

## Advanced Stratigraphy Reference Textbooks

Allen, Philip A., and Allen, John R. (1990) Basin Analysis. Principles and Applications. Blackwell, Oxford. [One of the few 'basin analysis' textbooks. Good for isostasy, backstripping, geodynamic models. Some discussion towards end about basin fill architecture] Emery, D., and Myers, K.J. (1996) Sequence Stratigraphy. Blackwell, Oxford. [A new text which is philosophically closest to how this course is taught...I haven't passed judgement on it. It seems to emphasize characterization over process]

Lemon, Roy R. (1990) Principles of Stratigraphy. Merrill, Columbus. [Basic strat. text]

Prothero, Donald R., and Schwab, Fred (1996) Sedimentary Geology. Freeman, New York. [good basic text]

Van Wagoner, J.C., Mitchum, R.M., Campion, K.M., and Rahmanian, V.D. (1990) Siliciclastic Sequence Stratigraphy in Well Logs, Cores, and Outcrops. American Association of Petroleum Geologists, Tulsa. [will come in handy later in the course when we focus on 2-D stratigraphy]

Walker, Roger G. (1984) Facies Models. Geological Association of Canada, Toronto. [key for interpreting rocks]

Walker, Roger G., and James, Noel P. (1992) Facies Models. Response to Sea Level Change. Geological Association of Canada, Toronto. [modification of first Walker text]

"1-D" Stratigraphy: \*'s are must read

Angevine, C.L., Heller, P.L., and Paola, C., 1988, Quantitative sedimentary basin modeling: Short course notes prepared for the 1988 Geological Society of America National Meeting, Denver, Colorado: p. 8-16.

Boss, S.K., Rasmussen, K.A., 1995, Misuse of Fisher plots as sea-level curves, *Geology*, v. 23, no. 3, p. 221-224. [uses Holocene transgression to argue carbonates do not keep up with sea level and hence do not record accommodation/eustacy.

Drummond, C.N., Wilkinson, B.H., 1993, Aperiodic accumulation of cyclic peritidal carbonate, *Geology*, v. 21, p. 1023-1026.

Drummond, C.N., Wilkinson, B.H., Aperiodic accumulation of cyclic peritidal carbonate: reply, *Geology*, May 1994, p. 479.

Gildner, R.F., and J.L. Cisne, 1990, Quantitative Modeling of Carbonate Stratigraphy and Water-Depth History Using Depth-Dependent Sedimentation Function, Cross, T.A. (ed.), *Quantitative Dynamic Stratigraphy*, Prentice Hall, New Jersey (need to read this for computer lab).

\*Goldhammer, R.K., Dunn, P.A., and Hardie, L.A., 1987, High frequency glacio-eustatic sea level oscillations with Milankovitch characteristics recorded in the Middle Triassic platform carbonates in northern Italy: *American Journal of Science*, v. 287, p. 853-892.

Grotzinger, J.P., 1986, Cyclicity and paleoenvironmental dynamics, Rocknest Platform, northwest Canada, *Geological Society of America Bulletin*, v. 97, p. 1208-1231.

\*James, N.P., Shallowing-Upward Sequences in Carbonates, in R. Walker (ed.), *Facies Models*, p. 214-228.

Osleger, D., 1994, Aperiodic accumulation of cyclic peritidal carbonate: comment, *Geology*, May 1994, p. 479.

\*Posamentier, H.W., Jervey, M.T., and Vail, P.R., 1988, Eustatic controls on clastic deposition 1--conceptual framework, in *Sea-Level Changes--An integrated Approach: SEPM Special Publication 42*, p. 109-124. (specifically p. 109-116, through "one-dimensional model").

\*Read, J.F., and Goldhammer, R.K., 1988, Use of Fisher plots to define third-order sea-level curves in Ordovician peritidal cyclic carbonates, Appalachians. *Geology*, v. 16, p. 895-899.

Read, J.F., Grotzinger, J.P., Bova, J.A., and Koerschner, W.F., 1986, Models for generation of carbonate cycles, *Geology*, v. 14, p. 107-110. (one of the first carbonate cycle modeling papers)

\*Schlager, W., 1981, The paradox of drowned reefs and carbonate platforms, *Geological Society of America Bulletin*, Part 1, v. 92, p. 197-211.

Sclater, J.G., and Christie, P.A.F., 1980, Continental stretching: an explanation of the post-mid Cretaceous subsidence of the Central North Sea Basin: *JGR*, v. 85, p. 3711-3739 (Appendix A, p. 3730-3735 illustrates the classic backstripping approach...a landmark paper).

\* Suppe, J., 198?, *Principles of Structural Geology*: Prentice-Hall, Inc. Chapter 1 (p. 17-24). (This is the isostasy exercise that I handed out in class).

## 2-D Stratigraphy

Cross, T. A., and Lessenger, M., 1988, *Seismic Stratigraphy*: *Ann. Rev. Earth Planet. Sci.*, v.16, p. 319-354 [read 332-335]. Defines unconformities (angular, disc., non...). Begins discussion of onlap and offlap (p.314).

Cross, T.A., 1988, Controls on coal distribution in transgressive-regressive cycles, Upper Cretaceous, western interior, U.S.A., in *Sea-Level CHanges--An Integrated*

Approach: SEPM Special Publication 42, p.371-380 [specifically, p. 373-378, section titled "origin of progradational events and stacking geometries"].

Jervey, M.T., 1988, Quantitative geological modeling of siliciclastic rock sequences and their seismic expression, in *Sea-Level Changes--An integrated Approach: SEPM Special Publication 42*, p.47-69 [specifically 47-end 50].

Kidwell, S.M., 1988, Reciprocal sedimentation and-correlative hiatuses in marine-paralic siliciclastis: Miocene outcrop evidence: *Geology*, v. 16, p. 609-612. [a classic outcrop analogue of proximal and distal record of relative sea-level change...understand this and how it relates to 'sequence terminology'].

Krumbein, W.C., and Sloss, L.L., 1963, *Stratigraphy and Sedimentation (2nd Edition)*: W.H. Freeman and Company, 660 p. 304-308.

Leckie, D.A., Singh, C., Goodarzi, F., and Wall, J.H., 1990, Organic-rich, radioactive marine shale: a case study of a shallow-water condensed section, Cretaceous Shaftesbury Formation, Alberta, Canada: *Jour. Sedimentary Petrology*, v. 60, p. 101-117. [this is the paper I presented in class, discussing characteristics of a condensed section..a beautiful characterization of a transgressive surface].

Loutit, T., Hardenbol, J., Valir, P.R., Baum, G. R., Condensed sections, the key to age dating and correlation of continental margin sequences, *SEPM 42*, p.183.

Medwedeff, D. A. 1989, Growth Fault-Bend folding at southeast Lost Hills, San Joaquin Valley, California: *AAPG Bulletin*, v. 73, p. 54-67. [just flip through this to get the concept].

Wheeler, H.E., 1964, Baselevel, lithosphere surface, and time-stratigraphy: *GSAB*, v.75, p.599-610. An absolutely classic paper that brings in concept of 'baselevel' in very qualitative terms. Directly addresses the 'baselevel transit cycle' which is the father of the depositional sequence. Every stratigrapher should know the concepts presented in his paper. The concept of baselevel is really a diffusive concept as presented here.

#### Critical Reads for Sequence/Seismic Stratigraphy:

Jervey, M.T., 1988, Quantitative geological modeling of siliciclastic rock sequences and their seismic expression, in *Sea-Level Changes --An integrated Approach: SEPM Special Publication 42*, p.47-69 [specifically 47-end 50].

Mitchum, R. M., Jr., Vail, P.R., and Thompson, S., III, 1977, Seismic stratigraphy and global changes of sea level, part 2;: the depositional sequence as a basic unit for stratigraphic AAPG Memoir 26, p.53-62. (one of the classics)

Posamentier, H.W., Jervey, M.T., and Vail, P.R., 1988, Eustatic controls on clastic deposition 1&2--conceptual framework, in *Sea-Level Changes--An integrated Approach*:

SEPM Special Publication 42, p.109-124 [specifically p.109-116, through “one-dimensional model”].

Vail, P.R., Todd, R.G., Sangree, J.B., 1977, Seismic stratigraphy and global changes of sea level, part 5: chronostratigraphic significance of seismic reflections: in *Seismic Stratigraphy - applications to hydrocarbon exploration*, C.E. Payton, ed., AAPG Memoir 26, p.99-116. (this addresses an important philosophical issue, still debated, namely, what is reflector in terms of geologic significance).

Van Wagoner et al., 1988, An overview of the fundamentals of sequence stratigraphy and key definitions: SEPM Special Publication 42, p.39-45.

Van Wagoner, J.C., Mitchum, R. M., Campion, K.M., and Rahmanian, V.D., 1990, Siliciclastic sequence stratigraphy in well logs, cores, and outcrops: concepts for high-resolution correlation of time and facies, *AAPG Methods in Exploration Series*, No. 7, p.55.

Seismic Stratigraphy - other references:

Boyd, R., Suter, J., and Penland, S., 1989, Relation of sequence stratigraphy to modern sedimentary environments: *Geology*, v. 17, p.926-929.

Cross, T. A., and Lessenger, M., 1988, Seismic stratigraphy: *Ann. Rev. Earth Planet. Sci.*, v. 16, p.319-354 (this week: p.319-332).

Sherriff, R.E., 1977, Limitations on resolution of seismic reflections and geologic detail derivable from them, in *Seismic Stratigraphy - applications to hydrocarbon exploration*, C.E. Payton, ed., AAPG Memoir 26, p. 1-14. (Succient analysis of how rock property ties to seismic).