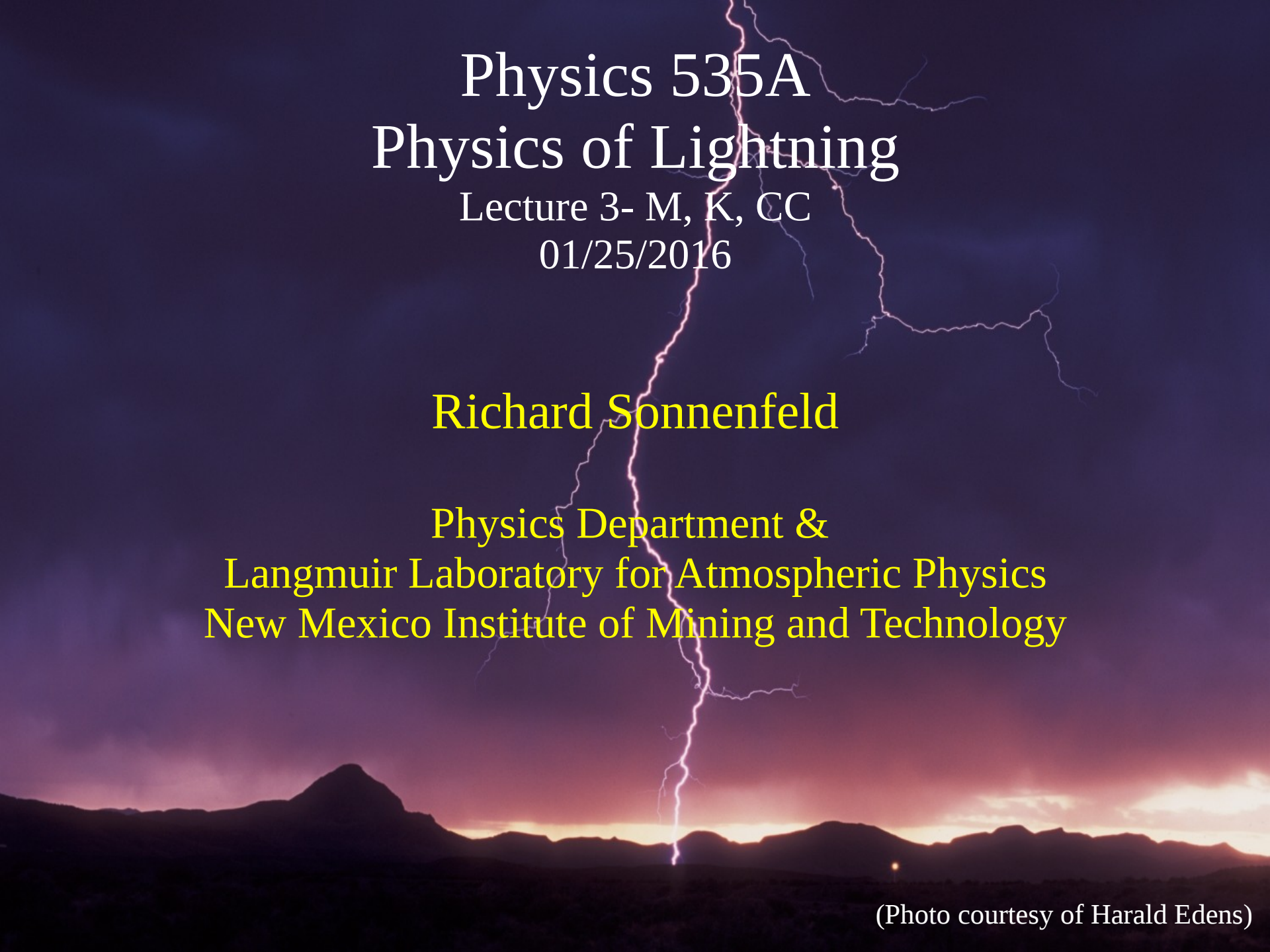
Physics 535A
Physics of Lightning

Lecture 3- M, K, CC

01/25/2016

Richard Sonnenfeld

Physics Department &
Langmuir Laboratory for Atmospheric Physics
New Mexico Institute of Mining and Technology



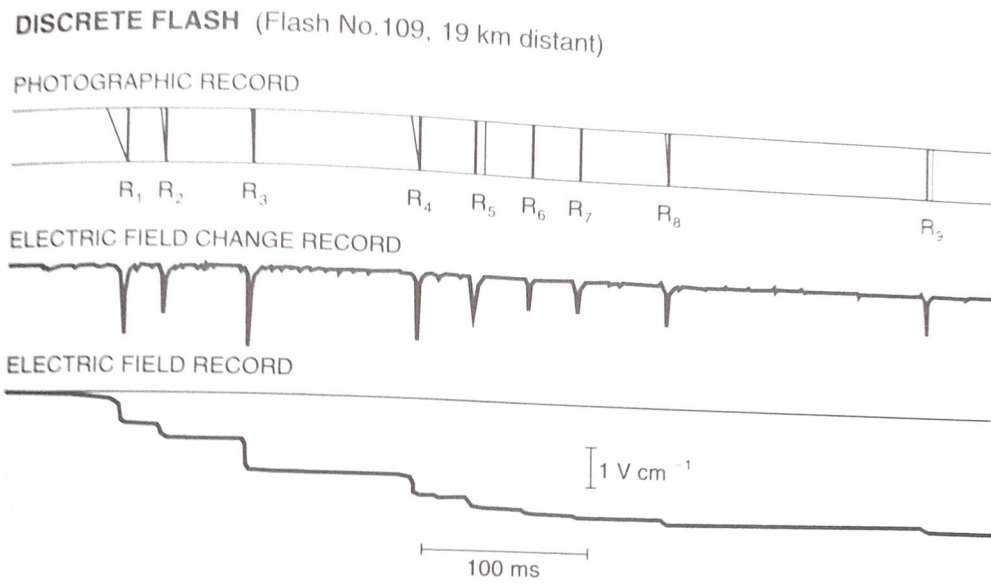
(Photo courtesy of Harald Edens)

Watching a lightning flash with the Digital broadband interferometer.

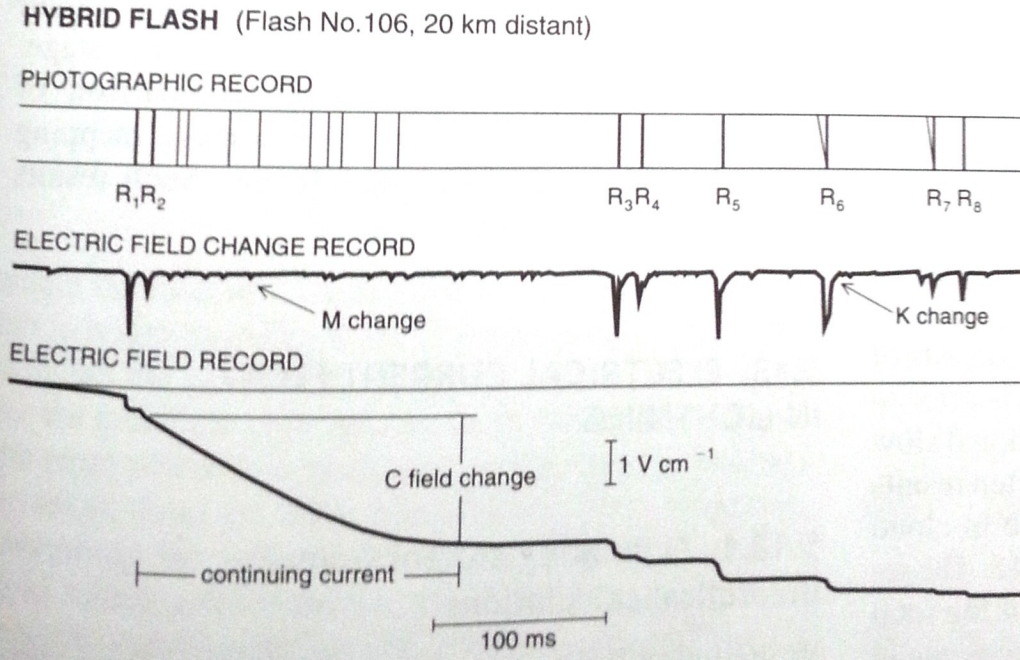
Lightning Vocabulary

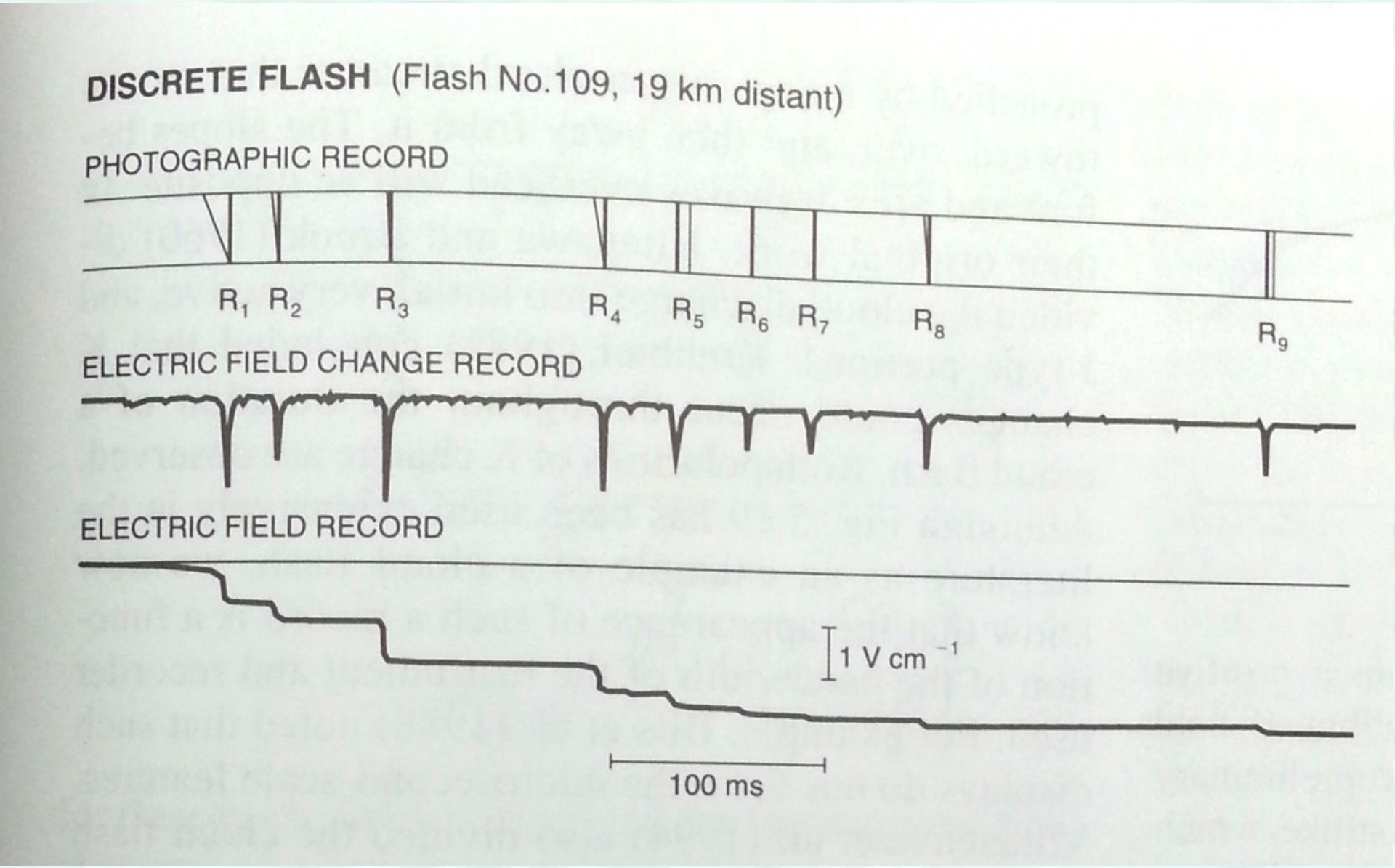
M, K

CC



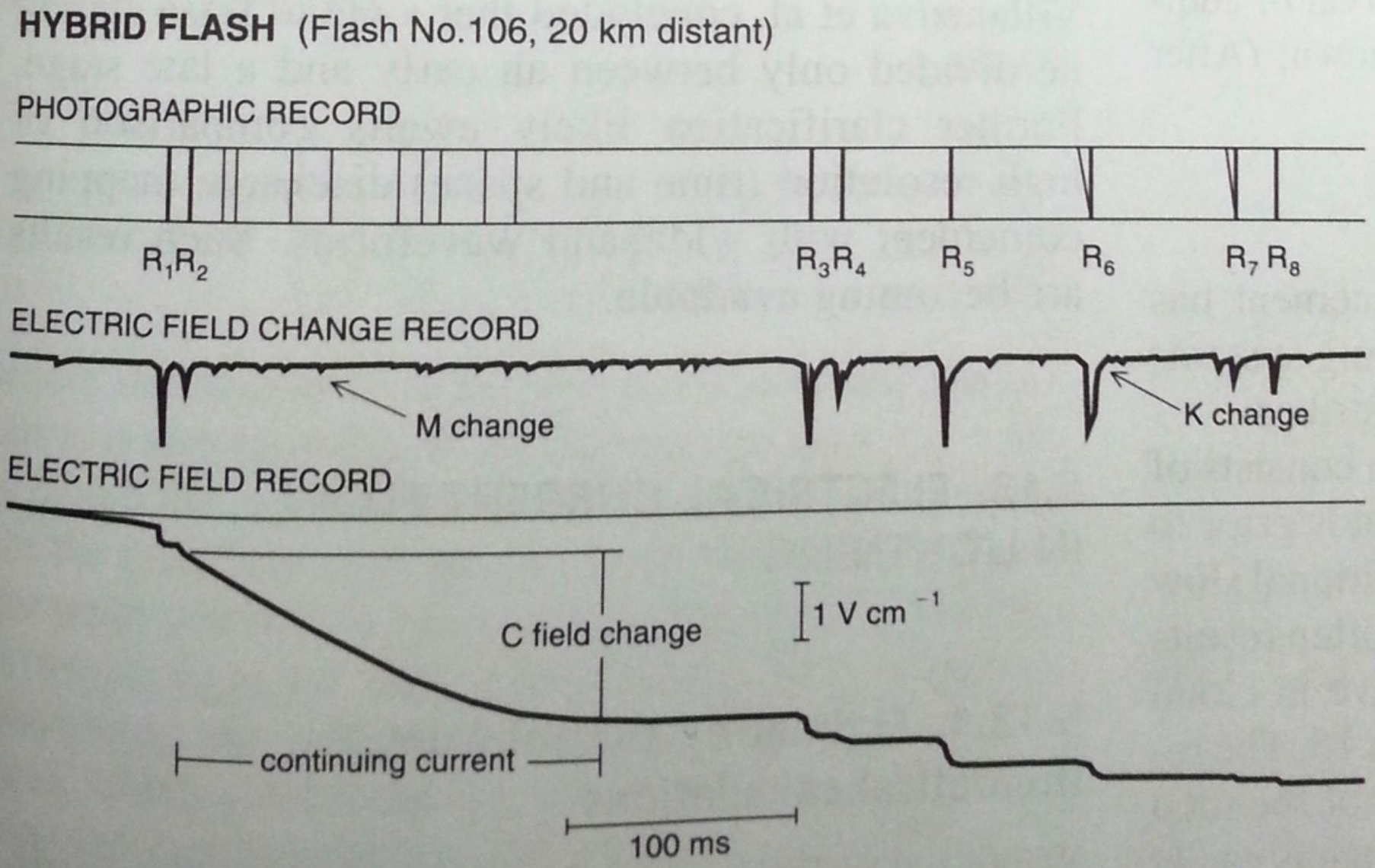
From MacGorman and Rust, p. 107





(Photo courtesy of Harald Edens)

Continuing Current



Lightning Vocabulary V

(from Uman, with editorial comments by Sonnenfeld and Winn)

K-change:

A rapid (<1 millisec) step in electric field that typically occurs after a return stroke. One can consider this a "failed dart leader".

M-component:

A rapid step in electric field that occurs during a long continuing current. So it's a dart leader that happens while there is still a conducting channel to ground (as opposed to a dart leader in a "conditioned" channel to ground.)

Could be caused by another active channel with dart-leaders joining a channel with continuing current.

(Photo courtesy of Harald Edens)

Lightning Vocabulary VI

(from Uman, with editorial comments by Sonnenfeld and Winn)

Conditioning:

Q:Why is a second return stroke faster than a first one?

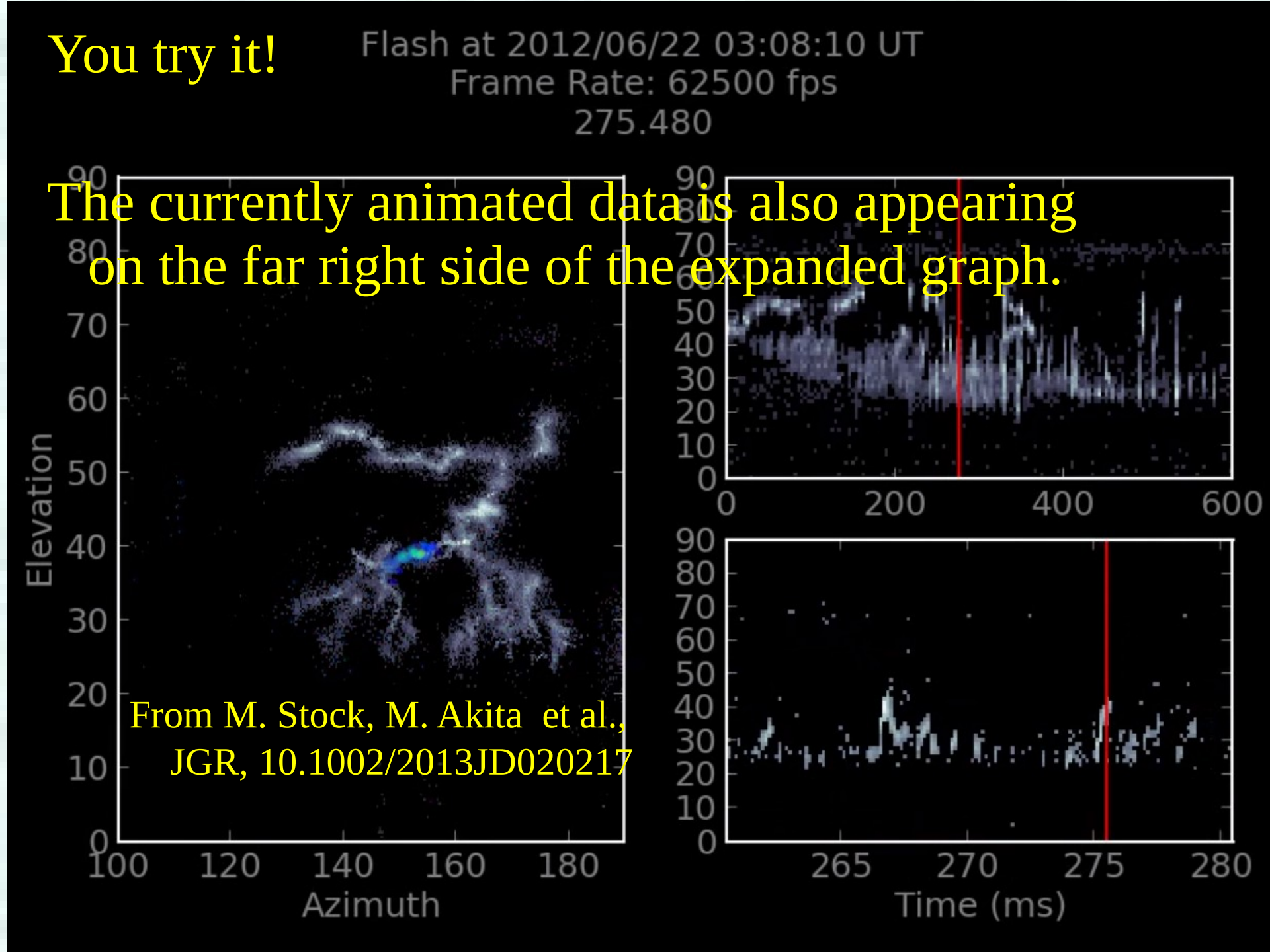
A: Because the channel is conditioned.

Q: What's conditioning?

A: ??

(Photo courtesy of Harald Edens)

You try it!



The currently animated data is also appearing on the far right side of the expanded graph.