

## GI251 Event Stratigraphy

### Faculty of Science

Autumn 2022

### Extent and Intensity

2/1/0. 5 credit(s). Type of Completion: zk (examination).

Taught in person.

### Teacher(s)

Jeffrey Over (lecturer), Office: 01004a; [Mgr. Tomáš Kumpan, Ph.D.](#) (deputy)

[Mgr. Tomáš Kumpan, Ph.D.](#) (alternate examiner)

### Guaranteed by

[Mgr. Tomáš Kumpan, Ph.D.](#)

[Department of Geological Sciences - Earth Sciences Section - Faculty of Science](#)

Contact Person: [doc. Mgr. Martin Ivanov, Dr.](#)

Supplier department: [Department of Geological Sciences - Earth Sciences Section - Faculty of Science](#)

### Timetable

Tuesday 10:00 - 12:50

### Prerequisites (in Czech)

G3061 Historická a stratigrafická geologie, G3021 Petrografie

### Course Enrolment Limitations

The course is also offered to the students of the other fields.

The capacity limit for the course is 45 student(s).

Current registration and enrolment status: enrolled: 0/45, only registered: 9/45, only registered with preference (fields directly associated with the programme): 9/45

### Fields of study / plans the course is directly associated with

there are 60 fields of study the course is directly associated with, [display](#)

### Course objectives (in Czech)

Introduction of the concepts, principles, development, and practical application of event stratigraphy in understanding earth history from the Precambrian through the Holocene.

### Learning outcomes (in Czech)

Upon successful completion of this course, students will be able to: 1) summarize the principal types of events and outline how they develop and are manifested/recognized in the stratigraphic record 2) summarize the scale of different events and the recognition of how events shaped earth history 3) outline the utility of events in correlation and role in the relative time scale 4) summarize key events and give examples in each period of the geological time scale

## Tentative schedule

Week 1	13 Sept (no meeting)	field courses
Week 2	20 Sept	Introductions. Introduction to geologic time and correlation; scale and nature of events, reading assignments
Week 3	27 Sept (holiday) - no class -	
Week 4	04 Oct	preservation of event horizons and beds; discussion of articles; determination of presentations for future meetings reading assignment – Carney and Pierce, 1995; <a href="https://geocopy.wordpress.com/2016/01/11/graphic-correlation/">https://geocopy.wordpress.com/2016/01/11/graphic-correlation/</a>
Week 5	11 Oct	Graphic correlation determination that events can be correlated - assignment Schmidt vs Benner; Lali section vs Lali section; Lali composite vs CS of Klapper  paper topic and presentation topics determined
Week 6	18 Oct	Archean and Proterozoic events, presentation (Over)
Week 7	25 Oct (alien appointment)	Cambrian and Ordovician events, presentation assignment use data set from Akzo cores in Marcellus interval (Kumpan)
Week 8	01 Nov	Silurian and Devonian events, presentation; Damborský Submission of paper outline and bibliography
Week 9	08 Nov	Carboniferous and Permian events, presentation Kozáková
Week 10	15 Nov	Triassic and Jurassic events, presentation Hykš
Week 11	22 Nov	Cretaceous events, presentation Sotorrio González
Week 12	29 Nov	Paleogene events, presentation Dubjelová Submission of paper
Week 13	06 Dec	scale of modern Neogene events, Anthropocene, presentation Khoshyar
Week 14	13 Dec	review and exam concepts resubmission of paper

## Literature

### Required literature

Kauffman, E.G., 1988. Concepts and methods of high-resolution event stratigraphy. *Annual Reviews in Earth and Planetary Sciences* 16:605-654.

Simmons, M.D., Miller, K.G., Ray, D.C., Davies, A., van Buchem, F.S.P., and Greselle, B., 2020, Phanerozoic Eustasy. In Gradstein, F.M., Ogg, J.G., Schmitz, M., Ogg, G. (eds.), *The Geologic Time Scale 2020*. Elsevier, Amsterdam, p. 357-400.

### Not specified

see below

## Teaching methods

Theoretical lectures, assignments, group discussion and presentations

### Assessment methods

Written test - nomenclature; assignments, evaluation of presentation

Assignments	25 %
Research paper	25 %
Presentations and participation	25 %
Exam	25 %
Total	100 %

### Language of instruction

English

### Follow-Up Courses

- [GI261 Cyclostratigraphy and Astrochronology](#)

### Further Comments

The course can also be completed outside the examination period.

The course is taught only once.

The course is taught: every week.

The course is also listed under the following terms [Spring 2022](#).

### Event Stratigraphy key references

Becker, R.T., and Kirchgasser, W.T., (editors), 2007. Devonian Events and Correlation. Geological Society Special Publication 278, 280 p.

Carney, J.L., Pierce, R.W., 1995. Graphic correlation and composite standard databases as tools for the exploration biostratigrapher. SEPM Spec. Publ. 53, 23–43.

Danielsen, E.M., Cramer, B.D., and Kleffner, M.A. 2019. Identification of a global sequence boundary within the upper Homerian (Silurian) Mulde event; high-resolution chronostratigraphic correlation of the Midcontinent United States with Sweden and the United Kingdom. *Geosphere* 15:839-855.

Edwards, L.E., 1984. Insights on why graphic correlation (Shaw's method) works. *J. Geol.* 92, 583–597.

Edwards, L.E., 1989. Supplemented graphic correlation: a powerful tool for paleontologists and nonpaleontologists. *PALAIOS* 4, 127–143.

Edwards, L.E., 1995. Graphic correlation: some guidelines on theory and practice and how they relate to reality. SEPM Spec. Publ. 53, 45–50.

Einsele G., Ricken, W., and Seilacher, A. (editors), 1991. *Cycles and Events in Stratigraphy*. Springer-Verlag, New York, 955 p.

Gerhardt, A.M., and Gill, B.C., 2016. Elucidating the relationship between the later Cambrian end-Marjuman extinctions and SPICE Event. *Palaeogeography, Palaeoclimatology, Palaeoecology* 461:362-373.

Hu, Z., Li, W., Zhang, H., Krainer, K., Zheng, Q., Xia, Z., Hu, W., and Shen, S., 2021. Mg isotope evidence for restriction events within the Paleotethys ocean around the Permian-Triassic transition. *Earth and Planetary Science Letters* 556:article 116704.

Kauffman, E.G., 1988. Concepts and methods of high-resolution event stratigraphy. *Annual Reviews in Earth and Planetary Sciences* 16:605-654.

Mann, K.O., Lane, H.R. (Eds.), 1995. *Graphic correlation*. SEPM Society for Sedimentary Geology Spec. Publ. no. 53 (263 pp.).

Milia, A., Morabito, S., and Petrosino, P., 2020. Late Pleistocene-Holocene climatic and volcanic events in the bathyal area of the eastern Tyrrhenian Sea and the stratigraphic signature of the 39 ka Campanian Ignimbrite eruption. *Global and Planetary Change* 185:article 103074.

Shaw, A.B., 1964. Time in Stratigraphy. McGraw-Hill, p. 365.

Wagreich, M., Hart, M., Sames, B., and Yilmaz, I.O. (editors), 2019. Cretaceous Climate Events and Short-Term Sea Level Changes. Geological Society Special Publication 498, 266 p.