

Assessment of IM Criteria in the Chesapeake Bay

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TMAW Instantaneous Minimum Workshop

12/2/13

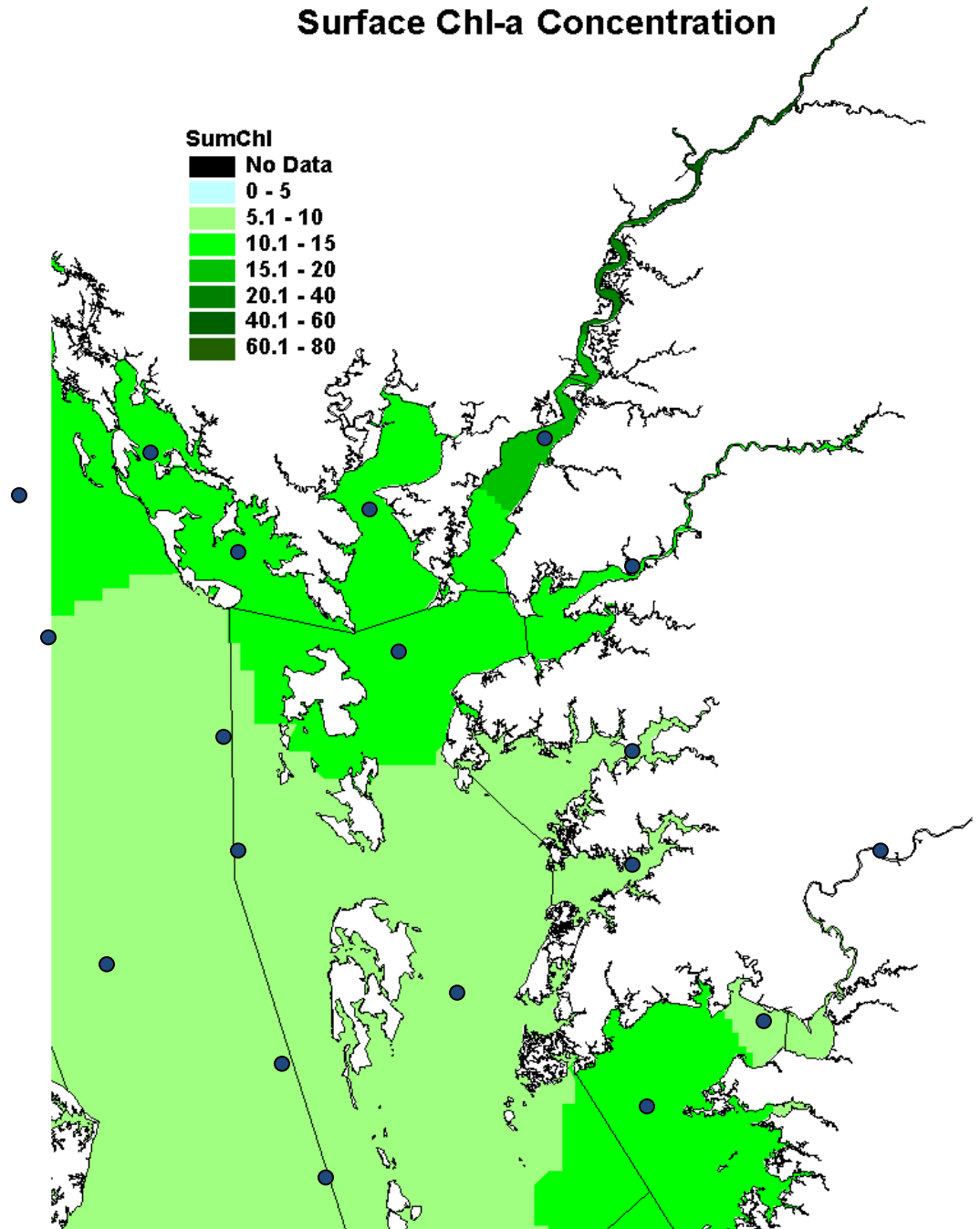
Dissolved Oxygen Criteria

	Migratory	Open Water	Deep Water	Deep Channel
Instantaneous	Not Eval	Not Eval	Not Eval	Evaluated
1-day mean			Not Eval	
7-day mean	Not Eval	Not Eval		
30-day mean		Evaluated	Evaluated	

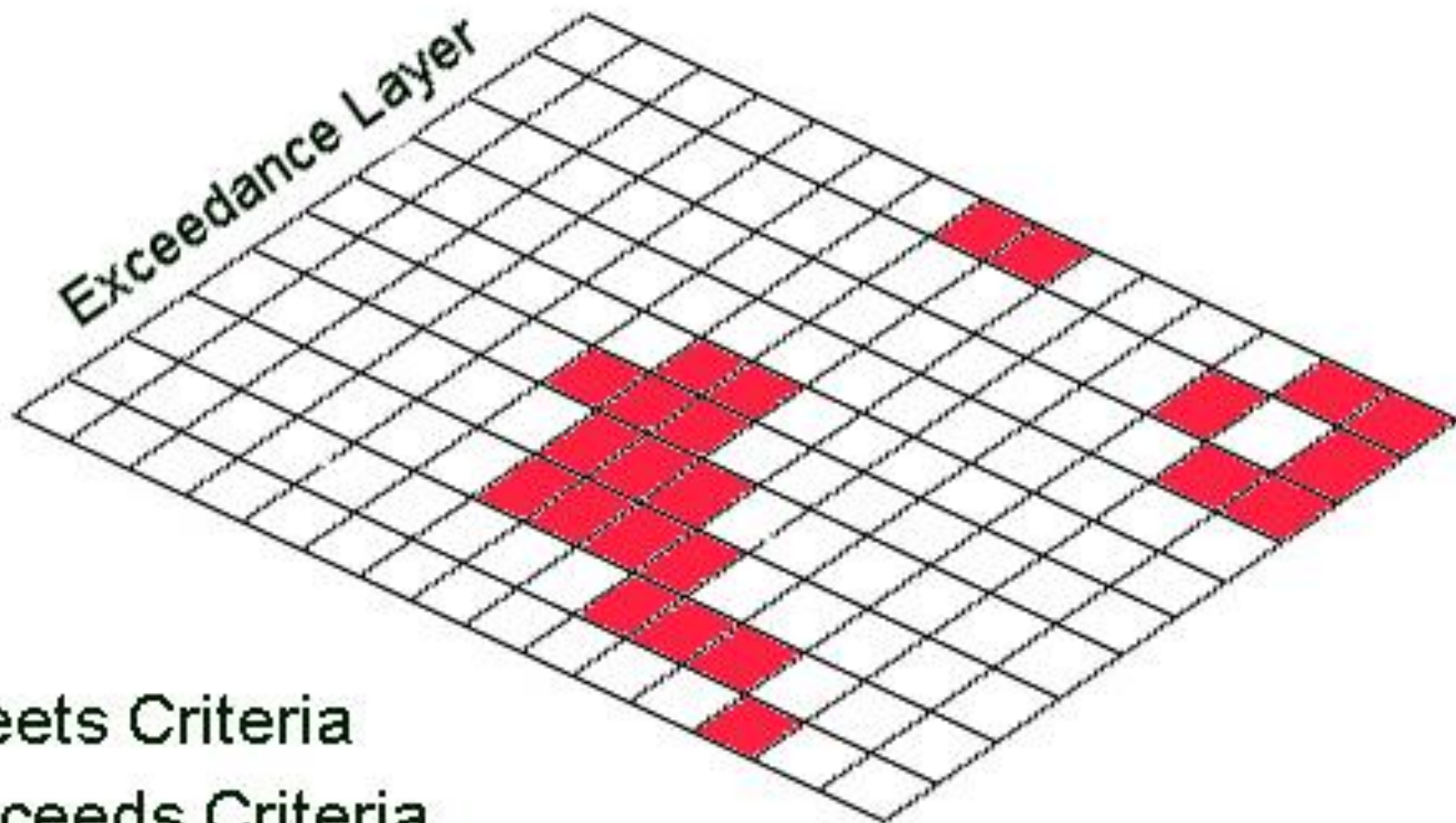
Developing a CFD for evaluating criteria attainment

**Interpolate the Bay
water quality
monitoring data for
each month**

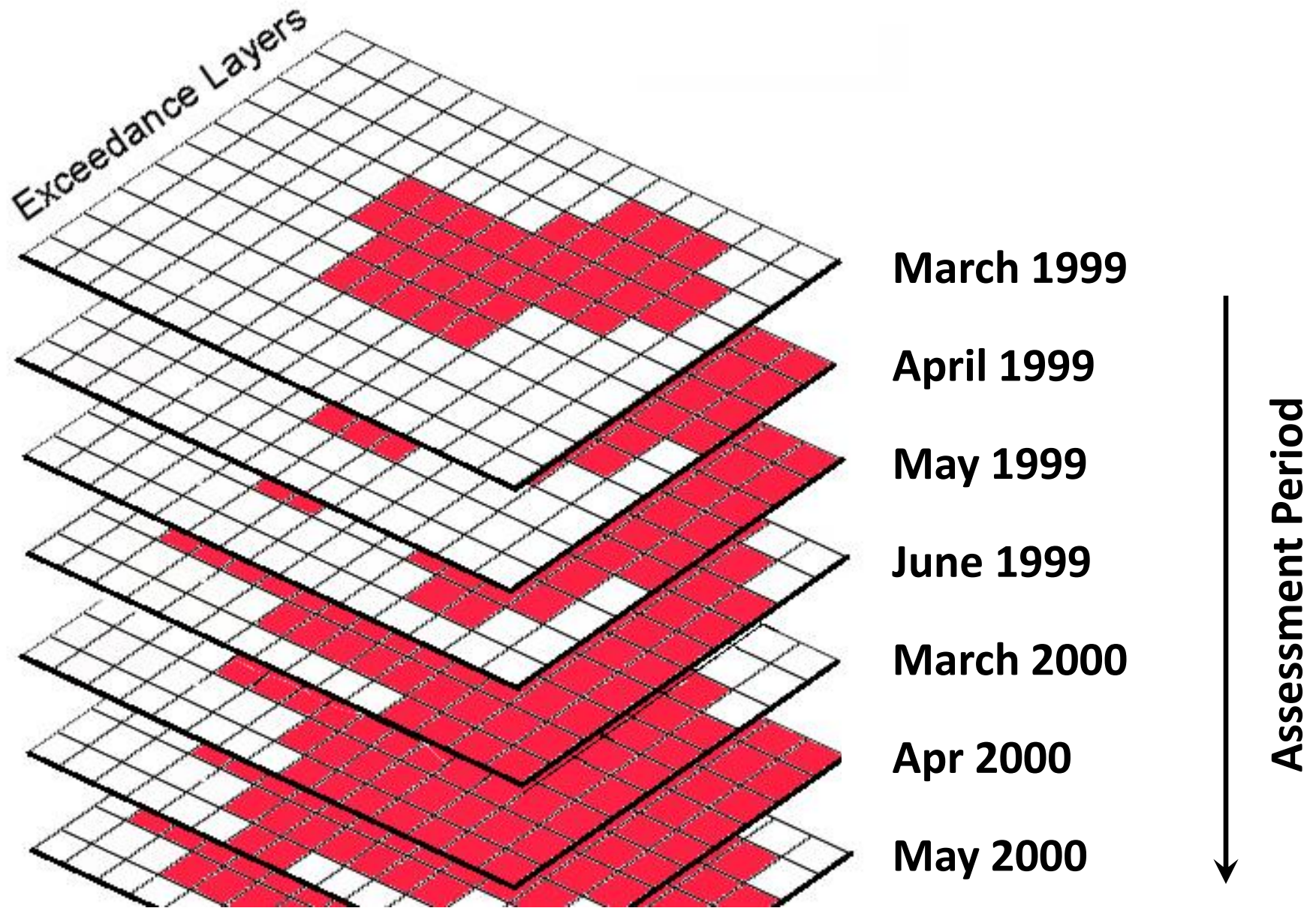
 Station



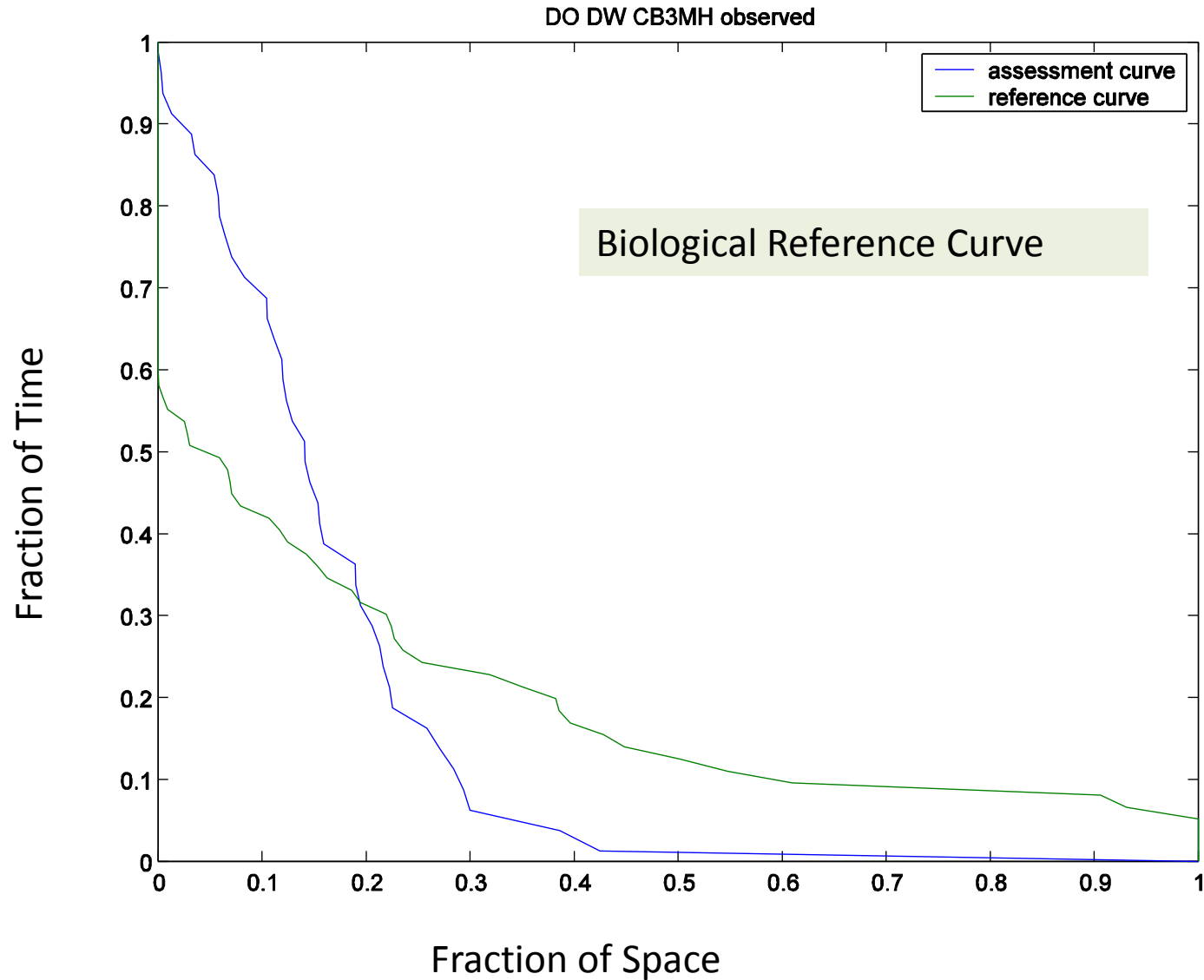
Identify the cells in a CBP segment / designated use area that exceed the criteria for that month



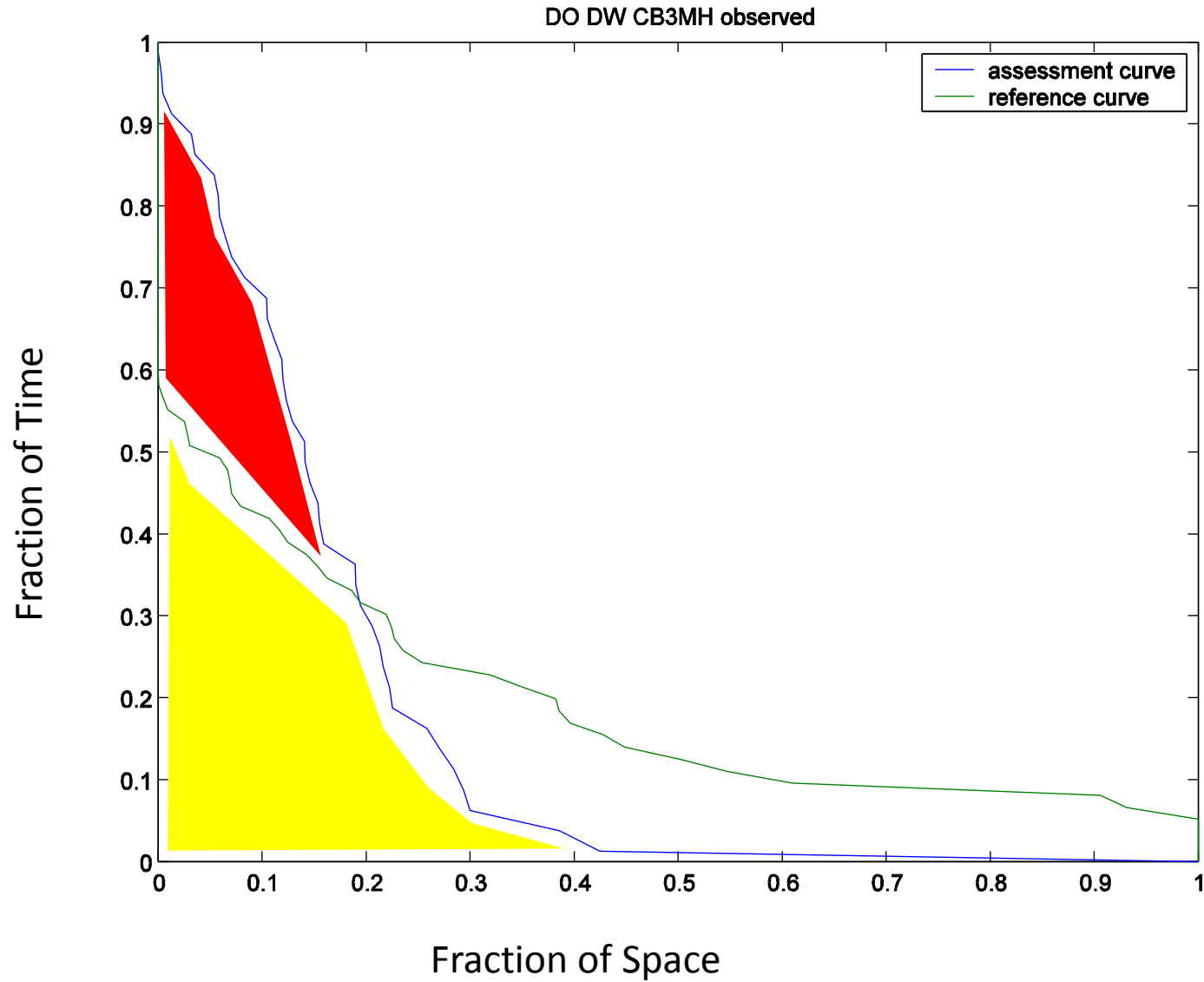
Assess each month for three years



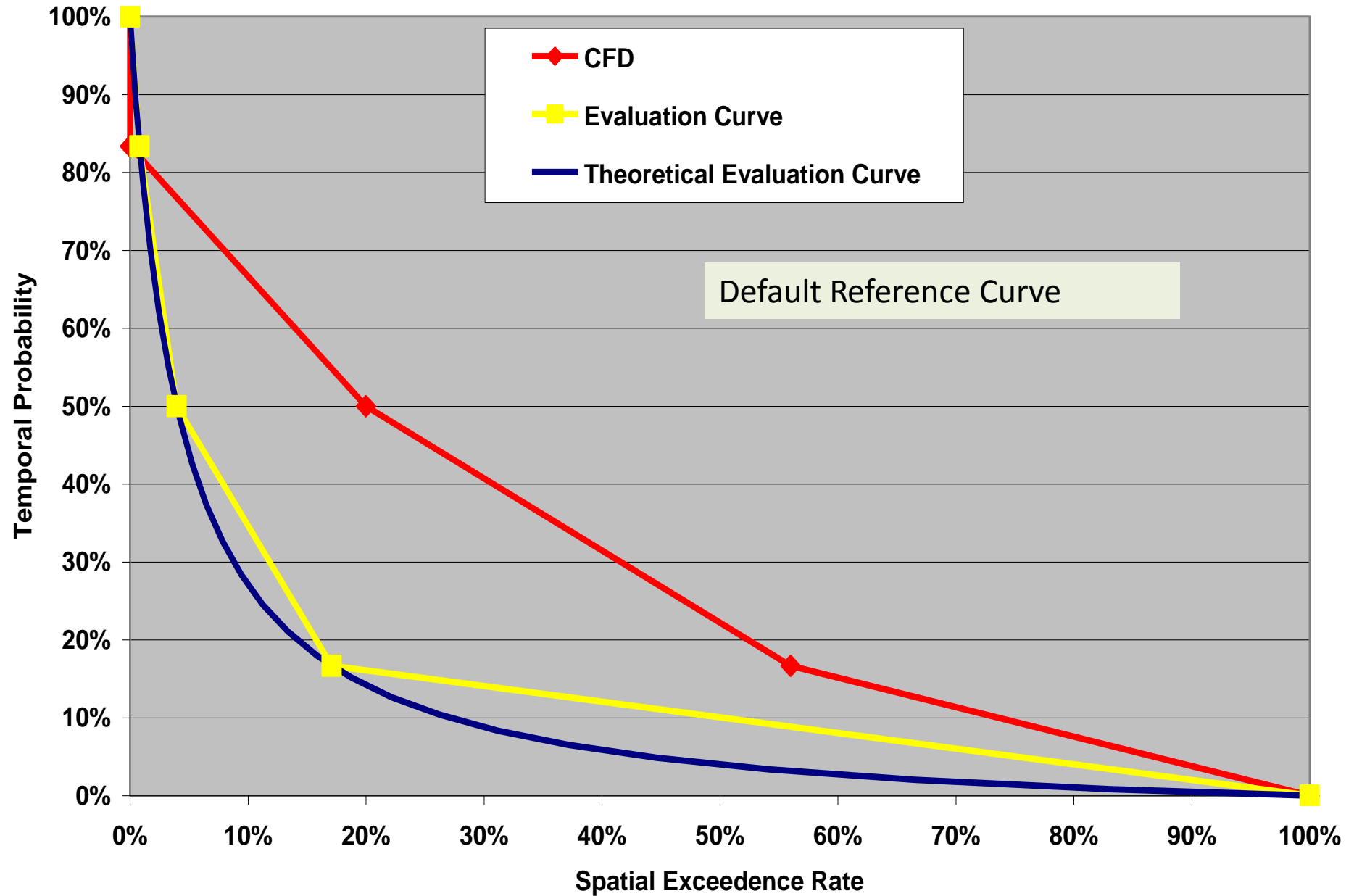
A real CFD



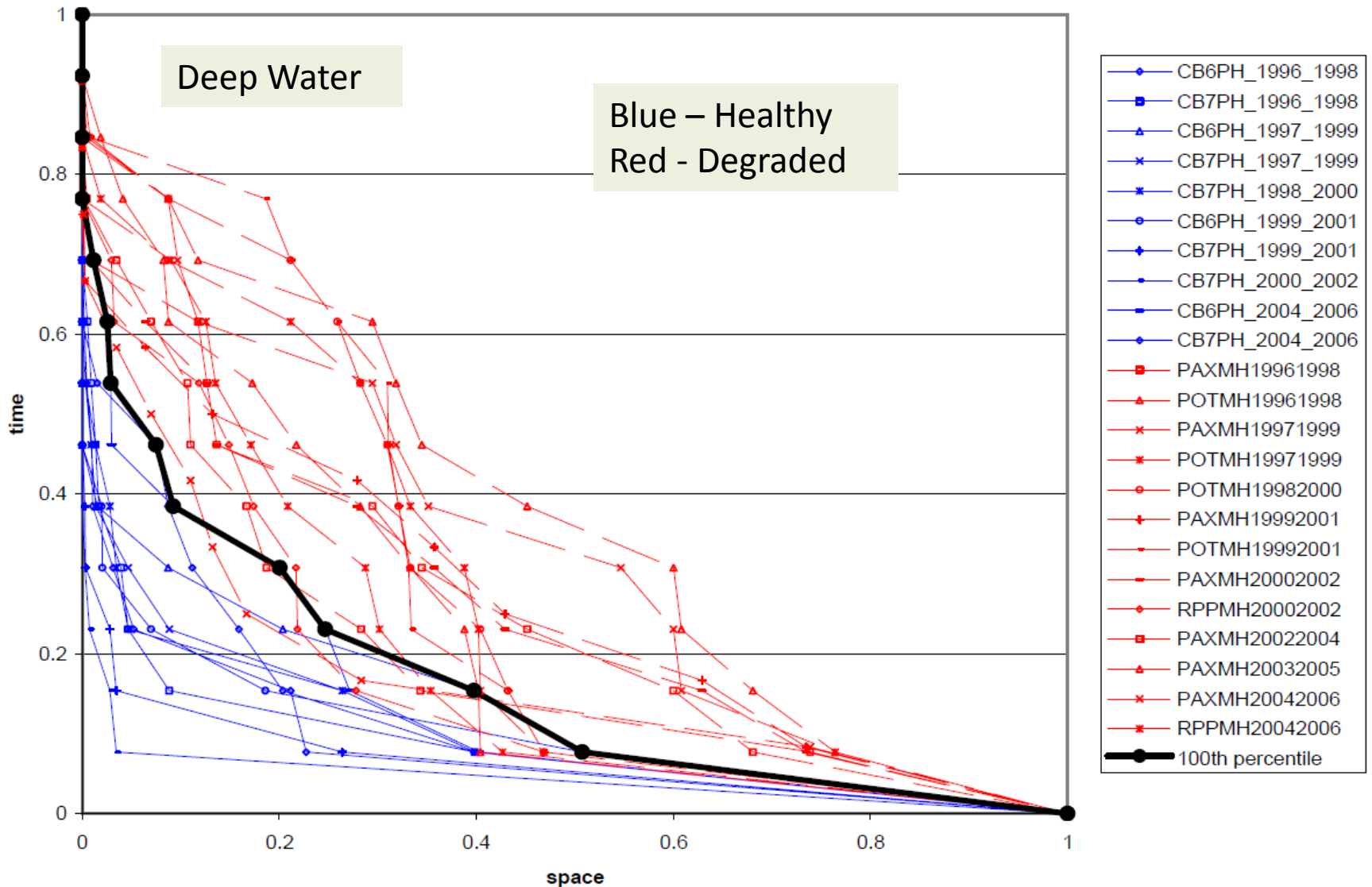
A real CFD



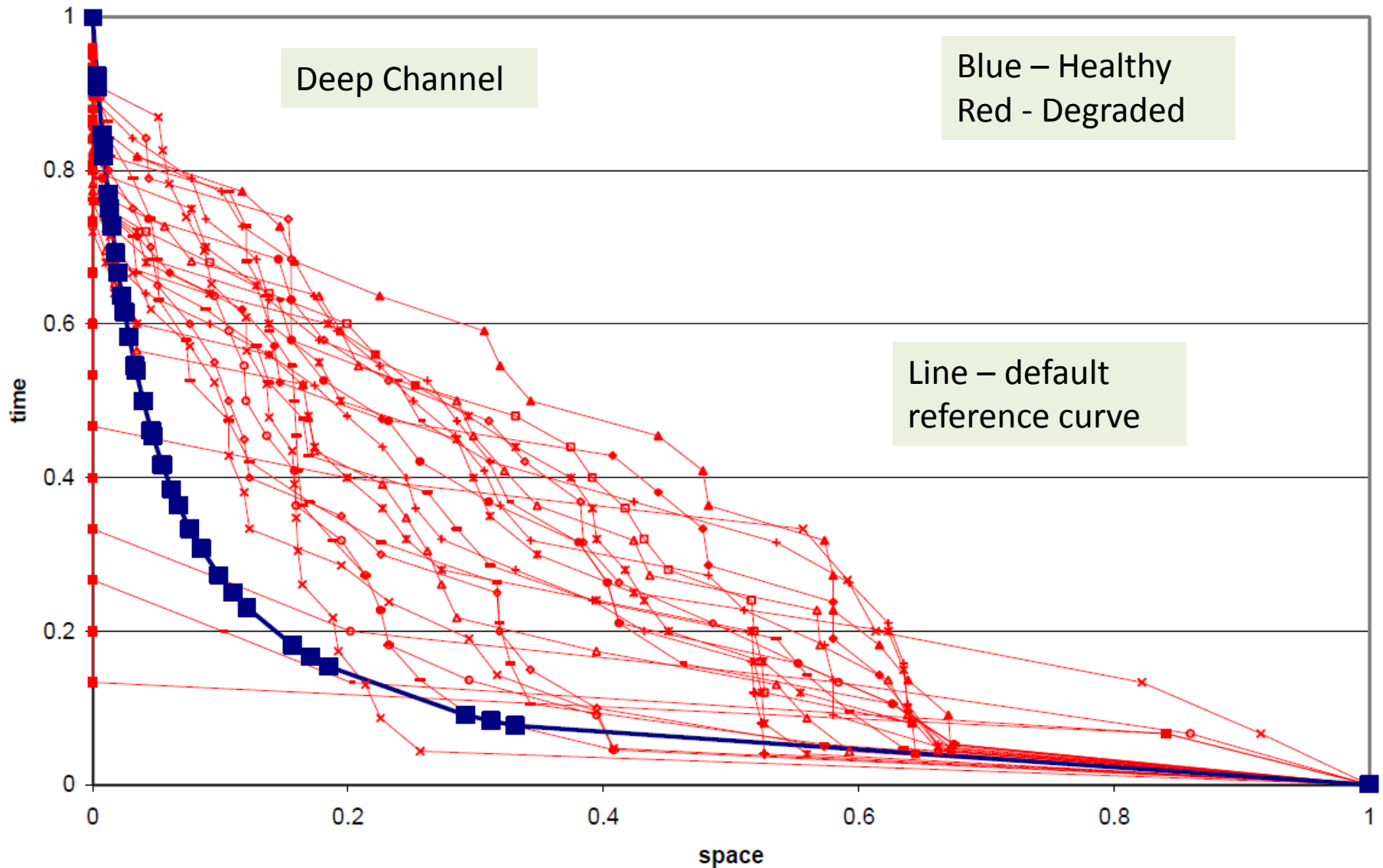
CFD Evaluation



Biological Reference Curve



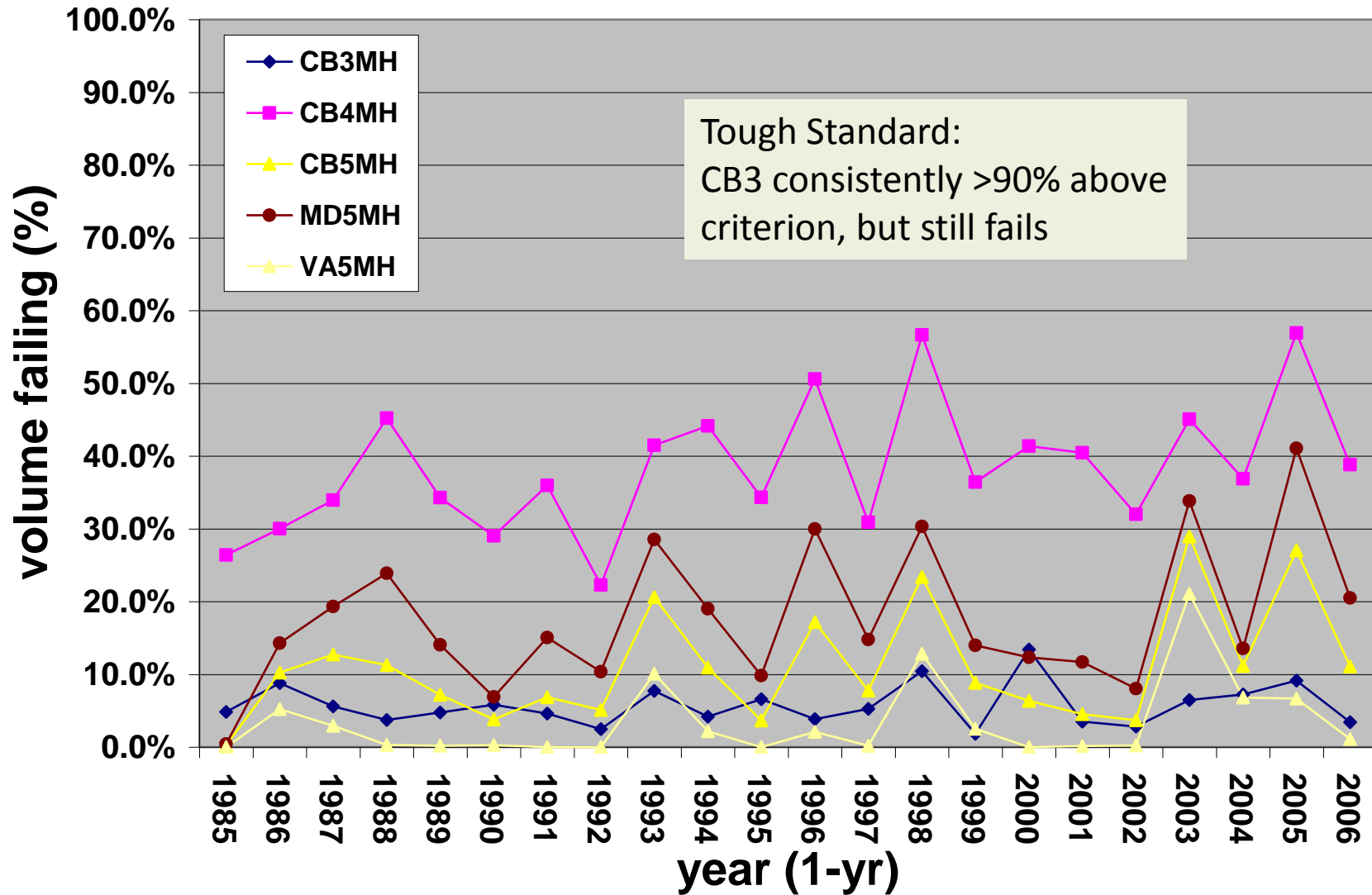
No Biological Reference Curve



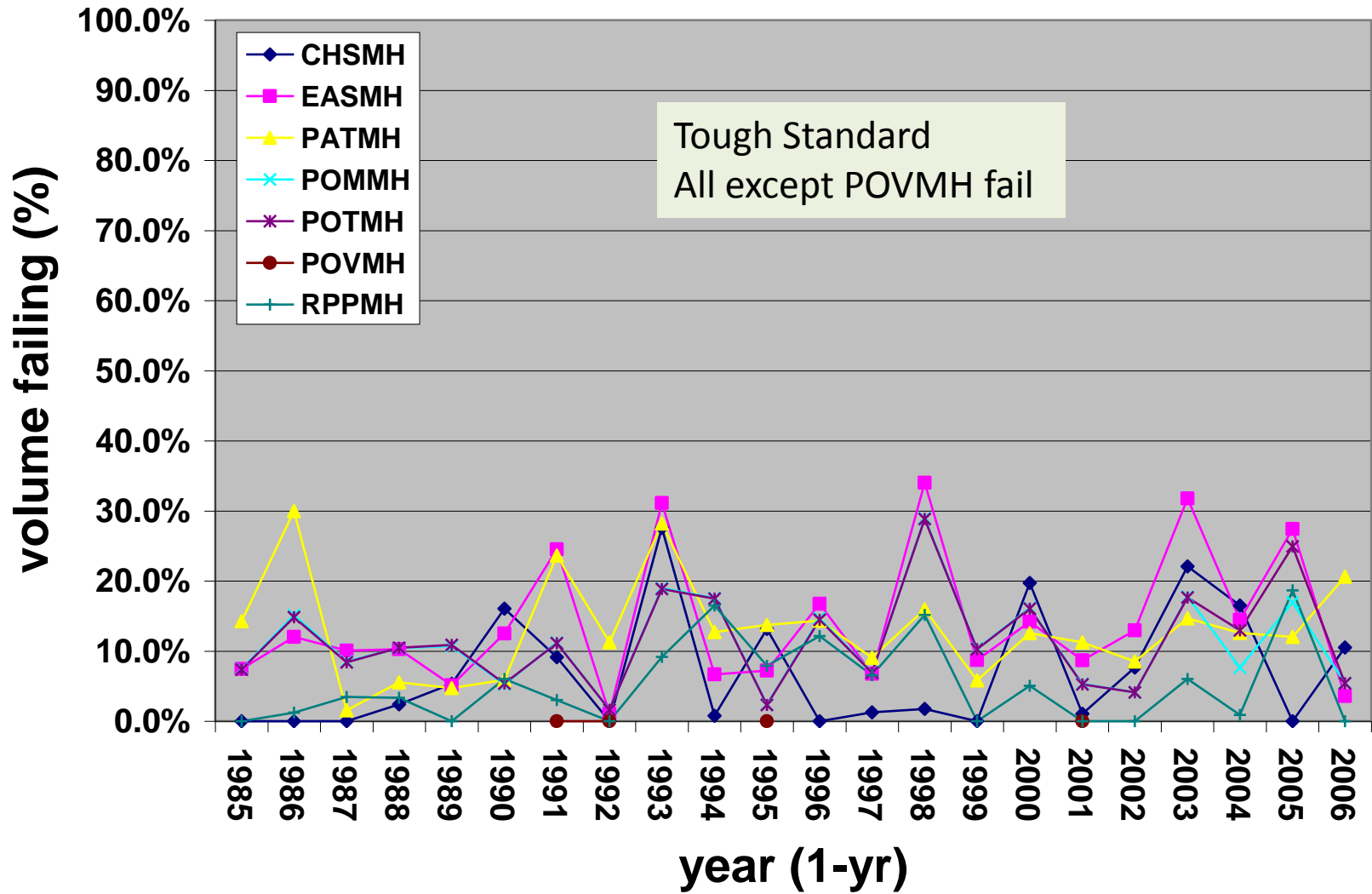
Assessments

- 12 deep channel areas assessed
- 5 periods 2005-2007 through 2009-2011
- Out of 60 assessments, 7 passed
 - All five periods in Virginia Potomac Mesohaline (<1% of Potomac Mesohaline)
 - Two of five periods in Virginia section of CB5MH

Mesohaline Deep Channel Failure Rate



MH Tribs DC Failure Rate



Rationale for a Reference Curve

- 2003 Criteria and Allocation Documents
 - Keystone species are resistant to 0.6 mg/l and that extensive mortality is likely only under persistent exposure
 - The states and EPA determined that conditions where no organism would be negatively effected at any time or place would not be achievable economically or technologically.
- 2009 Criteria Document
 - Multiple references indicate that low oxygen conditions, may have been a historical feature in the deep channel of the bay. although not nearly as severe as today.

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30-day mean		Evaluated	Evaluated	