



Measuring Optical Properties in Case 2 Waters: Some AOP and IOP Considerations

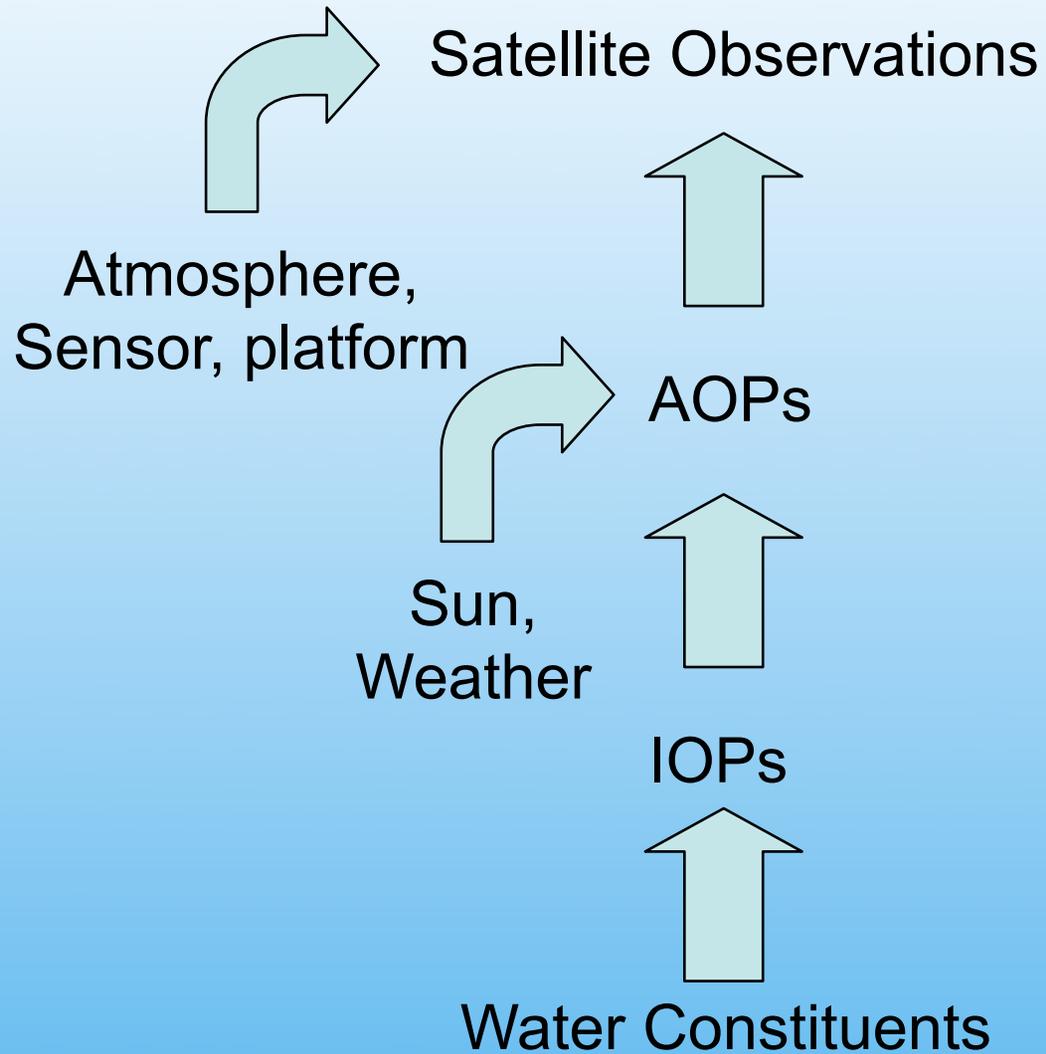
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Robert A. Maffione, Chief Scientist
HOBI Labs, Inc.



1. Hyperspectral and IOP Measurements

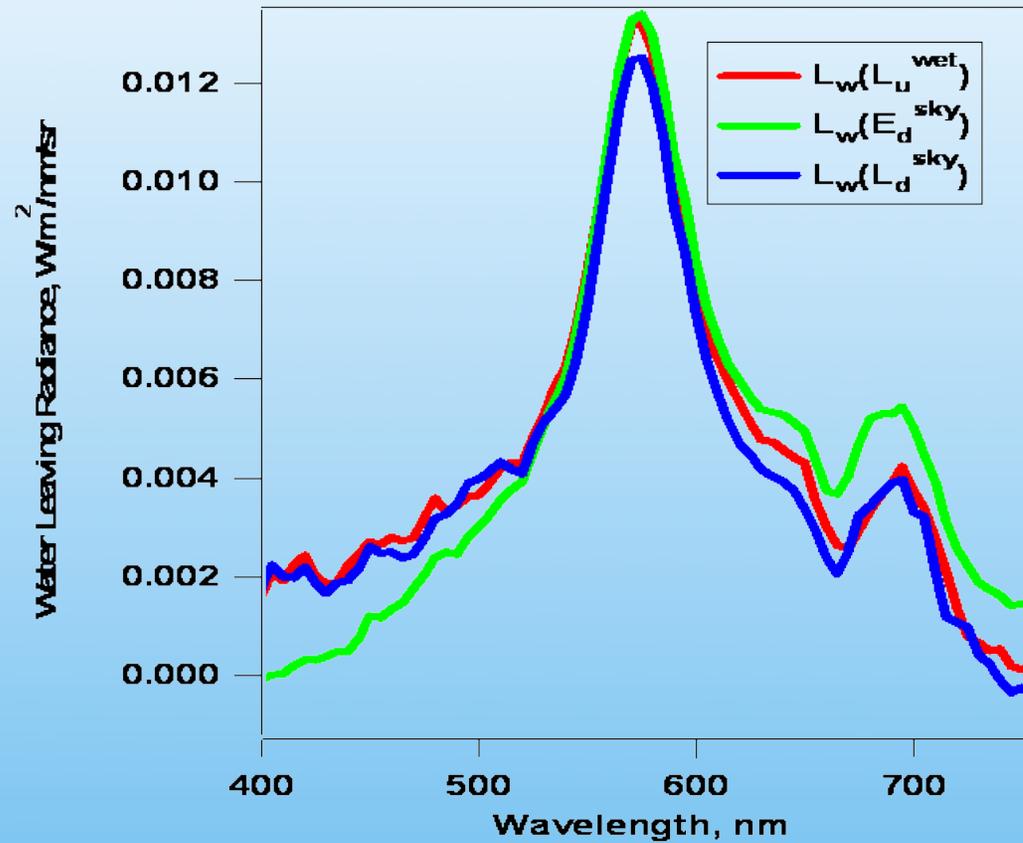


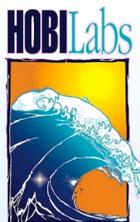
Why IOPs?



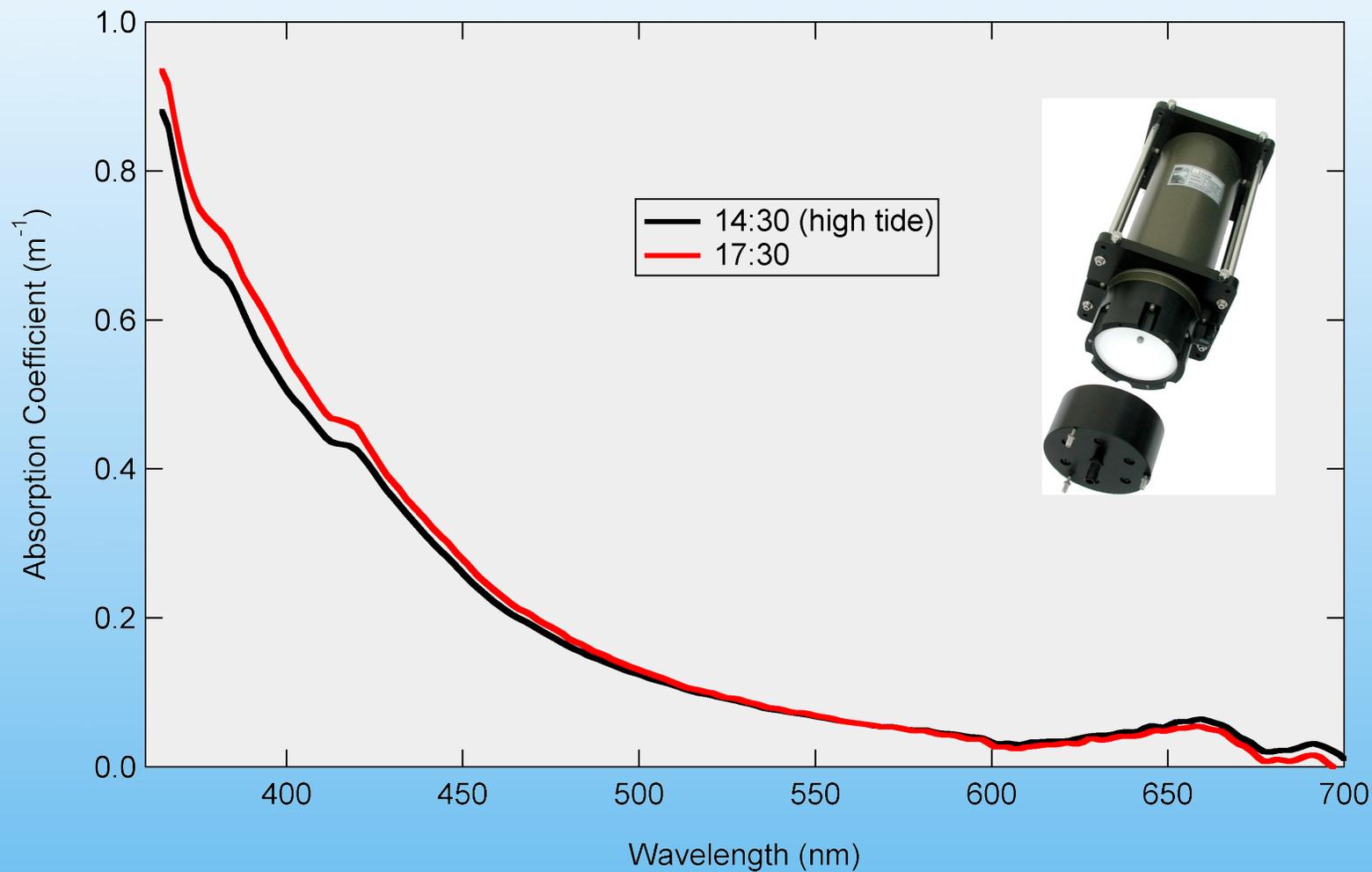


Why Hyperspectral Measurements?





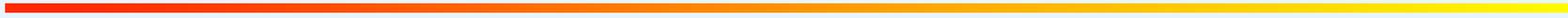
Why Hyperspectral Measurements?





Hyperspectral: What's Different?

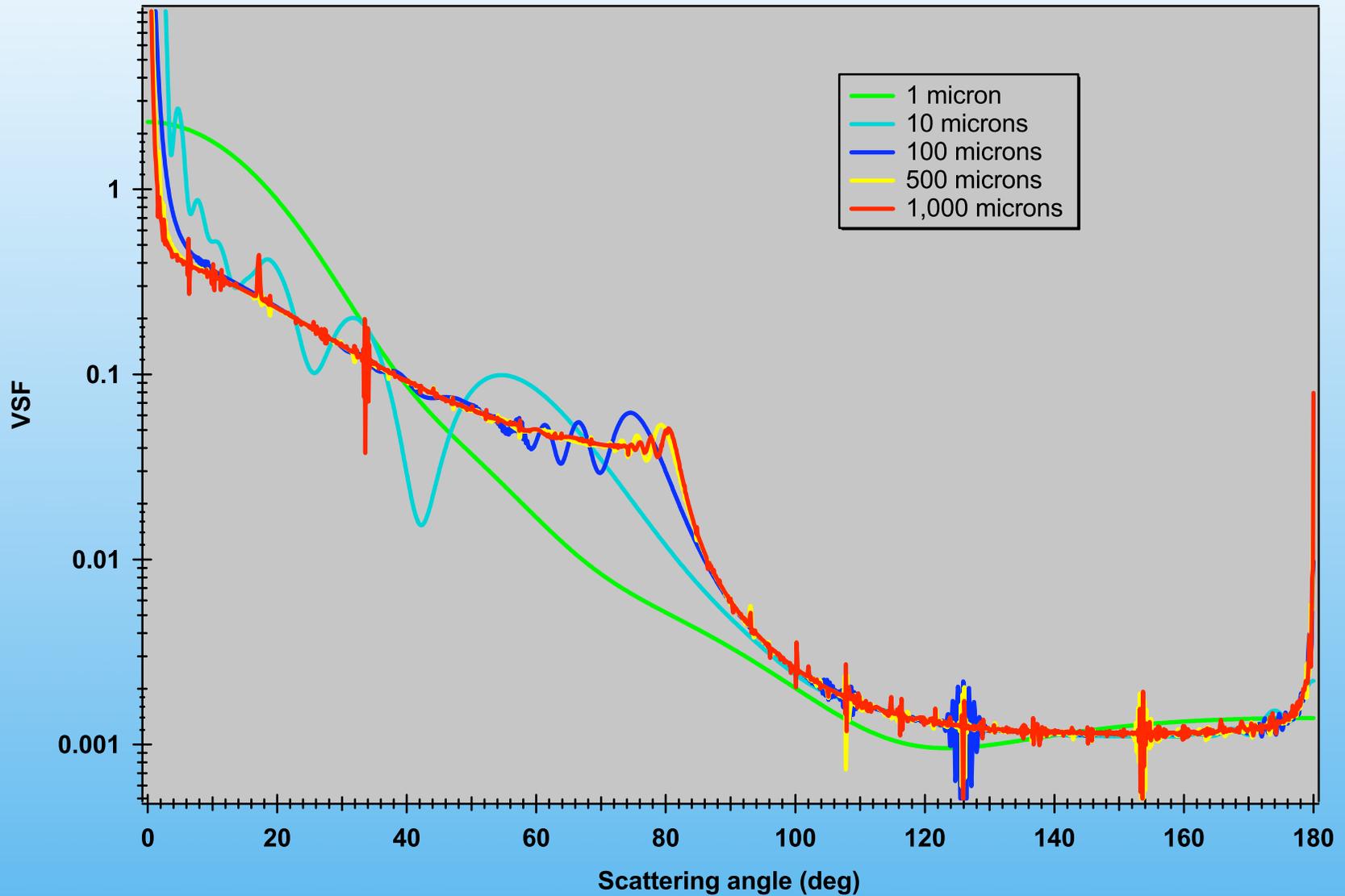
- Optical designs and detector characteristics vary
- Fiber optic light collectors
- Integration time and dynamic range
- Data density

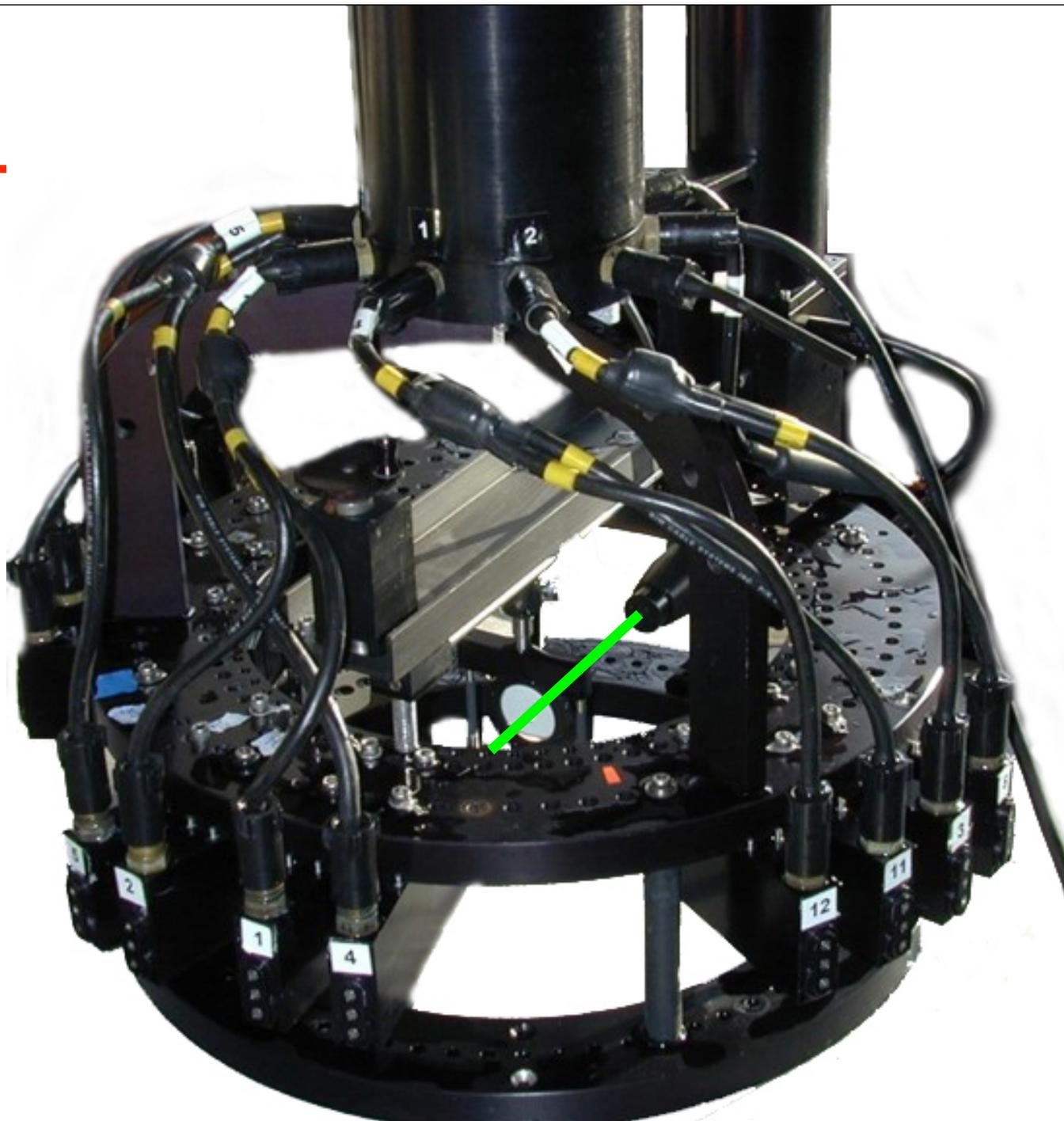
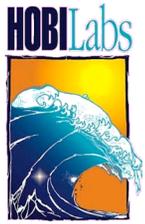


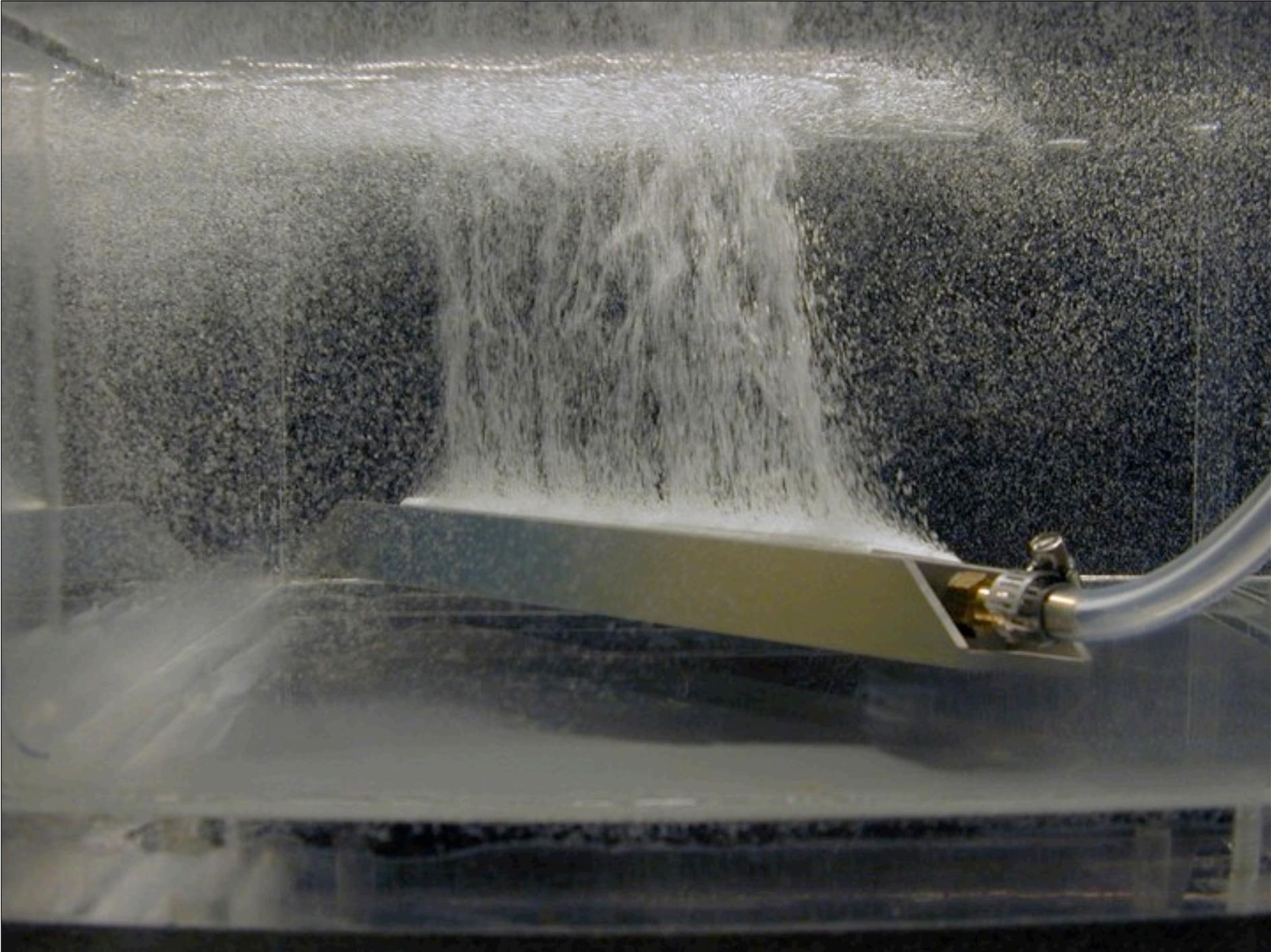
2. Bubbles

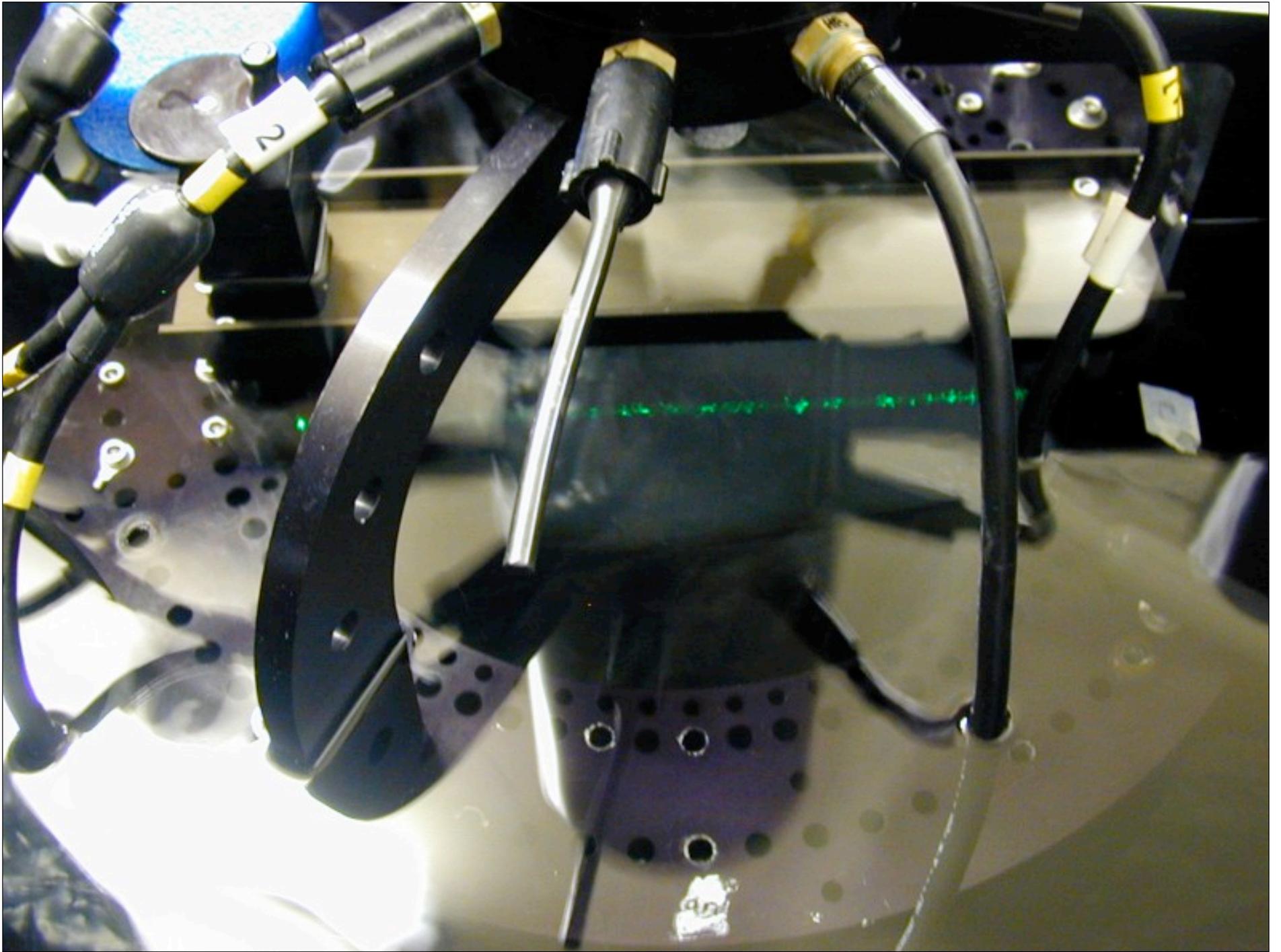


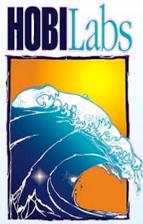
Calculated VSF of Bubbles



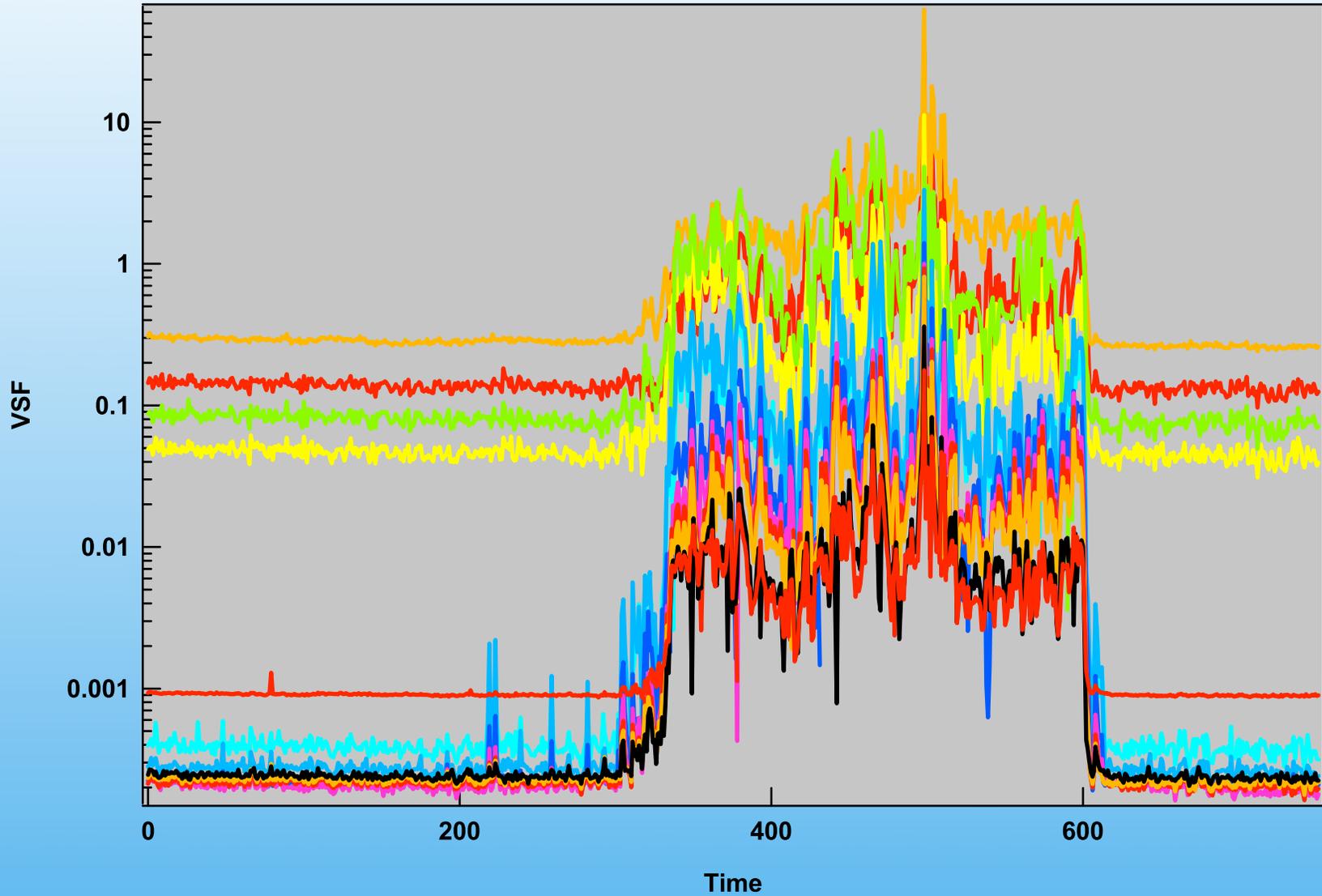






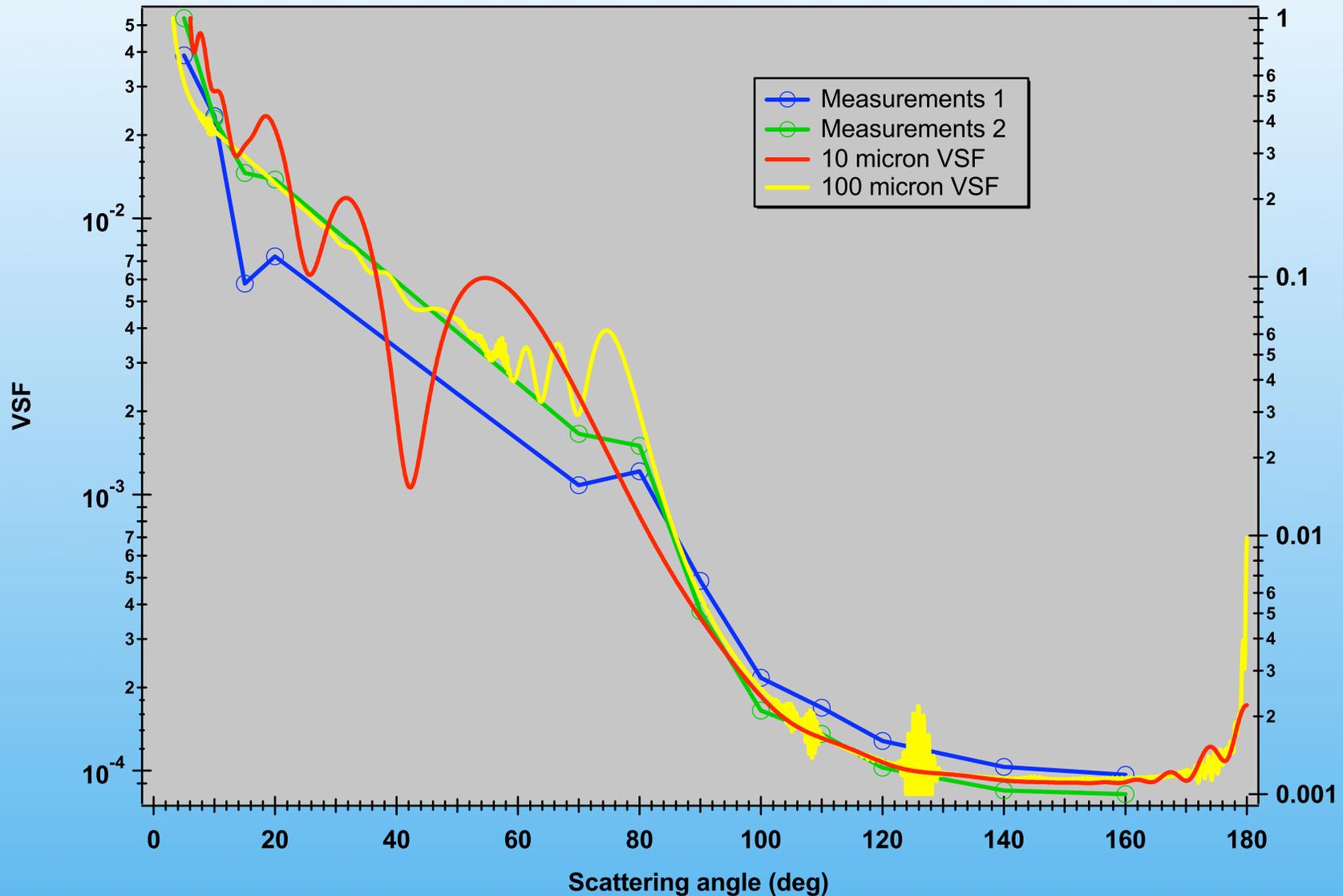


Bubble VSF Time Series



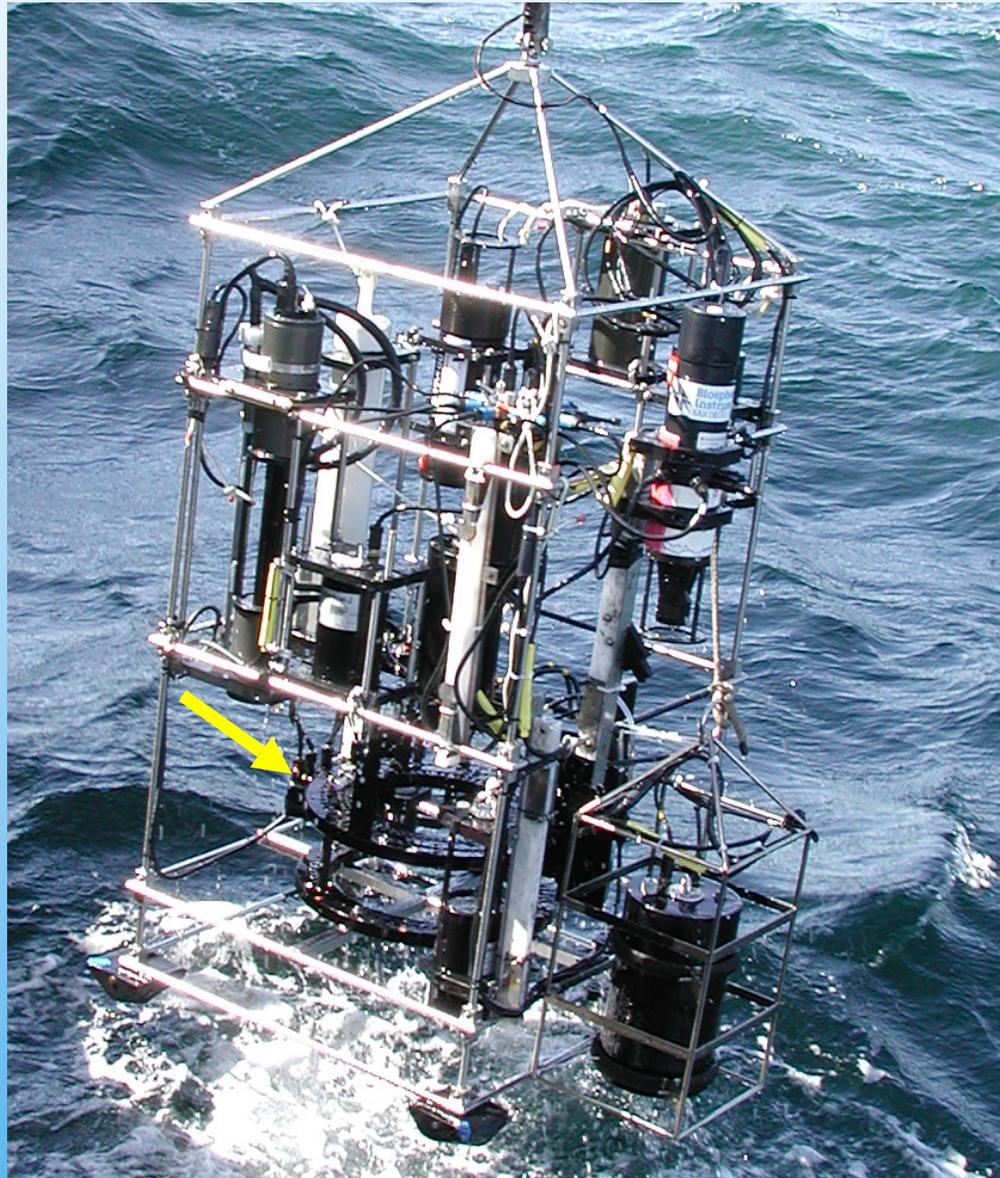


Bubble VSF Calculated and Measured

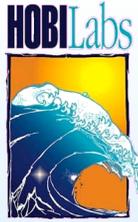




HydroProfiler with HydroBeta (etc)







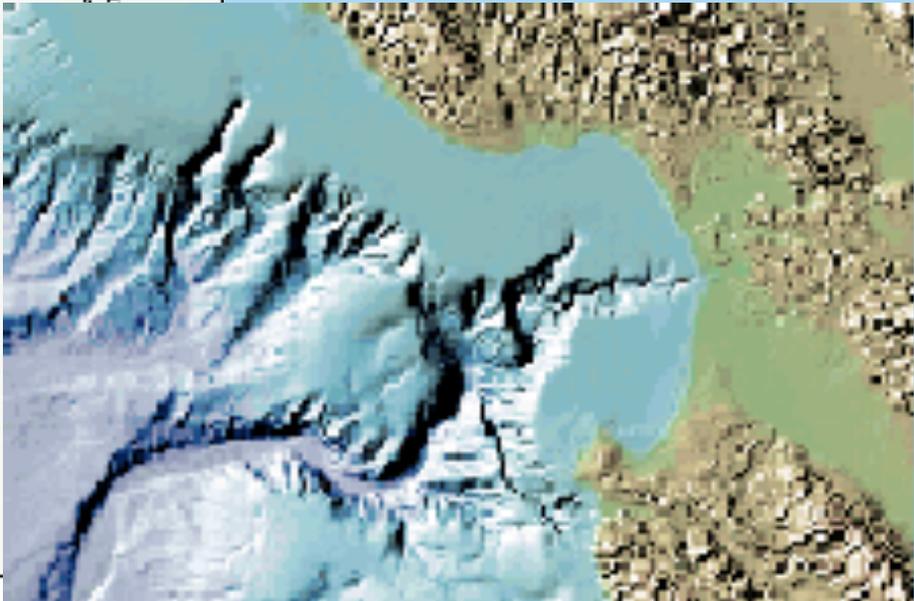
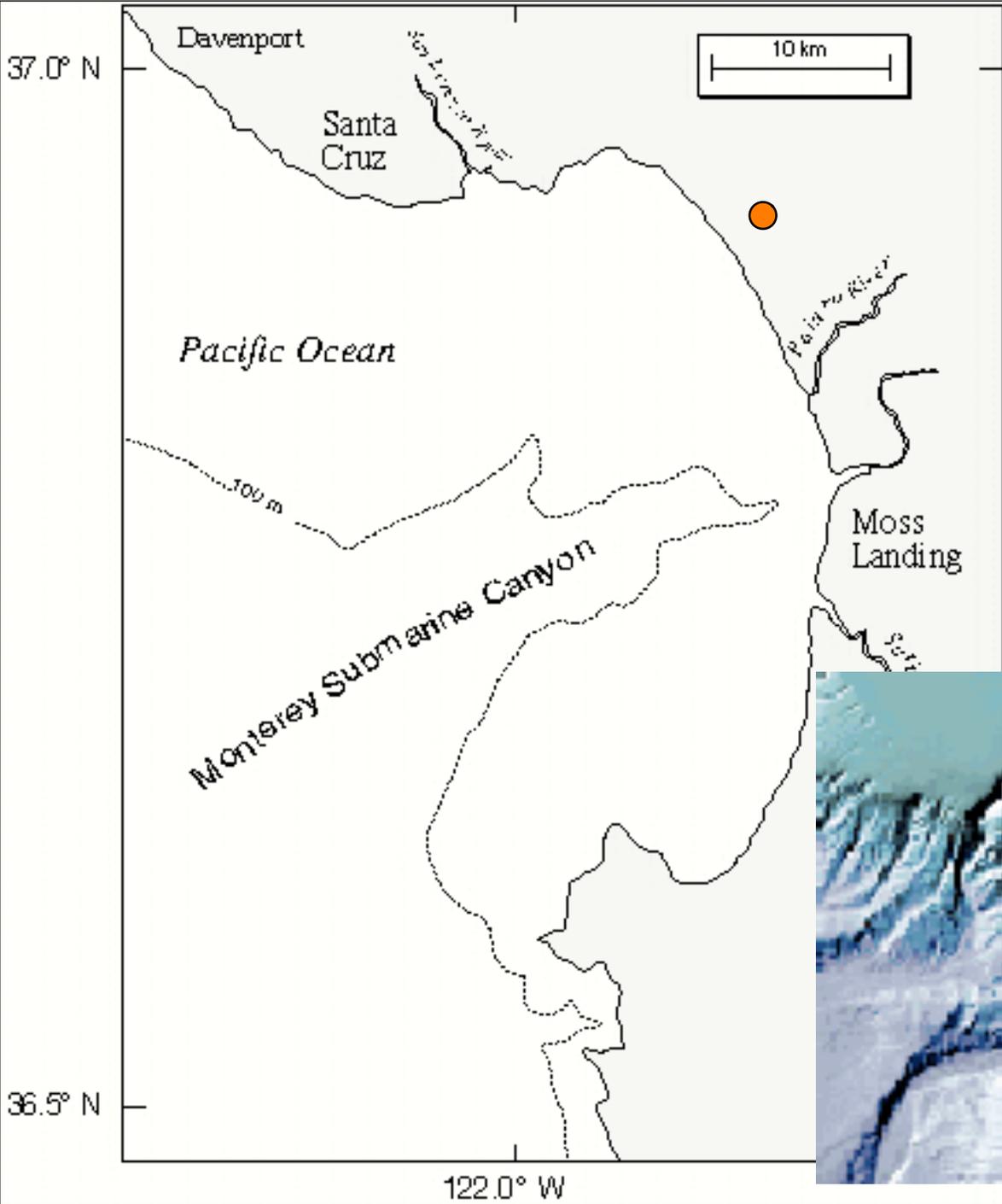
Bubble Experiment Results

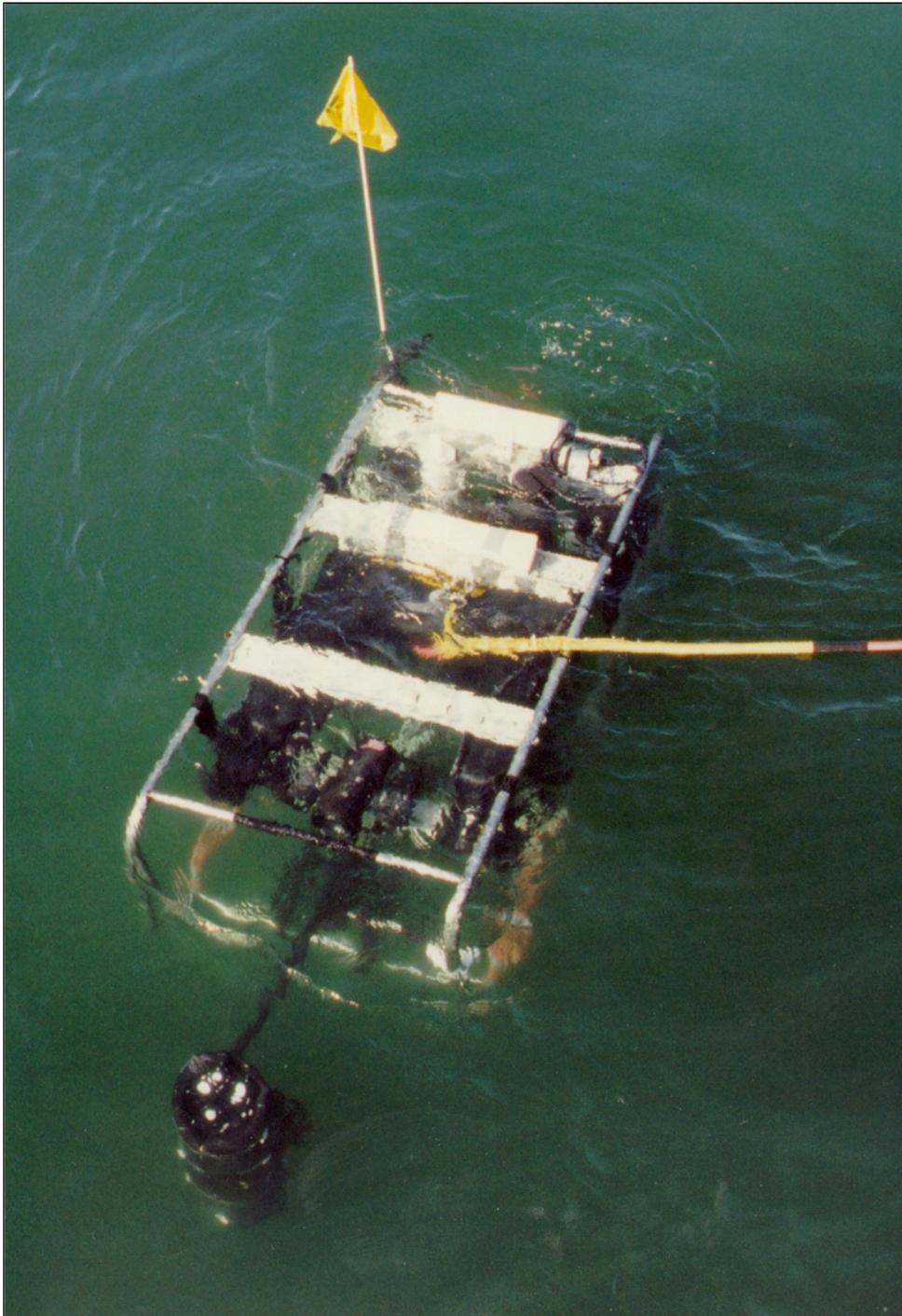
- HydroBeta detected characteristic bubble signature, but bubbles dissipated very rapidly.
- WALRUS observations of radiometric parameters also showed substantial, but short-lived, bubble effects.
- Bubble effects persist only if continually replenished by wind or waves.



3. Near-shore Internal Waves

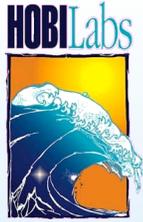
Monterey Bay



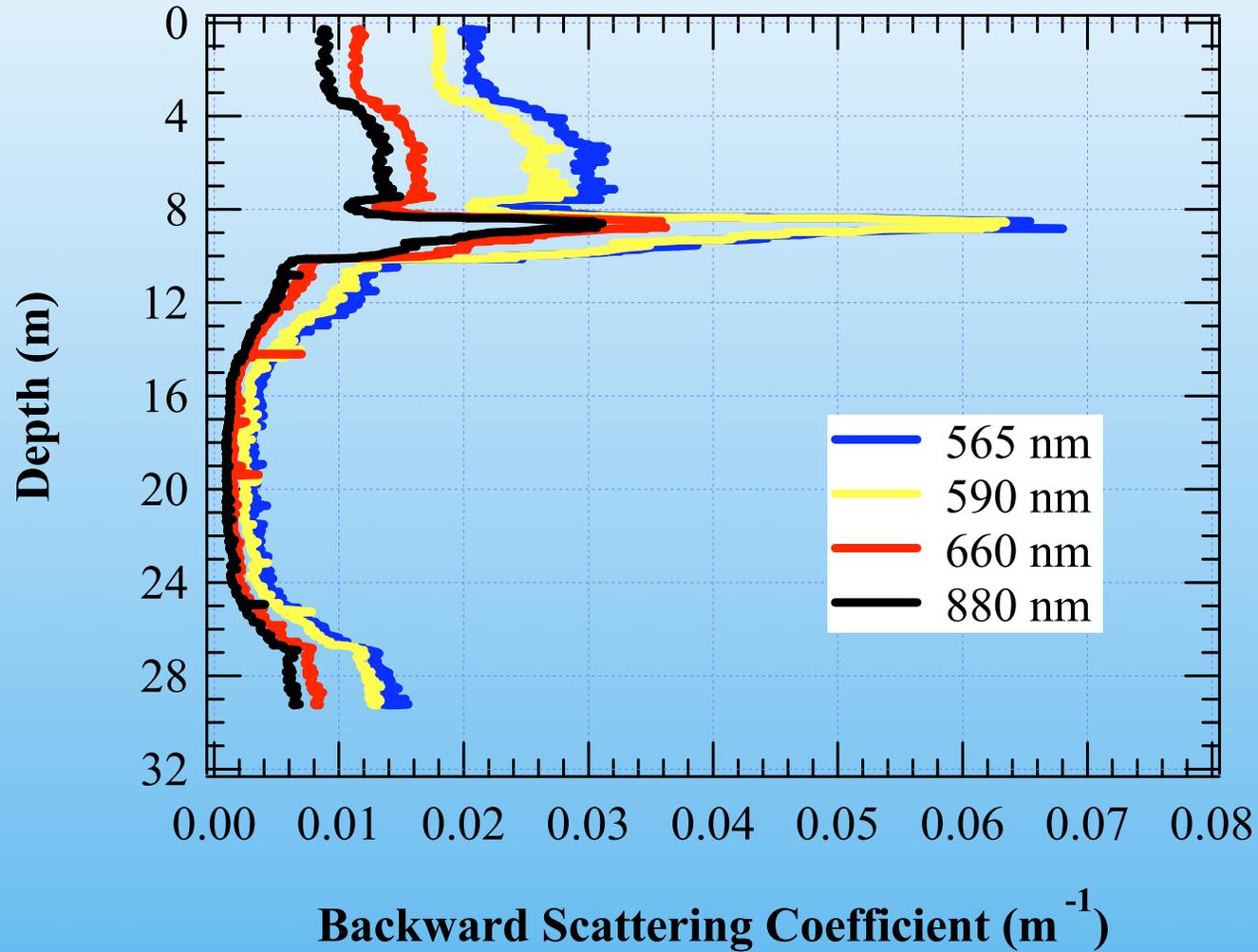


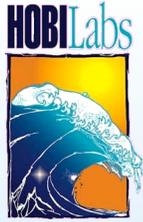
BORIS

**Bio-Optical
Remotely-operated
Instrumented
Submersible**

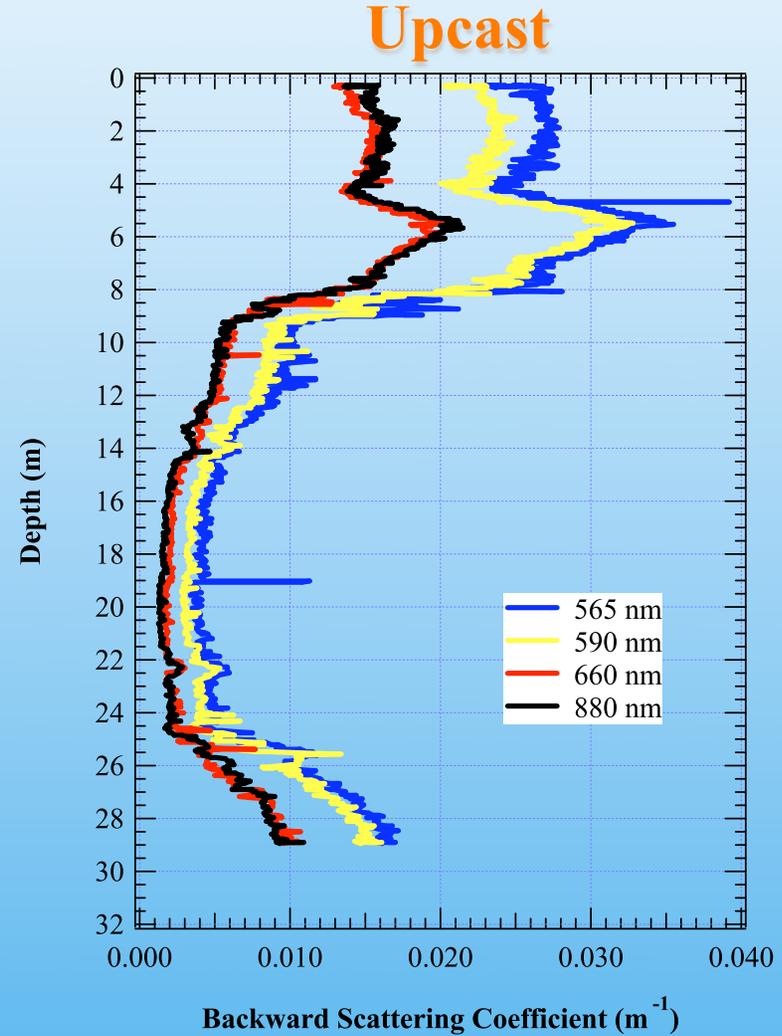
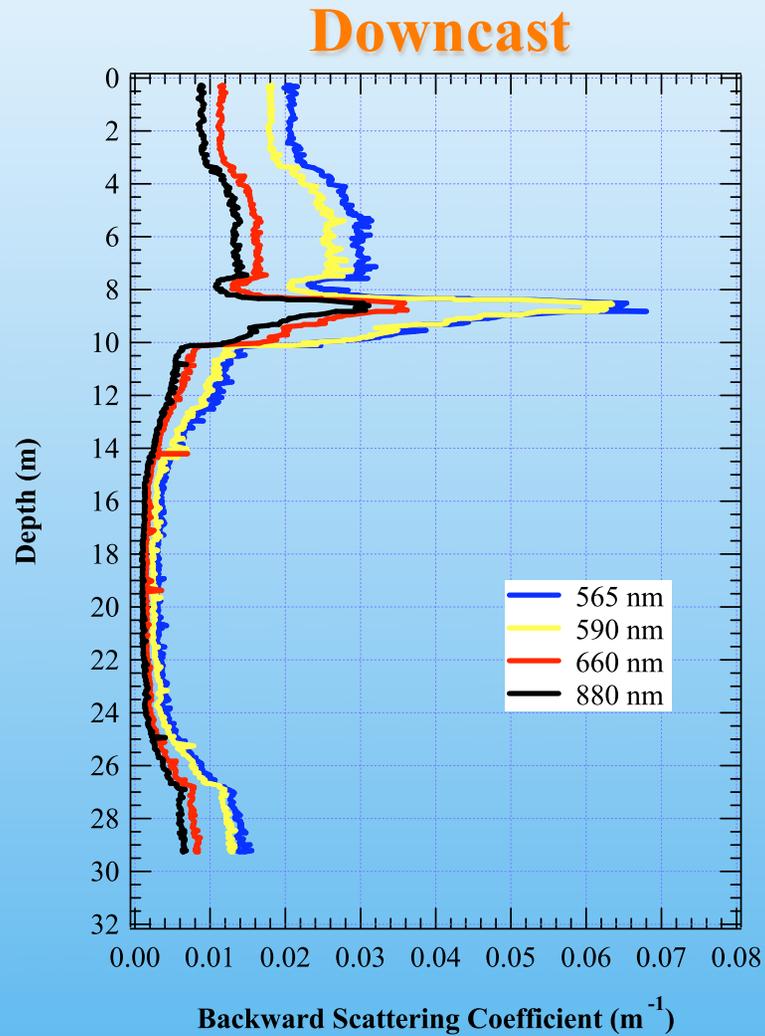


Thin Layer in Monterey Bay



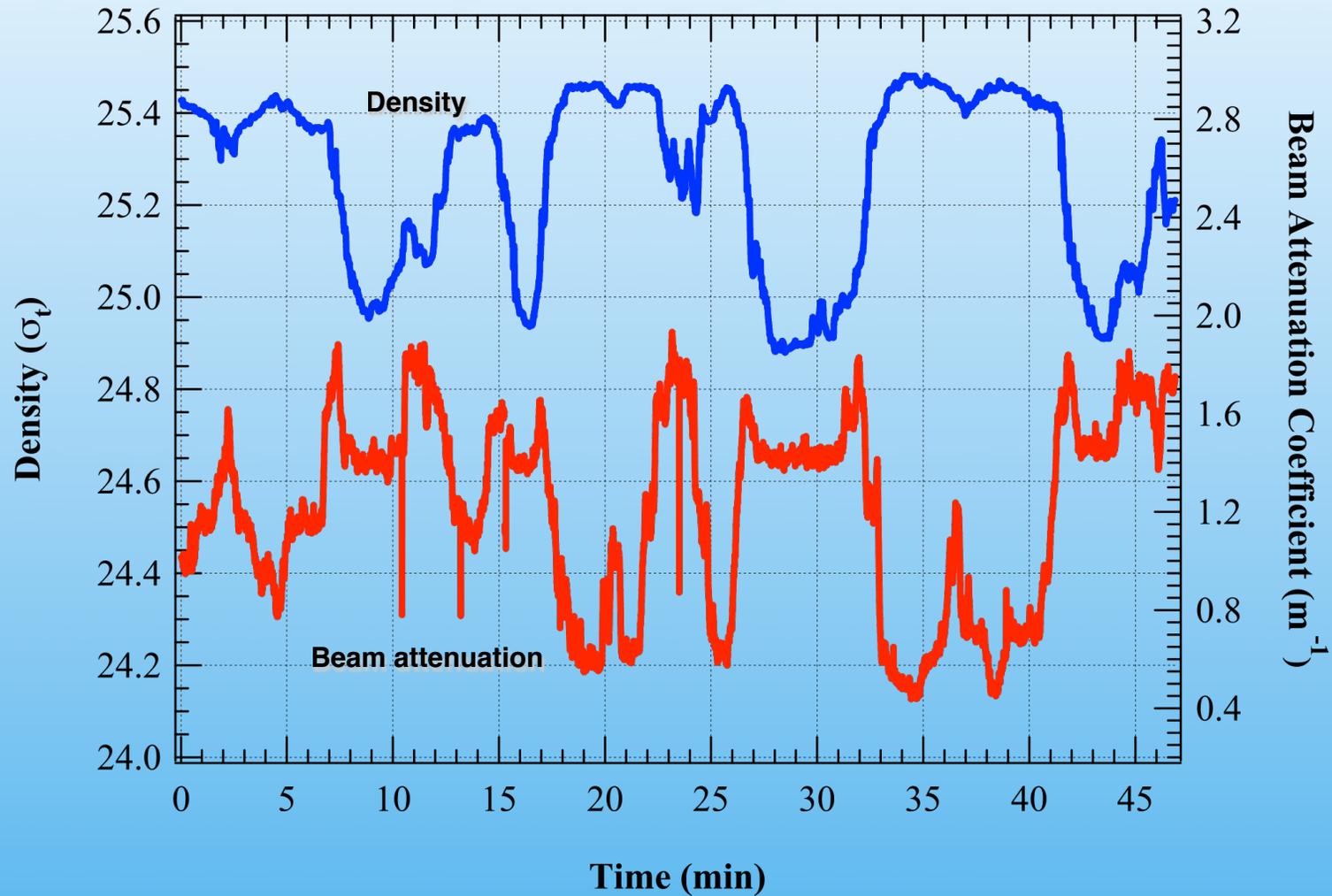


The layer shifts - rapidly!



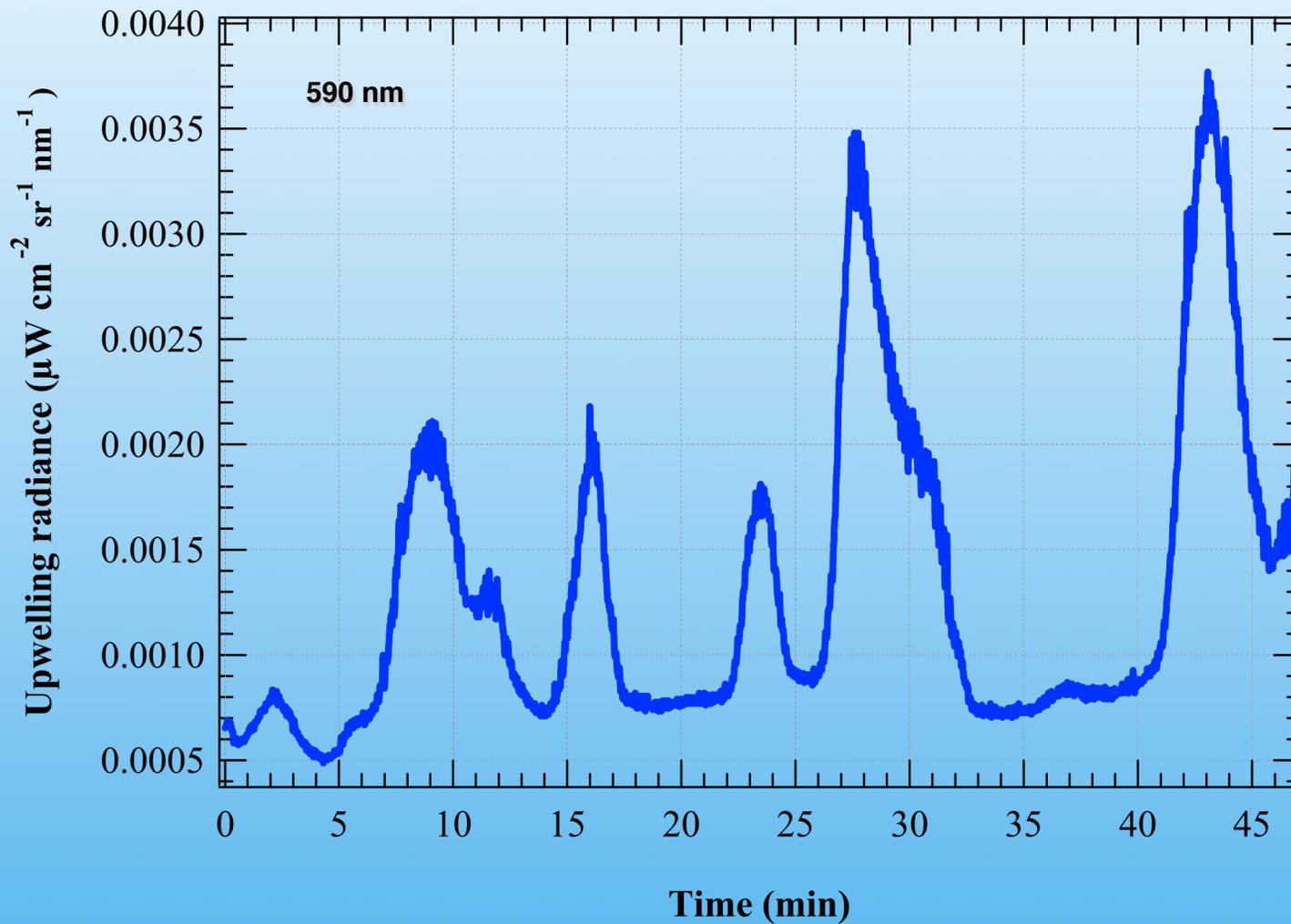


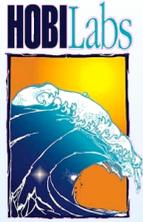
Internal Wave Revealed



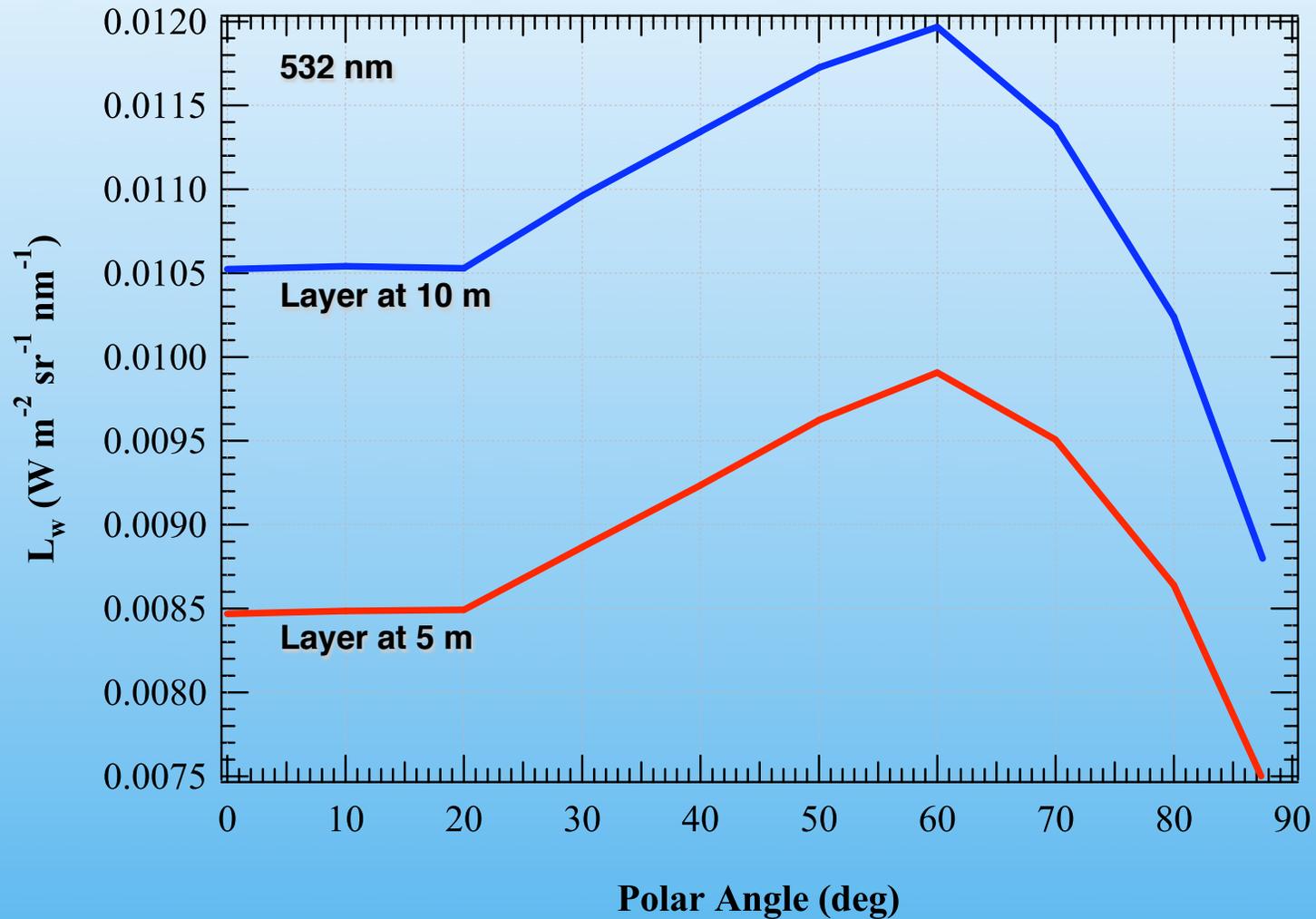


Optical Effects of a Near-Shore Internal Wave



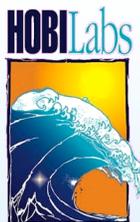


Modeled L_w for a Modulated 2-Layer System



The End





Why Hyperspectral Measurements?

