

Decompression risk evaluation for trimix dives derived from commercially available desktop decompression algorithms

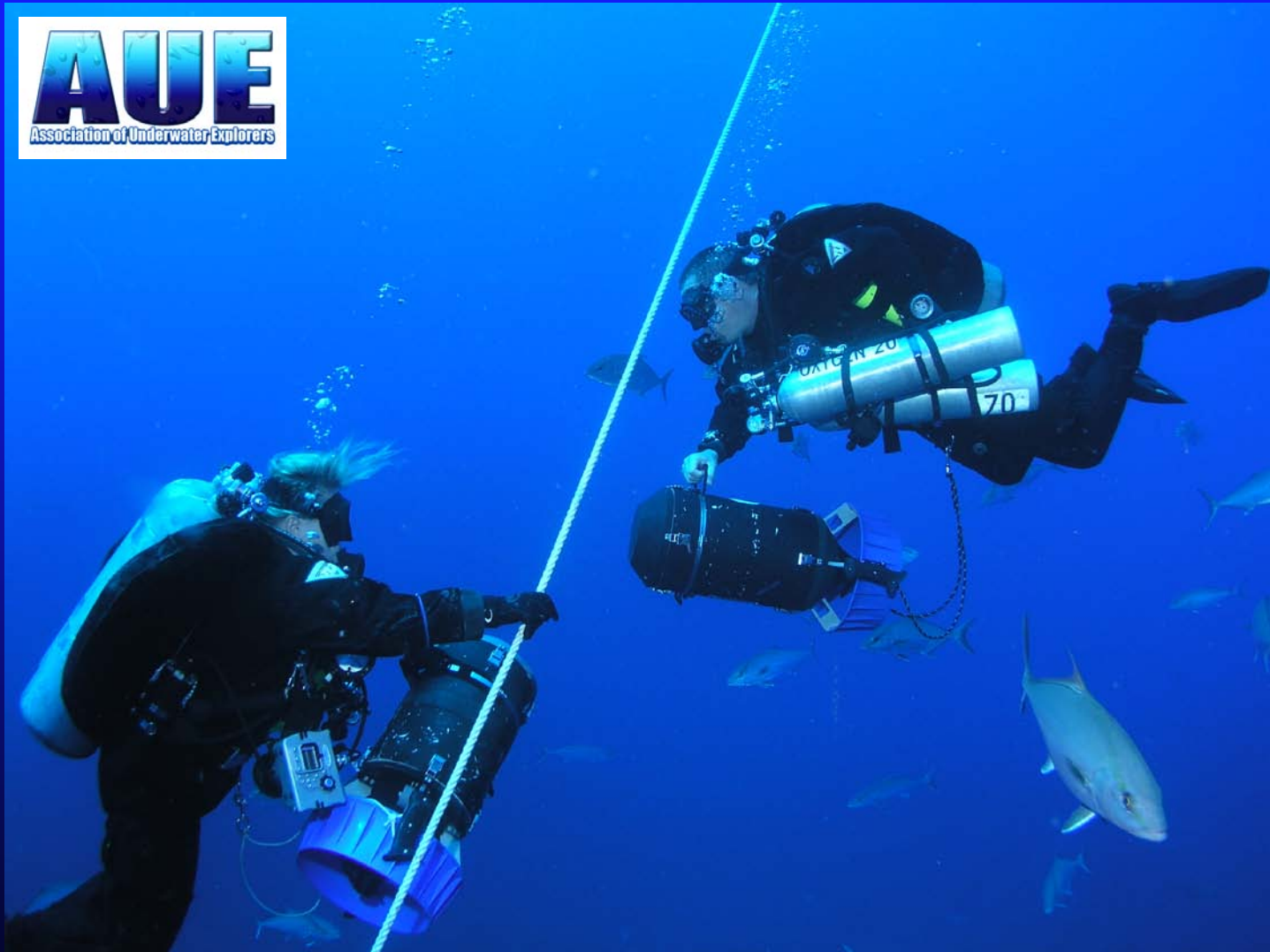
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Technical Divers



Evaluation Parameters

21 O₂ / 35 He trimix dives

50% Nitrox and 100% O₂ decompression gasses

Bottom times were limited to the time one could safely dive using the “Rule of thirds” on double 130cuft cylinders (173 cuft used) with a single aluminum 80 cubic foot stage bottle utilizing a surface gas consumption rate of 0.4 cuft/min.

Desktop Decompression Software



V-Planner

Decompression algorithms

- DecoPlanner – Buhlmann
- GAP-Software - Reduced Gradient Bubble Model (RGBM)
- NAUTILUS DivePlanner - Decompression Computation and Analysis Program (DCAP) and Hamilton-Kenyon Bubble Model (HKBM)
- V-Planner - Variable Permeability Model (VPM-B/E)

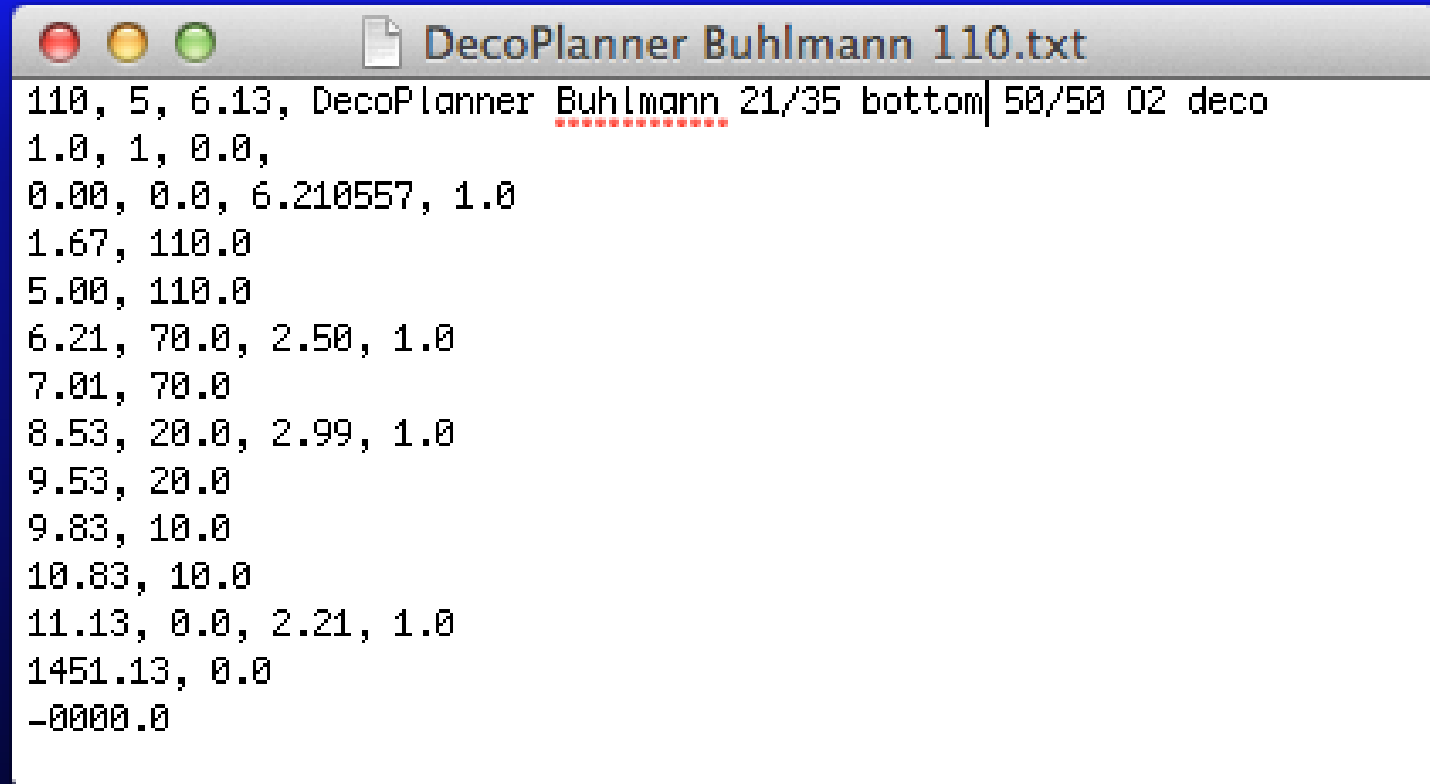
Probabilistic models

Risk predictions were made using the Linear Exponential Multi-gas Model (LEM).

This risk model is the NMRI98 model utilized in our previous work on the efficacy of oxygen decompression extended to include three diffusible gases, in this case oxygen, nitrogen, and helium.

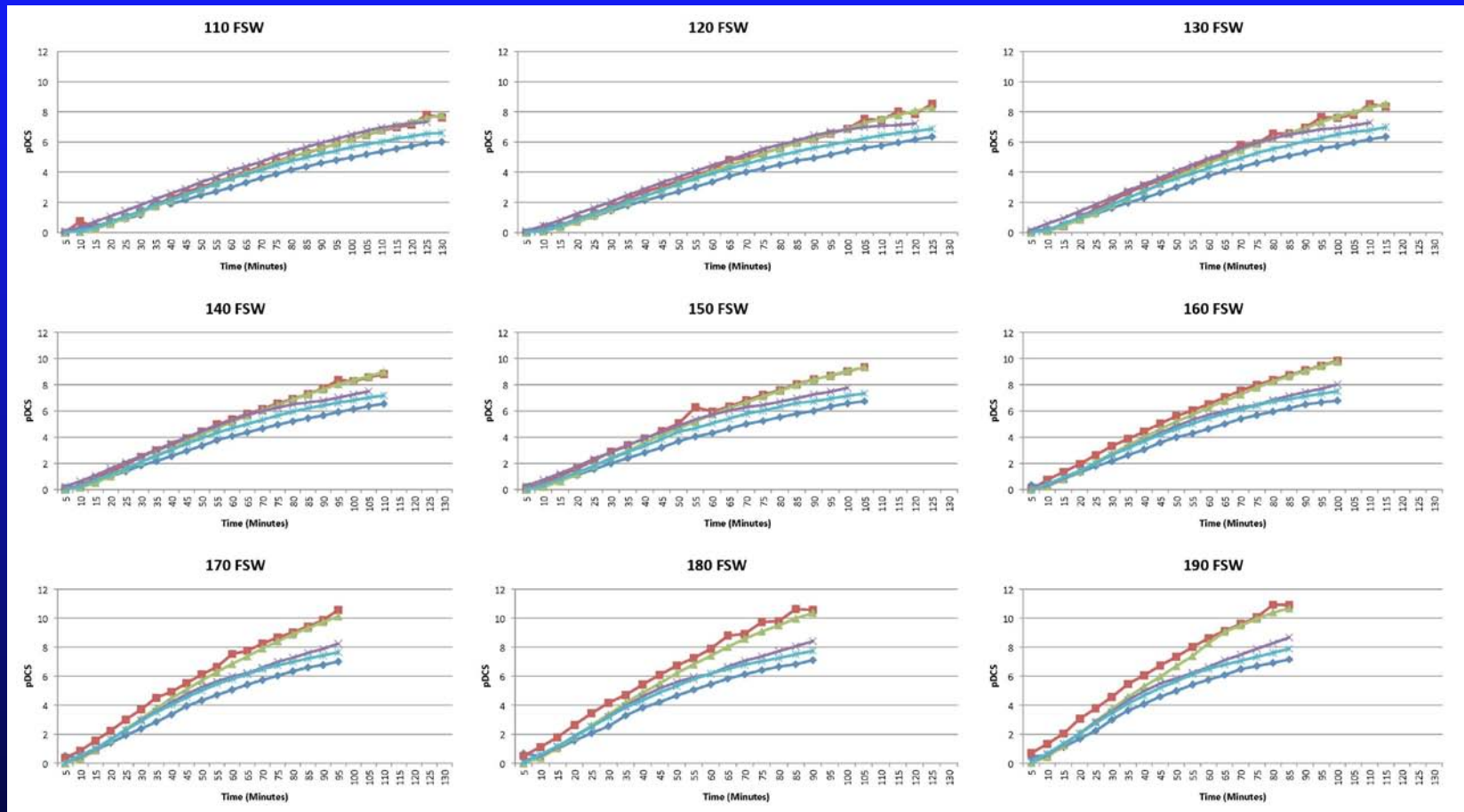
LEM was fit to the he8n25 data set which includes 4,669 dive trials split between 1,347 profiles.

Profile Formatting



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110, 5, 6.13, DecoPlanner Buhlmann 21/35 bottom| 50/50 02 deco
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0.00, 0.0, 6.210557, 1.0
1.67, 110.0
5.00, 110.0
6.21, 70.0, 2.50, 1.0
7.01, 70.0
8.53, 20.0, 2.99, 1.0
9.53, 20.0
9.83, 10.0
10.83, 10.0
11.13, 0.0, 2.21, 1.0
1451.13, 0.0
-0000.0
```

Profile Risk





Courtesy Amanda Cotton