

PASI 2007 Lecture on Coastal Fronts – Outline v.1

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1. Phenomenology and Anatomy
2. Classification
 - a. Plume fronts
 - b. Mixing Fronts
 - c. Shear Fronts
 - d. Semi-geostrophic fronts
3. Laboratory and Numerical Analogs
 - a. The Simpson-Britter Experiments
 - b. The Linden-Simpson Experiments
 - c. Gawarkiewitz-Chapman Shelf Break Front
 - d. The Fong-Geyer Coastal Current Front
4. Quantitative Predictions and Observations
 - a. Mixing Front Locations: the Hunter-Simpson Criterion
 - b. Plume Front Propagation:
 - i. The hydraulic model
 - ii. The Garvine model
 - c. Plume Front Structure
 - i. The Britter-Simpson Model
 - ii. The Garvine Model
 - d. Plume Front Scales
 - i. A conjecture and some data
 - e. Shear Front Observations
5. Open Questions
 - a. Along Front Variations
 - b. Rates of Frontogenesis/Frontolysis
 - c. Ecological Consequences
 - d. Biogeochemical Consequences
6. Summary