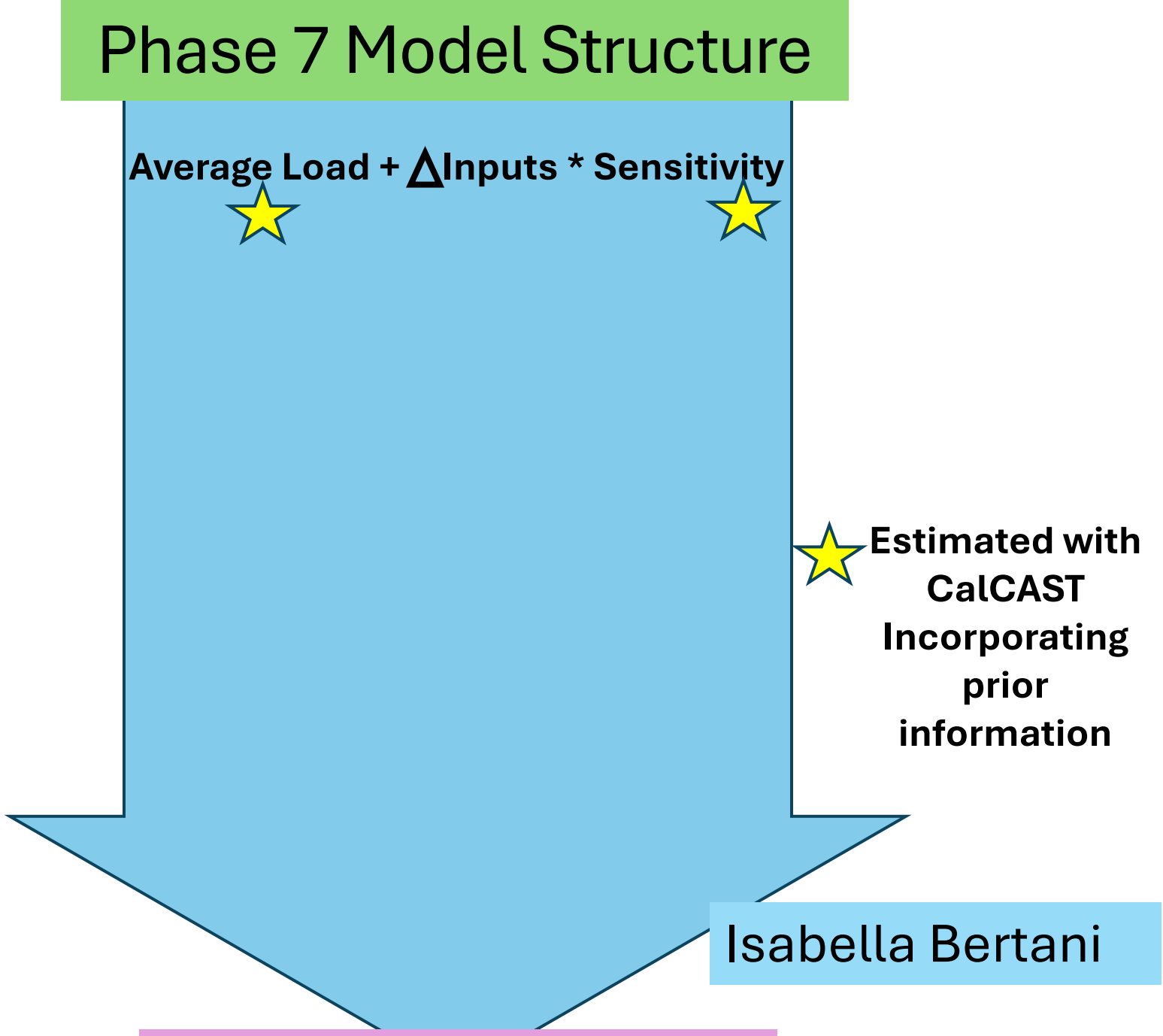
Tool for finding parameters that best match observations



Isabella Bertani

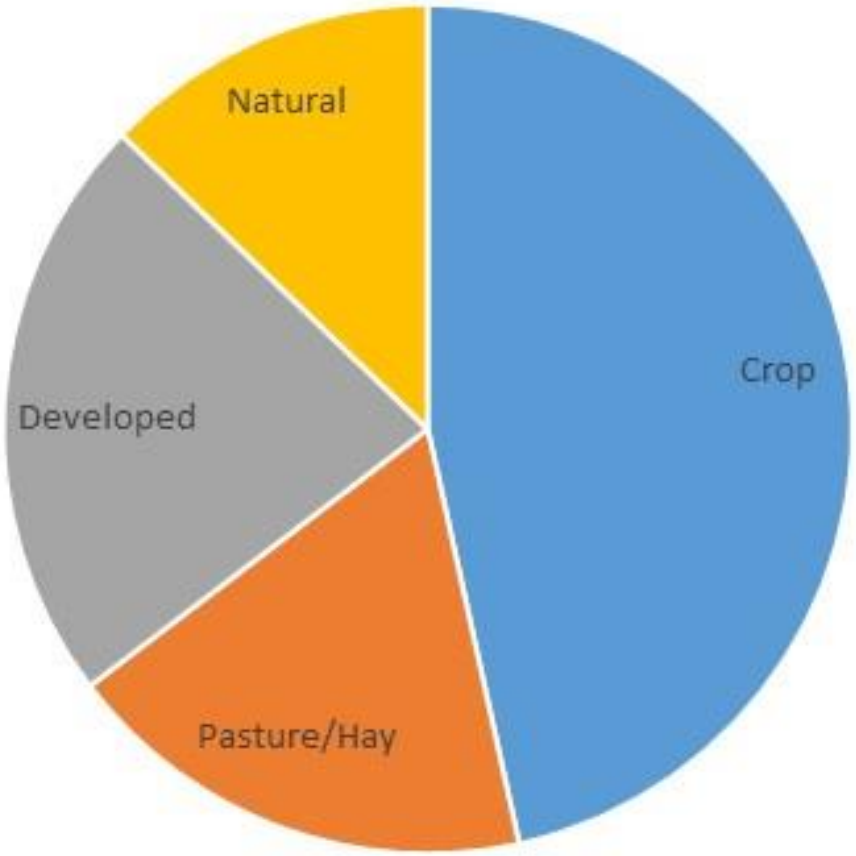
Phase 7
CalCAST

Tool for finding parameters that best match observations

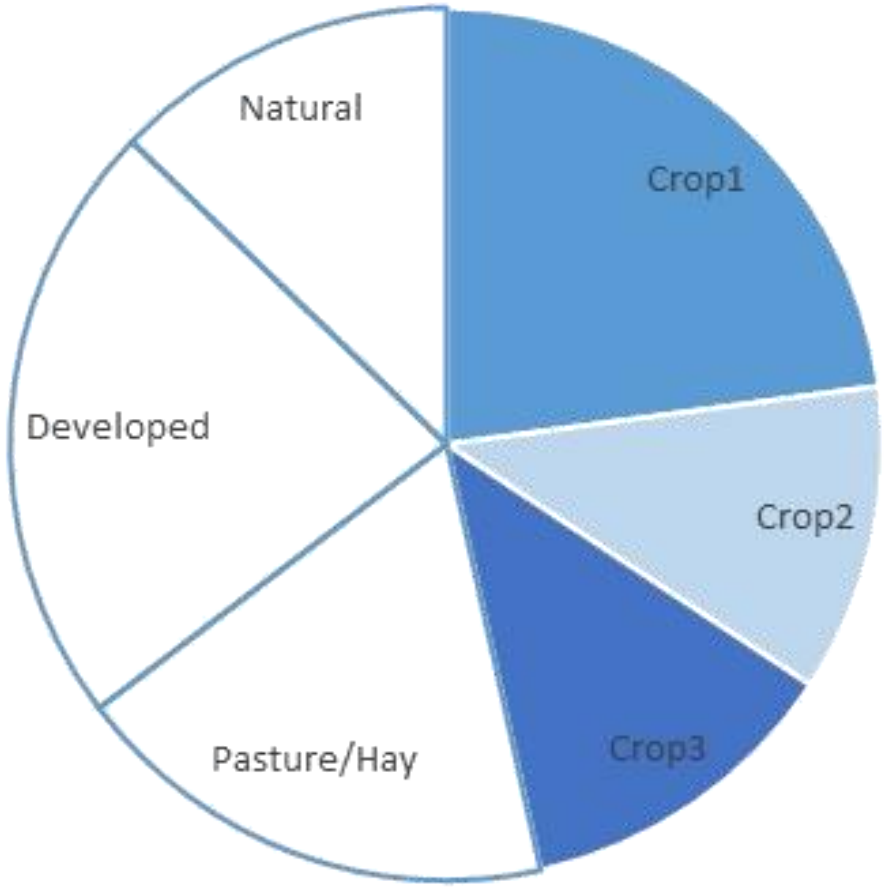


CalCAST can estimate **Average Load** for Classes

CalCAST - MWG



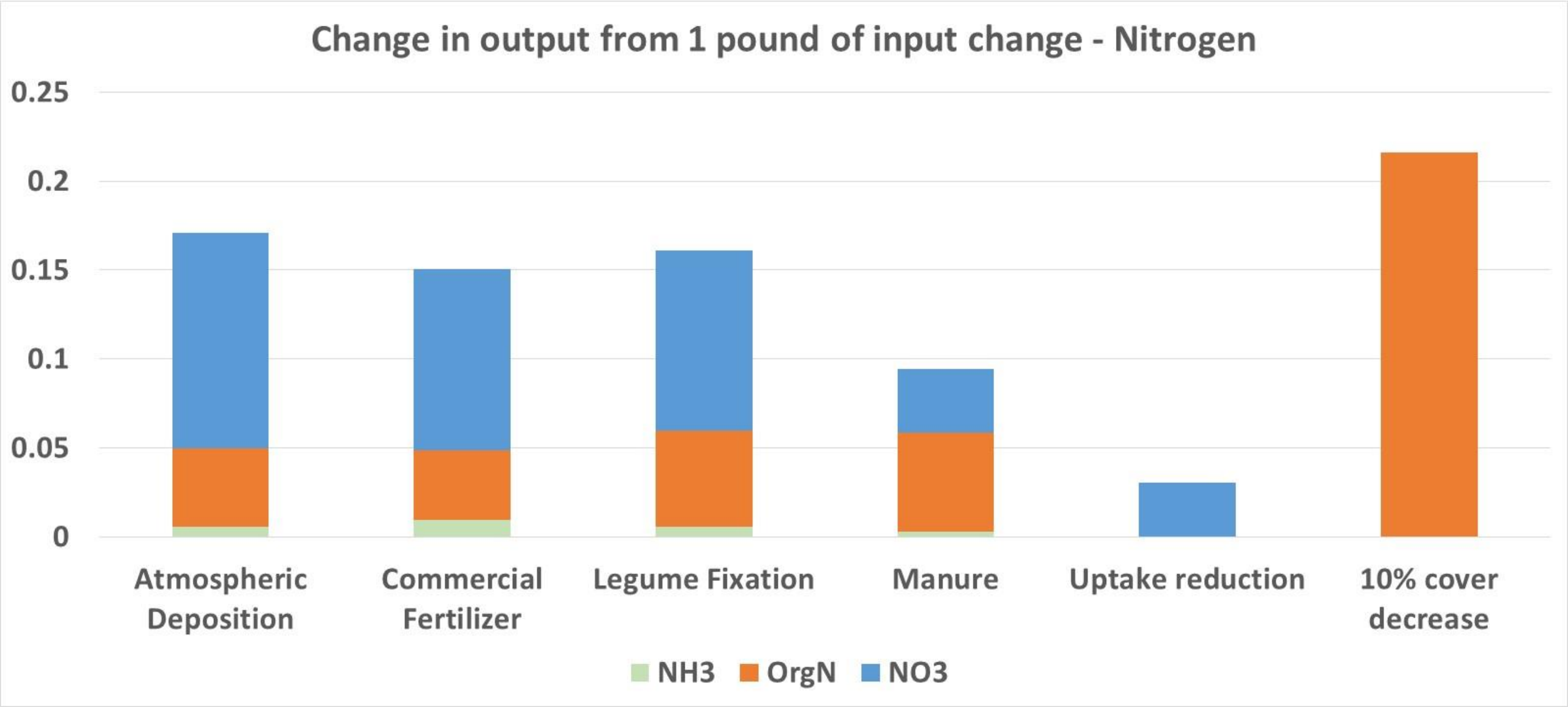
Literature - WQGIT



P6 documentation

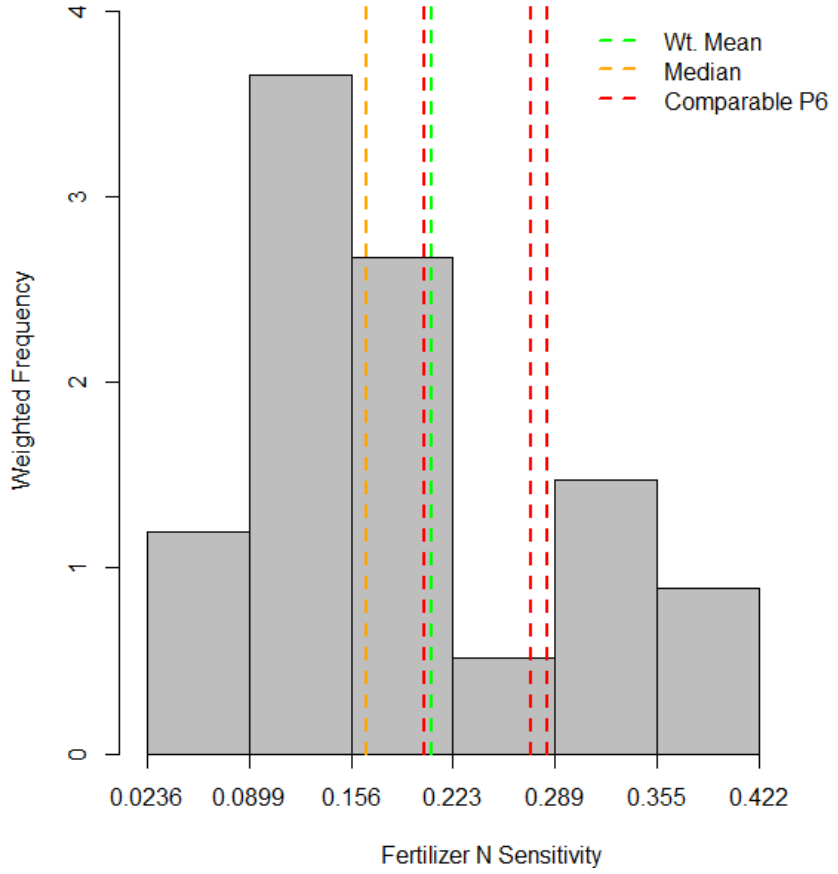
Manure had a lower sensitivity in Phase 6 compared to inorganic sources

Double Cropped land



Fertilizer N literature values are similar to P6

Value	TN
Weighted Literature Mean	0.19
Literature Median	0.14
P6 Grain w/ Manure	0.26
P6 Specialty Crop High	0.25
P6 Grain w/o Manure	0.18



A distribution can be estimated to inform CalCAST

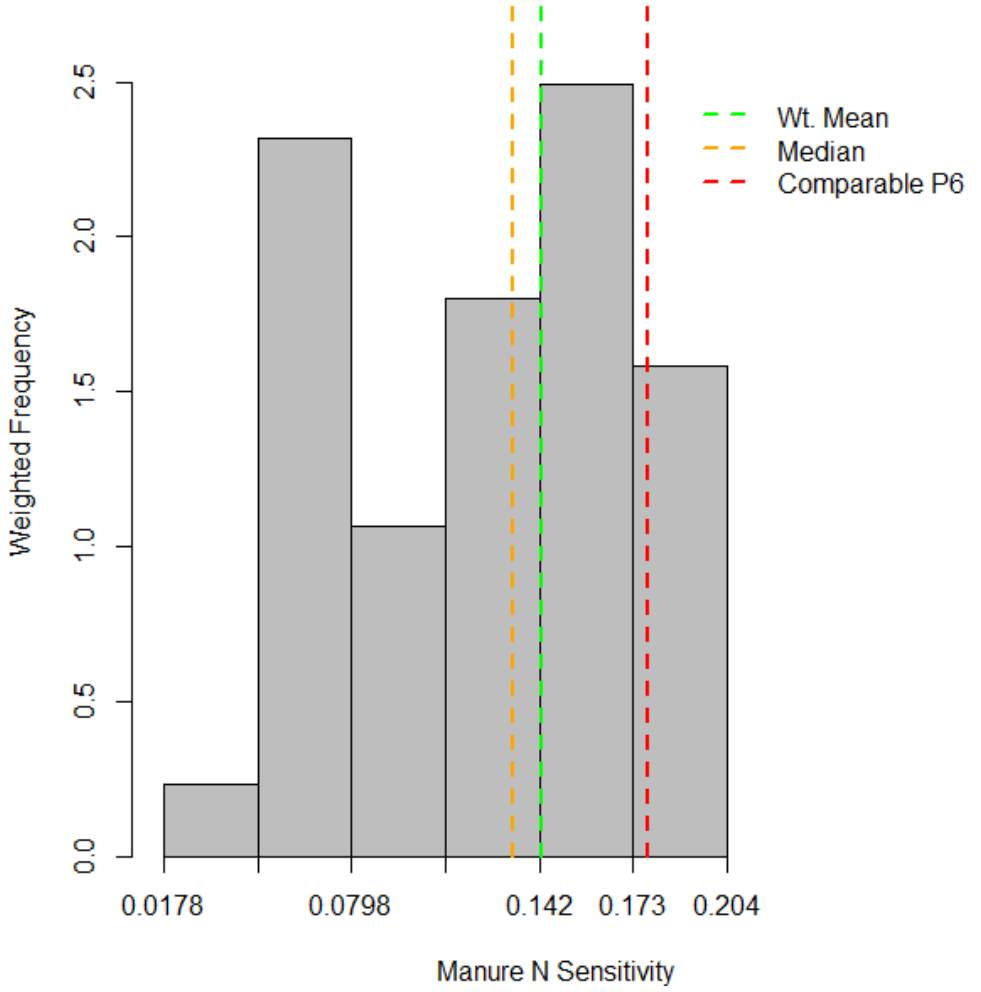
- Literature values are normalized by % intensive ag. land area in the study to account for major differences in land use.
- Values have been weighted by the quality of the study using fit criteria and sample count.

Joseph Delesantro

Manure N literature values are similar to P6

Value	TN
Weighted Literature Mean	0.122
Literature Median	0.115
P6 Grain w/ Manure	0.16
P6 Specialty Crop High	0.16

A distribution can be estimated to inform CalCAST



- Literature values are normalized by % intensive ag. land area in the study to account for major differences in land use.
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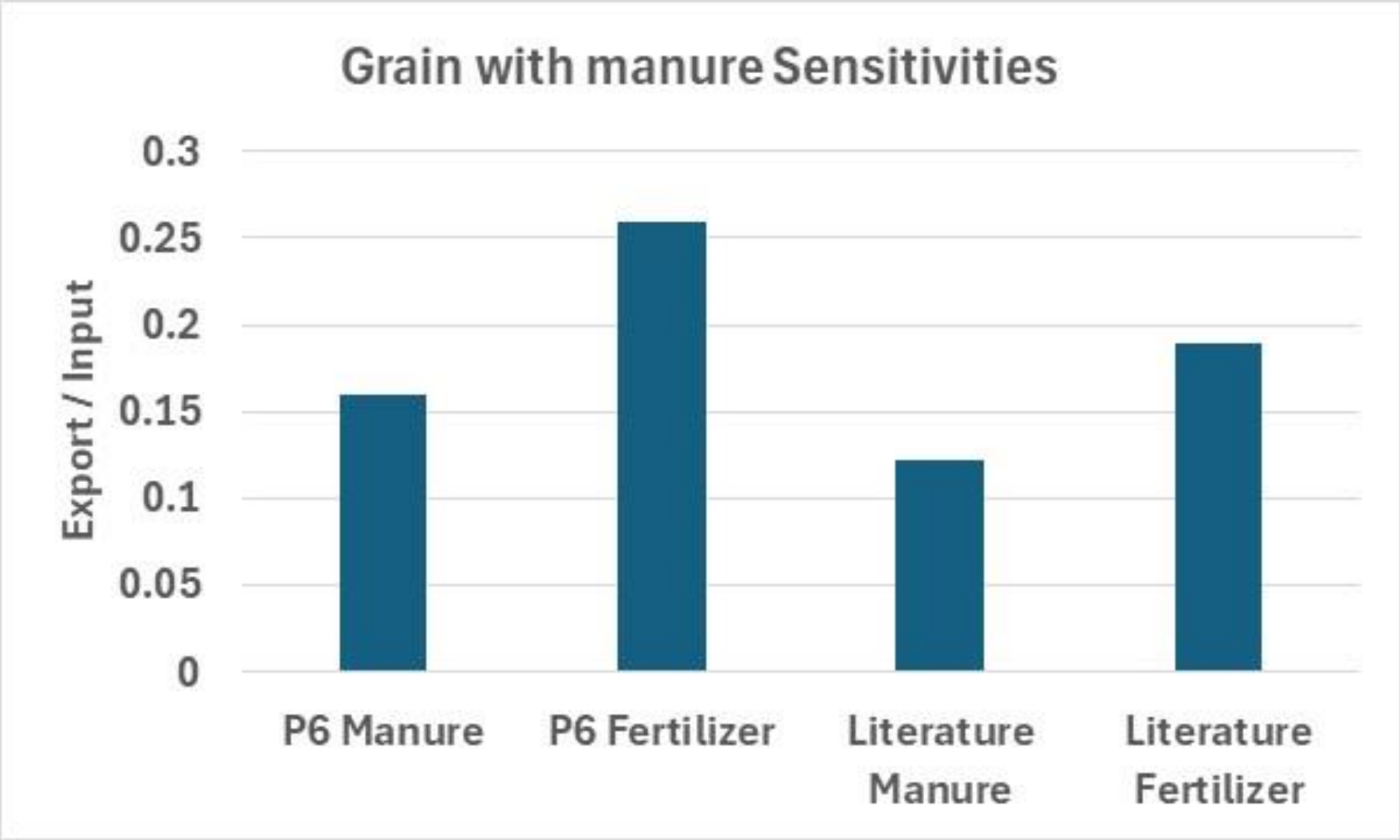
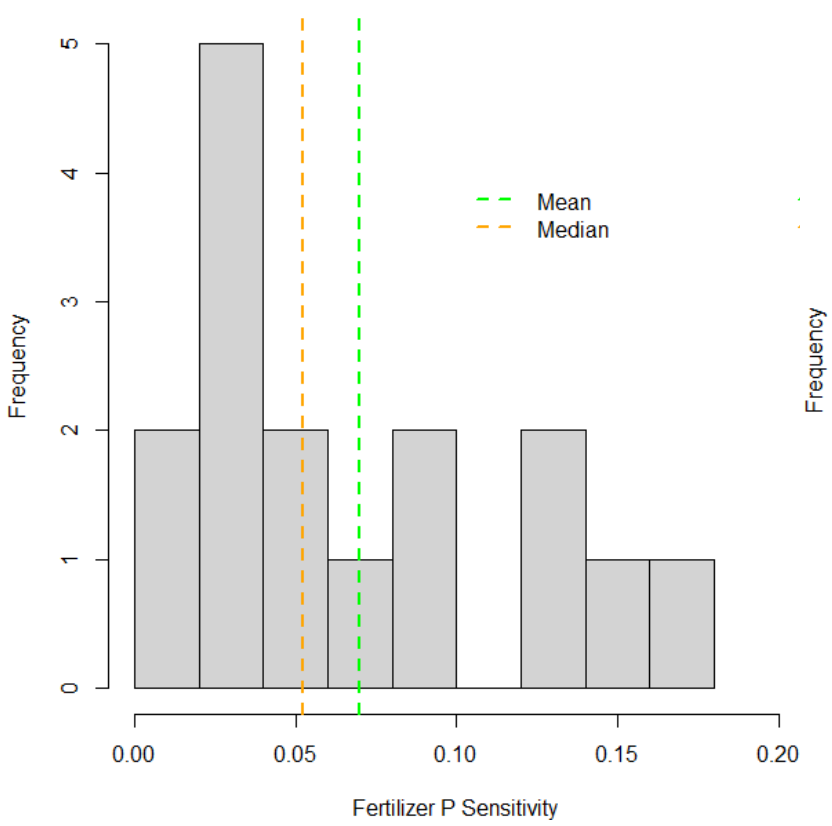
Joseph Delesantro

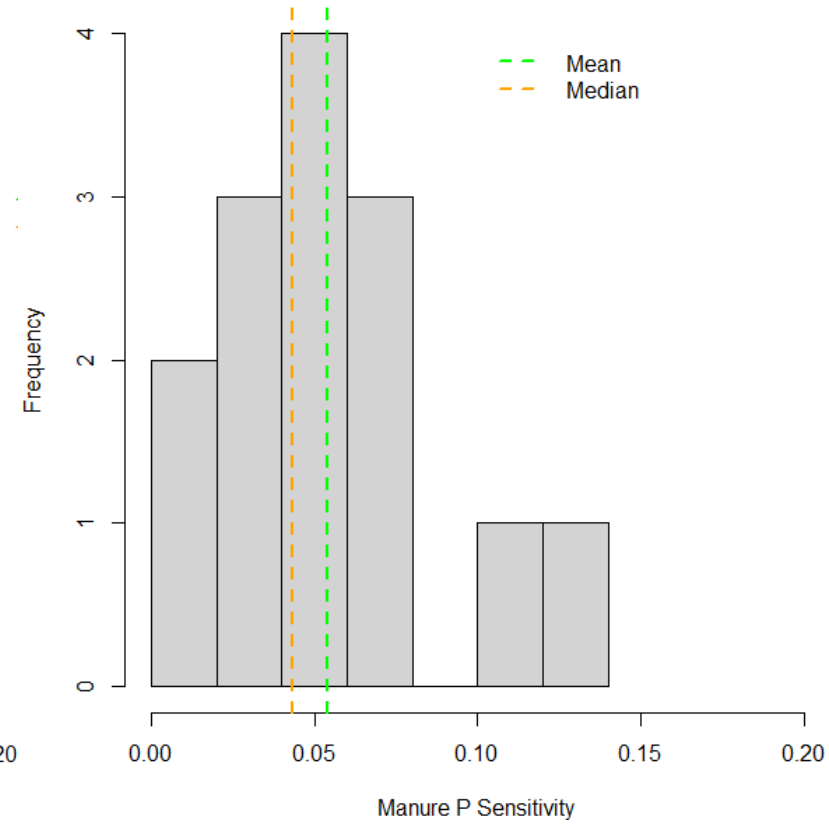
The ratio of fertilizer to manure in Phase 6 is supported by the literature



Work Beginning on Phosphorus

- Literature exists
- Fertilizer > manure





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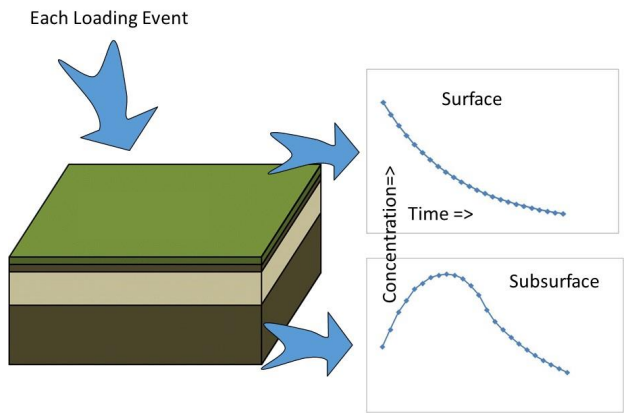
Dynamic Model



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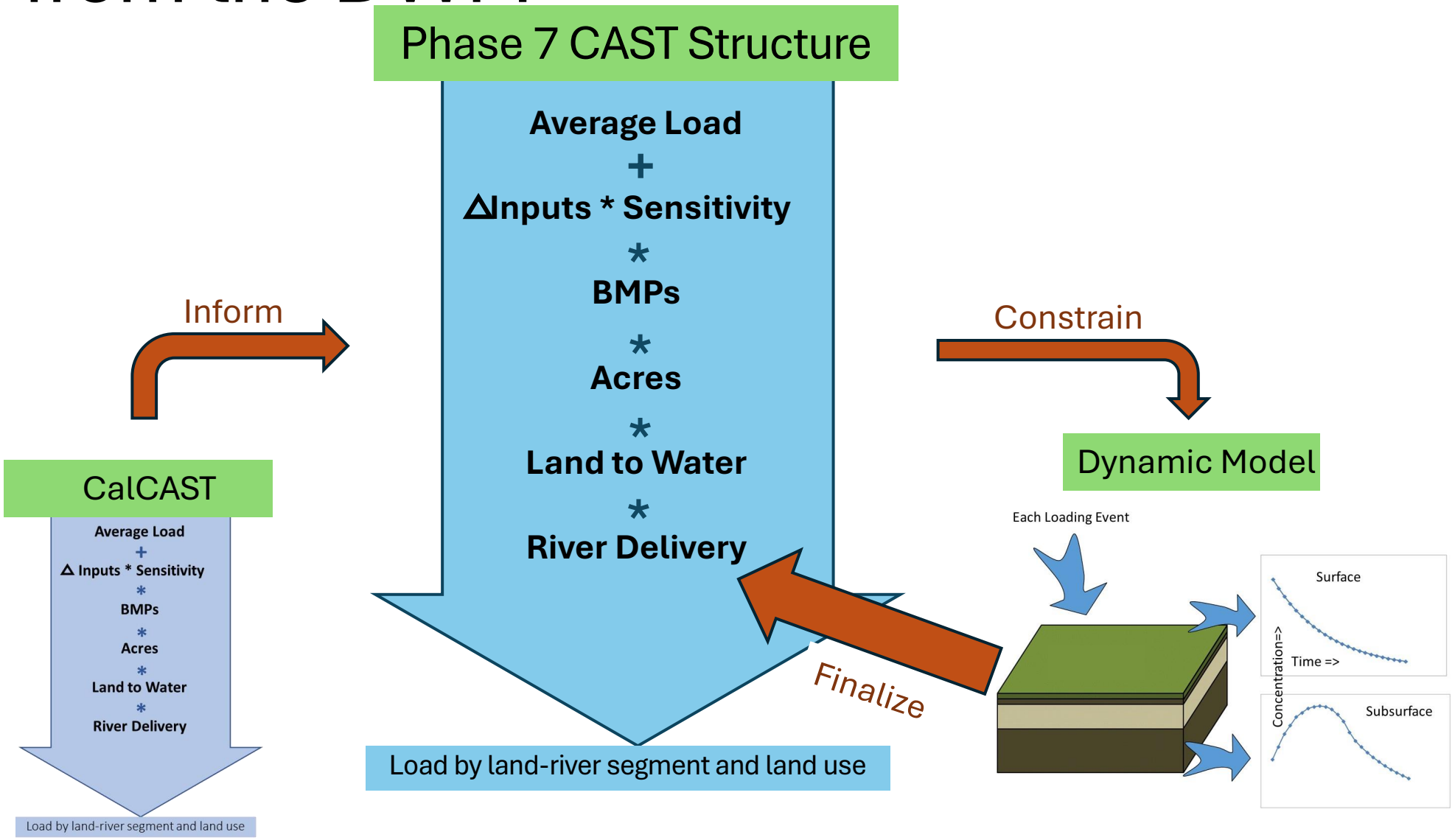
As in Phase 6, there will be a final calibration step from the DWM



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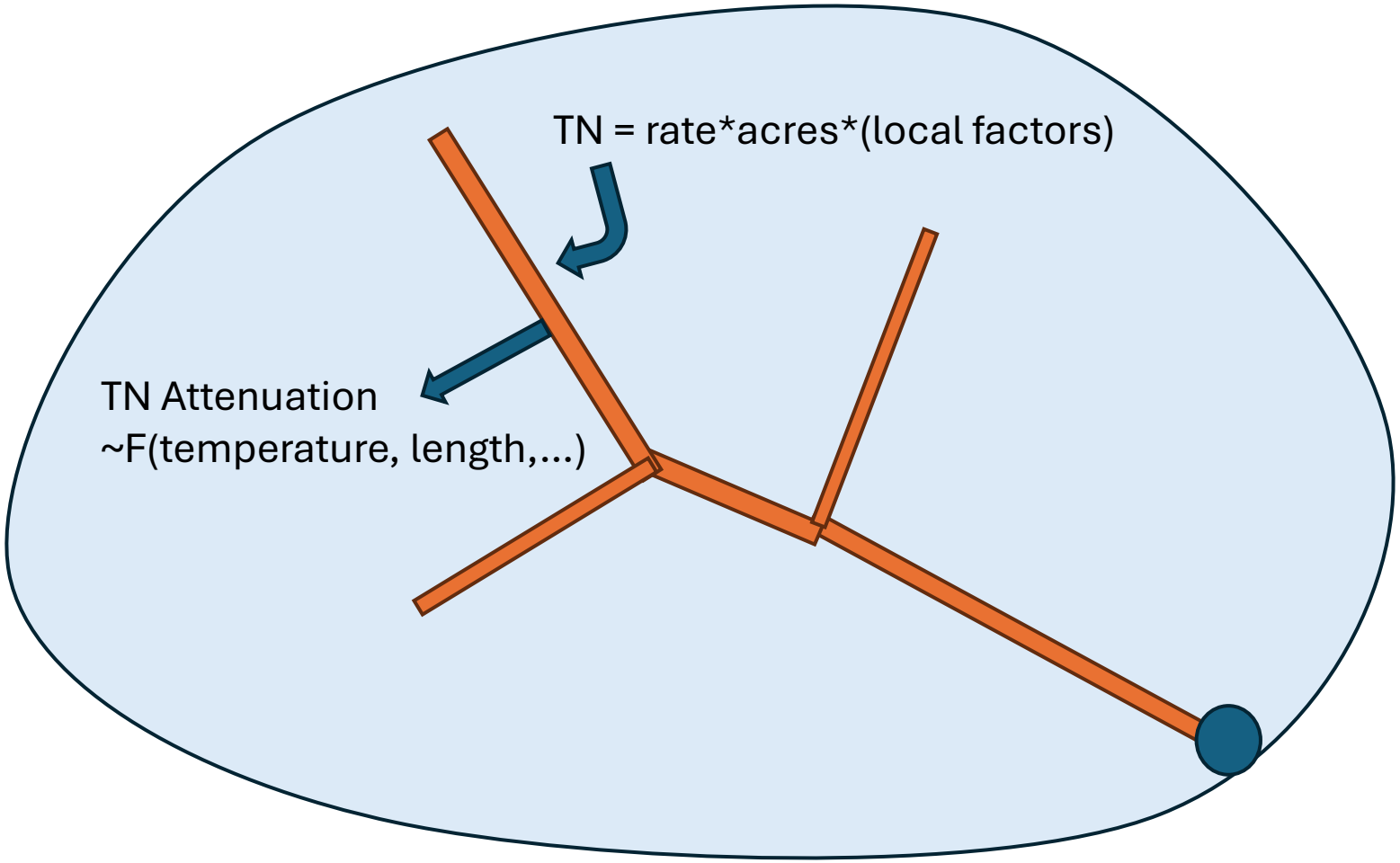
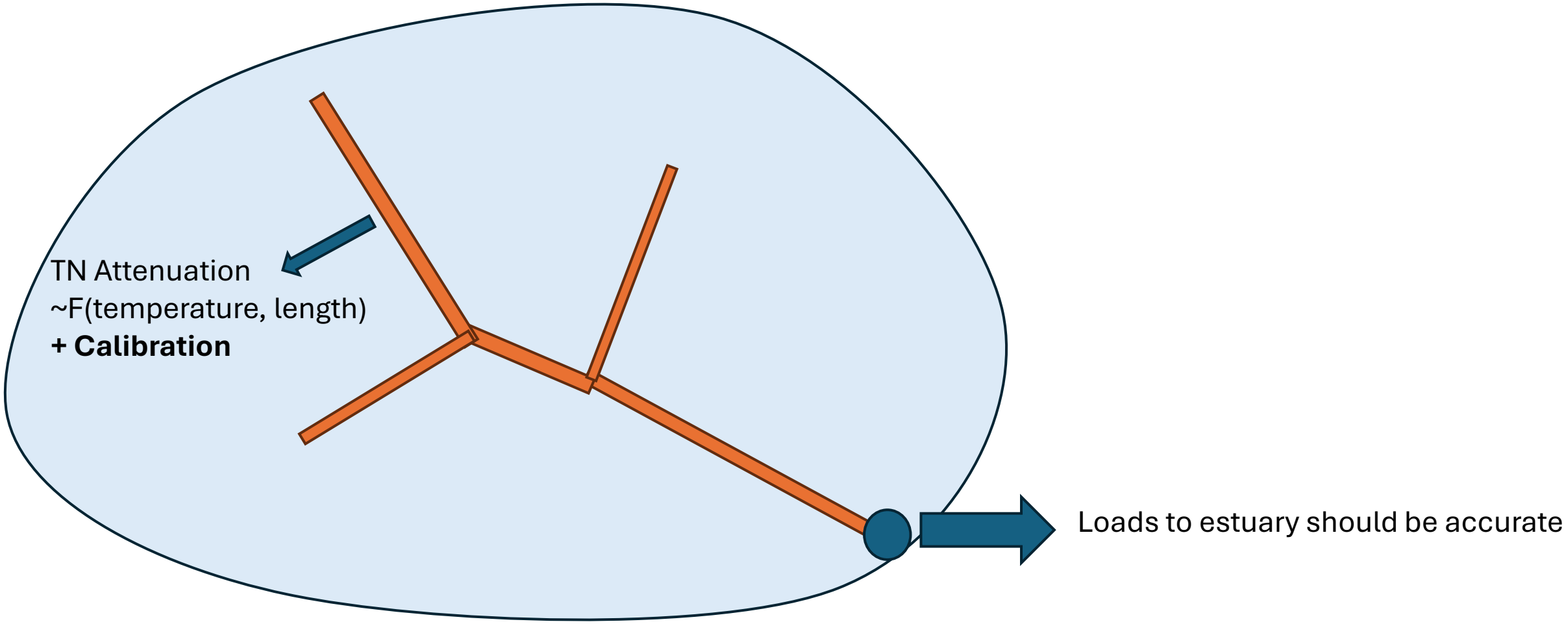
CalCAST is fully explainable, but can only get so close at any given station



DWM used to adjust attenuation

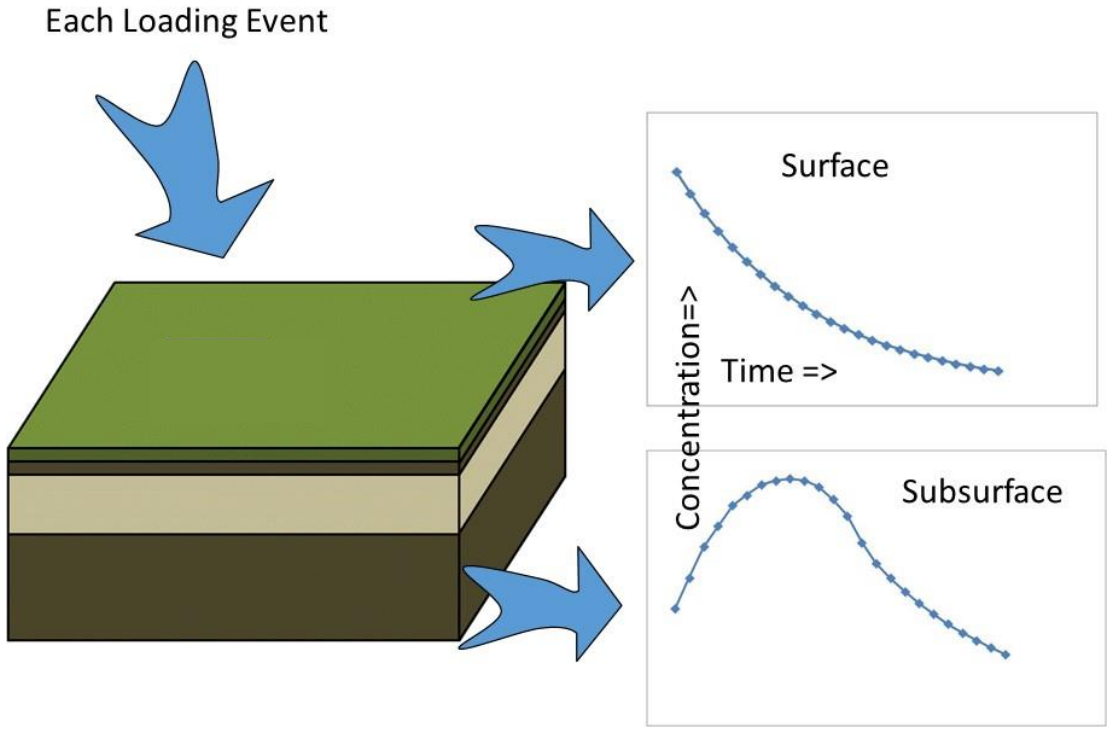


Phase 7

Dynamic Model

Tool for

- loading estuarine models
- Comparing against observations
- Other potential collaborative projects



Gopal Bhatt

Machine Learning informs both CalCAST and DWM

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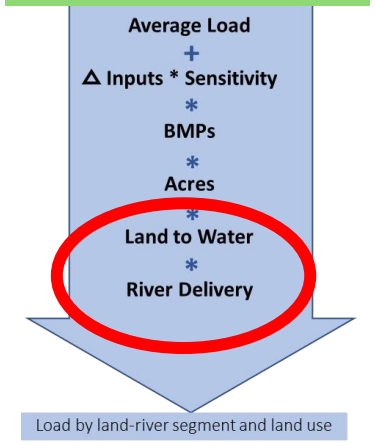
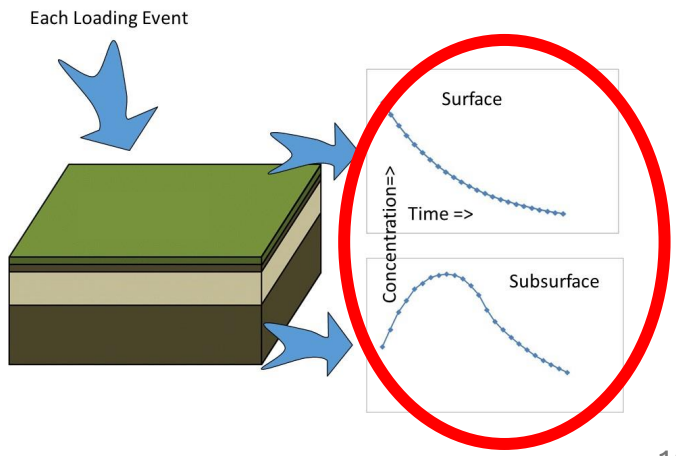


Constrain

Dynamic Model



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1/7/2025